CONVENTION ON INTERNATIONAL TRADE IN ENDANGERED SPECIES
OF WILD FAUNA AND FLORA

Thirty-third meeting of the Animals Committee
Geneva (Switzerland), 12 – 19 July 2024

Compliance

Review of Significant Trade in specimens of Appendix-II species

SPECIES SELECTED FOLLOWING COP19

1. This document has been prepared by the Secretariat.

Selection of species/country combinations to be reviewed

2. Following the 19th meeting of the Conference of the Parties (CoP19, Panama City, 2022), 21 animal species/country combinations were selected for the Review of Significant Trade at the 32nd meeting of the Animals Committee (AC32; Geneva, June 2023) on the basis of information provided in document AC32 Doc. 14.2.

3. On 5 July 2023, the Secretariat notified the range States concerned of the selected taxa; explained the justification for this selection; and requested comments regarding possible problems with the implementation of Article IV of the Convention for trade in these species. Range States were given 60 days to respond (i.e., until 5 September 2023). The Secretariat emphasized that the main purpose of the request for comments was to obtain the information required to assess the implementation of Article IV, paragraphs 2 (a), 3 and 6 (a) in the relevant range State. The letter was accompanied by the text of the Resolution; a summary schedule on the conduct of the Review of Significant Trade; guidance on how to respond to the enquiry; as well as details of the sort of information that would be taken into account by the Animals Committee when assessing the selected cases at its 33rd meeting (AC33, Geneva, July 2024). The Secretariat also pointed out that in the absence of a reply or sufficient information, the Animals Committee could come to the conclusion that "action is needed" and formulate recommendations directed to the range State, which, if not implemented, could lead to action by the Standing Committee, including ultimately the possibility of a recommendation to suspend trade in the relevant species. Parties were encouraged to engage with their Scientific Authorities as well as other relevant stakeholders to ensure that their responses were as complete as possible.

4. The selected species/country combinations concerned, and the justification for their selection, are shown in the table below. Range States that responded to the consultation are indicated in **bold**, and their responses are presented in the language and format in which they were submitted in Annex 1.

Taxa included in the Review of Significant Trade following CoP19

Species	Country selected	Justification
Falco cherrug	**Jordan (JO)**	(2) Endangered species; High volume (GT – globally threatened)
Kinixys homeana	**Ghana (GH)**	(2) Endangered species; High volume (GT)
Python regius	**Ghana (GH)**, Benin (BJ), **Togo (TG)**	(2) High volume (GT); Sharp increase
Siebenrockiella crassicollis	**Indonesia (ID)**	(2) Endangered species; High volume (GT)

Species	Country selected	Justification
Carcharhinus longimanus	**Kenya (KE); Senegal (SN); Oman (OM); Yemen (YE)**	(3) Endangered species; Sharp increase (global); Sharp increase
Mobula spp.	**Sri Lanka (LK)***	(4) Endangered species; High volume (GT); Sharp increase (global); Sharp increase
Sphyrna lewini	**Mexico (MX); Indonesia (ID); China (CN)**; **Kenya (KE); Nicaragua (NI); Oman (OM); Sri Lanka (LK)**; **Yemen (YE)**	(4) Endangered species; High volume (GT); Sharp increase (global); Sharp increase
Sphyrna mokarran	**Mexico (MX)**	(3) Endangered species; Sharp increase (global); Sharp increase
Testudo horsfieldii	**Uzbekistan (UZ)**	(1) High Volume (GT)

** Sri Lanka did respond to the consultation, but did not provide detailed responses to the questions posed*

5. Concerning trade in *Falco cherrug*, Jordan confirmed that it does not export falcons at all. They are protected according to its national laws. In addition, Jordan stated that it does not have any facility that breeds falcons, but re-exports specimens imported legally into the country. As a result of the data clarifications provided by Jordan, the Secretariat informed Jordan that it would not be taking *Falco cherrug* from Jordan forward as a priority case in Stage 2 of the CITES Review of Significant Trade process.

Consultation with the range States and compilation of information

6. In accordance with paragraph 1) d) ii) of Resolution Conf. 12.8 (Rev. CoP18) on *Review of Significant Trade in specimens of Appendix-II species*, the Secretariat engaged the World Conservation Monitoring Centre of the United Nations Environment Programme (UNEP-WCMC) to compile a report about the biology, management and trade in the species selected at AC32, to be submitted for consideration by the Animals Committee at the present meeting. In doing so, UNEP-WCMC actively engaged with the range States and relevant experts on behalf of the Secretariat in the compilation of the report.

7. UNEP-WCMC's species report is found in Annex 2 to this document. It presents conclusions about the effects of international trade on the selected species, the basis on which such conclusions are made, as well as problems with the implementation of Article IV of the Convention. It provides preliminary categorizations of each species/country combination into one of the three categories outlined in paragraph 1) e) of Resolution Conf. 12.8 (Rev. CoP18), namely:

   a) 'action is needed' shall include species/country combinations for which the available information suggests that the provisions of Article IV, paragraph 2 (a), 3 or 6 (a), are not being implemented;

   b) 'unknown status' shall include species/country combinations for which the Secretariat (or consultants) could not determine whether or not these provisions are being implemented; and

   c) 'less concern' shall include species/country combinations for which the available information appears to indicate that these provisions are being met.

8. The Secretariat is in agreement with the provisional categorizations presented in the report in Annex 2, which are summarized in the following table. Range States that responded to the consultation are indicated in **bold**.

Species	Country	Provisional categorization in Annex 2
Kinixys homeana	**Ghana (GH)**	Action is needed
Python regius	**Ghana (GH)**	Action is needed
	Benin (BJ)	Action is needed
	Togo (TG)	Action is needed
Siebenrockiella crassicollis	**Indonesia (ID)**	Less concern
Carcharhinus longimanus	**Kenya (KE)**	Conditional upon annual publication of a zero export quota, Less concern
	Senegal (SN)	Conditional upon annual publication of a zero export quota, Less concern
	Oman (OM)	Action is needed
	Yemen (YE)	Conditional upon annual publication of a zero export quota, Less concern

Species	Country	Provisional categorization in Annex 2
Mobula spp.	**Sri Lanka (LK)**	Action is needed
Sphyrna lewini	**Mexico (MX)**	Unknown (see paragraph 10)
	Indonesia (ID)	Action is needed
	China (CN)	Action is needed
	Kenya (KE)	Action is needed
	Nicaragua (NI)	Action is needed
	Oman (OM)	Action is needed
	Sri Lanka (LK)	Action is needed
	Yemen (YE)	Conditional upon annual publication of a zero export quota, Less concern
Sphyrna mokarran	**Mexico (MX)**	Unknown (see paragraph 10)
Testudo horsfieldii	**Uzbekistan (UZ)**	Conditional upon annual publication of a zero export quota, Less concern

9. For the 20 cases reviewed, 12 are provisionally categorized as “Action is needed”; and 6 are provisionally categorized as “less concern”, noting that 5 of these cases would only be categorized as “less concern” with the annual publication of zero export quotas.

10. The selection of the species/country combinations of *S. lewini*/Mexico and *S. mokarran*/Mexico presented the first RST cases where multiple stocks need to be considered for the same species. For these species/country combinations, harvest of the species occurs on both the Pacific and Atlantic coastlines of Mexico, which are three distinct population segments with different statuses (Northwest Atlantic and Gulf of Mexico, Central and Southwest Atlantic, and Eastern Pacific). While it was considered that Mexico has strong management frameworks for these species, given that there are multiple stocks involved with varying levels of concern, these two species/country combinations were classified as “unknown status”.

11. Another consideration relating to marine species is that multiple exporting range States may be harvesting from a single stock and therefore the Committee needs to make a judgement on which countries to include in the RST process. Complexity is increased where multiple criteria are met. In addition, for migratory species, it might be more relevant to consider inclusion of particular stocks within the RST process and direct any recommendations to all Parties that are exporting the species from those stocks. This is difficult, given that it may only become apparent that multiple countries are exporting specimens from particular shared stocks when assessing the species in-depth (some of which may be included in RST and others not). These scenarios may require further consideration by the Animals Committee.

12. In accordance with paragraph 1 f) of Resolution Conf. 12.8 (Rev. CoP18), the Secretariat will draw the attention of the relevant range States to Annex 2 to this document ahead of the present meeting and invite them to provide any additional information for consideration by the Animals Committee.

Categorization and recommendations by the Animals Committee

13. In accordance with paragraphs 1 g) and i) of Resolution Conf. 12.8 (Rev. CoP18), the Animals Committee shall at the present meeting:

    a) review the responses from the range States in Annex 1 and the report from UNEP-WCMC in Annex 2, along with any additional information received from the range States concerned. If appropriate, the Animals Committee shall revise the preliminary categorization proposed for species/country combinations of those with ‘unknown status’, those where ‘action is needed’ or those of ‘less concern’, and provide a justification for the revision;

    b) for cases where ‘action is needed’, formulate, in consultation with the Secretariat, time-bound, feasible, measurable, proportionate, and transparent recommendations directed to the range States retained in the review process, using the principles outlined in Annex 3 to Resolution Conf. 12.8 (Rev. CoP18). The recommendations should aim to build the range State’s long-term capacity to implement Article IV, paragraphs 2 (a), 3 and 6 (a) of the Convention; and

    c) also take into consideration, as appropriate, the guidance on the formulation of recommendations for the Review of Significant Trade, presented in Annex 3 to the present document (originally published as Annex 5 to document CoP17 Doc. 33).

14. In accordance with paragraph 1 g) i) of Resolution Conf. 12.8 (Rev. CoP18), in cases where the species/country combination is categorized by the Animals Committee as of 'less concern' due to the establishment of a zero-export quota, any change to this quota should be communicated by the range State to the Secretariat and the Chair of the Animals Committee, along with a justification.

15. In accordance with paragraph 1 i) of Resolution Conf. 12.8 (Rev. CoP18), the Animals Committee is to formulate separate recommendations directed to the Standing Committee for problems identified in the course of the review that are not directly related to the implementation of Article IV paragraph 2(a), 3 or 6(a), following the principles outlined in Annex 3 of the Resolution.

16. Concerning the formulation of recommendations for cases where "action is needed", the Animals Committee may wish to consider factors such as the nature and severity of the risk to the species as a result of the trade concerned, as well as the capacity of the range State to implement those recommendations. The recommendations should focus on the requirements of the Convention and not go beyond. As indicated in Resolution Conf. 12.8 (Rev. CoP18), recommendations should be proportionate and feasible, as well as time-bound, measurable and transparent. Range States should also be encouraged to make use of the new *Guidance on making Non-Detriment Findings (NDFs)* developed under Decisions 19.132 to 19.134.

Recommendations

17. The Animals Committee is invited to undertake the tasks outlined in paragraphs 13 to 16, in accordance with paragraphs 1 g) and i) of Resolution Conf. 12.8 (Rev. CoP18).

Taxon/country combinations selected for review by the Animals Committee following CoP19:

Range State responses

This document only includes the responses received for the taxon/country combinations that UNEP-WCMC was asked to review by the CITES Secretariat. Confidential information relating to CITES permits has been removed.

Contents

Materials on Scalloped hammerhead (*Sphyrna lewini*)

1. Distribution of *S. lewini* in Chinese waters, including occurrence of the species in protected areas

Scalloped hammerhead (*Sphyrna lewini*) is a member of the genus Sphyrna, the family Sphyrnidae, the order Carcharhiniformes. On a global scale, there are a total of 2 genera and 11 species of the family Sphyrnidae[1]. China has vast sea areas with over 20,000 species of marine life[2], accounting for 10% of the world's total discovered population. There are approximately 16,200 species of marine animals[3], including 4 species of the family Sphyrnidae[4]. Scalloped hammerhead is a common species of the family Sphyrnidae along the coast of China, which is distributed in the South China Sea, East China Sea, Yellow Sea, Bohai Sea among others[5]. Landing of Scalloped hammerhead has been recorded in many locations including Yantai (Shandong); Dasha (Jiangsu); Shanghai; Shengshan (Zhejiang); Dong'ao, Fuding, Pingtan, Dongshan, and Xiamen (Fujian); Shanwei, Zhapo, and

[1] www.fishbase.org。
[2] Huang Z.G., Species and distribution of marine organisms in China, 2007
[3] http://www.qdio.ac.cn/mbm/kpyd_51811/202005/t20200512_559099.html。
[4] Zhang C.G, et al., Fish species, Volome: Fauna, the Chinese List of Biological Species, 2020。
[5] Ibid

Guangzhou (Guangdong); Qisha Port and Beihai (Guangxi); Xincun county, Sanya, the Xisha Islands and the Nansha Islands (Hainan); and the offshore waters of Taiwan, Province of China[6].

Scalloped hammerhead generally uses coastal shallow bays and estuarine waters as nursery sites. Female sharks give birth to fry in these shallow waters. Fry grow to a size of over 1 meter in the breeding grounds and then begin to migrate to the deep sea. Adult female sharks exhibit collective behavior and often gather in large groups near seamounts and distant islands. Adult male sharks move in more extended areas than female sharks. Every spring, juveniles with a total length of about 1 meter are recorded along the coast of China, and the number is not small. It is expected that Estimating the distribution of spawning and nursery sites along the coast of Chinese Mainland[7].

According to the China Fishery Resources Survey, the dominant species of sharks in China's offshore waters remain to be the order Carcharhiniformes and the order Squaliformes, with 32 common species found in bottom

[6] Zhu Y.D. and Meng Q.W., Zoology of China: Cartilaginous Fishes of the Class Syngnathiformes，2001

[7] David A. Ebert, Marc Dando, Sarah Fowler & Rima Jabado. 2021. Sharks of the World: A Complete Guide. Princeton University Press, PP624.

trawl surveys in the East and Yellow Seas（see Table 1），21 common species found in bottom trawl surveys in the Northern South China Sea of China's Offshore Areas（see Table 2），12 common species of hook and line fishing operations in the waters off islands and reefs in the South China Sea（see Table 3）. Scalloped hammerhead is present in all three tables[8].

Table 1. Common shark species in the East and Yellow Sea waters

No.	SPECIES
1	Broadnose Sevengill Shark *Notorynchus cepedianus*
2	Barred Bullhead Shark *Heterodontus zebra*
3	Shortfin Mako *Isurus oxyrinchus*
4	White Shark *Carcharodon carcharias*
5	Basking Shark *Cetorhinus maximus*
6	Common Thresher *Alopias vulpinus*
7	Zebra Shark *Stegostoma fasciatum*
8	Japanese Wobbegong *Orectolobus japonicus*
9	Whitespotted Bambooshark *Chiloscyllium plagiosum*
10	Whale Shark *Rhincodon typus*
11	Japanese Swellshark *Cephaloscyllium umbratile*
12	Gecko Catshark *Galeus eastmani*
13	Blackspotted Catshark *Halaelurus buergeri*
14	Venice Catshark *Proscyllium venustum*
15	Banded Houndshark *Triakis scyllium*
16	Spotless Smooth-hound *Mustelus griseus*
17	Tiger Shark *Galeocerdo cuvier*
18	New Spadenose Shark *Scoliodon macrorhynchos*
19	Milk Shark *Rhizoprionodon acutus*
20	Spinner Shark *Carcharhinus brevipinna*

[8] China Aquatic Products Processing and Marketing Alliance, White Paper on China's Shark Industry, 2013

21	Hardnose Shark *Carcharhinus macloti*
22	Pondicherry Shark *Carcharhinus hemiodon*
23	Blacktip Shark *Carcharhinus limbatus*
24	Sandbar Shark *Carcharhinus plumbeus*
25	Silky Shark *Carcharhinus falciformis*
26	Blacktip Reef Shark *Carcharhinus melanopterus*
27	Spottail Shark *Carcharhinus sorrah*
28	Smooth Hammerhead *Sphyrna zygaena*
29	Scalloped Hammerhead *Sphyrna lewini*
30	Japanese Shortnose Spurdog *Squalus brevirostris*
31	Shortspine Spurdoy *Squalus Mitsukurii*

Table 2. Common shark species in the northern waters of the South China Sea

No.	Species
1	Pelagic Thresher *Alopias pelagicus*
2	Spotted Wobbegong *Orectolobus maculatus*
3	Whitespotted Bambooshark *Chiloscyllium plagiosum*
4	Slender Bambooshark *Chiloscyllium indicum*
5	Barbelthroat Carpetshark *Cirrhoscyllium expolitum*
6	Gecko Catshark *Galeus eastmani*
7	Broadfin Sawtail Catshark *Galeus nipponensis*
8	Blacktip Sawtail Catshark *Galeus sauteri*
9	Reticulated Swellshark *Cephaloscyllium fasciatum*
10	Japanese Swellshark *Cephaloscyllium umbratile*
11	Torazame Catshark *Scyliorhinus torazame*
12	Blackspotted Catshark *Halaelurus burgeri*
13	Graceful Catshark *Proscyllium habereri*
14	Venice Catshark *Proscyllium venustum*
15	Spotless Smooth-hound *Mustelus griseus*
16	Spotless Smooth-hound *Mustelus kanekonis*
17	New Spadenose Shark *Scoliodon macrorhynchos*
18	Blacktip Shark *Carcharhinus limbatus*
19	Scalloped Hammerhead *Sphyrna lewini*
20	Japanese Shortnose Spurdog *Squalus brevirostris*
21	Clouded Angelshark *Squatina nebulosa*

Table 3. Common shark species in islands and reefs off the South China Sea

No.	Species
1	Bigeyed Sixgill Shark *Hexanchus griseus*
2	Broadnose Sevengill Shark *Notorynchus cepedianus*
3	Sand Tiger Shark Carcharias arenarias
4	Zebra Shark *Stegostoma fasciatum*
5	Reticulated Swellshark Cephaloscyllium fasciatum
6	Japanese Swellshark *Cephaloscyllium umbratile*
7	Blacktip Shark *Carcharhinus limbatus*
8	Tiger Shark *Galeocerdo cuvier*
9	Sickelfin Weasel Shark *Hemigaleus microstoma*
10	New Spadenose Shark *Scoliodon macrorhynchos*
11	Scalloped Hammerhead *Sphyrna lewini*
12	Japanese Shortnose Spurdog *Squalus brevirostris*

2. Population size, status and trends of *S. lewini* in Chinese waters, and any other relevant fishing areas, including details of any population monitoring systems in place

In China, Scalloped hammerhead is not a target species in the fishing industry and only appears as by-catch. According to the fishery resource monitoring survey results from 1997 to 2012, the annual of shark by-catch in China's offshore areas is about 10,000 to15,000 tons[9]. According to previous surveys and catch statistics, the most common small shark species are *Chiloscyllium plagiosum*, *Mustelus griseus*, *Scoliodon*

[9] Cui H. et al., Current status of shark resource utilization and regulatory mechanisms in China, 2015

sorrakowah(Match *Scoliodon macrorhynchos*) and the most common big shark species is *Sphyrna lewini*[10].

The long-term resource monitoring results show that the majority of shark species in China's offshore waters have not changed much, and there has been no decline in shark resources up to date[11]. According to a survey conducted by the Sea Area Station of the East China Sea Fisheries Resource Dynamic Monitoring Network on fishing types such as trawl nets, sail nets, and gill nets in Jiangsu, Zhejiang, and Fujian, the commonly caught shark species in normal fishing activities are mainly the the genus Scoliodon and the family Sphyrnidae, with no significant fluctuations in their by-catch.

Scalloped hammerhead specimen exported from China since 2021 is recorded in CITES trade database[12], which are by-catch from the southern part of East China Sea and belong to the population of the Northwest Pacific region. According to dynamic monitoring of biological indicators of the population of Scalloped hammerhead in the northwest Pacific region(see table 4)[13、14、15], it is

[10] Ibid

[11] China Aquatic Products Processing and Marketing Alliance, White Paper on China's Shark Industry, 2013

[12] CITES Trade Database

[13] Chen, 1988. Notes on reproduction in the scalloped hammerhead, Sphyrna lewini, in Taiwan waters. Fish. Bull., 86 (1988), pp. 389-393.

[14] Chen, 2020. Mortality Estimates and Demographic Analysis for the Smooth Hammerhead Shark (Sphyrna zygaena) in the Northwest Pacific Ocean. Department of Production and Management, National Kaohsiung University of Science and

observed that during the span of 30-year monitoring, there was little change in important biological indicators, and there was no significant downward trend in body length. The birth length also remained basically unchanged, with a relatively high litter size, averaging 26. This indicates that the population structure of this species has not shown significant juvenile dominance compared to the past, indicating that the overall population size of this species is stable.

Table 4. Dynamic Monitoring of Biological Indicators of the Population of scalloped hammerhead in the Northwest Pacific Region

Indicator	Value
sexual maturity	Females 4.1 yr，males 3.8 yr（Taiwan Province of China, 1990）
	Females 11-14 yr，males 6-10 yr（Indonesia，2015）
maximum age	Females 35 yr，males 19 yr（west Pacific，1990）
	Females 24.41 yr，males 21.10 yr（Taiwan Province of China，2020）
	Females 28 yr，males 22 yr (east Australia. 2011)
Sexual maturity length	Females 210cm，males 198cm（west Pacific）
Maximum body length	Females 324cm，males 305cm（west Pacific）
Body length at birth	48.5(Taiwan Province of China,1988)
	48.5(Taiwan Province of China, 2020)
Litter size	12-38, average 26
Growth coefficient k	Females 0.249，males 0.222（west Pacific, 1990）
	Females 0.142，males 0.165 (Taiwan Province of China, 2020)
Asymptotic body lengthL∞	Females 319.72cm，males 320.59cm（TL）（west Pacific, 1990）
	Females 368cm，males 318cm (Taiwan Province of China, 2020)

Technology, Master Thesis

[15] Hoang Huy Huynh, Wen-Pei Tsai. 2023. Estimation of the population status of smooth hammerhead shark (Sphyrna zygaena) and scalloped hammerhead shark (Sphyrna lewini) in the Northwest Pacific Ocean: A data-limited approach. Journal of Sea Research, https://doi.org/10.1016/j.seares.2023.102434

3. Threats to the species (and any measures in place to reduce these threats)

In China, fishing activity is subject to permission and obtaining a fishing license. China has not approved fishing permits mainly targeting shark species such as the Scalloped hammerhead. China has included three CITES-listed shark species, *Rhincodon typus*, *Cetorhinus maximus*, and *Carcharodon carcharias*, in the list of National Key Protected Wildlife for conservation and management. Unauthorized fishing of nationally protected sharks and shark species approved for management will face administrative and even criminal penalties. Although Scalloped hammerhead is not within the scope of national key protected wildlife, Chinese fishermen are extremely sensitive to shark fishing of any species. Sometimes fishermen cannot immediately determine whether the shark they catch belongs to the national key protection. So, when encountering such situations, fishermen will choose to release it on the spot, which is the safest disposal method they adopt to comply with the law.

The Chinese government has organized and implemented a series of institutional measures over time,

including dual control of the number and power of marine fishing vessels, reduction of fishing boats and production by fishermen, total management of marine fishery resources, establishment of prohibited fishing areas and periods. These measures have played an important role in controlling fishing intensity, protecting fishery resources, and promoting sustainable development of the fishery. They have also played a crucial role in protecting shark resources such as Scalloped hammerhead to a certain extent.

4. Landings data of *S. lewini* from key Chinese fleets (including artisanal and industrial fleets, and whether the specimens landed are adults or juveniles), details of the size of these fleets, the key areas where the species is fished, and whether the species is caught as a target species or as incidental catch by each fishery

In China, Scalloped hammerhead is not a target species in the fishing industry and only appears as a by-catch species in the take. There are no fishing boats in China that target Scalloped hammerhead. According to previous fishery resource surveys, *Chiloscylium plagiosum*, *Mustelus griseus*, *Scoliodon sorrakowah*(Match *Scoliodon macrorhynchos*), and *S.*

lewini are the most common species[16]. In Chinese waters, the catching areas of Scalloped hammerhead are mainly in the East China Sea and South China Sea. The data of fishing vessels in the relevant areas are as follows. There are 13,592 fishing boats below 44.1 kilowatts, 18,377 fishing boats between 44.1 (inclusive) and 441 kilowatts, and 1,373 fishing boats above 411 kilowatts in the East China Sea region. There are 47,925 fishing boats below 44.1 kilowatts, 12,991 fishing boats between 44.1 (inclusive) and 441 kilowatts, and 970 fishing boats above 411 kilowatts in the South China Sea region[17].

According to the continuous fishing port visit carried out by the Institute of Zoology of the Chinese Academy of Sciences in recent years, both adult and juvenile Scalloped hammerhead have been by-caught by fishermen.

5. Details of which Regional Fisheries Management Organizations China is a contracting party to

China is a signatory to the following regional fisheries organizations related to the Scalloped hammerhead:

(1) International Commission for the Conservation of

[16] Cui H. et al. , Current status of shark resource utilization and regulatory mechanisms in China, 2015

[17] Current status of shark resource utilization and regulatory mechanisms in China
Fisheries and Fisheries Administration of the Ministry of Agriculture and Rural Affairs, National Aquatic Technology Promotion Station, China Fisheries Society, 2023 China Fisheries Statistical Yearbook

Atlantic Tuna（ICCAT）[18]

(2) The Indian Ocean Tuna Commission (IOTC)[19]

(3) Western and Central Pacific Fisheries Commission (WCPFC)[20]

(4) Inter-American Tropical Tuna Commission (IATTC)[21]

6. Details of domestic utilization and trade

Shark meat is a healthy product with high protein and low fat used for consumption in many countries. In some countries, there is a dietary habit of consuming shark offal and shark skin. Shark skin can also be used to make leather products. Shark liver oil is mainly used in pharmaceuticals and health products, as well as in cosmetic ingredients and lubricants. Shark cartilage products are a growing industry in shark processing, and extracted chondroitin is used to treat many diseases, especially those targeting the elderly[22].

In international trade, shark products come in various forms. FAO has included a total of 25 shark product trade

[18] http://www.iccat.int/en/RecsRegs.asp。
[19] http://www.iotc.org/cmms。
[20] https://www.wcpfc.int/conservation-and-management-measures。
[21] http://www.iattc.org/ResolutionsActiveENG.htm。
[22] China Aquatic Products Processing and Marketing Alliance, White Paper on China's Shark Industry, 2013

items, mainly including whole frozen shark, frozen or iced fresh shark meat (including fillets, fillets, minced fish products), dried shark meat, pickled shark meat, smoked shark meat, shark fins, shark liver oil, and other shark products. Due to differences in customs statistical methodologies among countries, only trade data on shark fins are listed separately in FAO data statistics, while it is difficult to distinguish whole frozen sharks, shark fillets, etc. by species. The overall import and export trade volume of shark fins remained stable from 1999 to 2009, with an average annual trade volume fluctuating around 32,000 tons. However, its proportion in the total trade volume of shark products showed a downward trend, dropping from 17.2% in 1999 to 10.7% in 2009. The trade volume of frozen sharks and other products continued to rise, increasing from 129,000 tons in 1999 to 239,000 tons in 2009, an increase of 84%. The data shows that, The comprehensive utilization rate of shark whole fish is increasing year by year（see figure 1）[23].

[23] China Aquatic Products Processing and Marketing Alliance, White Paper on China's Shark Industry, 2013

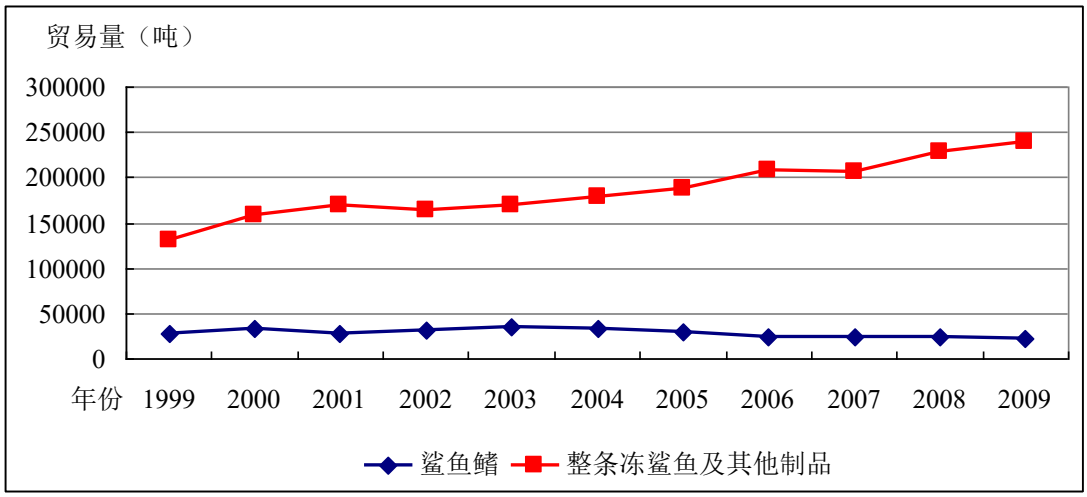

Figure 1. Trend chart of annual trade volume of shark products 1999 -2009

(fin in blue, frozen shark and its product in red)

(Horizontal axis: year; Longitudinal axis: trade volume in tons)

Similar to other sharks, all parts of Scalloped hammerhead can be utilized. For example, meat and shark fins can be consumed, skin can be used to make leather, liver can be used to extract liver oil, jawbones and teeth can be used to make handicrafts, and etc.

In China, due to the fact that Scalloped hammerhead is not a major economic species and is only a by-catch species, its catch cannot support the formation of a large-scale commercial industry.

According to CITES trade database[24], after the inclusion of Scalloped hammerhead into Appendix II came

[24] https://trade.cites.org/。

into force in 2014, the vast majority of the Scalloped hammerhead specimens exported from China are meat, totaling 262.17 tons, including 199.67 tons pre-Convention stockpiles and 62.5 tons caught in offshore fishing. The main destination country is South Korea. The imported specimen are mainly in form of shark fin, with a total of 41.29 tons, and there are also a small number of live specimens and other types of specimens, involving the main source countries of Mexico and Australia.

7. Details of how harvest and trade is managed and regulated, including copies of relevant legislation

According to relevant provisions in Article 7 and 37 of the Wildlife Protection Law of the People's Republic of China[25] and Regulations of the People's Republic of China on the Administration of Import and Export of Endangered Wild Fauna and Flora[26], As CITES-listed species, Scalloped hammerhead specimen's trade requires approval from the Fisheries and Fisheries Administration of the Ministry of Agriculture and Rural Affairs, and a CITES permit from the National Endangered Species Import and Export Managenent Office of the

[25] https://www.forestry.gov.cn/c/www/gklcfl/300028.jhtml。
[26] https://www.forestry.gov.cn/c/www/gkxzfg/300046.jhtml。

People's Republic of China (China CITES Management Authority).

As mentioned in section 5, China is a contracting party to CITES and multiple Regional Fisheries Management Organizations (RFMOs). For fishing from the high seas, China strictly complies with the management regulations of CITES and the regional fisheries organizations it has joined.

In China, domestic fishing of Scalloped hammerhead is managed in accordance with the Fisheries Law of the People's Republic of China [27]. The Ministry of Agriculture and Rural Affairs Further has refined relevant requirements by specially formulating the Implementation Rules of the Fisheries Law of the People's Republic of China [28] and the Regulations on the Management of Fishery Fishing Permits[29]. The Notice of the General Office of the Ministry of Agriculture and Rural Affairs on Good Practice in International Compliance with Tuna Fisheries (Nongbanyu [2022] No. 1) also puts forward control requirements for the by-catching sharks in the ocean, including: not approving deep-sea fishing projects that mainly target sharks; prohibiting the

[27] http://www.moa.gov.cn/ztzl/ncpzxzz/flfg/200708/t20070831_882803.htm。
[28] https://www.gov.cn/zhengce/202203/content_3337972.htm。
[29] https://www.moa.gov.cn/govpublic/CYZCFGS/202201/t20220127_6387843.htm。

retention, transshipment, and unloading of shark species prohibited by RFMOs in fishing vessels, such as *Alopias superciliosus*, *Carcharhinus longimanus*, Sphyrnidae, and *Carcharhinus falciformis* in the Atlantic Ocean; releasing accidental take harmless and keeping records; prohibiting shark threads, and etc[30].

The Ministry of Agriculture and Rural Affairs of China implements a summer fishing ban system in the ocean based on the situation of marine fishery resources and other factors. In the East China Sea region, which is the harvest source of China's export of Scalloped hammerhead specimens in 2021, the fishing ban usually lasts for up to 4 and a half months[31].

In 1999 and 2000, the former Ministry of Agriculture (now the Ministry of Agriculture and Rural Affairs) of China implemented policies of "zero growth" and "negative growth" in marine fishing, respectively, increasing control over the intensity of marine fishing. In 2003, the former Ministry of Agriculture of China issued the "Implementation Opinions on the Control System for Marine Fishing Vessels from 2003 to 2010", proposing the overall goal of controlling the total number and power of

[30] http://www.moa.gov.cn/nybgb/2022/202204/202206/t20220607_6401726.htm。
[31] http://www.moa.gov.cn/govpublic/YYJ/202102/t20210224_6362221.htm。

marine fishing vessels in China by 2010. In 2006, the State Council issued the Action Plan for the Conservation of Aquatic Biological Resources in China, strengthening the conservation of aquatic biological resources and the protection of rare and endangered species.

In 2017, the former Ministry of Agriculture of China issued "Notice on Further Strengthening the Control of Domestic Fishing Vessels and Implementing the Total Management of Marine Fishery Resources"[32], proposing goals for the total management of large and medium-sized marine fishing vessels and marine fishery resources, and initiating the implementation of the total management system for marine fishery resources. As of now, the control targets for Chinese offshore fishing vessels have been achieved, and the actual fishing volume is controlled within 10 million tons.

8. Details of how CITES non-detriment findings are made, including the institutions involved in the process

China attaches great importance to scientific wildlife conservation and management. Numerous scientific research institutions have carried out a series of work in scientifically evaluating the populations and conservation

[32] http://www.moa.gov.cn/govpublic/YYJ/201701/t20170120_5460583.htm。

status of shark species, including Scalloped hammerhead, as well as whether trade poses a threat to the survival of wild populations. As the highest academic institution of natural science in China and the designated China CITES Scientific Authority, the Chinese Academy of Sciences launched the project of "Resources Assessment of Important CITES-listed Species and Research on Detrimental Mechanism" in 2011 to carry out special research on important CITES-listed species, including sharks, to study their population and threat status, and to provide professional advice to competent wildlife authorities and China CITES Management Authority, and etc.

Several experts in cartilaginous fish (Elasmobranch) have extensively collected information on the global and Chinese population distribution, biological characteristics, trade data, legal acquisition of trade specimens, and management measures taken internationally and domestically from various countries, IUCN, FAO, domestic research institutes, industry associations, etc., as part of scientific research. Experts have also exchanged ideas with officials and experts from countries such as Indonesia, Mexico, and Japan on methods for evaluating the survival

status of Scalloped hammerhead population, exploring more scientific, reasonable, and practical evaluation methods that are in line with national conditions. Experts have monitored the genetic diversity of the Chinese population of Scalloped hammerhead in the northwest Pacific based on two molecular markers, mitochondrial DNA (mtDNA) and microsatellites. The results of the two molecular markers showed high genetic diversity, indicating that the population has a high potential to be resilient to human activities and environmental changes.

In 2021, China amended and released the National Key Protected Wildlife List[33]. During the process of amending this list, China organized an expert discussion meeting. Academicians and experts from 11 scientific research institutions, including Beijing Forestry University, China CITES Scientific Authority, the Chinese Academy of Forestry Sciences, the Institute of Zoology, the Institute of Aquatic Species, the Kunming Institute, the Chengdu Institute of Biology, the Institute of Oceanography of the Chinese Academy of Sciences, Beijing Normal University, Shenyang Normal University, and Nanjing Normal University, attended the meeting. Based on long-term

[33] https://www.forestry.gov.cn/c/www/dzbhml/144172.jhtml https://www.forestry.gov.cn/html/main/main_5461/20210205122239482485322/file/20210205122347636743107.pdf。

scientific research on the population, distribution dynamics, trade, and utilization of wild animals in China, including shark species such as Scalloped hammerhead, a study and analysis were conducted on each species on the list, and suggestions for list adjustment were proposed. The population of Scalloped hammerhead distributed in the coastal areas of China has not been found to have a significant decline in the wild, threatened survival, similar species with biological characteristics urgently need protection or similar trends, which does not meet the listing criteria of endangered status, precious status, similarity, and preventive measures requirement. Therefore, it is not listed as a national key protected wild animal.

With the support of China CITES Management Authority and relevant agencies, China CITES Scientific Authority will establish more effective scientific cooperation mechanisms with relevant national departments and research institutions, and continue to carry out scientific research for CITES implementation, including shark species.

9. Details of any known illegal fishing and trade activities

At present, there is no indication of illegal fishing activities targeting Scalloped hammerhead. After checking the annual illegal trade report submitted by China to CITES since 2013, no smuggling activities of Scalloped hammerhead and its products were found[34].

10. Contact details of any relevant experts in the country

Ms. ZHANG Jie（Associate Researcher, Institute of Zoology, Chinese Academy of Sciences），zhangjie@ioz.ac.cn

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Mr. LI Yunkai (Professor, Shanghai Ocean University)，ykli@shou.edu.cn。

[34] China, CITES Annual Illegal Trade Report, 2013-2022 中国，年度非法贸易报告，2013—2022 年。

Ghana's Response to Review of Significant Trade in Specimens of Appendix-II Species. [Resolution Conf. 12.8 (Rev. CoP18)]. (*Python regius*)

Non- Detriment Finding Decision-making (NDF) process in Ghana.

Ghana's designated Scientific Authority is the Faculty of Renewable Natural Resources, College of Agriculture and Natural Resources of the Kwame Nkrumah University of Science and Technology, Kumasi (KNUST). It conducts Non-Detriment Findings (NDF) to scientifically evaluate parameters such as species distribution and habitats, population status and trends, hunting practices, as well as volumes and impact of trade in target species. The findings result in the issuance of a positive or a negative recommendation to the CITES Management Authority of Ghana. Generally, the Scientific Authority goes through a series of cycles as showed in Figure 1 below to conduct an NDF. In summary, it starts with a preliminary evaluation exercise to ascertain if a detailed, science based NDF is needed for the species and specimens concerned. If it warrants a science based NDF, then there is the evaluation of conservation concerns and potential biological risks. Assessments at these steps set the context of risk that the harvest, trade and management should be considered. The procedure continues with a detailed evaluation of harvest impacts, and trade impacts relevant to the species concerned as well as an evaluation of whether the management measures in place are sufficiently rigorous to mitigate the concerns, risks, and impacts identified. The overall findings of these processes culminate in a positive or negative NDF recommendation to Management Authority.

The Scientific Authority also base on student research and research of other institutions on animals and plants to advise the Management Authority on trade levels of CITES listed and other non-CITES species that are in trade.

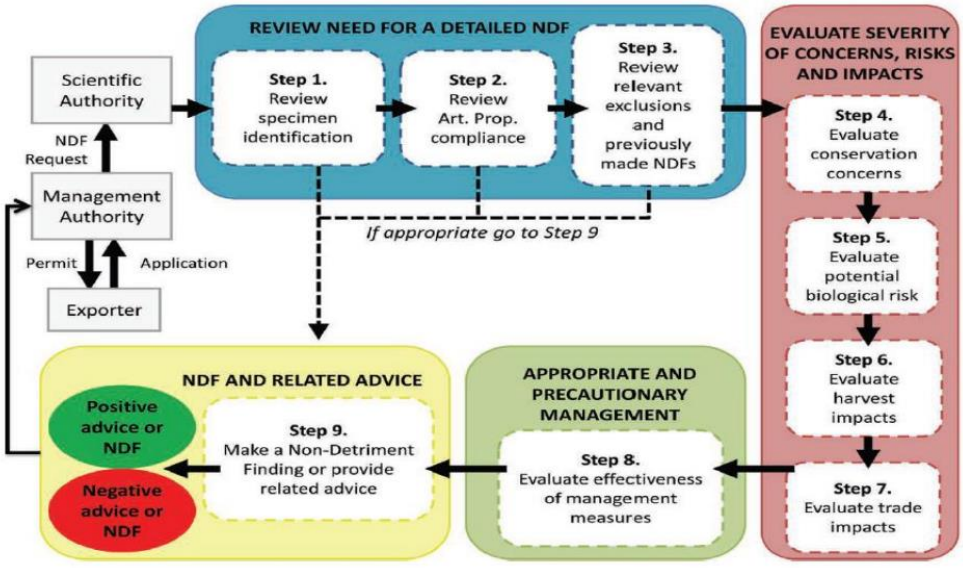

Figure 1: Simplified pathway adopted by the Scientific Authority for making NDF (Adopted from Wolf et al. 2018)

Institution(s)/expert(s)/stakeholder(s) involved in making the NDF, other than the designated Scientific Authority.

Ghana has not specifically conducted an NDF for *Python regius*, primarily due to the substantial resources required for its completion. However, the Management Authority's policies and decisions regarding the management, conservation, and regulation of the species are based on various legislations, recommendations, and research on the species, as well as advice from the Scientific Authority over the years. There is a quota system in place to regulate trade and prevent over-exploitation of the species. The role of some of the institutions whose work currently supports the development of the NDF, in addition to the Scientific Authority, are described below:

Resource Management Support Centre of the Forestry Commission (RMSC)

It is the technical wing of the Forestry Commission (FC) responsible for exploring, developing, facilitating, and supporting the implementation and monitoring of cost-effective forest management systems in Ghana. As part of its mandate, the Centre conducts inventories of target plant and animal populations across their distribution range in Ghana. It collaborates with the Scientific Authority to conduct NDF or scientific research and provide advice to the Management Authority on CITES implementation.

is the technical unit of the Forestry Commission (FC) with responsibility to explore, develop, facilitate, and support the implementation and monitoring of effective and affordable forest and wildlife management systems in Ghana.

Wildlife Division of the Forestry Commission (WD):

It is responsible for management and conservation of all wildlife resources in the country and administers 16 Wildlife-Protected Areas (PAs), 5 Coastal Ramsar Sites and the Accra and Kumasi Zoos. It also assists with the running of 2 community owned Wildlife Sanctuaries and promotion of the Community Resource Management Area concept in Ghana. The WD is the CITES Management Authority in Ghana and supports all the other institutions in the NDF process.

Monitoring of species export levels by the Scientific Authority

The scientific authority monitors the exports of Python regius by evaluating documentation and the work carried out by institutions responsible for managing and enforcing regulations to ensure the protection and sustainable export of the species. They also assess ranching facilities to ensure that they are properly registered with the Management Authority and that they meet all necessary requirements. Additionally, they sometimes educate wildlife breeders on best practices. The Scientific Authority also monitors trade levels of species by analyzing the trade data compiled by the UNEP-WCMC.

Ecology, Distribution, Habitat and Population of Python regius in Ghana.

Python regius, also known as the royal or the ball python, is a popular snake species in the pet trade. It gets its name from its defense strategy and habit of coiling into a tight ball when threatened. This defense behavior makes it easy to handle for humans, which explains its popularity in the pet trade. Females are oviparous laying three to ten large eggs, which gets hatched after fifty to sixty days. Ball python is a non-venomous constrictor snake native to sub-Saharan Africa, specifically, from Senegal, Mali, Guinea-Bissau, Guinea, Sierra Leone, Liberia, Ivory

Coast, Ghana, Benin, and Nigeria through Cameroon, Chad, and the Central African Republic to Sudan and Uganda, (Spawlset al. 2018). It is part of the Pythonidae family and known for its docile nature and distinctive appearance. This snake is solitary, nocturnal hunter and predominantly feeds on small mammals such as rodents and birds. It inhabits a wide range of ecosystems, from savannas and grasslands to forested areas.

The species is adaptable and can be found in a variety of habitats within its range. Ball python often associates with grasslands and savannas but can also be found in wooded areas, near streams, and in agricultural fields. It is known for its ability to burrow and it's often found in rodent burrows or termite mounds, protection itself from predators and temperature fluctuations.

Locally, the species can be found throughout the country and common in farmlands in the Eastern, Greater Accra, Central, Volta, and the Savana regions of Ghana. Python regius typically hides in burrows during the day and occasionally exhibits terrestrial behavior at night. (Gorzula *et al* 1997).

The population status of *Python regius* according to the IUCN Red List is Near Threatened. In Ghana, the total estimated population density ranges from 0.839 to 2.77 individuals per ha in Ghana (Luiselli et al, 2012). The population trend of the species is thought to be declining overall because of pressures on its habitat and directly on its population, though the magnitude of declines cannot be determined with certainty. *(IUCN 2022)*

Threats

Habitat destruction including land conversion due to urbanization, over-usage of pesticides, snaring of animals and uncontrolled bushfires are major threats to the species. Locally, royal python is kept as pet, used for meat, leather, and traditional medicines. Ntiamoah-Boadu (1992) documented the traditional medicinal use of python fat for treating swellings and rheumatism, while the bones were used to remove thorns.

Farmers in various local areas kill royal pythons out of fear, but these encounters have a limited impact on wild royal python populations. In contrast, certain communities in Ghana actively protect this species for cultural and religious reasons. They hold royal pythons in high regard as sacred beings and refrain from causing them harm. (Gorzula et al 1997)

Although international trade can have adverse effects on the species population, it is not a major threat to the species in the wild. This is because harvesting and trade for export are well controlled. Most of the specimens exported are from ranching activities (i.e., ranched specimens), and only a few are directly taken from the wild.

Notwithstanding the above-mentioned threats, the royal python population in the wild is not significantly affected. This is because management measures are always taken to minimize their effects. A study by Gorzula et al. in 1997 in West Africa indicates a prevailing trend of converting forests into farmland. This widespread land-use change has significant implications for the royal python populations in the region. It can be inferred that these snake populations are likely experiencing a rapid increase in numbers, potentially outpacing the rate of snake extraction. The study recommended a cautious increase of more than 25% exports annually.

Trade

The ball python (*Python regius*) is the most traded, CITES listed, live animal exported from Africa (Harrington LA et al 2020). It is also the most traded animal species from Ghana**.** Royal pythons traded from Ghana are mostly ranched specimens. Ghana has established an annual export quota since 2000. The current annual export quotas for the species are 60,000 individuals for ranched specimens, 7,000 for wild-taken specimens, and 200 for captive-bred specimens.

Ghana's trade levels of the species are described in figure 2, 3 and 4 below;

Figure 2: Exports of ***Python regius*** from 2018 to 2022**. (**SOURCE: UNEP-WCMC, CITES Trade Database)

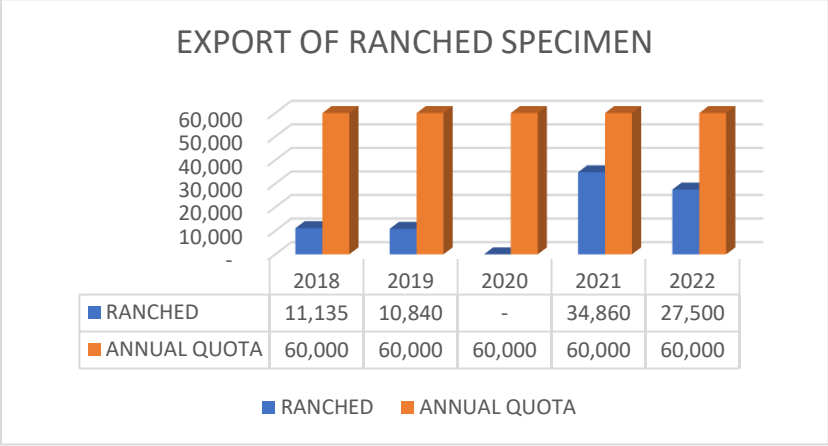

Figure 3: Exports **of ranched specimen of *Python regius*** from 2018 to 2022**. (**SOURCE: UNEP-WCMC, CITES Trade Database)

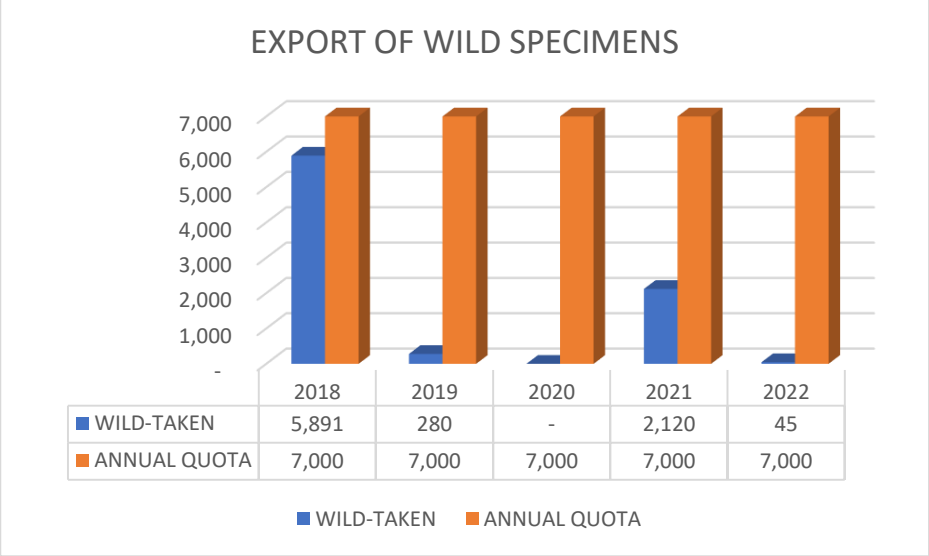

Figure 4: Exports of ranched specimen of ***Python regius*** from 2018 to 2022**. (**SOURCE: UNEP-WCMC, CITES Trade Database)

Species Management

Monitoring and Controlling of Harvesting and trade

The collection and trade of royal pythons are monitored and controlled by the Wildlife Division (CITES Management Authority) through a permitting system. Harvesting permits are issued to registered wildlife traders and breeders for the purpose of acquiring wild-taken specimens or collecting eggs for ranching before obtaining export approval. Some traders are also authorized to harvest a limited number of adult pythons or use some of the ranched stock not intended for sale for captive breeding. Wild-taken adults collected for breeding are later released back into the wild. Majority of Royal pythons authorized for export are ranched specimens, only a limited number of wild specimens are authorized for export.

Captive breeding and ranching facilities must obtain approval from the Management Authority (MA). The MA conducts inspections of these facilities to ensure they meet the necessary requirements before issuing permits for the export of ranched or captive-bred specimens.

Harvesting of Royal pythons and any other wild animal species for commercial purposes in Conservation Areas such as Wildlife Protected Areas and Forest Reserves is strictly prohibited by law. Harvesting of wild animals is only allowed on fallow and farmlands outside Conservation Areas. Populations of the species within Forest Reserves and Wildlife Protected Areas are actively protected from most threats.

The MA ensures that registered Wildlife Traders apply for export permit (CITES certificate) for the royal pythons or any other wildlife by completing an application form and attach a copy of a valid collection permit or evidence of ranching or breeding activity. The MA grants export permits (CITES certificate) only after ensuring that all requirements have been met.

The Management Authority, in collaboration with the ICT Directorate of the Forestry Commission, is in the process of developing a robust software application for issuing export and import permits, including CITES permits. The electronic permit system, when completed, is expected to eliminate errors and permit forgery, reduce the processing time for permits, and provide an interface for other enforcement agencies and destination countries to verify the authenticity of permits at various entry and exit points.

The trade in Royal pythons is closely monitored and controlled through a quota system. Ghana has established an annual export quota since 2000 to manage and conserve the species better. The current annual export quotas are set at 60,000 individuals for ranched specimens, 7,000 for wild-taken specimens, and 200 for captive-bred specimens. These quotas are strictly adhered to in order to prevent over-exploitation of the species, as illustrated in Figures 1, 2, and 3.

The Management Authority has established a dedicated unit at Kotoka International Airport, which is responsible for inspecting and verifying all permits and wildlife shipments. This unit collaborates with Customs in the performance of their duties. Customs represents the Management Authority (MA) in the execution of these duties at all entry and exit points of the country where the MA is not represented. Additionally, Veterinary Services also inspect all wildlife specimens and issue health certificates only after they are satisfied with the health status of the specimens before export.

PLATE 1: Inspection by the Management Authority at some Breeding and Ranching Facilities

Conservation Education/Sensitization

The Wildlife Division, undertakes continuous community sensitization programs across the country to create awareness about the vulnerability of species populations, bushfire prevention, poaching, illegal trade use of pesticides, and other related issues.

Laws and regulations

The Wild Animal Preservation Act 1961 (Act 43), the Wildlife Conservation Regulation 1971 (LI 685), and the Wildlife Reserves Regulations 1971 (LI 710), as variously amended, are the main legislation governing the management and conservation of wildlife resources in Ghana. Additionally, other environmental regulations and laws support the protection and conservation of plants and animals. In July 2023, Ghana passed the Wildlife Resources Management Bill into law, pending presidential assent. This new law aims to consolidate and revise the existing legislation related to wildlife and Protected Areas, ensure compliance with international conventions on wildlife to which Ghana is a signatory, and address related matters.

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Website: https://www.oaklandzoo.org/animals/ball-royal-python#:~:text=Distribution-,Ball%20Pythons%20occur%20in%20Sub%20Saharan%20Africa%20from%20the%20West,geographic%20border%20for%20the%20species. [Accessed 24/09/2023]

Ghana's Response to Review of Significant Trade in Specimens of Appendix-II Species. [Resolution Conf. 12.8 (Rev. CoP18)]. (*Kinixys homeana*)

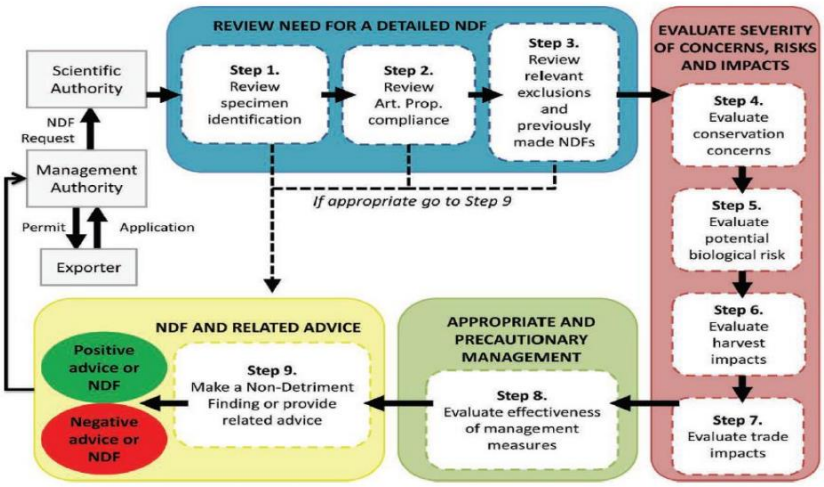
Non- Detriment Finding Decision-making (NDF) process in Ghana.

Ghana's designated Scientific Authority is the Faculty of Renewable Natural Resources, College of Agriculture and Natural Resources of the Kwame Nkrumah University of Science and Technology, Kumasi (KNUST). It conducts Non-Detriment Findings (NDF) to scientifically evaluate parameters such as species distribution and habitats, population status and trends, hunting practices, as well as volumes and impact of trade in target species. The findings result in the issuance of a positive or a negative recommendation to the CITES Management Authority of Ghana.

Generally, the Scientific Authority goes through a series of cycles as shown in Figure 1 below to conduct an NDF. In summary, it starts with a preliminary evaluation exercise to ascertain if a detailed, science based NDF is needed for the species and specimens concerned. If it warrants a science based NDF, then there is the evaluation of conservation concerns and potential biological risks. Assessments at these steps set the context of risk that the harvest, trade and management should be considered (Figure 1).

The procedure continues with a detailed evaluation of harvest impacts, and trade impacts relevant to the species concerned as well as an evaluation of whether the management measures in place are sufficiently rigorous to mitigate the concerns, risks, and impacts identified. The overall findings of these processes conclude in a positive or negative NDF recommendation to the Management Authority.

The Scientific Authority also base on student research and research of other institutions on animals and plants to advise the Management Authority on trade levels of CITES listed and non-CITES species.



Simplified pathway adopted by the Scientific Authority for making NDF (Adopted from Wolf et al. 2018)

Institution(s)/expert(s)/stakeholder(s) involved in making the NDF, other than your designated Scientific Authority.

Ghana is yet to undertake an NDF for the species *Kinixys homeana* due to the substantial resources required for its completion. However, a quota has been established to regulate trade and prevent over-exploitation of the species. Additionally, the institutions described below are currently making effort to research into the species. Many of these organizations are typically involved in the development of NDFs for various animal species, aside the designated Scientific Authority.

Wildlife Division of the Forestry Commission (WD):

The Wildlife Division of the Forestry Commission is responsible for the management and conservation of all wildlife resources in the country. It administers 16 Wildlife-Protected Areas (PAs), 5 Coastal Ramsar Sites and the Accra and Kumasi Zoos. Additionally, it assists with the operation of 2 community-owned Wildlife Sanctuaries and promotes the Community Resource Management Area concept in Ghana. The WD is the CITES Management Authority in Ghana and provides support to all the other institutions in the NDF process.

Resource Management Support Centre of the Forestry Commission (RMSC)

The Resource Management Support Centre of the Forestry Commission (RMSC) is the technical wing of the Forestry Commission (FC) with the responsibility to explore, develop, facilitate, and support the implementation and monitoring of effective and affordable forest management systems in Ghana. As part of its mandate, the Centre conducts inventories of target plant and animal populations across their distribution range in Ghana.

Monitoring of species export levels by the Scientific Authority.

The scientific Authority Monitors exports of Kinixys *homeana*, by assessing export and import documents and work of the institutions charged with various responsibilities to ensure protection and sustainable export of the species as described below;

- The WD issues permit and monitors harvesting of the species from the wild. Additionally, it issues CITES permits for the export of the species.
- Customs monitors specified quantities and documentation of the species exports.
- The scientific Authority also monitors exports by analyzing the trade data compiled by the UNEP-WCMC.

Ecology, Distribution, and population Status of *Kinixys homeana* in Ghana

Kinixys homeana is a small to medium-sized forest tortoise in the family Testudinidae. It has an omnivorous diet that includes plant matter, seeds, fungi, worms, and snails, and it exhibits specialized habitat selection for rainforest and swamp forest patches. The species is diurnal and is most active above ground after rains, particularly during the wet season. It prefers low light conditions and often moves in the early morning or late evening, tending to remain hidden during the rest of the day.

This tortoise species naturally inhabits subtropical or tropical moist lowland forests, subtropical or tropical swamps, and plantations. It can be considered an obligate inhabitant of the continuous rainforest region, according to Luiselli et al. (2013).

Kinixys homeana distributed across Liberia, Ivory Coast, Ghana, Togo, Benin, Nigeria, Cameroon, Equatorial Guinea, Central African Republic (Chirio and Ineich 2006). There are also reports of its presence in Congo Kinshasa (Democratic Republic of Congo), according to Trape et al. (2012).

In Ghana, Kinixys homeana is widespread in the southern territories, as noted by Iverson (1992). The most significant populations of this species in Ghana are found in Kakum National Park and the forested hills around Lipke Bakwa. Additionally, it has been recorded in Muni Lagoon, a coastal area of Ghana, as reported by Raxworthy and Attuquayefio (2000).

Threats

Habitat loss is one of the main threats to this species. The species loses its habitat due to rapid deforestation, land conversion into agricultural farmlands, and industrial expansion. Globally, the percentage of threats driving this tortoise to extinction is estimated to be 50% habitat loss, 40% local consumption as bushmeat, and 10% exploitation for the international pet trade (Luiselli et al, 2021). According to UNEP (2008), Ghana has one of the highest rates of deforestation in Africa, at 2% (135,000 hectares) per year, and between 1990 and 2005, approximately 1,931,000 hectares (26%) of *Kinixys homeana* habitat was lost for gold mining, rubber plantations, and palm oil plantations. The species is Critically Endangered across all of its geographic range according to the IUCN red list.

Locally, habitat loss through deforestation and agricultural expansion is the main threat to the species. Like other wildlife in Ghana, Kinixys homeana is traded in some local markets as traditional medicine and bushmeat. Surveys by Luiselli and associates in the markets around Accra and Koforidua in October-November 2003 revealed the sale of specimens of the species in local markets. International trade in the species is well-regulated and does not pose much of a threat to the species.

Trade

Ghana established an export quota of 340 specimens taken from the wild in 2000. This quota was put in place to ensure that wild populations of the species are not over-exploited, which could be detrimental to the survival of the species.

Data from the UNEP-WCMC indicates that Ghana exceeded the export quota for Kinixys homeana in 2018, 2021, and 2022. However, information retrieved from the archives of the Wildlife Division (the Management Authority) contradicts these claims, as illustrated in Figure 1 below.

Further investigation has revealed that Ghana's exports for the species in 2018 amounted to 220, not 470 as reported in the WCMC database. It was determined that some figures in the 2021 and 2022 reports by Ghana were inaccurate. Attached to this document are supporting documents and copies of permits that detail various transactions for 2018, 2021, and 2022.

Specifically, permit number 033021 indicates a quantity of 20, not 230 as recorded in Ghana's 2022 report and the WCMC database. Additionally, an error occurred in the Kinixys homeana data for Ghana's 2021 report, where a quantity of 50 was mistakenly added against permit number 031860. However, permit number 031860 was actually issued for Python regius, a different

species, and should not have been included in the Kinixys homeana report. Copies of the affected permits (033021 and 031860) can be found in Appendix I and II of this document, respectively.

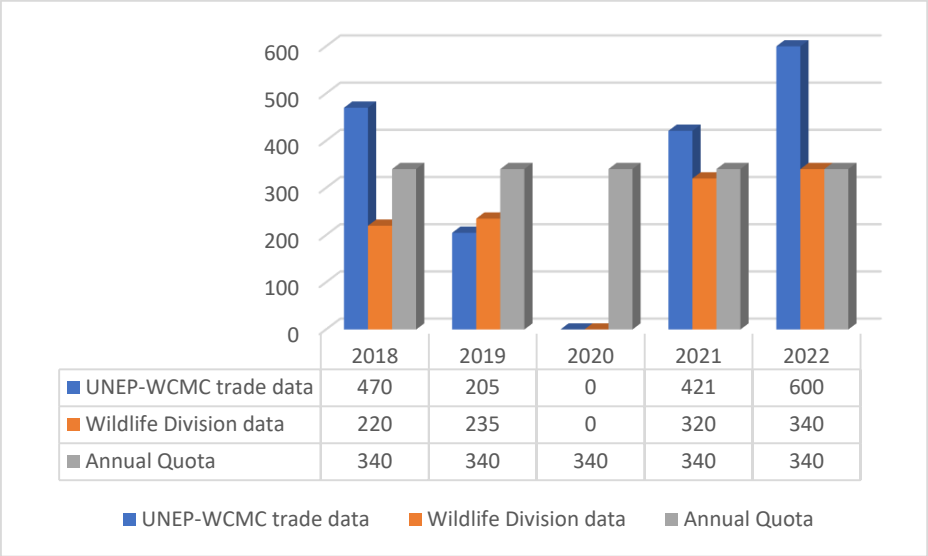


Fig. 1: Ghana's Export Data of *Kinixys homeana* from 2018 to 2022. SOURCE: UNEP-WCMC, (CITES Trade Database) and Wildlife Division, (CITES Management Authority) Ghana

Species Management

The trade in *Kinixys homeana* is closely monitored and controlled through a quota system. Ghana has established a quota of 340 individuals harvested from the wild annually. This helps in controlling the overexploitation of the species.

Harvesting permits are issued to registered wildlife traders for the purpose of acquiring wild-taken specimen. Additionally, the MA ensures that registered Wildlife Traders apply for export permit (CITES certificate) for the *Kinixys homeana* or any other wildlife by completing an application form and attach a copy of a valid collection permit. The MA grants export permits (CITES certificate) only after ensuring that all requirements have been met.

The Management Authority has established a dedicated unit at Kotoka International Airport, which is responsible for inspecting and verifying all permits and wildlife shipments. This unit collaborates with Customs in the performance of their duties. Customs represents the Management Authority (MA) in the execution of these duties at all entry and exit points of the country where the MA is not represented. Additionally, Veterinary Services also inspect all wildlife specimens and issue health certificates only after they are satisfied with the health status of the specimens before export.

Prohibition of harvesting of the species in Conservation Areas (Wildlife Protected Areas and Forest Reserves)

Harvesting of Hinged backed tortoise and any other wild animal species for commercial purposes in Conservation Areas such as Wildlife Protected Areas and Forest Reserves is strictly prohibited by law. Harvesting of wild animals is only allowed on fallow lands outside Conservation Areas. Populations of the species within Forest Reserves and Wildlife Protected Areas are actively protected from most threats.

Conservation Education/Sensitization
The Wildlife Division, through the management of various protected areas, embarks on continuous community sensitization programs across the country to create awareness about the vulnerability of species populations, bushfire prevention, illegal hunting, and other related issues.

Laws and regulations
The Wild Animal Preservation Act 1961 Act 43, Wildlife Conservation Regulation 1971, LI 685 and Wildlife Reserves Regulations 1971, LI 710 as various amended are the main legislation governing the management and conservation of wildlife resources in Ghana. Additionally, there are other laws governing the management of timber resources and environmental regulation. In July 2023, Ghana passed the Wildlife Resources Management Bill into law, pending presidential assent. This new law aims to consolidate and revise the existing legislation related to wildlife and Protected Areas, ensure compliance with international conventions on wildlife to which Ghana is a signatory, and address related matters.

Under both the old and the new laws, Kinixys homeana is protected, making harvesting and trade in this species without a valid permit illegal. Section 19(2) of the law explicitly prohibits the hunting, capturing, or destruction of any young or adult accompanied by its young.

There is also a period within the year (1st August to 1st December) known as the Closed Season when hunting, capturing, or destroying of species is prohibited.

Management of international trade in Kinixys homeana in Ghana
The Wildlife Division (CITES Management Authority) is responsible for management and trade of the species. The Division monitors harvesting and trade of the species through issuance of harvesting and export permits. The Division also monitors the quota system strictly.

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Assessement of The Trade of Specimen Wild with Source Code W for *Siebenrockiella crassicollis*

I. Decision-making (NDF) process

a) Explanation of how the Scientific Authority makes an NDF

SA making a Simple NDF as Primary Evaluation on several aspects, including the annual harvest volume, area occupancy of the species, life history, and illegal trade. Please see the attached NDF document.

b) Details, and role, of any institution(s)/expert(s)/stakeholder(s) involved in making the NDF, other than your designated Scientific Authority

In Indonesia, NDF is made jointly by three components namely Scientific Authority, Management Authority and Relevant Experts from universities and other relevant stakeholders. Scientific Authority acts as a coordinator as well as providing data related to species, and analysis the data. The Management Authority provides trade and regulatory data and analyzes together. While others provide related data and analyze it together. The draft is discussed together by Scientific Authority, Management Authority and Relevant Experts to become the final document of the NDF.

c) Explanation of how the Scientific Authority monitors the level of exports

Indonesia monitoring the level of export by comparing annual export quota, annual reports (permits, issues), exporter reports (Cites trade database) and importer reports (Cites trade database) from 2017 to 2021. We also confirmed the data to the exporters to explore the truth of the data and the causes of fluctuation of export realization.

II. Population

d) Details on the conservation status of the species in your country, (provide published references and other data sources where available), such as: − geographical distribution / extent of occurrence − population status − population estimates − population trends − other biological and ecological factors that may be relevant.

This species is not listed in the protected species in Indonesia (Ministerial Regulation of Ministry of Environment and Forestry number P.106, year 2018). However, the commercial utilization of unprotected species is regulated under Government Regulation No. 8/1999 on the Use of Wild Plant and Animal Species and the Ministerial Decree of Ministry of Forestry number 447, year 2003 based on the legality, traceability, and sustainability.

Siebenrockiella crassicollis distributed in Sumatera, Kalimantan, Java (Dijk et al. 2014). Recently, Hasan et al (2023) reported the presence of this species in Belitung Island. Various habitat types of *S. crassicollis* are wetland areas including swamps, peat swamps, paddy field, river, lake, and secondary forests. This species is well adapted in human modified habitats such as water canals in settlement and oil palm plantation (Horne et al. 2021: Riyanto & Mumpuni 2019), (Figure 1). The approximate total area of the wetlands of Sumatra (119,000 km^2), Kalimantan (122,000 km^2), and Java (18,000 km^2) (Margono et al. 2014).

The species is medium reproducing rate, with first maturity at about 4-7 years (Mumpuni pers comm.), females reproduce 3 to 4 clutches annually, each clutch consisting of 1–2 eggs, around 2.4 by 1.2 inches and weighing 30 g, incubation periods 68 to 84 days. Longevity potential is about 35 years, maximal lifespan from an observed animal in captivity is 16.7 years, three generations correspond to 54 years (Critter 2023; Horn et al. 2021).

The species In Indonesia is relatively common. Riyanto and Mumpuni (2019) reported based on their short-term survey in early 2018 found three individuals/ha of *S. crassicolis* in Jambi, and 16/ha in North Sumatra (Table 1).

Table 1. Estimates of population relative abundance and catch value in unit effort of *S. crassicollis* in Jambi and North Sumatra (Riyanto and Mumpuni, 2019).

Location	Transect length and width (km)	Wide (Ha)	∑ traps	Duration (days)	*S. crassicollis*		
					∑ individuals caught	abundance (individuals/Ha)	CPUE
Jambi	1.5/0.0015	0.38	37	20	1	3	0.001
North Sumatra 1	2.7/0.006	1.62	21	7	16	10	0.14
North Sumatra 2	1.7/0.002	0.34	15	7	7	21	0.14
North Sumatra						16	0.12

Figure 1. Habitat types of *Siebenrockiella crassicollis* in the canal of oil palm plantation in Jambi (left) and canal around settlement in North Sumatra (right).

III. Threats

e) Identify known threats to the species in your country (e.g., habitat destruction, disease, persecution, other offtake of the species e.g., by-catch, invasive species, etc.) and what measures (if any) are in place to reduce those threats.

Indonesia has implemented programs for the preservation of flora and fauna. Companies operating within the country are required to engage in conservation activities, which include establishing protected areas within the area known as (High Conservation Value area) with habitat connectivity outside their concession area. Additionally, the Indonesian government has regulations that all related companies must have a waste treatment plant, and this waste treatment is continuously monitored by authorities.

In order to reducing the potential for by-catch and inappropriate hunting techniques, the authorities always provide counseling to the public for example turtle hunters not to use fishing hooks and encourage to use funnel traps that can be adjusted to select the size of the trapped turtles.

IV. Trade

f) Provide information on the levels of legal trade in the species in the 5 most recent years (where not already available through the UNEP-WCMC trade database) and anticipated trade levels. Please indicate whether these figures represent actual trade or permits issued.

Export quota and annual report based on permit issues has been reported and available in CITES (Figure 2).

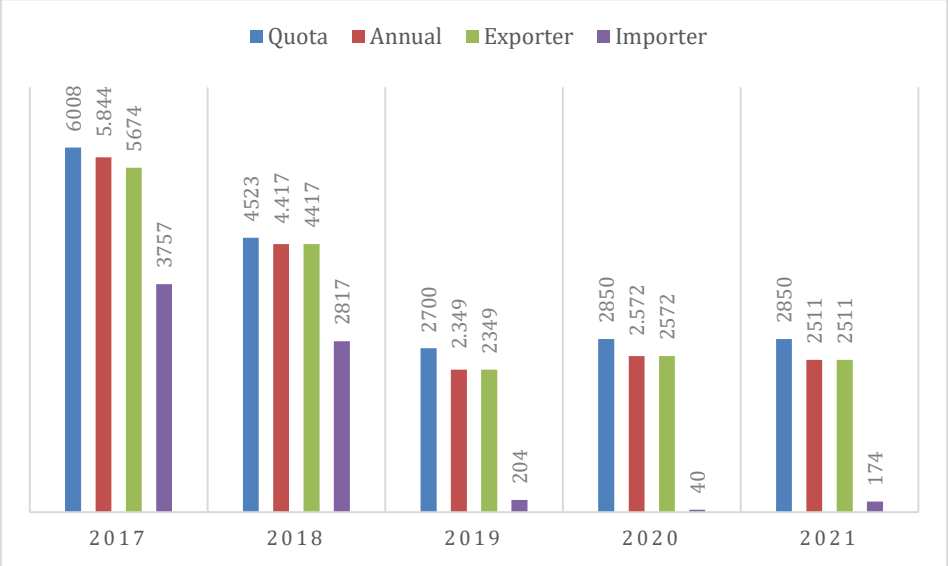

Figure 2. Comparison of annual export quota, annual reports (permits, issues), exporter reports (Cites trade database) and importer reports (Cites trade database) of *Siebenrockiella crassicollis* from 2017 to 2021.

g) Provide any information available on the levels of illegal trade (known, inferred, projected, estimated)

During 2017-2021, 173 individuals were reported illegally harvested from Central Kalimantan in 2019 (Fauzi et al., 2020). The total national quota for 2019 is 2700 individuals. Although it is below the total number of national quota, the Central Kalimantan is not included in the list of area legal harvest of *S. crassicollis* in 2019.

h) Provide information on procedures for identification of specimens in trade to the species level (if appropriate).

Indonesia only exports this species in live specimens. Morphologically, the specimens are easy to distinguish from other species and are well recognized even at the level of hunters with vernacular name. In the level of suppliers, collectors, distributors, they already understand the scientific name and identifications. Aside, both Management and Scientific authorities provide informative and easy to use identification guides with pictures in various forms such as books and posters (posters are generally owned and affixed to the walls of the suppliers' buildings). In addition, the officer from regional office of Ministry of Environment and Forestry and related stakeholder such as custom, quarantine officer etc. are regularly received training on species identification.

i) Provide information on any export quota in place for the species and details for the 5 most recent years, if not already published on the CITES website. Please explain any cases where the quota has been exceeded.

No, please refers on point f

j) Include information on how captive-produced or artificially propagated specimens are distinguished in trade from wild-harvested specimens, if applicable.

Not applicable.

V. Species management (wild harvest)

k) Provide information on harvest / trade management measures currently in place (or proposed), including any monitoring programs, threat evaluations, adaptive management strategies and considerations of levels of compliance, and/or harvest or trade quotas (both for domestic and international markets including how quotas are determined and how they are allocated regionally, if applicable).

The harvest /trade management.

The harvest and trade of the species controlled by the provincial offices of the Management Authority (BKSDA). In accordance with the Decree of the Minister of Forestry No. 447 of 2003 the BKSDA office will issue permits to collect species included in the quota list in the field based on the quota allocated for each respective province. All specimens harvested from the habitat are officially registered by the Sub-provincial Section Offices of BKSDA (Districts office of BKSDA) who then report back to the provincial BKSDA.

For domestic transport, the specimens must be covered by permits issued by BKSDA or its Section Offices. To facilitate better control, the domestic transport permit is, started from January 2005, now standardized throughout Indonesia. All permits (collection and domestic transport permits) are required to be reported to central level, which will improve monitoring of internal (domestic) trade. For international trade, there are already a limited numbers of import/export points nominated for Indonesia’s CITES trade (see CITES Notification 1999/79).

Monitoring the chain of custody between source regions and collection points within Indonesia is theoretically possible of accuracy. Each province is divided into a number of BKSDA jurisdictions which will be able to track the legality of the specimens.

Standardized domestic transport permits are issued by BKSDA, in which five separate copies must accompany internal shipments within Indonesia. In addition, there should be a monthly report by BKSDA offices to report levels of internal transport to the central Directorate General of Ecosystem and Nature Conservation (DG KSDAE) office (as the CITES MA). The five copies are: the first copy must follow the specimen; the second copy stays as the file of BKSDA; the third copy is sent to the central office (DG KSDAE) as the file for DG KSDAE and used for crosschecking with the original which is enclosed with application for export; the fourth copy is file for BKSDA destination and used for cross checking with the original when the shipment has arrived; and fifth copy is for the Section of BKSDA.

Monitoring, threat evaluations, adaptive management strategies.

Monitoring is conducted on the level of export and domestics. There is limitations size of harvest (maximum 15 cm Straight Carapace Length, SCL). The monitoring data will be analyzed and evaluated, and it will be basis on determining the adaptive management strategies.

Determining Annual Quota

Management of specimens exported with source code W is implemented by imposing an annual quota. The quota is set based on available information on population, distribution, level of trade activities per province, indicated by previous years used quota and proposed quota for the following years. The mechanism of setting quota is outlined in Figure 3.

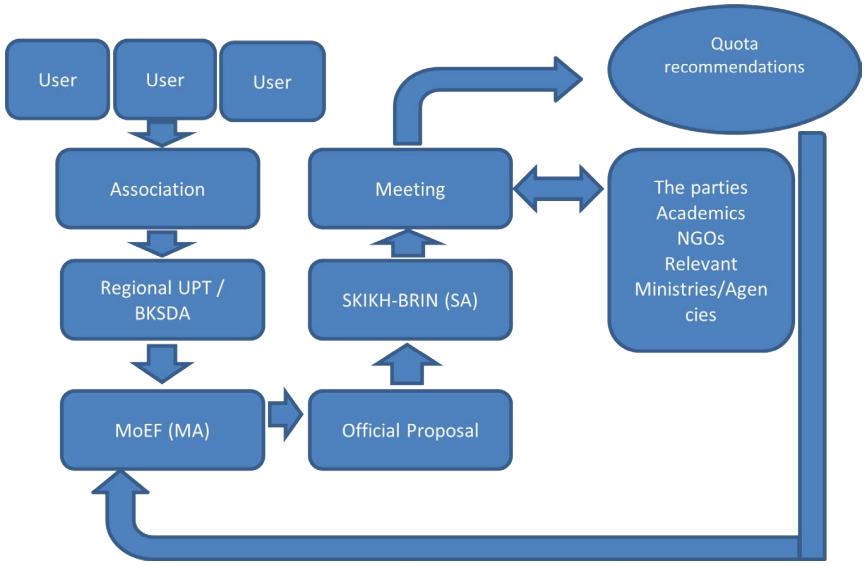

Figure 3. The Proposed harvested quota of wild plant and animal species flowchart.

The quota is distributed to domestic permit holders who operate in specific areas. Permit holders employ a group of hunters. The facilities, the workers, the hunters involved are registered and might be inspected by field officers in the provincial unit at any time.

l) Details of capture methods /rates of mortality pre-export (i.e., during/post capture) and how this is taken into account in the NDF.

The capture method is baited trap that is available for targeting on certain sizes which caused by adjusting the entrance and the diameter of the woven body of the trap (Figure 4).

Figure 4. The kinds of trap used for capturing the turtles from made from ware in Nort Sumatra (left) and made from woven plastic rope with a frame made of wooden sticks in Jambi (right). These traps can be adjusted to the diameter of its entrance to obtain with certain sizes.

Species management (ranched specimens)

m) Provide information on management of ranched animals in trade (e.g., details of ranching facilities including stock numbers (male: female), annual production levels, survival rate of female specimens used in the ranching operation) and details of impacts on wild populations (if applicable).

Not applicable.

VI. Laws and regulations

n) Details of national or sub-national laws and regulations for the species relating to harvest (e.g., open/closed seasons, legal limits for harvest, community management or customary limits/by-laws).

National regulation for utilization of wild plants and animals is mostly contained in the Minister of Environment and Forestry (MoEF) regulation as this ministry is assigned to coordinate CITES implementation and govern Appendix II species management. Those regulations are as follow:

1. Law No. 5/1990 on Conservation of Biotic Natural Resources and Ecosystems
2. Government Regulation No. 7/1999 on the Preserving Plant and Animal Species.
3. Government Regulation No. 8/1999 on the Use of Wild Plant and Animal Species.

4. Minister of Forestry Decree No. 447/Kpts-II/2003 on Administration Directive of Harvest or Capture and Distribution of the Specimens of Wild Plant and Animal Species.
5. Minister of Environment and Forestry Regulation No. P.106/ MENLHK/SETJEN/KUM.1/12/2018 on the Second Amendment to the Minister of Environment and Forestry Regulation No. P.20/ MENLHK/SETJEN/KUM.1/6/2018 on Protected Plants and Animals.
6. Minister of Trade Regulation No.18 Year of 2021 Jo Minister of Trade Regulation 40 Year of 2022 on Export Prohibited Goods and Import Prohibited Goods
7. Minister of Trade Regulation No.19 Year of 2021 Jo Minister of Trade Regulation No.12 Year of 2022 on Export Policy and Regulation
8. Minister of Finance Decree No. 1821/KM.4/2019 on List of Restricted Goods for Export Based on the Minister of Trade Regulation No. 122 of 2018
9. Minister of Environment and Forestry Regulation No. P.19/Menhut-II/2005 on Breeding of Wild Plants and Animals.

Based on Government Regulation No. 7/1999 on the Preserving Plant and Animal Species dan Minister of Environment and Forestry Regulation No. P.106/ MENLHK/SETJEN/KUM.1/12/2018 on the Second Amendment to the Minister of Environment and Forestry Regulation No. P.20/ MENLHK/SETJEN/KUM.1/6/2018 on Protected Plants and Animals stated that Black marsh turtle is not listed as protected species. But the utilization is regulated by Government Regulation No. 8/1999 on the Use of Wild Plant and Animal Species dan Minister of Forestry Decree No. 447/Kpts-II/2003 on Administration Directive of Harvest or Capture and Distribution of the Specimens of Wild Plant and Animal Species.

Following the aforementioned regulation, distribution of appendix II species must be managed with a controlled extraction from the wild and a set of documentation (Figure 5). The annual national quota is set for each province by the management authority based on recommendations from the scientific authority. Figure 5 shows that those who gather Black marsh turtle are required to have a harvest/capture permit. Business actors carrying out domestic and foreign distribution are required to have a distribution permit. Such actors would have several licensed gatherers. Since the annual quota is distributed to these workers, permit holders must report their activities to the government.

o) Details of national or sub-national laws and regulations for the species relating to trade (e.g., species specific export provisions, CITES related export laws, export controls under other domestic laws).

Transported specimen or product of appendix II species must be accompanied by a domestic transport document (SATS-DN) issued by the provincial unit of Ministry of Forestry (BKSDA), and a cross-border transport (SATS LN) or CITES permit issued by the Directorate General (DG) of Forest Protection and Nature Conservation, or (following nomenclatural changes) DG of Nature Resource and Ecosystem Conservation, in the event of export. Only permit holders may apply such documentation (Figure 5).

The administration of export requires further verification of other documents, i.e., phytosanitary certificates, export approvals from the Ministry of Trade and export/import notifications from the customs office. The process of document verification could be monitored by a website application called Indonesia National Single Window (INSW). The INSW is a single window service operated by an institution under the Ministry of Finance, to handle related export-import and/or national logistics documents electronically, which includes customs documents, quarantine documents, licensing, port/airport documents, etc.

Whenever a documentation fails in the system, the process of permitting will not be continued.

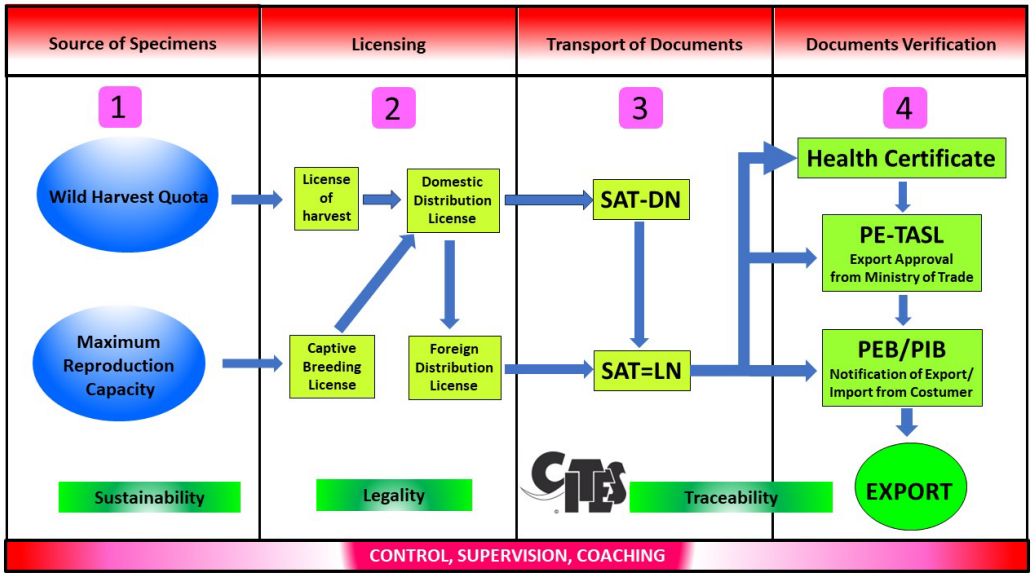

Figure 5. The management procedure under the national regulations.

Further Management Intervention

Following Recommendation from the **NDF Assessment**, Indonesia commits to reduce the annual export quota by **40%** (to be 839 individuals) as well as applied size limitation for allowed harvest specimens in straight carapace length (SCL) ≤ 15 cm. This management intervention will provide guarantees a sustainable on utilization of Black Marsh Turtle (*Siebenrockiella crassicollis*) from Indonesia at level annually harvest from Sumatra and Kalimantan up to **839 individuals**, and this will be enforced **from 2024.**

References

Critter, C. 2023. Black Marsh Turtle (*Siebenrockiella crassicollis*) Care and Information. https://crazycrittersinc.com/black-marsh-turtle-siebenrockiella-crassicollis-care-and-information/

Fauzi, M.A., Hamidy, A., Mumpuni, Kurniawan, N. 2020. The Threat of Appendix CITES-Listed Turtles Harvesting in Central Borneo and South Sumatra. *Journal of Tropical Life Science*, 10 (3): 215 – 222 http://dx.doi.org/10.11594/jtls.10.03.05

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Dan Satwa Liar “Riset Sebagai Fondasi Konservasi Dan Pemanfaatan Tumbuhan Dan Satwa Liar’ 2018. Pusat Penelitian Biologi LIPI, page 17-25. ISBN 978-979-579-109-6.

CITES Non-detriment finding

A Primary Evaluation of *Siebenrockiella crassicollis* from Indonesia

Text in italics is explanatory and should be deleted in completed documents. Please refer to the NDF Guidelines document for further explanation on how to complete this evaluation.

Species name	Black marsh turtle (*Siebenrockiella crassicollis*)
Range state name	ID
Report compiled by	SA & MA
Date compiled	07/22/2023

Section One: Summary

Please provide a short overview (1-2 paragraphs) of the trade in this species in the country of interest.

The Black marsh turtle (BMT), *Siebenrockiella crassicollis*, was put in Appendix II.

Based on document AC32 Doc. 14.2 mentioned that the export of BMT from Indonesia was selected as RST candidate because it met the selection criteria EN species and high volume. Based on annual reports (total 17.693, average 3539) and importer reports (total 6992, average **1339**) from 2017-2021. Therefore, we used importer reports to evaluate the trade of BMT.

This NDF will examine the 1339 individuals wild caught BMT each year and reported illegal harvest (173 individuals), so total **1512** individuals. (Annual harvest level **<2000**, score: **1**).

Section Two: Primary Evaluation score

Please score each attribute listed within the table below and sum these to provide a total.

	Number of points			**Score**
Criteria	**1**	**2**	**3**	
Annual Harvest level	Low (<2,000)	Medium (2,000 - 20,000)	High (>20,000)	**1**
Area of occupancy	Large (>20,000km^2)	Medium (2,500 – 20,000km^2)	Small (<2,500km^2)	**1**
Life-history	Fast	Medium	Slow	**2**
Illegal trade and IUCN Threat status	If levels of illegal trade are known, they should be included under "Annual harvest level". If unknown, and suspected to be detrimental, give a **maximum score of 1 point. Similarly, if the status of the species is** listed as VU, EN or CR in the IUCN Red List of Threatened Species, give a **maximum score of 1 point**			**1**

Section Three: Justification – Harvest level

Please provide an explanation with appropriate references to justify the score given.

Even though our export quota is 2,850 individuals, the importer reports from 2017 to 2022 was 1339 individuals each year on average (Figure 1). The total of 6992 individuals (2017-2021) or 1339 individuals each year.

This would give us an annual harvest rate value of 1.

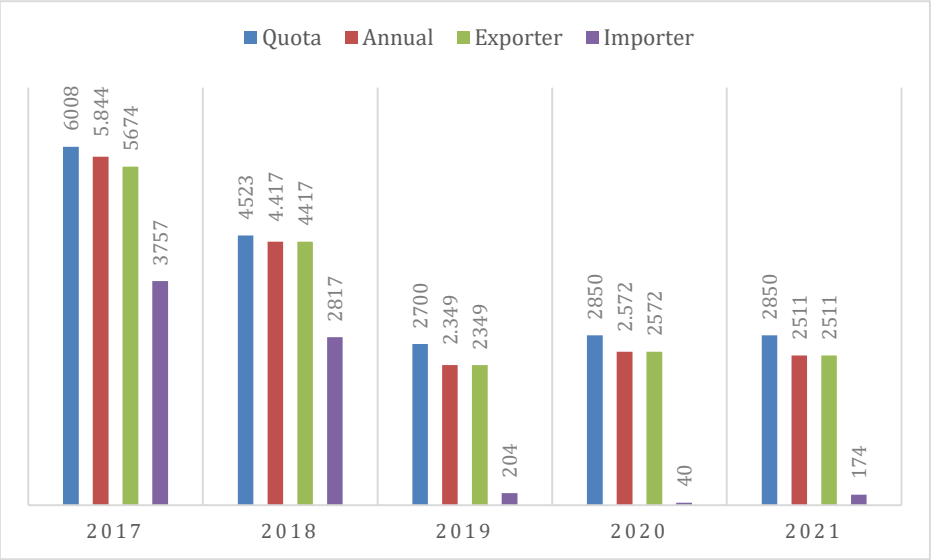

Figure 1. Comparison of annual export quota, annual reports (permits, issues), exporter reports (Cites trade database) and importer reports (Cites trade database) of *Siebenrockiella crassicollis* from 2017 to 2021.

Section Four: Justification – Area of occupancy

Please provide an explanation with appropriate references to justify the score given.

The habitat types of *Siebenrockiella crassicollis* are wetland areas, swamps, peat swamps, and secondary forests as well as water canals in oil palm plantation. In Indonesia, this species is distributed in Sumatra, Kalimantan and Java, especially Java, no harvest from this island.

The approximate total area of the wetlands of Sumatra (119,000 km^2), Kalimantan (122,000 km^2), and Java (66,000 km^2)

Therefore, we assign an area of occupancy of 1.

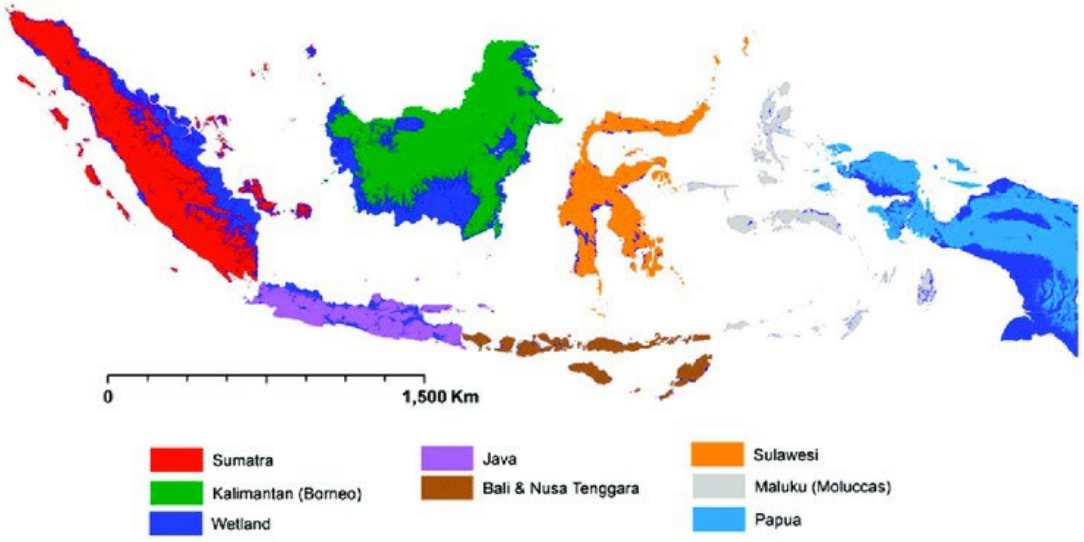

Figure 2. Wetland area of Indonesia (Margono et al., 2014)

Figure 3. *Siebenrockiella crassicollis* from Lampung found at swamp (left) and from Palembang found at riverbank (right). Photographs by fajaradityajulyatmojo.

Section Five: Justification – Life history

Please provide an explanation with appropriate references to justify the score given.

The species is slow reproducing, with first maturity at about 4–7 years, females will reproductive 3 to 4 clutches, each clutch consisting of 1–2 eggs, around 2.4 by 1.2 inches and weighing 30 g, incubation periods 68 to 84 days. Longevity potential is about 35 years, maximal lifespan from an observed animal in captivity is 16.7 years, three generations correspond to 54 years.

Life span of BMT is >10 years, and first mature at about 4–7 years. Therefore, we categorize life history criteria to "medium", score: **2** points.

Figure 3. *Siebenrockiella crassicollis* a juvenile from Jambi (left) and a female adult from North Sumatra.

Section Six: Illegal trade

Please provide an explanation with appropriate references to justify the score given.

Most of the illegal trade originates from carapace trade. Since 2016, Indonesia has banned the carapace trade, and improved trade monitoring. Although illegal trade reported in 2019 (173 individuals) (Fauzi et al, 2020), this number is already included in the annual harvest level. This species is listed as EN. We therefore assign this species clearly to score **1** point.

Section Seven: Conclusion, course of action and determination on exports

Please provide an overall conclusion on the perceived threat of trade to the species and details on whether further course of action will be taken to complete an NDF for the species.

.

Our evaluation yields a final score of **5**, therefore **trade is non-detrimental.**

Evaluating Non-Detriment

Primary Evaluation score lower than five (5) = trade is non-detrimental (**record the score and justification in the *Primary Evaluation* worksheet provided (in Annex B). This can be used for Step 4 of the Non-Detriment Finding**).

If the *Primary Evaluation* score is equal to or greater than five (5) then the non-detriment requirement cannot be satisfied, warranting additional information based on other indices to evaluate detriment. **A *Secondary Evaluation* should be undertaken**.

Based on this primary evaluation, therefore with consideration of the precautionary, the annual export quota will be reduced by 40% (to be 839 individuals) as well as applied size limitation for allowed harvest specimens in straight carapace length (SCL) ≤ 15 cm.

This management intervention will provide guarantees a sustainable on utilization of Black Marsh Turtle (*Siebenrockiella crassicollis*) from Indonesia at the level annually harvest from Sumatra and Kalimantan up to 839 individuals, and this will be enforced from 2024.

Section Eight: Literature Cited

Please provide references to all the reports and literature cited in this evaluation.

AC32 Com. 3. Compliance REVIEW OF SIGNIFICANT TRADE IN SPECIMENS OF APPENDIX-II SPECIES

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The Information of the Range States as a Response to the Stage 2 of the Review of Significant Trade on *Sphyrna lewini* in Indonesia

September 2023

This report has been prepared by the CITES Management Authority and Scientific Authority of Indonesia on the request of the CITES Secretariat for the purpose of Review of Significant Trade process in accordance with Resolution Conf. 12.8 (Rev. CoP 17).

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I. Decision-making (NDF) process

(a) Explanation of how the Scientific Authority makes an NDF

The development of the NDF document involved Scientific Authority (SA), Management Authority (MA), academics, experts, NGOs, and relevant government elements. In developing the NDF, various aspects were considered: (a) biological and population aspects; (b) fishing and trade pressures; and (c) management. The team gathers information and data from various sources, verifies the validity at its best based on scientific principles, and categorizes the degree of reliability. Subsequently, the team analyzes and formulates the data into an NDF document. The National Scientific Authority (SA) of Indonesia developed a non-detrimental finding (NDF) for *Sphyrna* spp. in 2017 following the NDF Guidance by Mundy-Taylor, et al. (2014). The unpublished document of NDF of *Sphyrna* spp. prepared in 2017 resulted in a positive NDF with conditions. Later, the NDF was reviewed and revised in 2022 with the same result. The document was then reported to the CITES Secretariat in 2023.

(b) Details, and role, of any institution(s)/expert(s)/stakeholder(s) involved in making the NDF, other than your designated Scientific Authority

The National Management Authority (MA) of Indonesia and their field officers are the Scientific Authority's principal partners in compiling data and preparing assessments and reports. They maintain historical records of trade licensing and corresponding activities. Another contributor who also plays a role in acquiring relevant data and information is the trade association. Other experts from universities and NGOs are also involved in field studies on different aspects.

(c) Explanation of how the Scientific Authority monitors the level of exports

The National Management Authority is obliged to monitor the implementation of the export quota. In 2017-2020, when the Management Authority was under the Ministry of Environment and Forestry (MoEF), quota implementation was monitored by scrutinizing the domestic transport permit (SATS-DN) and export permit (SATS-LN). After the transfer of the authority for fish from MoEF to the Ministry of Marine Affairs and Fisheries (MMAF) in 2021 (Figure 1), the monitoring is carried out through the examination of the MMAF's CITES permit documents, i.e., domestic transit permit (SAJI-

DN) and the CITES export permit (SAJI-LN). The documents support the traceability of the utilization of CITES Appendix II species because they contain important information such as species name, catch origin, trade destination, quantity, and product type.

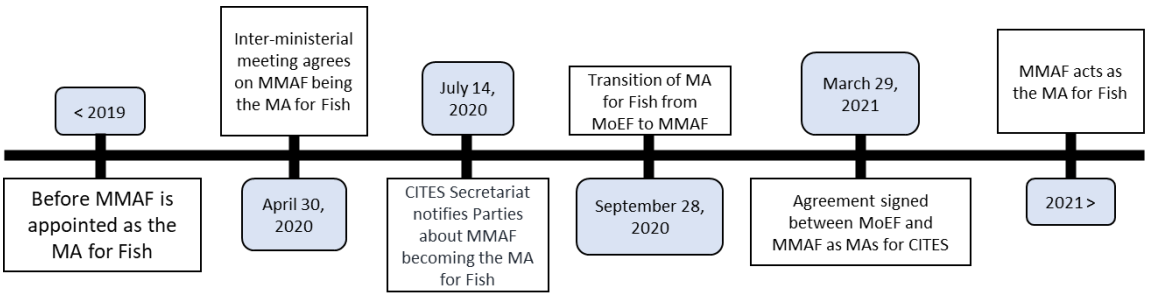

Figure 1 The process of transferring the role of the National Management Authority for Fish from the Ministry of Environment and Forestry (MoEF) to the Ministry of Marine Affairs and Fisheries (MMAF)

II. Population

(d) Details on the conservation status of the species in your country, (provide published references and other data sources where available)

The scalloped hammerhead shark (*Sphyrna lewini*) (Figure 2) is one of the most common shark species in Indonesian waters. Its distribution in Indonesia includes the Indian Ocean, Makassar Strait, Java Sea, South China Sea, and most waters around the islands of Sumatra, Kalimantan, Sulawesi, Maluku, Nusa Tenggara, and Papua (Fahmi & Dharmadi, 2013). The habitat of scalloped hammerhead (*Sphyrna lewini*) is in over continental and insular shelves and adjacent deep water, from the surface to deeper than 1,043 m, often close inshore and insular shelves and in enclosed bays and estuaries. Juveniles mainly occur in shallow inshore areas, subadults in deeper water, while adults aggregate further offshore around seamounts (Ebert, at al., 2021). Comprehensive population studies for this species have yet to be conducted in Indonesian waters, and no population trend data are available. However, regular monitoring activities are conducted at several landing sites (Figure 3). Based on a study of the fishery of *Sphyrna lewini* in West Nusa Tenggara Province by Simeon, et al. (2020), the exploitation rate for this species decreased from 0.5 in 2017 to 0.4 in 2019. In addition, based on a modeling study, several possibilities indicated the projection of *Sphyrna lewini* biomass for the next

50 years would have a low risk of stock decline, assuming the management to limit fishing efforts is carried out effectively (Loneragan, et al., 2021).

Figure 2 *Sphyrna lewini* (scalloped hammerhead shark) [Photo by Simeon, 2019]

Figure 3 Monitoring of *Sphyrna lewini* harvest at a landing site in Tanjung Luar, West Nusa Tenggara [Photos by the Directorate for Marine Conservation and Biodiversity, 2022]

III. Threats

(e) Identify known threats to the species in your country (e.g. habitat destruction, disease, persecution, other offtake of the species e.g. by-catch, invasive species, etc.) and what measures (if any) are in place to reduce those threats

The main potential threat to *Sphyrna lewini* in Indonesia is uncontrolled non-targeted fisheries in the fishing activities that capture juveniles. Indonesia has several management instruments to address the threat, such as the National Plan of Action (NPOA) for Sharks and some regulations related to CITES implementation and awareness program activities for stakeholders. Indonesia has been implementing several

actions, primarily limiting the number of harvests through a quota system, prohibiting the capture of juveniles, protecting some critical habitat areas, and controlling trade for CITES-listed species. One example of the implementation of trade control is the issuance of Fish Utilization Permit (SIPJI). Every person must own this written permit to utilize CITES Appendix II species, in which they will also receive an identification card called KTP SIPJI.

IV. Trade

(f) Provide information on the levels of legal trade in the species in the 5 most recent years (where not already available through the UNEP-WCMC trade database) and anticipated trade levels. Please indicate whether these figures represent actual trade or permits issued.

There were no export activities for *Sphyrna lewini* from 2017 to 2019 due to an export ban issued by the Indonesian government. The action was one of Indonesia's efforts to meet the compliance related to the governance of utilizing CITES Appendix II commodities. However, domestic utilization was allowed. Export quota started to be distributed in 2020 during the transition of the Management Authority for Fish from MoEF to MMAF. Due to the change in the National Authorities, the export quota by MMAF for 2020 and 2021 has yet to be reported to the CITES Secretariat. Currently, the CITES website only has information on the export quota by MoEF.

There were no exports of *Sphyrna lewini* in 2020 despite having export quotas of 725 fish (given to MoEF) and 8,085 fish (given to MMAF). In 2021, the export quota for *Sphyrna lewini* was 1,194 fish (given to MoEF) and 6,006 fish (given to MMAF). The weight of a set of fins (dorsal, caudal, anal, pelvic, and pectoral fins) on a *Sphyrna lewini* is estimated at 3% of the total weight. The export realization of *Sphyrna lewini* fin products in 2021 was 2,208.70 kg. Thus, the quantity was below the export quota, as shown in Table 1, based on permits issued and the Annual Report/CITES Trade Database. The low export realization in 2020 and 2021 indicates that Indonesia did not contribute to the increased exports of *Sphyrna lewini* products globally between 2017 and 2021.

(g) Provide any information available on the levels of illegal trade (known, inferred, projected, estimated)

Based on the Annual Illegal Trade Report submitted to the CITES Secretariat in 2017-2021, there were no indications of illegal trade violations for *Sphyrna lewini*. In terms of addressing potential violations, Indonesia has regulatory instruments such as the Regulation of the Minister of Marine Affairs and Fisheries 61/2018 on the Utilization of Protected and/or CITES-listed Fish Species, fishing patrol, and placement of observers on fishing vessels. As a mitigation measure, every traded shark commodity must undergo a verification process down to the species level (Figure 4), referring to the shark and ray identification technical guidelines. In addition, field verifiers must be well-trained and certified. Moreover, Indonesia has a National Competency Standards for Managing and Utilizing Sharks and Rays, issued on March 6, 2023 through the Decree of the Minister of Manpower and Transmigration No. 26/2023.

Figure 4 Verification at the warehouse of an export permit holder for *Sphyrna lewini* in South Sulawesi [Photos by the Marine and Coastal Resource Management Agency in Makassar, 2021]

(h) Provide information on procedures for identification of specimens in trade to the species level (if appropriate).

The identification to the species level can be traced from the transport documents. Each consignment, from the source location to another point of transport or vice versa, must be accompanied by a domestic transport permit (SAJI-DN). This transport permit must be based on minutes of inspection (BAP) written by well-trained and certified authorized officers who verify the actual physical commodities to be transported as

declared by the holders of Fish Utilization Permit (SIPJI). The field verifiers must have the ability to identify shark products. The CITES export permit (SAJI-LN) can only be granted based on a correct domestic transport permit (SAJI-DN). These permits are used to fulfill the traceability requirements under CITES rules because the documents include crucial details, including the species name, the origin of the catch, the destination of the transaction, the amount, and the type of product.

(i) Provide information on any export quota in place for the species and details for 5 most recent years, if not already published on the CITES website. Please explain any cases where the quota has been exceeded.

As mentioned in point (f), the export quota started to be distributed in 2020 during the transition of the Management Authority for Fish from MoEF to MMAF after an export ban had been in place in 2017-2019. Due to the change in the National Authorities, the export quota by MMAF for 2020 and 2021 has not yet been reported to the CITES Secretariat. The details of the export quota are shown in Table 1. In 2020, export quotas of 725 fish and 8,085 fish were given to MoEF and MMAF, respectively. In 2021, export quotas of 1,194 fish and 6,006 fish were given to MoEF and MMAF, respectively.

(j) Include information on how captive-produced or artificially propagated specimens are distinguished in trade from wild-harvested specimens, if applicable.

There is no captive-produced or artificially propagated specimen of *Sphyrna lewini* in Indonesia.

V. Species management (wild harvest)

(k) Provide information on harvest / trade management measures currently in place (or proposed), including any monitoring programmes, threat evaluations, adaptive management strategies and considerations of levels of compliance, and/or harvest or trade quotas (both for domestic and international markets including how quotas are determined and how they are allocated regionally, if applicable)

Species management of *Sphyrna lewini* exported with source code W is implemented by imposing an annual quota. The quota is set based on available information on population, distribution, and level of trade activities per province indicated by the used quota in the previous year and the proposed quota for the following year. In determining the harvest/catch quota, Scientific Authority conducted several meetings with the parties, academics, NGOs, and relevant Ministries/Agencies. The mechanism of setting quotas is outlined in Figure 5.

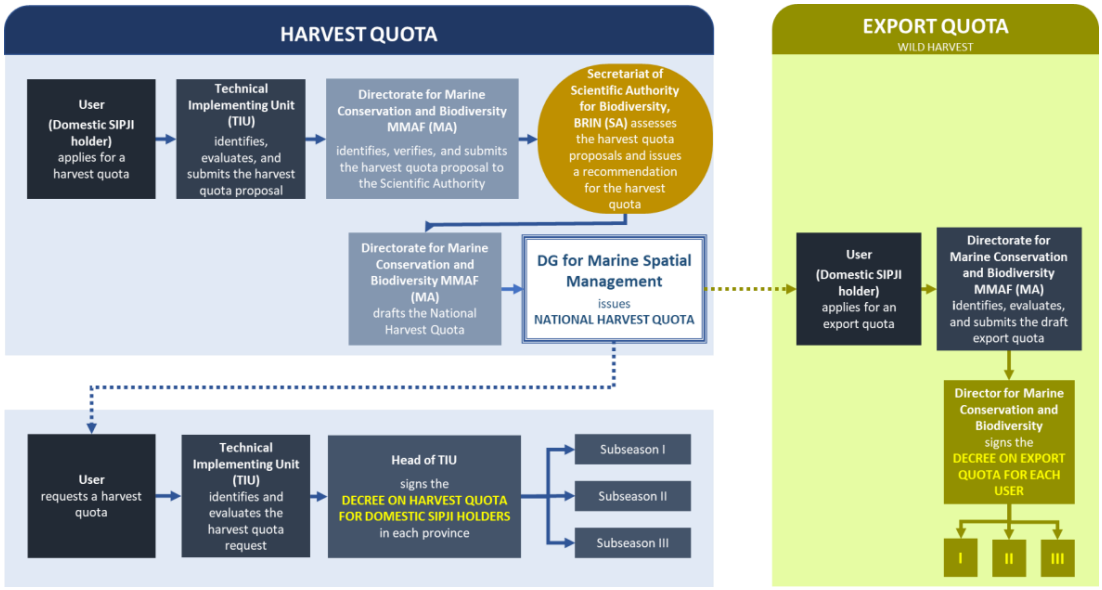

Figure 5 The process of proposing a harvest quota

The Scientific Authority established the first harvest quota recommendation for *Sphyrna* spp. based on the precautionary approach of taking less than 20% of the average annual catch data of *Sphyrna* spp. from 2005 to 2016. The harvest quota was set to be stable or decrease gradually in the following years. Furthermore, the National Management Authority (MA), through the Director General for Marine Spatial Management of MMAF, determines the national harvest quota based on the National Research and Innovation Agency (NRIA) recommendation as the Scientific Authority. The harvest quota for fish species distributed to SIPJI-holding business actors in each province is issued through a letter from the Head of the Technical Implementing Unit (TIU). For fish species that are exported as body parts or derivatives, the export quota for wild CITES-listed fish species is issued by the Director for Marine Conservation and

Biodiversity, MMAF, after converting the harvest quota in individual units into body parts in kilograms. The conversion uses the recommendation from the Scientific Authority.

Those who trade nationally regulated and/or CITES-listed species should comply with international trade provisions. Fulfillment of traceability aspects under CITES provisions is carried out by using the domestic transport permit (SAJI-DN) and the CITES export permit (SAJI-LN). For look-alike species that have similarities with nationally regulated and/or CITES-listed species, a recommendation letter is issued stating that the species being transported does not include nationally regulated and/or CITES-listed species.

For export purposes, several documents are required. CITES permit is a prerequisite for the issuance of a Health Certificate (HC) and Export Approval for Natural Plants Wildlife and Fish (EA-NPWF), which are prerequisites for the issuance of Goods Export Notification (GEN) documents. The Fish Quarantine, Quality Control, and Fishery Product Safety Agency (known as BKIPM) issues the Health Certificate. The EA-NPWF is issued by the Directorate General for Foreign Trade of the Ministry of Trade, and the Goods Export Notification (GEN) is issued by the Directorate General for Customs of the Ministry of Finance.

(l) Details of capture methods / rates of mortality pre-export (i.e. during/post capture) and how this is taken into account in the NDF

Hammerhead shark fishing generally occurs all year round without seasonal patterns. Most mature individuals are caught using drift surface longline and set bottom longline. Those fishing gears have significant differences both in gear construction and the number of hooks. The mortality rate is 100% due to the long immersion period of the fishing gear. Potential fishing grounds for hammerhead sharks are in almost all Indonesian waters, ranging from the Indian Ocean, Makassar Strait, Java Sea, South China Sea, and most waters around the islands of Sumatra, Kalimantan, Sulawesi, Maluku, Nusa Tenggara, and Papua. In some main landing sites, catch data (number, size, and other fisheries information) is recorded to monitor the catch and for scientific purposes.

VI. Species management (ranched specimens)

(m) Provide information on management of ranched animals in trade (e.g., details of ranching facilities including stock numbers (male:female), annual production levels, survival rate of female specimens used in the ranching operation) and details of impacts on wild populations (if applicable)

Ranching does not apply to *Sphyrna lewini* specimens in Indonesia.

VII. Laws and Regulations

(n) Details of national or sub-national laws and regulations for the species relating to harvest; and (o) Details of national or sub-national laws and regulations for the species relating to trade

Several regulations have been implemented to strengthen the governance of shark harvest and trade in Indonesia, including:

1) Law No. 5/1990 on Conservation of Biotic Natural Resources and Ecosystems
2) Law No. 45/2009 on the Amendment to the Law No. 31/2004 on Fisheries
3) Government Regulation No. 7/1999 on the Preserving Plant and Animal Species
4) Government Regulation No. 8/1999 on the Use of Wild Plant and Animal Species
5) Government Regulation No. 60/2007 on Fish Resources Conservation
6) Government Regulation No. 85/2021 on the Type and Tariffs of Non-Tax State Income Applicable at the Ministry of Marine Affairs and Fisheries
7) Regulation of the Minister of Environment and Forestry No. P.106/2018 on the Second Amendment to the Minister of Environment and Forestry Regulation No. P.20/ MENLHK/SETJEN/KUM.1/6/2018 on Protected Plants and Animals
8) Regulation of the Minister of Marine Affairs and Fisheries No.61/2018 on the Utilization of Protected and/or CITES-listed Fish Species
9) Regulation of the Minister of Marine Affairs and Fisheries No. 58/2020 on Capture Fisheries Business
10) Regulation of the Minister of Marine Affairs and Fisheries No. 10/2021 on the Standards for Business Activities and Products in the Implementation of Risk-Based Business Licensing in the Maritime and Fisheries Sector
11) Regulation of the Minister of Marine Affairs and Fisheries No. 31/2021 on the Imposition of Administrative Sanctions in the Maritime and Fisheries Sector

12) Regulation of the Minister of Marine Affairs and Fisheries No. 8/2022 on Types of Commodities Mandatory to Check Fish Quarantine, Quality, and Safety of Fishery Products
13) Regulation of the Minister of Trade No. 40/2022 on the Amendment to the Regulation of the Minister of Trade No. 18/2021 on Export Prohibited Goods and Import Prohibited Goods
14) Regulation of the Minister of Trade No.23/2023 on Export Policies and Arrangements
15) Decree of the Minister of Forestry No. 447/2003 on Administration Directive of Harvest or Capture and Distribution of the Specimens of Wild Plant and Animal Species.
16) Decree of the Minister of Finance No. 1821/2019 on the List of Restricted Goods for Export Based on the Regulation of the Minister of Trade No. 122/2018
17) Decree of the Minister of Manpower and Transmigration No. 26/2023 on the Enactment of the National Competency Standards for the Category of Agriculture, Forestry and Fisheries in the Main Group of Fisheries for Managing and Utilizing Sharks and Rays

In conclusion, in terms of regulation and implementation of the governance of the utilization of CITES Appendix II species, Indonesia has made serious efforts to meet CITES criteria related to legality, traceability, and sustainability.

Table 1 Export quota and realization in 2017-2021 based on permits issued by the Management Authorities

Year	Export Quota	Export Realization (Permits issued)	Export Realization (Annual Report/CITES Trade Database)	Export Product	Regulation
2017	Export ban				Regulation of the Minister of MAF 48/2016
2018	Export ban				Regulation of the Minister of MAF 5/2018
2019	Zero export quota				Decree of the DG for Natural Resource and Ecosystem Conservation 441/2018
2020 [a]	8,810 fish ($\underset{\text{MoEF}}{725\text{ fish}} + \underset{\text{MMAF}}{8{,}085\text{ fish}}$)	0	0		Decree of the DG for Natural Resource and Ecosystem Conservation 1/2020
2021	7,200 fish ($\underset{\text{MoEF}}{1{,}194\text{ fish}} + \underset{\text{MMAF}}{6{,}006\text{ fish}}$)	2,208.70 kgs	2,208.70 kgs	Fins [b]	1. Decree of the DG for Natural Resource and Ecosystem Conservation 1/2021 2. Decree of the DG for Marine Spatial Management 49/2021 3. Decree of the Director for Biodiversity Conservation 6/2021 4. Decree of the Director for Biodiversity Conservation 18/2021 5. Decree of the Director for Marine Conservation and Biodiversity 1701/2021 6. Decree of the Director for Marine Conservation and Biodiversity 2145/2021

Note: [a]The years 2020 and 2021 were when the MA for Fish was being transferred from MoEF to MMAF; thus the export quota by MMAF was not reported to and recorded in the CITES website. [b]A set of fins on a *Sphyrna lewini* makes up 3% of the total weight.

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Response to request for information on *Siebenrockiella crassicollis* in Indonesia

1. Distribution of *S. crassicollis* in Indonesia, including extent of occurrence and area of occupancy of the species, and its occurrence in protected areas

Siebenrockiella crassicollis distributed in Sumatera, Kalimantan, Java (Dijk et al. 2014), (Figure 1). Recently, Hasan et al. (2023) reported the presence of this species in Belitung Island. Various habitat types of *S. crassicollis* are wetland areas including swamps, peat swamps, paddy fields, rivers, lakes, and secondary forests. This species is well adapted in human modified habitats such as water canals in settlements and oil palm plantations (Horne et al. 2021: Riyanto & Mumpuni 2019). The approximate total area of the wetlands of Sumatra (119,000 km^2), Kalimantan (122,000 km^2), and Java (18,000 km^2) (Margono et al. 2014). The extent of occurrence is 930,743.521 km^2 and the area of occupancy is 84.000 km^2 (cell width 2 km) (Figure 2).

Figure 1. Known distribution of *S. crassicollis* based on citizen science in Indonesia (source: inaturalist, 2023)

The turtle was reported occurrence in the protected areas such as Tahura Orang Kayo Hitam protected forest (Jambi), Kampar Peninsula of Riau Ecosystem Restoration (Riau), Sebangau National Park (Central Kalimantan), The Rimba Raya Biodiversity Reserve (Central Kalimantan).

Figure 2. The Extend of Occurrence (EOO) and Area of Occupancy (AOO) of *S. crassicolis*

2. Population size, status and trends of the species in Indonesia, and details of any population monitoring systems (in place or proposed)

The species in Indonesia is relatively common. Riyanto and Mumpuni (2019) reported that based on their short-term survey in early 2018, they found three individuals/ha of *S. crassicolis* in Jambi and 16/ha in North Sumatra (Table 1). These sites are proposed to do population monitoring.

Table 1. Estimates of population relative abundance and catch value in unit effort of *S. crassicollis* in Jambi and North Sumatra (Riyanto and Mumpuni, 2019).

Location	Transect length and width (km)	Wide (ha)	∑ traps	Duration (days)	*S. crassicollis*		
					∑ individuals caught	abundance (individuals/ha)	CPUE
Jambi	1.5/0.0015	0.38	37	20	1	3	0.001
North Sumatra 1	2.7/0.006	1.62	21	7	16	10	0.14
North Sumatra 2	1.7/0.002	0.34	15	7	7	21	0.14
North Sumatra						16	0.12

3. Threats to the species (and any measures in place to reduce these threats)

Threats to species can come from anywhere, including the desire to use carapace, increase quotas, use unfriendly fishing gear, habitat loss, and etc.. The scientific authority and management authority have emphatically not granted these wishes. Besides that, continuously through the BKSDA, outreach is always carried out to business actors and the public about which commodity trade is prohibited and which is permitted.

Indonesia has implemented programs for the preservation of flora and fauna. Companies operating within the country are required to engage in conservation activities, which include establishing protected areas within the area known as (High Conservation Value area) with habitat connectivity outside their concession area. Additionally, the Indonesian government has regulations that all related companies must have a waste treatment plant, and this waste treatment is continuously monitored by authorities.

In order to reducing the potential for by-catch and inappropriate hunting techniques, the authorities always provide counseling to the public for example turtle hunters not to use fishing hooks and encourage to use funnel traps that can be adjusted to select the size of the trapped turtles.

4. **Details of wild harvesting and trade and how this is managed and regulated (e.g. open/closed seasons, legal harvest limits), including copies of relevant legislation. In particular, Fauzi et al. (2020) report that the Directorate of Conservation Biodiversity of Species and Genetic does not allow the harvest of gravid females, and that the Scientific Authority of Indonesia has recommended banning the carapace trade since 2016. We would welcome confirmation of whether this information is correct**.

Indonesia has regulated illegal harvesting and trade as well as how to manage and regulate them as mentioned in Fauzi et al. (2020). Harvest limits implemented in annual quota are set each year which include quantity, size (straight carapace length (SCL) ≤ 15

cm), including prohibitions on gravid individuals not being harvested. This annual quota is set for each province by the management authority based on recommendations from the scientific authority. Likewise, it is true that since 2016 Indonesia has no longer opened quotas for carapace trade.

Business actors carrying out domestic and foreign distribution are required to have a distribution permit. Such actors would have several licensed gatherers. Since the annual quota is distributed to these workers, permit holders must report their activities to the government. Every transported specimen must be accompanied by a domestic transport document (SATS-DN) issued by the provincial unit of Ministry of Forestry (BKSDA), and a cross-border transport (SATS LN) or CITES permit issued by the Directorate General (DG) of Forest Protection and Nature Conservation, or (following nomenclatural changes) DG of Nature Resource and Ecosystem Conservation, in the event of export. Only permit holders may apply for such documentation (Figure 3).

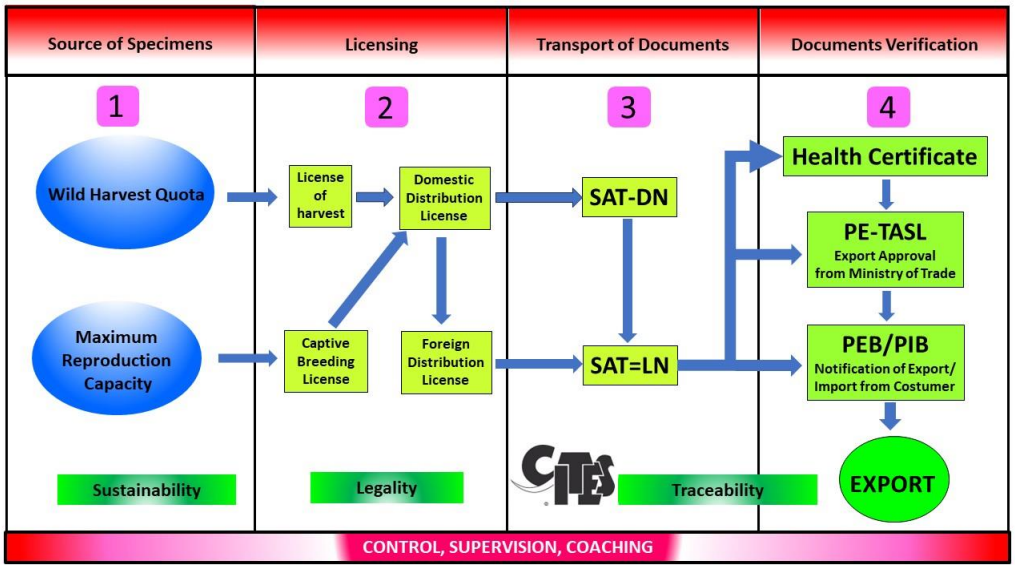

Figure 3. The management procedure under the national regulations.

5. Details of how CITES non-detriment findings are made, including the institutions involved in the process

The Simple NDF as Primary Evaluation or/ and NDF is making on several aspects, including species biological, trade, threat, and management aspects. NDF is made jointly by three components namely Scientific Authority, Management Authority and Relevant Experts from universities and other relevant stakeholders. Scientific Authority acts as a coordinator as well as providing data related to species, and analysis the data. The Management Authority provides trade and regulatory data and analyzes together. While others provide related data and analyze it together. The draft is discussed together by Scientific Authority, Management Authority and Relevant Experts to become the final document of the NDF.

6. Details of any known illegal trade activities

There is currently no illegal trade in the species, but the potential is always there. Therefore, Indonesia continuously carries out education, monitoring, and action, especially if there are violations. Monitoring is carried out in an integrated manner involving various parties, including management authority, police, and quarantine as well as NGO networks.

7. Contact details of any relevant experts in the country

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Response to
"Request for information on species subject to the CITES Review of Significant Trade"

Indonesia

1. **Distribution of *S. lewini* in Indonesian waters, including occurrence of the species in protected areas**

The scalloped hammerhead shark (*Sphyrna lewini*) is one of the most common shark species in Indonesian waters. Its distribution in Indonesia includes the Indian Ocean, Makassar Strait, Java Sea, South China Sea, and most waters around the islands of Sumatra, Kalimantan, Sulawesi, Maluku, Nusa Tenggara, and Papua (Fahmi & Dharmadi, 2013). The habitat of scalloped hammerhead (*Sphyrna lewini*) is in over continental and insular shelves and adjacent deep water, from the surface to deeper than 1,043 m, often close inshore and insular shelves and in enclosed bays and estuaries. Juveniles mainly occur in shallow inshore areas, subadults in deeper water, while adults aggregate further offshore around seamounts (Ebert, et al., 2021).

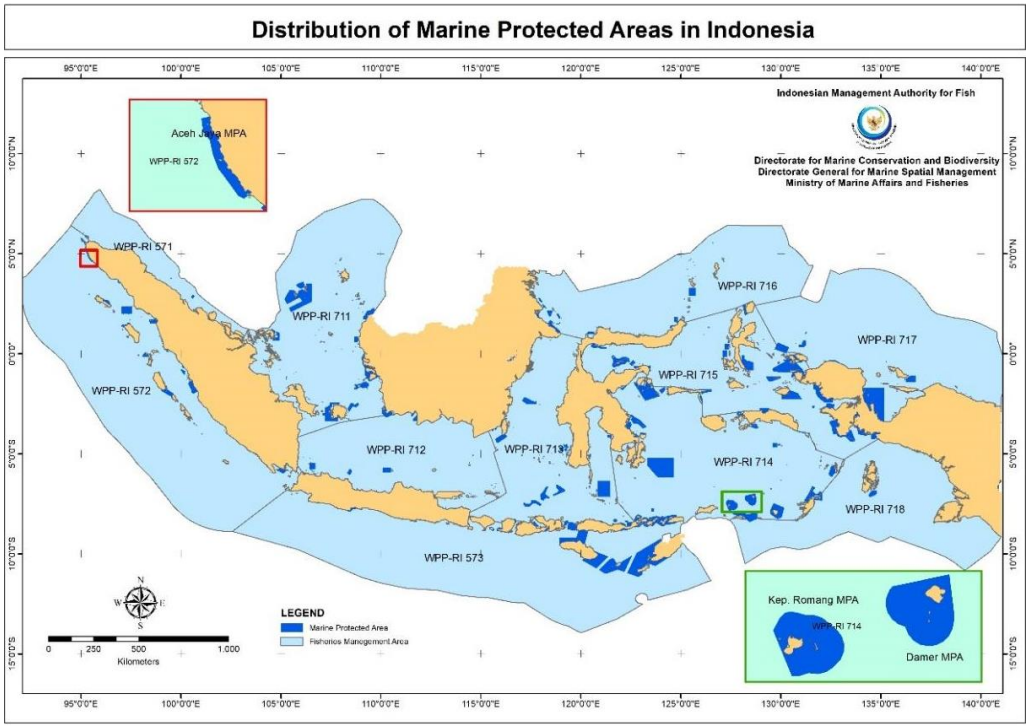

Figure 1. Map of Marine Protected Areas and Fisheries Management Areas in Indonesia.

To protect critical habitats for marine fauna, including for *Sphyrna lewini,* the government of Indonesia establishes Marine Protected Areas (MPAs). As of 2022,

the total area of MPAs reached 28.9 million hectares, distributed all over the country. Based on the managing institution, Indonesian MPAs are classified into three: 1) National MPAs managed by the Ministry of Marine Affairs and Fisheries (MMAF); 2) National MPAs managed by Ministry of Environment and Forestry; and 3) Local MPAs managed by provincial government. Although the managing institutions vary, all of the MPAs aim to protect and conserve marine and coastal resources. The conservation targets include coral reefs, seagrass, mangroves, marine turtles, marine mammals, reef fishes, sharks, and rays. There are three MPAs that particularly target hammerhead sharks as their conservation priorities, namely Aceh Jaya MPA (Aceh Province), Damer MPA (Maluku Province), and Romang Islands MPA (Maluku Province) (Figure 1).

2. Population size, status and trends of *S. lewini* in Indonesian waters and any other relevant fishing areas, including details of any population monitoring systems in place

Due to limited resources, population studies of *Sphyrna lewini* have only been conducted in a few areas, for example in the West Nusa Tenggara region. Based on a study conducted by Simeon et al. (2020), the exploitation rate of this species in West Nusa Tenggara Province has decreased from 0.5 in 2017 to 0.4 in 2019. In addition, based on modeling studies, some possibilities suggest the projected biomass of *Sphyrna lewini* for the next 50 years in Indonesia has a low risk of stock decline, assuming management to limit fishing effort is carried out effectively (Loneragan et al., 2021). Comprehensive population studies for this species accross Indonesian waters are indeed very important and are expected to be carried out in the future.

As part of population monitoring efforts, regular catch-monitoring activities have been conducted at several landing sites across the country (Figure 2). In addition, fishers are also encouraged to record their catch in a logbook. This monitoring data is also useful as input in the NDF making and quota allocation. Catch monitoring is conducted by MMAF through its Technical Implementing Units (TIUs) and the Center for Data, Statistics, and Information (CDSI/*Pusdatin*).

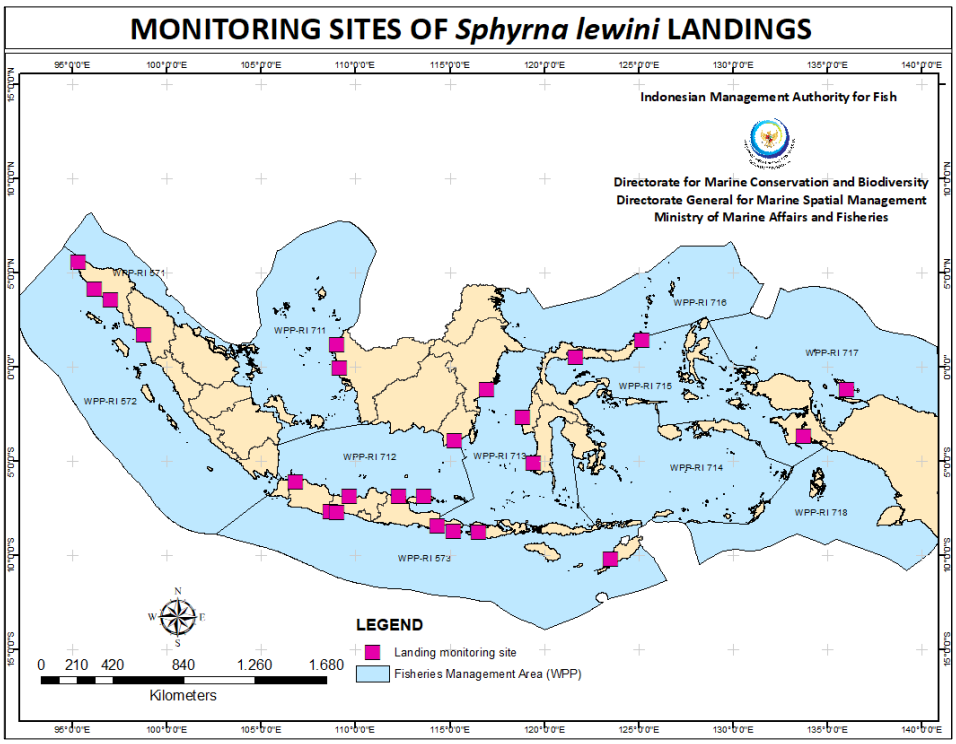

Figure 2. Map of the monitoring sites of *Sphyrna lewini* landings in Indonesia

3. Threats to the species (and any measures in place to reduce these threats)

The main potential threat to *Sphyrna lewini* in Indonesia is incidental catch that capture juveniles. Indonesia has several management instruments to address the threat, such as the National Plan of Action (NPOA) for Sharks and some regulations related to CITES implementation and awareness program activities for stakeholders. Additionally, Indonesia has been implementing several actions, primarily limiting the number and the size for harvest and export through a quota system, prohibiting the capture of juveniles, protecting critical habitat areas as shown in Figure 1 above, and controlling trade for CITES-listed species. One example of the implementation of trade control is the issuance of Fish Utilization Permit (SIPJI). Every person must own this written permit to utilize CITES Appendix II species, in which they will also receive an identification card called "KTP SIPJI". We consider this kind of control as the most robust effort to control the trade of juveniles in international and domestic markets.

4. Landings data of *S. lewini* from key Indonesian fleets (including artisanal and industrial fleets, and whether the specimens landed are adults or juveniles), details of the size of these fleets, the key areas where the species is fished, and whether the species is caught as a target species or as incidental catch by each fishery.

Hammerhead shark fishing generally occurs all year round without seasonal patterns. The fishing gears commonly used to target *Sphyrna lewini* are gillnet, drift net, longline, handline, and troll line. The species are also caught incidentally by purse seine, trammel net, and trawl net. The mortality rate is 100% due to the long immersion period of the fishing gear. The vessels catching *Sphyrna lewini* are sized between 5 and 393 gross tonnage, comprising artisanal and industrial fleets. Potential fishing grounds for hammerhead sharks are in almost all Indonesian waters, ranging from the Indian Ocean, Makassar Strait, Java Sea, South China Sea, and most waters around the islands of Sumatra, Kalimantan, Sulawesi, Maluku, Nusa Tenggara, and Papua.

According to the samples of landing records obtained from the fish catch logbook and on-site monitoring between 2017 and 2021, the catch of *Sphyrna lewini* fluctuated with the highest quantity, reaching 800 tons, recorded in 2018, and followed by 362 tons in 2020, while the lowest catch was recorded in 2019 with just 6.5 tons.

5. Details of which Regional Fisheries Management Organisations Indonesia is a contracting party to

Indonesia is a contracting party to the Western and Central Pacific Fisheries Commission (WCPFC), Indian Ocean Tuna Commission (IOTC), Commission for the Conservation of Southern Bluefin Tuna (CCSBT). Indonesia is a cooperating non-member of the Inter-American Tropical Tuna Commission (IATTC). The responsibilities of Indonesia as a Contracting Party to WCPFC, IOTC, and CCSBT are shown in Table 1 below.

Table 1. Responsibilities of Indonesia as a Contracting Party to WCPFC, IOTC, and CCSBT

	WCPFC	IOTC	CCSBT
Reporting	• Annual Report Part 1 (Scientific) • Annual Report Part 2 (Compliance)	• Statistical and Operational Data • Compliance Questionnaire • Implementation Report • Feedback Letter	• Compliance Report • Data Exchange • Catch Documentation Report (monthly)
Adaptation to National Regulations	• Harvest Strategy • Catch or effort limit for tropical tuna	• Harvest Strategy • Catch Limit for Yellowfin Tuna	• Management Procedure • Total Allowable Catch for Southern Bluefin Tuna

	WCPFC	IOTC	CCSBT
	• Fish Aggregating Device (FAD) Management	• Fish Aggregating Device (FAD) Management • Allocation Criteria	
Quota/Catch Limit	• Catch limit for Bigeye Tuna in longline and purse seine fisheries • Catch limit for Yellowfin Tuna in purse seine fisheries • Catch limit for Skipjack Tuna in purse seine fisheries	• Catch limit for Yellowfin Tuna in purse seine and longline fisheries	• Catch quota for Southern Bluefin Tuna for 2024-2026

6. Details of domestic use and trade

The Management Authority imposes annual harvest quota, where the catch can be used domestically or exported. The Scientific Authority recommends *Sphyrna lewini* harvest to reach the minimum total length of 2 meters to avoid catching juveniles. However, if juveniles are caught, the fish may only be used locally and not transported to other provinces. For domestic consumption, the most common product is meat. The local people usually have it salted, steamed, or grilled.

7. Details of how harvest and trade in *S. lewini* is managed and regulated, including copies of relevant legislation.

Species management of *Sphyrna lewini* exported with source code W is implemented by imposing an annual quota. The quota is set based on available information on population, distribution, and level of trade activities per province indicated by the used quota in the previous year and the proposed quota for the following year. In determining the harvest/catch quota, Scientific Authority conducted several meetings with the parties, academics, NGOs, and relevant Ministries/Agencies to gather inputs. The mechanism of setting quotas is outlined in Figure 3.

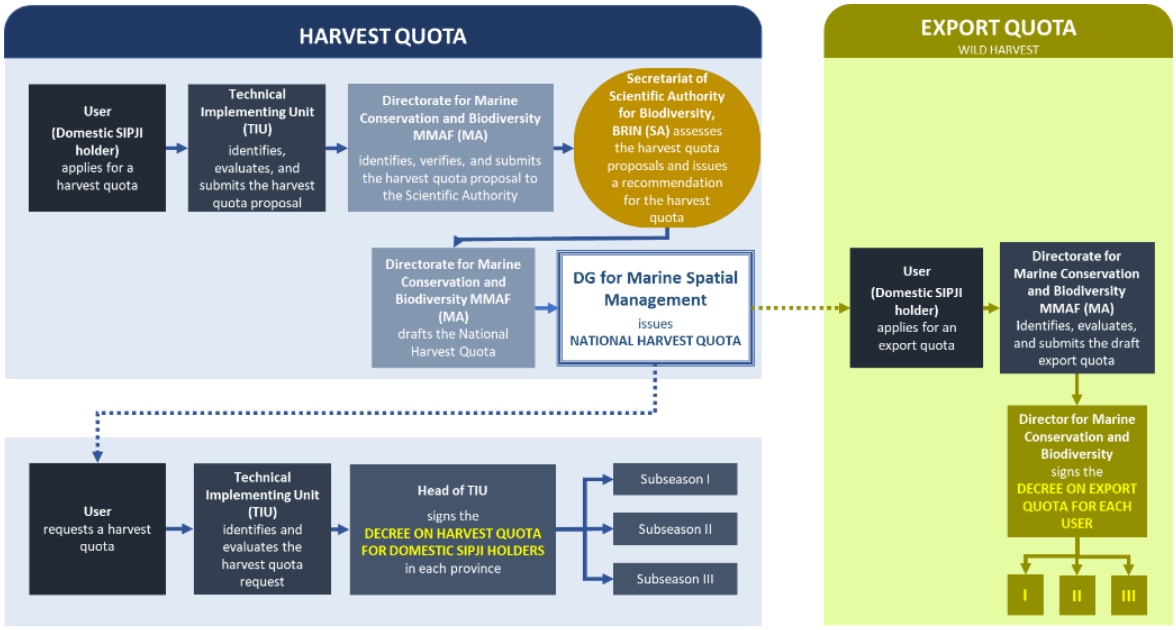

Figure 3. The process of proposing and issuing harvest and export quotas.

the National Management Authority (MA), through the Director General for Marine Spatial Management of MMAF, determines the national harvest quota based on the National Research and Innovation Agency (NRIA) recommendation as the Scientific Authority. The harvest quota for fish species distributed to SIPJI-holding business actors in each province is issued through a letter from the Head of the Technical Implementing Unit (TIU). For fish species that are exported as body parts or derivatives, the export quota for wild CITES-listed fish species is issued by the Director for Marine Conservation and Biodiversity, MMAF, after converting the harvest quota in individual units into body parts in kilograms. The conversion uses the recommendation from the Scientific Authority.

Those who trade nationally regulated and/or CITES-listed species should comply with international trade provisions. Fulfillment of traceability aspects under CITES provisions is carried out by using the domestic transport permit (SAJI-DN) and the CITES export permit (SAJI-LN). While look-alike species that have similarities with nationally regulated and/or CITES-listed species, a recommendation letter is issued stating that the species being transported does not include nationally regulated and/or CITES-listed species.

For export purposes, several documents are required. CITES permit is a prerequisite for the issuance of a Health Certificate (HC) and Export Approval for Natural Plants Wildlife and Fish (EA-NPWF), which are prerequisites for the issuance of Goods Export Notification (GEN) documents. The Fish Quarantine, Quality Control, and Fishery Product Safety Agency (known as BKIPM) issues the

Health Certificate. The EA-NPWF is issued by the Directorate General for Foreign Trade of the Ministry of Trade, and the Goods Export Notification (GEN) is issued by the Directorate General for Customs of the Ministry of Finance.

With respect to formal regulations, sets of policies have been issued and implemented to strengthen the governance of shark harvest and trade in Indonesia, including:

a. Law No. 5/1990 on Conservation of Biotic Natural Resources and Ecosystems
b. Law No. 45/2009 on the Amendment to the Law No. 31/2004 on Fisheries
c. Government Regulation No. 7/1999 on the Preserving Plant and Animal Species
d. Government Regulation No. 8/1999 on the Use of Wild Plant and Animal Species
e. Government Regulation No. 60/2007 on Fish Resources Conservation
f. Government Regulation No. 85/2021 on the Type and Tariffs of Non-Tax State Income Applicable at the Ministry of Marine Affairs and Fisheries
g. Regulation of the Minister of Environment and Forestry No. P.106/2018 on the Second Amendment to the Minister of Environment and Forestry Regulation No. P.20/ MENLHK/SETJEN/KUM.1/6/2018 on Protected Plants and Animals
h. Regulation of the Minister of Marine Affairs and Fisheries No.61/2018 on the Utilization of Protected and/or CITES-listed Fish Species
i. Regulation of the Minister of Marine Affairs and Fisheries No. 58/2020 on Capture Fisheries Business
j. Regulation of the Minister of Marine Affairs and Fisheries No. 10/2021 on the Standards for Business Activities and Products in the Implementation of Risk-Based Business Licensing in the Maritime and Fisheries Sector
k. Regulation of the Minister of Marine Affairs and Fisheries No. 31/2021 on the Imposition of Administrative Sanctions in the Maritime and Fisheries Sector
l. Regulation of the Minister of Marine Affairs and Fisheries No. 8/2022 on Types of Commodities Mandatory to Check Fish Quarantine, Quality, and Safety of Fishery Products
m. Regulation of the Minister of Marine Affairs and Fisheries No. 28/2023 on the Implementation of the Government Regulation No. 11/2021 on Measurable Fishing
n. Regulation of the Minister of Trade No. 40/2022 on the Amendment to the Regulation of the Minister of Trade No. 18/2021 on Export Prohibited Goods and Import Prohibited Goods
o. Regulation of the Minister of Trade No.23/2023 on Export Policies and Arrangements

p. Decree of the Minister of Forestry No. 447/2003 on Administration Directive of Harvest or Capture and Distribution of the Specimens of Wild Plant and Animal Species.
q. Decree of the Minister of Finance No. 1821/2019 on the List of Restricted Goods for Export Based on the Regulation of the Minister of Trade No. 122/2018
r. Decree of the Minister of Manpower and Transmigration No. 26/2023 on the Enactment of the National Competency Standards for the Category of Agriculture, Forestry and Fisheries in the Main Group of Fisheries for Managing and Utilizing Sharks and Rays

In more details, harvest and export quotas for *Sphyrna lewini* are issued each year through the following regulations:

a. Regulation of the Minister of Marine Affairs and Fisheries No. 48/2016 on the Export Ban for *Carcharhinus longimanus* and *Sphyrna* spp. in 2017
b. Regulation of the Minister of Marine Affairs and Fisheries No. 5/2018 on the Export Ban for *Carcharhinus longimanus* and *Sphyrna* spp. in 2018
c. Decree of the Minister of Marine Affairs and Fisheries No. 21/2021 on the Harvest Quota for Partially Protected and/or CITES-listed Fish Species in 2021
d. Decree of the Directorate General for Natural Resource and Ecosystem Conservation No. 441/2018 on Wildlife Harvest Quota in 2019
e. Decree of the Directorate General for Natural Resource and Ecosystem Conservation No. 1/2020 on Wildlife Harvest Quota in 2020
f. Decree of the Directorate General for Natural Resource and Ecosystem Conservation No. 1/2021 Wildlife Harvest Quota in 2021
g. Decree of the Directorate General for Marine Spatial Management No. 49/2021 on the Export Quota for Partially Protected and/or CITES-listed Fish Species in 2021
h. Decree of the Director for Biodiversity Conservation No. 6/2021 on Pre-Convention Export Quota for Sharks and Rays in 2021
i. Decree of the Director for Biodiversity Conservation No. 18/2021 on Export Quota for Sharks and Rays in 2021
j. Decree of the Director for Marine Conservation and Biodiversity No. 1701/2021 on the Export Quota for Partially Protected and/or CITES-listed Fish Species in 2021
k. Decree of the Director for Marine Conservation and Biodiversity No. 2145/2021 on the Export Quota for Partially Protected and/or CITES-listed Fish Species in 2021

In addition, Indonesia's memberships in RFMOs are formalized through the following regulations:

a. Presidential Regulation No. 9/2007 on the Ratification of the Agreement for the Establishment of the Indian Ocean Tuna Commission

b. Presidential Regulation No. 109/2007 on the Ratification of the Convention for The Conservation Of Southern Bluefin Tuna
c. Presidential Regulation No. 61/2013 on the Ratification of the Convention o n The Conservation And Management Of Highly Migratory Fish Stocks In The Western And Central Pacific Ocean

The copies of the regulations can be found here.

8. Details of how CITES non-detriment findings are made, including the institutions involved in the process.

The development of the NDF document involved Scientific Authority (SA), Management Authority (MA), academics, experts, NGOs, and relevant government elements. In developing the NDF, various aspects were considered: (a) biological and population aspects; (b) fishing and trade pressures; and (c) management. The team gathers information and data from various sources, verifies the validity at its best based on scientific principles, and categorizes the degree of reliability. Subsequently, the team analyzes and formulates the data into an NDF document through several meetings. The National Scientific Authority (SA) of Indonesia developed a non-detrimental finding (NDF) for *Sphyrna* spp. in 2017 following the NDF Guidance by Mundy-Taylor, et al. (2014). The unpublished document of NDF of *Sphyrna* spp. prepared in 2017 resulted in a positive NDF with conditions. Later, the NDF was reviewed and revised in 2022 with the same result. The document was then reported to the CITES Secretariat in 2023.

The National Management Authority (MA) of Indonesia and their field officers are the Scientific Authority's principal partners in compiling data and preparing assessments and reports. They maintain historical records of trade licensing and corresponding activities. Another contributor who also plays a role in acquiring relevant data and information is the trade association. Other experts from universities and NGOs are also involved in field studies on different aspects.

The NDF document for hammerhead sharks in Indonesia can be found here.

9. Details of any known illegal fishing and trade activities

Indonesia has regulatory instruments such as the Regulation of the Minister of Marine Affairs and Fisheries 61/2018 on the Utilization of Protected and/or CITES-listed Fish Species, fishing patrol, and placement of observers on fishing vessels. As a mitigation measure, every traded shark commodity must undergo a verification process down to the species level, referring to the shark and ray identification technical guidelines. In addition, field verifiers must be well-trained and certified. Moreover, Indonesia has a National Competency Standards for

Managing and Utilizing Sharks and Rays, issued on March 6, 2023 through the Decree of the Minister of Manpower and Transmigration No. 26/2023.

Figure 4. Verification at the warehouse of an export permit holder for *Sphyrna lewini* in South Sulawesi [Photos by the Marine and Coastal Resource Management Agency in Makassar, 2021]

Based on the Annual Illegal Trade Report submitted to the CITES Secretariat in 2017-2022, there were no indications of international trade violations for *Sphyrna lewini*. However, there were several domestic illegal trade cases such as not obtaining the required permit and misdeclaring quantity of specimens. The perpetrators were then fined and not allowed to trade domestically and internationally for 6 months.

10. Contact details of any relevant experts in the country

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d. Endratno
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e. Iim Naimah
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11. **We also note that Indonesia published quotas for wild-sourced *S. lewini* fins for the year 2020, and "fins (including meat and other body organs)" for the year 2021. Please could you confirm the unit of measurement that applied to these quotas (i.e. kg, number of items) and what CITES trade term code(s) the 2021 quota corresponds to in the Guidelines for the preparation and submission of CITES annual reports?**

    The unit measurement applied to the reported quotas in 2020 and 2021 is the number of items. The CITES trade term codes the 2021 quota corresponds to are dried fins, skin, and meat.

Significant Trade Review Process: The Ocean Whitetip Shark (*Carcharhinus longimanus* and Scalloped Hammerhead Shark (*Sphyrna lewini*)

Report by the CITES Management Authority for Kenya

5 September 2023

At the 32nd meeting of the CITES Animals Committee, Kenya was listed for significant trade in two Critically Endangered shark species - the oceanic whitetip shark *Carcharhinus longimanus* and scalloped hammerhead shark *Sphyrna lewini*.

The process requires that Kenya provides relevant information to the Secretariat to clarify the levels of trade and where relevant to justify how the level of trade is not a cause for RST.

With Kenya having been identified for these two shark species, we provide our responses as follows:

Carcharhinus longimanus

It should be noted that the Oceanic Whitetip shark, *Carcharhinus longimanus* is also listed on Appendix I of the Convention on the Conservation of Migratory Species of Wild Animals (CMS) which calls on member States to strictly protect species listed on its Appendix I, while the Indian Ocean Tuna Commission (IOTC) has imposed a retention ban for the species.

CITES requires that, trade in CITES-listed species does not contravene the measures of other Conventions, such as CMS or of the Regional Fishery Management Organizations (RFMOs), such as IOTC.

As a Party to both CITES and CMS, and a contracting Party to IOTC, Kenya does not currently allow international commercial trade in this species. This is a measure taken since June 2021 to prohibit trade in the species. For the last five years between 2018 to present, Kenya issued (until June 2021) three (3) Export permits for commercial trade in dried fins of total 315kgs and one (1) permit for 6 pieces of fins for education/training purpose.

Sphyrna lewini

A rapid assessment conducted in 2018 established sustainable levels of harvesting and maximum exportable quantities of live specimens of the species at 50. Grant of CITES Export permits for the Species has therefore been in observance of the limit each year for the period 2018 to present.

Conclusions

In all her policy documents, legal frameworks and statements, the Government of Kenya recognizes that, sustainability of her fisheries is national, regional, as well as an international challenge.

To help ensure the conservation and sustainable use of sharks and other fisheries resources in national and international waters, Kenya Fisheries Service (KeFS); the principal national agency responsible for management and development of fisheries in the country and in collaboration with other agencies including the CITES authorities with a role in regulating trade in fisheries products closely monitors the fishing activities of both national and foreign-flagged vessels licensed to fish in inshore waters and in the EEZ.

A baseline assessment of Kenyan sharks conducted in 2018 to inform formulation of a National Plan of Action (NPoA) for the Conservation and Management of Sharks has been used in decision making when considering grant of permits for commercial trade in Sharks in the country including the two species now subject of significant trade review process.

Limited awareness of the Fisheries policies and enforcement of CITES provisions by the other relevant government institutions with role in management of fisheries at both the national and county government levels are however some of the limitations in effectively regulating international trade in CITES listed species of Sharks.

Plans are underway to undertake Non-Detriment Finding studies for priority sharks and rays species including the two species and CITES law enforcement workshops all towards improving implementation of Article IV of the Convention with regard to international trade in *Carcharhinus longimanus* and *Sphyrna lewini* in particular and other CITES listed species in general.

Respuesta de México a la consulta de la Secretaría CITES DR/TC/RST/20223/MX sobre el Examen del comercio significativo de especímenes de especies del Apéndice II [Resolución Conf. 12.8 (Rev. CoP87)] para *Sphyrna lewini* y *Sphyrna mokarran*

1. Proceso de adopción de decisiones para formular dictámenes de extracción no perjudicial (DEnP o NDF)

a) Explicación de cómo la Autoridad Científica formula un NDF

A solicitud de la Autoridad Administrativa (Dirección General de Vida Silvestre de la Secretaría de Medio Ambiente y Recursos Naturales, DGVS-SEMARNAT), la Autoridad Científica (Comisión Nacional para el Conocimiento y Uso de la Biodiversidad, CONABIO) emite Dictámenes de Extracción no Perjudicial (NDF) para cada solicitud de exportación de especímenes de tiburones mexicanos listados en la CITES.

Los NDF se emiten a nivel de especie y por litoral, siguiendo protocolos estandarizados y con base en la mejor información científica disponible sobre su biología y poblaciones, evaluaciones de vulnerabilidad, riesgo por manejo pesquero, reconstrucción de capturas y modelos de rendimiento máximo sostenible basados en capturas nacionales que sientan las bases para los Volúmenes de Exportación Sustentables (VES).

Volúmenes de Exportación Sustentable (VES)

Con base en los resultados del "Taller de Fortalecimiento de capacidades técnicas y administrativas en la emisión de permisos de exportación de tiburones mexicanos listados en la CITES" (CDMX, 2019), la CONABIO y el Instituto Nacional de Pesca y Acuacultura (INAPESCA) sostuvieron reuniones de trabajo y acordaron conjuntamente metodologías y criterios para establecer los valores de referencia de Volúmenes de Exportación Sustentable (VES) para cada especie de tiburón y litoral:

a) Como punto de referencia se utilizó el concepto de Rendimiento Máximo Sostenible (RMS) a partir de capturas desarrollado por Martell y Froese (2013) con un modelo simple de producción excedente de Schaefer (1954) (ver detalles de la metodología en la sección 2d sobre estimación de la población).
b) Se realizó la reconstrucción de las capturas por especie a partir de:
    i. Datos de los Anuarios Estadísticos de Acuacultura y Pesca publicados por la Comisión Nacional de Pesca y Acuacultura (CONAPESCA), con proporciones obtenidas del Programa de Observadores Abordo del INAPESCA, la información recopilada por los Proyectos de Investigación del Programa Tiburón de los Centros Regionales de Investigación Acuícola y Pesquera (CRIAP) y con apoyo de expertos del Centro de Investigación Científica y de Educación Superior de Ensenada (CICESE).
    ii. Se complementó la información con publicaciones de tesis, artículos científicos y literatura gris (ver apartado de "Reconstrucción de capturas" en la sección de Referencias).
c) En 2020 los VES fueron puestos a prueba como valores de referencia piloto.
d) Posteriormente, la CONABIO y el INAPESCA, en colaboración con expertos académicos del CICESE, afinaron la metodología para establecer los VES que fueron presentados ante la DGVS-SEMARNAT y la CONAPESCA acordando iniciar su uso.

e) Los valores de los VES que utiliza la CONABIO son públicos en la página web de bit.ly/mitiburon, para el seguimiento de saldos disponibles para cada especie y litoral y se actualizan constantemente (**Cuadro 1**).
f) Cuando una especie/litoral alcanza el 100% del volumen sustentable, la Autoridad Científica emite NDF negativos y se suspende la emisión de permisos de exportación por parte de la Autoridad Administrativa.

Adicionalmente, la CONABIO colabora con un grupo de trabajo intersectorial[1] (compuesto por expertos académicos de 9 instituciones que incluyen: universidades y centros de investigación, sociedad civil, INAPESCA y la CONABIO) para afinar los análisis y la reconstrucción de capturas de tiburones y fortalecer los VES a fin de utilizar modelos de producción excedente con base en capturas (Froese *et al*., 2016, 2017) y más posteriormente integrar información adicional (p.e. tallas) para desarrollar un modelo estructurado por clases de edad.

Cuadro 1. Volúmenes de Exportación Sustentable (VES) estimados para cada litoral de las especies de tiburones mexicanos listados en la CITES antes de la CoP19.

Especie	Litoral	VES 2023** (ton)
Carcharhinus falciformis	Pacífico	2,298.58
	Atlántico*	373.3
Carcharhinus longimanus	Pacífico	229.1
	Atlántico	3.84
Sphyrna lewini	Pacífico	1,958.60
	Atlántico	2,062.32
Sphyrna mokarran	Pacífico	29.11
	Atlántico*	370.99
Sphyrna zygaena	Pacífico	265.02
	Atlántico	*
Alopias pelagicus	Pacífico	395.69
	Atlántico	*
Alopias superciliosus	Pacífico	131.9
	Atlántico	3.84
Alopias vulpinus	Pacífico	203.09
	Atlántico	*
*Isurus oxyrinchus***	Pacífico	890.8
*Isurus oxyrinchus***	Atlántico	0

* La captura de estas especies en estos litorales es poco frecuente.
** *Isurus paucus:* considerando sus registros marginales se incluye dentro del VES de *I. oxyrinchus*.
NA: las condiciones en que se encuentra la población silvestre no permiten su captura/exportación sustentable.

Cabe destacar que el peso total desembarcado que se reporta en los avisos de arribo, se descuenta de los VES, independientemente del resultado del NDF (positivo, positivo parcial o

[1] CICESE, UNAM, INAPESCA, CONABIO, CICIMAR, ECOSUR, Universidad de Quintana Roo, SOMEPEC A.C. e investigadores independientes.

negativo) o si el permiso CITES de exportación fue otorgado, pues los especímenes fueron extraidos del medio silvestre.

Integración y validación de información para emitir NDF

La Autoridad Científica analiza la información recibida en las solicitudes, principalmente los avisos de arribo (documento oficial donde los pescadores registran las capturas por especie), para:

1. A partir del peso de la aleta seca solicitada para exportación, se calcula el peso del cuerpo completo desembarcado utilizando factores de conversión especie-específicos compilados por la CONABIO (**Anexo 1**) para estimar la correspondencia con el peso desembarcado.
2. Evaluar si el peso desembarcado de tiburón completo se encuentra dentro de los Volúmenes de Exportación Sustentable (VES).
3. Revisar que la captura se haya realizado dentro de las temporadas autorizadas respetando las vedas establecidas para proteger a las especies en sus etapas más vulnerables (**Anexo 2**).
4. Revisar que la captura sea sustentable en línea con las recomendaciones de los Órganos Regionales de Ordenación Pesquera (OROP) de los que México es parte (CIAT, CICAA), tomando en cuenta medidas como las restricciones a la captura y porcentajes de retención para ciertas especies:
    a. CIAT: la Resolución C-16-06 la captura incidental del tiburón sedoso se limita a un 20% (embarcaciones mayores).
    b. CICAA: la Recomendación 09-07 prohíbe la retención y comercialización de cualquier parte del tiburón zorro ojón (*Alopias superciliosus*) a excepción de las pesquerías costeras mexicanas de pequeña escala con una captura menor a 110 ejemplares. Las Recomendaciones 10-07 y 10-08 prohíben la retención y comercialización de cualquier parte del tiburón puntas blancas oceánico y las del género *Sphyrna* (excepto *S. tiburo*). La Recomendación 11-08 prohíbe la retención y la comercialización de cualquier parte de tiburón sedoso a excepción de pesquerías costeras que utilicen el recurso para consumo local.

Con base en lo anterior, se emite un dictamen positivo, positivo parcial o negativo sobre la cantidad de especímenes que se pretende exportar.

En los años anteriores a la implementación de los VES (2014-2019), además de los análisis descritos en los puntos 1, 3 y 4 (arriba):

a) Se tomaba en cuenta que, a partir de las evaluaciones de las pesquerías de tiburón en ambos litorales, el INAPESCA determinó que se encontraban aprovechados al máximo sustentable de acuerdo con la Carta Nacional Pesquera.
b) Se consideraba el nivel de vulnerabilidad de la especie por litoral (**Anexo 1**) estimado con la metodología de Patrick y colaboradores (2010) adaptada de forma colegiada entre expertos académicos, CONAPESCA, INAPESCA, Asociaciones Civiles y pescadores (Benítez *et al*., 2015); y el riesgo por manejo (MRisk, adaptado a partir de Lack *et al*., 2014). Dichos valores se diferenciaban por especie, litoral, zona de pesca y tipo de embarcación (artesanal o de altura) para determinar el tipo de dictamen (positivo, positivo parcial o negativo).

Cabe mencionar que esta información, más otra complementaria ha sido proporcionada a la CITES anteriormente mediante respuestas a Notificaciones a las Partes y presentados en documentos de trabajo en diferentes Comités de Fauna y Conferencia de las Partes (**Anexo 3**).

b) Detalles y función de instituciones, experto(s) o interesado(s) que participen en la formulación de dictámenes de extracción no perjudicial, distintos de su Autoridad Científica designada

Como parte del proceso para generar, integrar y analizar información técnica y científica para elaborar NDF de tiburones mexicanos, la CONABIO colabora con actores clave nacionales e internacionales, incluyendo el sector pesquero gubernamental (CONAPESCA e INAPESCA), academia, productores y ONG. Adicionalmente, participa activamente en foros internacionales para incrementar las redes de información disponibles (**Figura 1**).

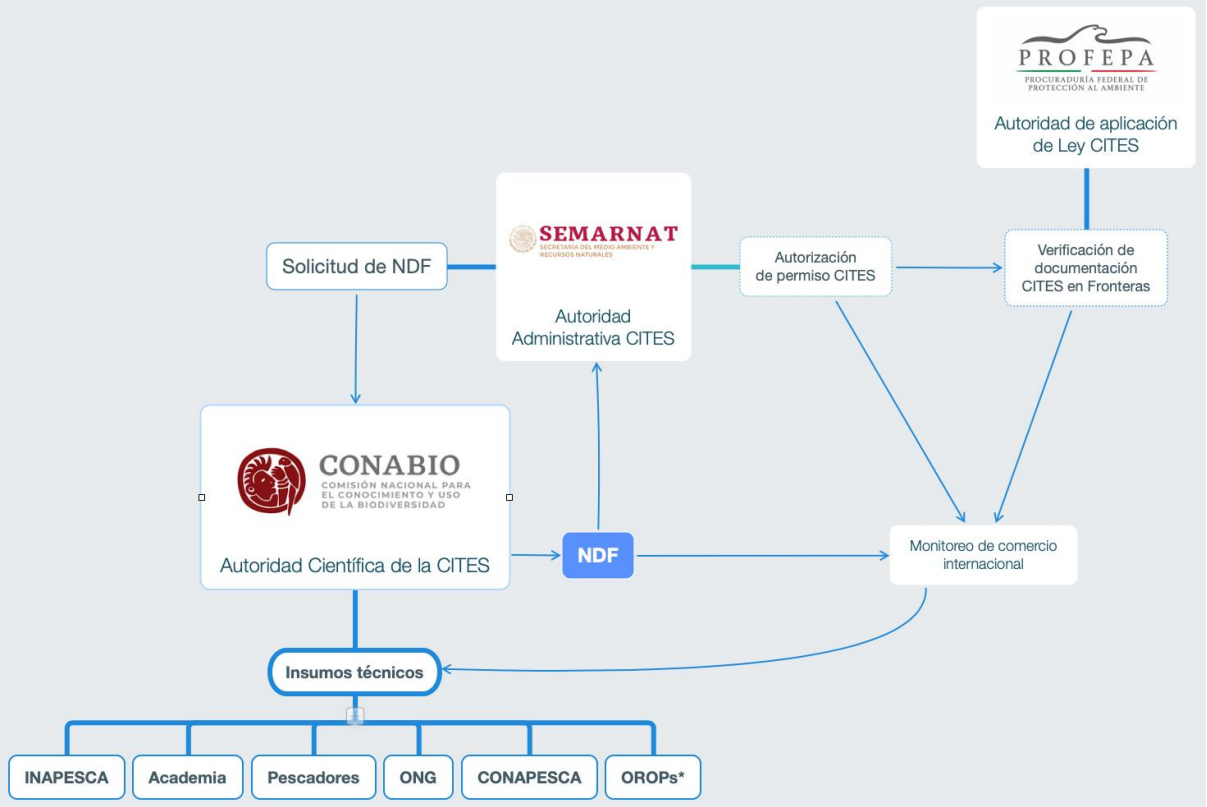

Figura 1. Esquema de los principales actores que proporcionan información a la CONABIO para la elaboración de NDF. *Actualmente, se colabora con el Gobierno de Alemania en una iniciativa para fortalecer el trabajo de las Partes de la CITES con las OROP.

Gobierno

La Comisión Nacional de Acuacultura y Pesca en México (CONAPESCA) es responsable del ordenamiento, fomento de pesca y acuacultura de calidad y con transparencia y el desarrollo de mecanismos de coordinación con diferentes instancias para implementar políticas, programas y normatividad que conduzcan y faciliten el desarrollo competitivo y sustentable del sector pesquero y acuícola del país, para incrementar el bienestar de los mexicanos.

CONAPESCA colabora con la Autoridad Científica compartiendo la información de las capturas pesqueras, lo que ha permitido contar con datos robustos para el cálculo de los VES.

El Instituto Nacional de Pesca y Acuacultura (INAPESCA) tiene como función dirigir, coordinar y orientar la investigación científica y tecnológica en materia de pesca y acuacultura, así como el desarrollo, innovación y transferencia tecnológica que requiera el sector pesquero y acuícola. El INAPESCA cuenta con 14 Centros Regionales de Investigación Acuícola y Pesquera (CRIAP) y 3 estaciones biológicas pesqueras, cada una ubicada en zonas costeras estratégicas para el estudio regional de las especies marinas. Con estos centros se han generado colaboraciones importantes y los de mayor relevancia para especies de tiburones son: Ensenada, Mazatlán, Bahía de Banderas, Manzanillo, Salina Cruz, Veracruz y Ciudad del Carmen. Sus especialistas realizan investigación sobre el desarrollo productivo y sustentable del sector pesquero y acuícola para especies de tiburones y son de los colaboradores más importantes junto con la academia, que han participado en el establecimiento de los criterios y análisis de la información para la estimación de los VES como base para formular los NDF.

Academia

Más de 35 expertos de 12 instituciones académicas han colaborado con la Autoridad Científica en los procesos de análisis e intercambio de información sobre las poblaciones y biología básica de las especies y han participado activamente en los talleres y reuniones donde se produjeron las evaluaciones de PSA, MRisk y estimación de VES que constituyen la base para los NDF.

Estas instituciones son: UNAM, CICESE, CICIMAR, ECOSUR Campeche, ECOSUR Chetumal, Universidad de Guadalajara, Universidad del Mar, Universidad de Quintana Roo, Centro Universitario de Ciencias Biológicas y Agropecuarias, Universidad Autónoma de Baja California, Universidad Autónoma de Nuevo León y Universidad Veracruzana.

ONG

Las organizaciones no gubernamentales han sido clave en el intercambio de información no publicada que también se considera para el desarrollo de los NDF y el vínculo con expertos, la difusión de análisis realizados por la Autoridad Científica y el contacto con pescadores para el desarrollo de capacidades en el llenado de los avisos de arribo (base para la obtención de información sobre las capturas de tiburón).

Las principales ONG que han colaborado con la Autoridad Científica son: WWF-México, SOMEPEC A.C., IEMANYA Oceánica A.C., ECOSIMATI, Pelagios Kakinjá, A.C., Causa Natura y COBI A.C.

OROPS

Actualmente, a través de la iniciativa del Ministerio Federal de Medio Ambiente, Conservación de la Naturaleza, Seguridad Nuclear y Protección del Consumidor de Alemania (BMUV) y la Agencia para la Conservación de la Naturaleza (BfN) se está realizando el proyecto "Mejorar las sinergias entre los Organismos Pesqueros Regionales (ORP) y la Gestión Pesquera Regional", que ayudará con la implementación de las medidas prioritarias para CITES a través de talleres para identificar la información que generan las OROPs para el fortalecimiento de NDF. El proyecto se basa en el reconocimiento de que los OROPs y la CITES comparten objetivos comunes en la recuperación de poblaciones agotadas, así como la pesca y el comercio legal y sostenible de elasmobranquios. El proyecto, en el que la CONABIO e INAPESCA han participado en sus foros, reúne a expertos, incluidos funcionarios gubernamentales, representantes de organismos pesqueros y de conservación, científicos y otras partes interesadas para identificar estrategias para coordinar y brindar de manera más efectiva la

protección y conservación de los elasmobranquios y construir puentes entre la CITES y las comunidades pesqueras.

En la siguiente liga se puede consultar un mapa con los actores clave que respaldaron las actividades de generación de información para la toma de decisiones en la elaboración de NDF: https://www.google.com/maps/d/u/0/edit?mid=1XDZtDcX45wmDwhxNBEwDlskZsw4b6-o&usp=sharing

c) Explicación de cómo la Autoridad Científica supervisa el nivel de las exportaciones La

Autoridad Científica colabora con la Autoridad Administrativa y la Autoridad de Aplicación de la Ley para asegurar que los permisos CITES de exportación que se emiten cuentan con un dictamen positivo y que la cantidad efectivamente exportada (verificada en puertos, aeropuertos y fronteras) se encuentra dentro de lo autorizado en los permisos.

Con este fin, las Autoridades CITES comparten información sobre los NDF, permisos CITES y Registros de Verificación emitidos para estas especies y se analizan correlaciones (ver detalles en **sección 4** sobre comercio).

2. Población

d) Detalles del estado de conservación de la especie en su país, (proporcione referencias publicadas y otras fuentes de datos, según proceda), como:

- **distribución geográfica / extensión de la presencia**

Las poblaciones de estas especies de tiburones martillo (*Sphyrna lewini* y *Sphyrna mokarran*) habitan las aguas del Golfo de México y Mar Caribe, de acuerdo a la Carta Nacional Pesquera (DOF, 26/07/2022). Esto concuerda con la distribución de ambas especies que reporta la IUCN (Rigby *et al*., 2019ab) y los mapas de distribución de las especies según la FAO (FAO, 2020a,b).

Estudios genéticos recientes realizados con microsatélites indican que las poblaciones de *S. lewini* pueden ser divididas en 4 subpoblaciones (Índico del oeste, Indo-Pacífico central, Pacífico central y Pacífico Este tropical (Green, *et al*., 2022). A pesar de ser una especie migratoria, las poblaciones de *S. lewini* en el Pacífico mexicano se encuentran dentro de la subpoblación del Pacífico Este tropical y están genéticamente separadas de otras poblaciones de la especie. Inclusive en México se han encontrado diferencias en sitios muestreados en el Pacífico norte, centro y Golfo de California (Castillo-Olguin *et al*., 2012; Elizondo-Sancho, *et al*., 2022).

Mediante marcadores de microsatélites, Testerman (2014) encontró que las poblaciones de *S. mokarran* del Atlántico mexicano se encuentran estrechamente relacionadas al interior del Golfo de México y tienen muy poca interacción con las poblaciones del Atlántico y del Océano Índico. Un patrón similar fue reportado para *S. lewini*, donde existe una estructura genética diferenciada al interior del Golfo de México y distinta del resto del Atlántico (Duncan, *et al*., 2006; Chapman, et al., 2009)
Sphyrna lewini.

Esta especie de tiburón martillo es la más común en aguas tropicales, se captura en pesquerías costeras artesanales, así como en operaciones en pesca oceánica y es una de las 10 especies de mayor importancia comercial en el Pacífico Mexicano. Las artes de pesca más comúnmente utilizadas son palangres de superficie y de fondo (Compagno *et al.,* 1995 y Soriano-Velásquez *et al.,* 2006). En el Golfo de México fue una de las nueve principales especies documentadas en la captura artesanal de tiburón, durante la temporada de pesca 1993-1994, en donde se emplearon palangres o cimbras y redes de enmalle de superficie y fondo (Castillo-Géniz *et al.,* 1998, Castillo-Géniz, 2001).

En un estudio de la pesca del Golfo de California durante 1998-1999, se describió a la cornuda común como una de las principales especies capturadas, especialmente en los estados de Baja California Sur y Sinaloa en primavera. La pesca de tiburones en la región del Golfo de California, incluyendo a la cornuda común, se realiza principalmente con redes agalleras de fondo, aunque también ocasionalmente se utilizan redes agalleras de superficie y palangre de fondo y superficie (Bizzarro *et al*., 2007).

Sphyrna mokarran

La cornuda gigante se distribuye en aguas tropicales mexicanas, siendo reportada en el Golfo de México (Castillo-Géniz *et al.,* 1998; Oviedo *et al.,* 2009), Golfo de California (Kato, 1965) y en el Caribe Mexicano (Schmitter-Soto *et al*., 2000). El primer registro de *S. mokarran* en aguas continentales mexicanas, se tiene en las localidades del río Tuxpan y en la Laguna de Chiltepec en Veracruz. Aparentemente, en la fase juvenil es cuando se presenta en regiones estuarinas y de agua dulce (Castro-Aguirre, 1978). Existen registros históricos de captura por parte de la flota tiburonera de Mazatlán, aunque no se dispone de un número total de individuos capturados (Kato, 1965).

En el Golfo de México los individuos juveniles y adultos migran al norte durante el verano, mientras que las hembras grávidas viajan hacia latitudes más tropicales durante los meses de invierno (Castro, 2011).

- **situación y estado de la población**

En las publicaciones de la IUCN actualizadas en el 2018 para *S. lewini* (Rigby *et al*., 2019a) y en el 2018 para *S. mokarran* (Rigby *et al*., 2019b), las poblaciones de ambas especies presentes frente a las costas del Pacífico Mexicano no fueron evaluadas al carecer de información para ello. De igual forma para ambas especies, los datos del 1994-2017 citados en dichas evaluaciones, demuestran signos de estabilidad o inclusive recuperación en el Golfo de México. Por principio precautorio y considerando decrementos en otras poblaciones a nivel mundial, la IUCN cataloga a ambas especies como En Peligro Crítico con tendencia al decremento.

Las poblaciones de *S. lewini* y *S. mokarran* en el Atlántico actualmente se encuentran en mejor estado que en la línea base de 1993. Recientemente, Pacoreau y colaboradores (2023), después de aplicar modelos Bayesianos con las series de tiempo de capturas disponibles, han encontrado en el Golfo de México tendencias positivas de forma posterior a 1993 con la implementación de las medidas de los planes de manejo pesquero en el área (Figura 2).

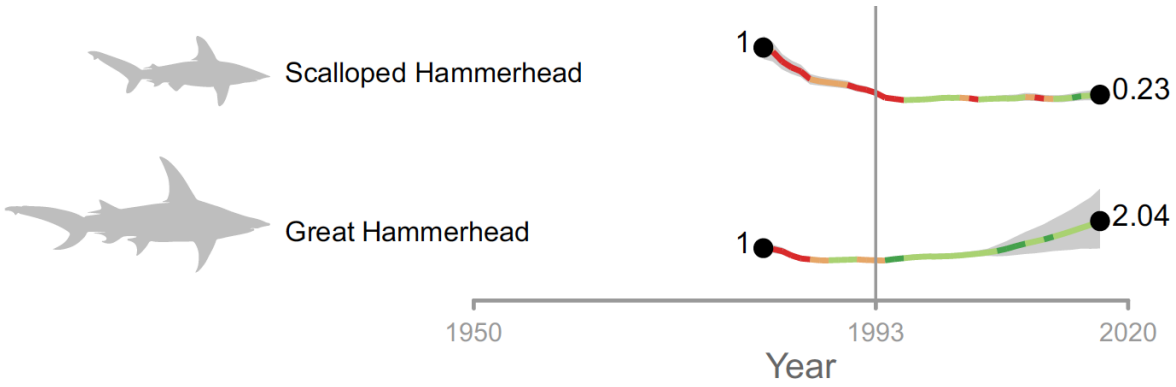

Figura 2. Muestra las tendencias poblacionales de *S. lewini* (*Scalloped Hammerhead*) y *S. mokarran* (*Great Hammerhead*) en el Atlántico. Las líneas grises denotan intervalos creíbles al 95% resultado del modelado Bayesiano de su población con respecto al estado de 1993. Las líneas verde oscuro denotan incrementos al 80%, las líneas verdes clara denotan incrementos al 50%, las líneas naranjas decrementos al 50% y las rojas decrementos al 80%.

Las evaluaciones realizadas por el INAPESCA en el Plan de Manejo Pesquero de Tiburones y Rayas en México y de acuerdo a lo publicado en la Carta Nacional Pesquera las pesquerías de tiburón en ambos litorales se encuentran aprovechadas al máximo sustentable.

En línea con lo anterior, desde el 2020 las Autoridades CITES, Autoridades Pesqueras y expertos académicos estimaron Volúmenes de Exportación Sustentable (VES; públicos en la página de la Autoridad Científica CITES de México: bit.ly/mitiburon) basados en el reporte de ISC-SWG (2018) para *I. oxyrinchus* y las metodologías de reconstrucción de capturas de Saldaña-Ruiz (2017) y Catch-MSY (Martel y Froese, 2013) para el resto de las especies. Este proceso se encuentra detallado en el siguiente punto sobre estimación de la población.

- **estimación de la población y tendencias de la población**

Con el fin de realizar las evaluaciones de las poblaciones de especies incluidas en el Apéndice II de CITES (antes de la CoP19) se realizó, en primera instancia, una reconstrucción histórica de capturas con base en la información proveniente de los Anuarios Estadísticos de Acuacultura y Pesca de 1937 a 2014 (Secretaría de Marina 1937–1969, Departamento de Pesca 1979–1981, Secretaría de Pesca 1982–1994, Secretaría del Medio Ambiente, Recursos Naturales y Pesca 1995–2001, Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación 2002–2014). Debido a que en dichos anuarios los tiburones no están clasificados por especie, se siguió la metodología de Saldaña-Ruiz (2017) para realizar la reconstrucción de las capturas en ambos litorales. Para la definición de proporciones de captura para cada especie se utilizó la mejor información disponible en cada litoral Mexicano. Para la definición de stocks se utilizó como referencia las definiciones de la distribución de cada especie definidas en el apartado 2b. El procesamiento de dicha información se detalla a continuación:

Reconstrucción histórica de las capturas en el Pacífico mexicano

Se consideraron dos periodos de datos para estimar la proporción de representación en las capturas del Pacífico mexicano:

a) Periodo 2006–2014: se utilizaron las proporciones por especie y por año a partir de la base de datos del Programa de Observadores a Bordo en Baja California y Sinaloa (POT) en conjunto con la composición de las especies de las pesquerías artesanales de

tiburones del Pacífico mexicano resultado de la revisión conjunta de la CONABIO, INAPESCA y el CICESE de 108 publicaciones científicas de 1990-2017 que incluyen artículos científicos, libros, tesis, memorias de congresos e informes técnicos del INAPESCA (ver apartado de "Reconstrucción de capturas" en la sección de Referencias).

b) Periodo 1937–2005: se utilizó de base la proporción máxima por especie de los años 2006–2014, y este valor fue ponderado considerando el entorno histórico de la pesca en México (Saldaña–Ruiz, 2017) que modeló el esfuerzo pesquero en dicho periodo. Estos enfoques analíticos y supuestos se describen en el **Cuadro 2**

Las proporciones finales utilizadas para reconstruir las series de tiempo de las especies listadas en la CITES hasta antes de la CoP19 (Panamá, 2021) para el Pacífico se encuentran en el **Cuadro 3**.

Reconstrucción histórica de las capturas en el Atlántico (Golfo de México y el mar Caribe).

Debido al tipo de pesca (artesanal) realizado en el Golfo de México y el mar Caribe, no existe un Programa de Observadores a Bordo, por lo que se utilizaron los datos de capturas recolectados en las Oficinas de Pesca (CONAPESCA) y de muestreos de desembarque en distintos sitios reportados en estudios puntuales realizados por el INAPESCA, así como los factores de pesca histórica en México del **Cuadro 2**.

Modelo de producción excedente.

Una vez obtenidas las capturas históricas por especie y por litoral, se aplicó el método desarrollado por Martell y Froese (2013), que utiliza un modelo simple de producción de Schaefer (1954) en el que se calcula el RMS únicamente para los pares r-K que no superen los valores de la capacidad de carga o colapsen a la población posterior al último año de la serie de tiempo. Para ello se requiere:

1) Serie de tiempo con la captura total: se utilizaron las series de tiempo reconstruidas para el Pacífico y el Atlántico.
2) Biomasa relativa inicial: los datos iniciales para los límites inferior y superior de la biomasa relativa inicial fueron 0.8 y 0.9, asumiendo que ésta representaba 80% y 90% de la capacidad de carga, respectivamente.
3) Nivel de disminución: para calcularlo se utilizó la relación de B_e/K, donde B_e es la biomasa del último año, en función de la razón entre la captura a escala del último año y la captura máxima de la serie de tiempo: C_e/C_{max} (C_e es la captura del último año y C_{max} es la captura máxima de la serie de tiempo), cuando $C_e/C_{max} > 0.5$ entonces $B_e/K \in [0.3, 0.7]$, y cuando $C_e/C_{max} \leq 0.5$ entonces $B_e/K \in [0.01, 0.4]$.
4) Valores de la capacidad de carga (*K*) (Zhou y Sharma 2013): como valor inferior de la capacidad de carga se consideró el valor en peso de la captura anual más alta (año récord) (Martell y Froese, 2013), y como valor superior se tomó 50 veces el valor de la captura máxima, asumiendo que la captura nunca rebasó 0.5% de la capacidad de carga.
5) Tasa intrínseca de incremento poblacional (r): se utilizaron los valores del **Cuadro 4** y se asumió una distribución uniforme.

Cuadro 2 Factores de pesca históricos de la pesquería de tiburones en aguas mexicanas usadas para la ponderación de la reconstrucción histórica de captura (1937–2014). Fuente Saldaña Ruiz, 2017. Las referencias del cuadro están en la fuente original.

Periodo	*Supuestos*	*Ponderación*
1937–1950	El hígado de tiburón fue el producto principal durante este periodo debido a la alta demanda de vitamina A durante la Segunda Guerra Mundial (Ferreira 1958, Hernández-Carvallo 1971, Alcalá-Moya 1999).	0.70
1951–1966	La carne de tiburón se convierte en el principal producto pesquero de tiburones debido a la llegada de la producción sintética de vitamina A (Ferreira 1958, Hernández-Carvallo 1971).	0.80
1967–1979	El desarrollo de la pesquería de tiburón del océano Pacífico presentó un crecimiento muy acelerado a finales de los sesenta.	0.90
1980–1990	Durante la década de los ochenta se alcanza el máximo histórico de toda la pesquería de tiburón del Pacífico (Márquez-Farías 2002).	1.0
1991–1999	Se presentó una disminución de los desembarques, probablemente relacionada con una crisis económica en todo el país en 1982. Dicha crisis económica afectó la capacidad de reinversión del sector pesquero, lo que resultó en el mayor uso de embarcaciones obsoletas y artes de pesca (Alcalá 2003; Hernández y Kempton 2003). Además de una segunda crisis económica a escala nacional (Espinoza-Tenorio *et al.* 2011).	0.90
2000–2005	Las políticas de gestión de la pesca mexicana se actualizaron para fomentar la sostenibilidad, incluida una mayor participación pública, así como nuevos aportes científicos y menor esfuerzo de pesca (Espinoza-Tenorio *et al.* 2011). Estos cambios forman la base para el desarrollo de un nuevo Reglamento Estándar Oficial específico para la pesquería, o la Norma Oficial Mexicana (NOM) (Hernández y Kempton 2003).	0.85

Cuadro 3. Proporción de la captura en peso de especies de tiburones mexicanos listados en la CITES antes de la CoP19 para el Pacífico mexicano (A) y el Atlántico (B).

A. Proporciones por especie para el Pacífico									
Año	***A. pela***	***A. super***	***A. vulpi***	***C. falci***	***S. lew***	***S. moka***	***S. zygae***	***C. longi***	**Otras**
1939-1950	0.0446	0.0168	0.0146	0.1704	0.1198	0.0018	0.0232	0.0188	0.5901
1951-1966	0.0450	0.0169	0.0147	0.1719	0.1209	0.0018	0.0235	0.0190	0.5863
1967-1979	0.0453	0.0170	0.0148	0.1732	0.1218	0.0018	0.0236	0.0191	0.5833
1980-1990	0.0510	0.0192	0.0166	0.1948	0.1370	0.0021	0.0266	0.0215	0.5313
1991-1999	0.0497	0.0187	0.0162	0.1898	0.1335	0.0020	0.0259	0.0209	0.5433
2000-2005	0.0481	0.0181	0.0157	0.1839	0.1293	0.0020	0.0251	0.0203	0.5575
2006	0.0490	0.0169	0.0147	0.2007	0.1320	0.0021	0.0250	0.0217	0.5379
2007	0.0468	0.0197	0.0172	0.1637	0.1284	0.0018	0.0259	0.0172	0.5793
2008	0.0515	0.0156	0.0136	0.1686	0.1159	0.0020	0.0274	0.0192	0.5862
2009	0.0525	0.0143	0.0125	0.1855	0.1244	0.0021	0.0263	0.0221	0.5602
2010	0.0491	0.0141	0.0123	0.1915	0.1197	0.0018	0.0256	0.0166	0.5692
2011	0.0493	0.0146	0.0127	0.1602	0.1271	0.0015	0.0260	0.0122	0.5964
2012	0.0489	0.0148	0.0129	0.1389	0.1394	0.0014	0.0253	0.0099	0.6084
2013	0.0474	0.0146	0.0127	0.1723	0.1411	0.0014	0.0241	0.0113	0.5750
2014	0.0453	0.0157	0.0136	0.1792	0.1375	0.0013	0.0252	0.0099	0.5723

B. Proporciones por especie para el Atlántico						
Año	***A.super***	***C.falci***	***I.oxy***	***S.lew***	***S.moka***	**Otras**
1937- 1950	0.0009	0.0550	0.0050	0.2960	0.0260	0.6171
1951- 1966	0.0012	0.0630	0.0060	0.3380	0.0300	0.5618
1967- 1979	0.0015	0.0700	0.0060	0.3810	0.0340	0.5075

1980- 1990	0.0008	0.0670	0.0130	0.2040	0.0700	0.6452
1991- 1999	0.0015	0.0700	0.0060	0.3810	0.0340	0.5075
2000- 2005	0.0013	0.0670	0.0060	0.3590	0.0320	0.5347
2006--2014	0.0013	0.0780	0.0070	0.4230	0.0380	0.4527

Cuadro 4. Valores de la tasa intrínseca de crecimiento poblacional (r) para *Sphyrna lewini* y *S. mokarran* utilizadas en la última estimación de los VES.

Especie	*r* (min – max)	Referencia
Sphyrna lewini	0.055 - 0.24	Cortés (2002, Anislado-Tolentino *et al*. (2008)
Sphyrna mokarran	0.055 - 0.1059	Carrier *et al*. (2010)

Para cada una de las especies se realizaron 30,000 simulaciones Montecarlo, posteriormente se dividió la biomasa en el año t (Bt) entre la biomasa que generaría el RMS (BRMS) para observar su tendencia a lo largo del tiempo. Una vez obtenidos los elementos de entrada para el modelo, se estimó el RMS y los gráficos correspondientes fueron realizados mediante el lenguaje de programación R studio versión 3.6.1. (*Programming Language for Statistical Computing and Graphics* software, Boston, MA) con las funciones "Schaefer" y la paquetería "ggplot2" (Wickham, 2016).

Considerando ambos litorales, actualmente se estima una biomasa al RMS de 4,020.92 toneladas de cuerpo completo para *S. lewini* y de 400 toneladas para *S. mokarran*.

- **otros factores biológicos y ecológicos que puedan ser relevantes**

No aplica.

3. Amenazas

e) Identifique las amenazas conocidas para la especie en su país (p.ej., destrucción del hábitat, enfermedades, persecución, otra explotación de la especie, p.ej., captura incidental, especies invasoras, etc.) y qué medidas (de haberlas) se están aplicando para reducir esas amenazas.

Pesquerías

Tanto para *S. lewini*, como para *S. mokarran*, la morfología de sus cabezas incrementa la susceptibilidad a la captura por parte de las artes de pesca utilizadas en la pesca dirigida y la pesca incidental. Las amenazas por la pesquería que presentan a nivel mundial han sido documentadas por Gallager y Kimley (2018), Rigby y colaboradores (2019a,b), Saldaña-Ruiz y colaboradores (2022), y Furundarena-Hernández y colaboradores (2022). En México existe captura dirigida en mayor proporción por parte de embarcaciones artesanales y captura incidental por redes de enmalle (usadas para la captura de peces de escama; Maguire *et al*., 2006; Bizarro *et al.,* 2007; Salomón Aguilar *et al*., 2009). Además, el valor comercial de las aletas

para ambas especies es alto, especialmente en los mercados asiáticos (Clarke *et al*., 2006, Clarke *et al*., 2004).

En México, a partir de 1993 se aplicó una moratoria de permisos de tiburón para no incrementar el esfuerzo de pesca existente. Esto implica que no se expiden nuevos permisos para la captura de este recurso, excepto en el caso de que se sustituyan embarcaciones descartadas o se renueven permisos (DOF 2012). La Norma Oficial Mexicana nom-029-pesc-2006 Pesca responsable de tiburones y rayas, se establecen especificaciones para su aprovechamiento, tiene el propósito de inducir el aprovechamiento sostenible de estas especies y es un conjunto de disposiciones aplicables a todas las pesquerías dirigidas a tiburones y rayas, que señalan la prohibición del uso exclusivo de las aletas de cualquier especie de tiburón y que en ningún caso se podrá arribarlas si sus cuerpos no están a bordo de la embarcación, así mismo, en ella se limita el esfuerzo total para la captura de tiburón.

En México, la Carta Nacional Pesquera (CNP) contiene el resumen de la información del diagnóstico y evaluación integral de la actividad pesquera (DOF 2012), así como, de los indicadores sobre la disponibilidad y conservación de los recursos pesqueros, en aguas de jurisdicción federal. Las fichas en esta carta contienen la descripción de las especies (nombre común y científico), indicadores pesqueros, esfuerzo pesquero permisible, comportamiento de las pesquerías, ubicación geográfica de las áreas de pesca, descripción de los sistemas de pesca, lineamientos y medidas de manejo. En ella (DOF 2012) se señala como recomendación el no incrementar el esfuerzo pesquero autorizado y reducir las unidades de pesca autorizadas en caso de que los permisos de pesca no sean ejercidos (Saldaña-Ruiz y colaboradores, 2022). En los permisos de pesca para embarcaciones menores el número de permisos se mantuvo relativamente constante a través del período 2011-2017.

De igual forma, las OROPs, han implementado la prohibición del aleteo en las pesquerías que aplican sus recomendaciones, mediante la exigencia de que las aletas permanezcan en el cuerpo del tiburón al momento de su comercialización y que el peso de estas no exceda 5% del peso total del cuerpo de los tiburones capturados.

Con el fin de proteger una fracción importante del stock reproductor de las principales especies de tiburones y rayas que se aprovechan comercialmente, a través de la reducción de la captura de hembras grávidas y de tiburones neonatos, se publicó el Acuerdo que establece las épocas y zonas de veda para la pesca de tiburones y rayas en aguas mexicanas. El periodo de veda abarcó del 12 de junio al 31 de julio en el 2012, mientras que en el 2013 se vedó del 1 de mayo al 26 de julio en el Océano Pacífico. En el Golfo de México y Mar Caribe, quedó: Tamaulipas, Veracruz y Quintana Roo a partir del 15 de mayo y hasta el 30 de junio, durante el periodo del 1 de mayo al 30 de junio de cada año. En Tabasco, Campeche y Yucatán a partir del 15 de mayo al 15 de junio y posteriormente del 1 al 29 de agosto de cada año.

Pérdida de hábitat

Otro posible riesgo que pudiera ocasionar impactos negativos en las poblaciones de ambas especies, es la pérdida de hábitat en áreas de crianza específicas, por degradación y contaminación de los ecosistemas costeros, por ejemplo, metales pesados y desechos agrícolas, ganaderos e industriales, como consecuencia de diversas actividades económicas (p.e. turísticas, petroleras, portuarias, agrícolas e industriales) que se desarrollan en la zona costera mexicana (Gutiérrez Galindo *et al*.,, 1994; Padilla y Sotelo, 2000; Hueter *et al.,* 2005; Bessudo *et al*., 2011).

En México existen instrumentos legales para la conservación: Ley General de Equilibrio Ecológico y Protección al Ambiente, Ley General de Vida Silvestre, nom-059-semarnat-2010.

Establecimiento de Áreas Naturales Protegidas (Reservas de la Biósfera, Parques Nacionales, Áreas de Protección de Flora y Fauna). Programa de Conservación de Especies en Riesgo (PROCER) que tienen como objetivo, propiciar el desarrollo sustentable y establecer las bases para: garantizar un medio ambiente sano para el desarrollo, salud y bienestar; definir la política ambiental; la preservación, la restauración y el mejoramiento del ambiente; la preservación y protección de la biodiversidad, y el establecimiento y administración de las Áreas Naturales Protegidas; el aprovechamiento sustentable, la preservación y la restauración del suelo, el agua y los demás recursos naturales, para que sean compatibles con la obtención de beneficios económicos y las actividades de la sociedad con la preservación de los ecosistemas; la prevención y el control de la contaminación. Derivado de esto, un total de 176 Áreas Naturales Protegidas de competencia Federal. Dentro de estas, hay una serie de ANP que brindan o tienen el potencial de ofrecer protección a elasmobranquios directa o indirectamente. Además,

Cambio climático

Por otro lado, el cambio climático también puede representar una amenaza para las condiciones en las que viven ambas especies actualmente (*S. lewini*) y en el futuro (ambas especies). De acuerdo a Reyes-Bonilla y colaboradores (2021) los escenarios climáticos indican que para los océanos de México habrá cambios en el nivel del mar y en la intensidad de tormentas y huracanes, mientras que las condiciones fisicoquímicas de los mares se verán alteradas por el incremento en la temperatura, la concentración de oxígeno, la productividad primaria, y la acidificación oceánica:

- Se llevó a cabo una evaluación de vulnerabilidad con los cambios que se espera observar en la temperatura, la productividad primaria y la cantidad de oxígeno en los mares de México hacia el año 2050 para diferentes especies entre ellas los tiburones martillo.
- Para el análisis se utilizaron los escenarios SSP5 (SSP585), que refleja un desarrollo impulsado por combustibles fósiles, y el SSP1 (SSP126), que refleja sustentabilidad para el horizonte 2050. Se trabajaron las predicciones de las siguientes variables oceanográficas, en un radio de 30 km alrededor de cada comunidad: temperatura superficial del mar, productividad primaria y oxígeno disuelto, tomadas del Max-PlanckInstitut für Meteorologie.

Para *Sphyrna lewini* que se distribuye actualmente a lo largo de 460,000 km2 de litoral, y en aguas adyacentes: bajo el escenario SSP126, se prevé un incremento en su área de ocurrencia del 2%, mientras que bajo el escenario SSP585 (condiciones más cálidas y menos productivas), disminuiría en apenas 1%, y esos cambios se presentan en la porción más tropical del Pacífico mexicano, así como en Veracruz y Tabasco en el Golfo de México. Por otra parte, se sugiere que este tiburón podría aumentar su presencia al interior del Golfo de California, lo que indicaría que las condiciones oceanográficas ahí se volverían más aptas para su presencia (**Figura 3**). Otros modelos (Rodríguez-Burgos, *et al*., 2022) indican que considerando escenarios de mayor acidificación, la especie podría migrar hacia el sur.

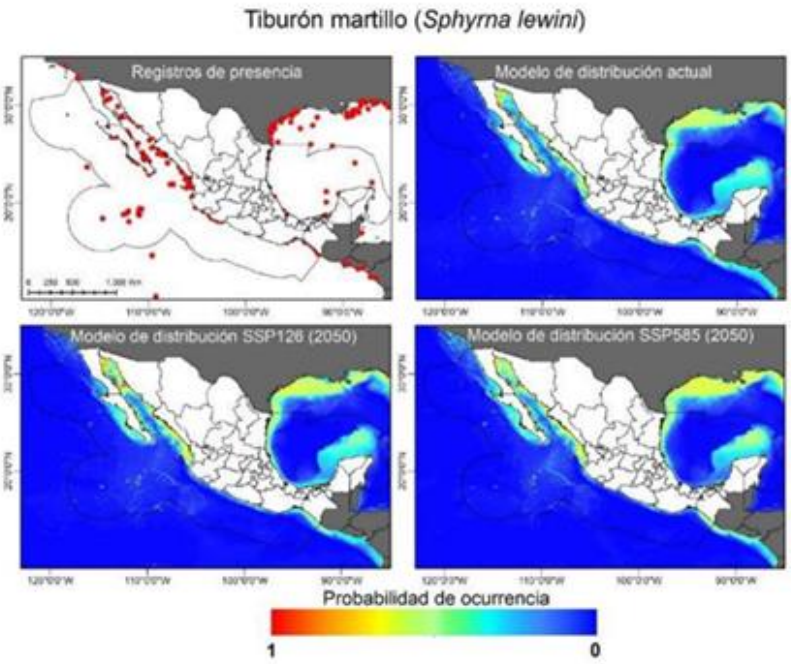

Figura 3.. Mapas de distribución actual y potencial (año 2050) del tiburón martillo *Sphyrna lewini* según los escenarios SSP126 y SSP585 de cambio climático (Tomado de Reyes-Bonilla et al., 2021).

El tiburón martillo gigante (*Sphyrna mokarran*) actualmente se distribuye en un área aproximada de 272,000 km2, en especial en aguas del Golfo de México. De acuerdo con el escenario SSP126, la especie sufriría un decremento de su superficie total de presencia del 13%, mientras que bajo el escenario SSP585 el decremento sería sólo cercano al 5%. En el Golfo de México, este tiburón prácticamente permanece estable en su zona de ocurrencia, pero en el Pacífico y Golfo de California disminuiría su presencia, aunque la especie no es muy común (**Figura 4**).

Actualmente, el marco legal sobre política climática de México es robusto, dicho marco provee un conjunto de herramientas para enfrentar las perturbaciones futuras, y está apoyado por una serie de tratados y acuerdos internacionales a los que México se ha adherido. Las herramientas previstas en la Ley General de Pesca y Acuacultura Sustentables, es decir, el ordenamiento pesquero, los planes de manejo pesquero y el otorgamiento de concesiones y permisos se convierten en instrumentos legales indispensables para la resiliencia y la adaptación al cambio climático.

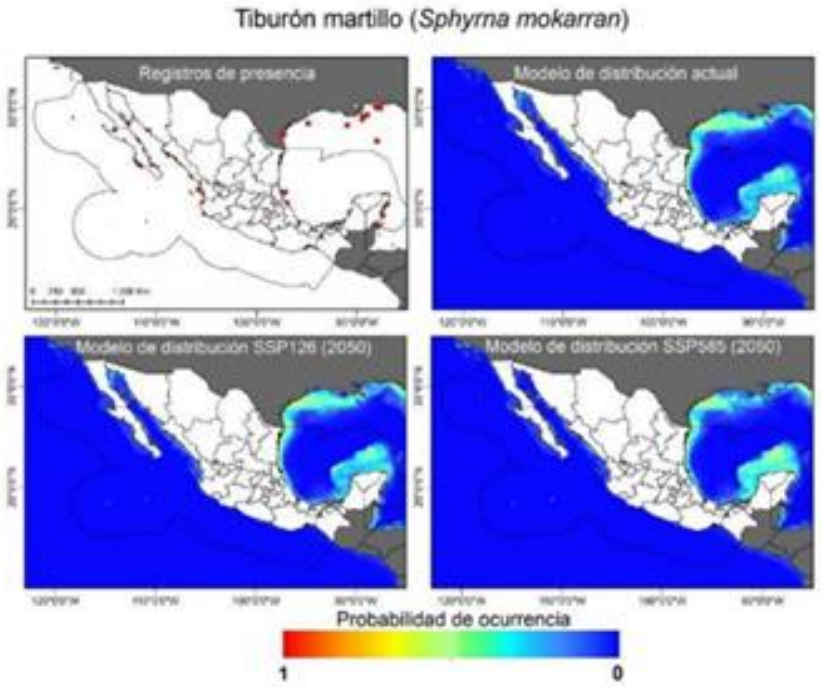

Figura 4. Mapas de distribución actual y potencial (año 2050) del tiburón martillo *Sphyrna mokarran* según los escenarios SSP126 y SSP585 de cambio climático (Tomado de Reyes-Bonilla et al., 2021).

4. Comercio

f) Proporcionar información sobre los niveles de comercio legal de la especie en los 5 años más recientes (cuando no esté disponible en la base de datos sobre el comercio del PNUMA-CMCM) y los niveles de comercio anticipados. Sírvase indicar si esas cifras representan el comercio efectivo o los permisos expedidos.

La DGVS-SEMARNAT es la Autoridad Administrativa responsable de presentar ante la CITES los informes anuales de comercio internacional de especies mexicanas listadas en la CITES. El comercio reportado comprende la cantidad autorizada y expedida en los permisos CITES hasta la fecha de corte del informe anual. De forma posterior algunos usuarios solicitan la cancelación/sustitución de sus permisos con base en sus propios intereses. Por tanto, la información presentada en este documento constituye el valor efectivamente autorizado en cada año y la Autoridad Administrativa solicitará a la UNEP-WCMC la actualización de los valores en la base de datos.

Con base en la información proporcionada por la CONABIO (NDF), la DGVS-SEMARNAT (Permisos CITES) y la PROFEPA (exportaciones verificadas en puertos, aeropuertos y fronteras), el **Cuadro 5** presenta las cantidades de aleta en el comercio internacional para ambas especies en el periodo de 2017 a 2021.

Desde que se listaron las especies en los Apéndices, el total de permisos CITES autorizados por la DGVS-SEMARNAT se encuentran respaldados por NDF emitidos por la CONABIO y las

cantidades verificadas en puertos, aeropuertos y fronteras por la PROFEPA son menores que las autorizadas.

Cuadro 5. Comercio internacional dictaminado positivo en NDF de la CONABIO, autorizado en permisos CITES por la DGVS-SEMARNAT y efectivamente exportado de acuerdo con verificaciones de la PROFEPA (2017-2021). Valores redondeados al kg más cercano.

Comercio internacional Aletas *S. lewini* (kg)					
Año	2017	2018	2019	2020	2021
NDF (CONABIO)	8654*	222	4631	5293*	6862*
Permiso CITES (DGVS)	8545	222	3846	4917	6783
Exportación verificada (PROFEPA)	1896	100	3431	4233	2191

Comercio internacional Aletas *S. mokarran* (kg)					
Año	2017	2018	2019	2020	2021
NDF (CONABIO)	141.12*	663.30	1366.92*	890.11	1264.02
Permiso CITES (DGVS)	141.12	207.30	1366.93	890.11	698.50
Exportado verificada (PROFEPA)	0.00	0.00	1354.00	889.50	701.52

*Debido a la operación de la cadena de comercialización (tiempos de secado de aletas, comercialización nacional, solicitud de permisos CITES, trámites aduanales para salida del producto, etc.) la cantidad dictaminada (NDF) al igual que la verificada (efectivamente exportada) pueden incluir valores de años previos al de emisión del permiso CITES.

A fin de mejorar los registros nacional e internacional del comercio de especies de tiburones mexicanos listadas en la CITES, México ha instado a las Partes de la CITES a no aceptar permisos CITES si no cuentan con la verificación realizada por la PROFEPA en la Casilla 14 de dicho permiso desde la Notificación a las Partes 988 del 13 de octubre de 1997 y con recordatorios en los Comités de Fauna (AC29-2017, AC30-2018 y en el AC31-2021).

g) Proporcionar la información disponible sobre los niveles de comercio ilegal (conocido, inferido, proyectado o estimado).

De acuerdo con la PROFEPA, no se tienen detectados intentos de exportación irregular en México de especímenes de las especies *Sphyrna lewini* y *S. mokarran* en los últimos 5 años.

La Dirección General de Verificación e Inspección Ambiental en Puertos, Aeropuertos y Fronteras de PROFEPA (DGVIAPAyF), como parte de sus funciones, monitorea los sitios de prensa de las agencias gubernamentales de países "de interés", así como los sitios de noticias en internet, de manera cotidiana. De este modo, se detectó que el 18 de febrero de 2023, el servicio de Aduanas de la Región Administrativa Especial de Hong Kong, emitió un boletín de prensa comunicando la detección y el aseguramiento de un embarque, en el Aeropuerto Internacional de esa ciudad, con 1.2 toneladas de aletas de tiburón, presuntamente de especies protegidas, sin especificar cuáles, procedentes de México; el valor en dólares hongkoneses es de 40 millones ($ 5,097,640 dólares americanos) y el caso e investigaciones están a cargo del Departamento de Agricultura, Pesquerías y Conservación del gobierno hongkonés (Boletín de prensa del Servicio de Aduanas de Hong Kong, 18 de febrero de 2023: https://www.customs.gov.hk/en/customs-announcement/press-release/index_id_3660.html?p=3&y=&m=) .

h) Proporcionar información sobre los procedimientos para la identificación de especímenes en el comercio a nivel de especie (según proceda).

La PROFEPA realiza la verificación de embarques de exportación, con la finalidad de que el actor de comercio exterior cumpla con lo dispuesto en el artículo 36-A de la Ley Aduanera y promocione el despacho de sus mercancías en algún régimen aduanero como la importación o exportación, temporal o definitiva. En este caso, se realiza la verificación documental y la revisión física de la mercancía conforme a un Manual de Procedimientos publicado en el Diario Oficial de la Federación (Manual de procedimientos para la importación y exportación de vida silvestre, productos y subproductos forestales, y materiales y residuos peligrosos, sujetos a regulación por parte de la Secretaría de Medio Ambiente y Recursos Naturales. DOF 29/01/2004) y, en caso de cumplimiento de los requisitos legales, se emite una constancia para uso en el despacho aduanero y se descargan los permisos CITES emitidos por la Autoridad Administrativa mexicana.

La identificación de las especies de tiburón martillo (*Sphyrna lewini* y *Sphyrna mokarran*) en aguas de jurisdicción federal mexicana están basadas en el diagnósis de las características morfológicas, por lo que se han puesto a disposición de la plantilla de inspectores que operan las verificaciones de embarques de exportación de estas especies, guías de identificación de ejemplares, aletas y tronchos de tiburones mexicanos, en un sitio compartido en la nube.

Asimismo, los registros de captura permiten a la CONAPESCA identificar qué especies se pescan a diario en México. Los avisos de arribo llenados por los pescadores son los documentos en los que se reporta a la autoridad competente el volumen de captura obtenido por especie, así como la especie (nombre científico y común) durante una jornada o viaje de pesca y su llenado es obligatorio (Art. 4, fracc. VI de la Ley General de Pesca y Acuacultura Sustentables - LGPAS). Este eslabón de la cadena productiva se encuentra en constante refuerzo a través de cursos de capacitación impartidos por la CONAPESCA, el INAPESCA y CONABIO en conjunto con ONG como WWF-México y SOMEPEC, A.C. donde también se utilizan y comparten materiales de identificación.

En el **Anexo 4** se detallan los materiales de identificación desarrollados/utilizados y los cursos de capacitación que se han realizado, dirigidostanto a los pescadores y comercializadores, como a las autoridades.

i) Proporcionar información sobre cualquier cupo de exportación en vigor para la especie y pormenores para los 5 años más recientes, si no están publicados en el sitio web de la CITES. Sírvase explicar los casos en que se sobrepasaron los cupos.

México no cuenta con cupos de exportación como instrumento para la reglamentación del comercio internacional de especies de fauna y flora de CITES. Sin embargo, México cuenta con instrumentos a nivel nacional, como Leyes, Reglamentos, Normas Oficiales Mexicanas (NOM), la Carta Nacional Pesquera y el establecimiento de metodologías para determinar los Volúmenes de Exportación Sustentables (VES), cuyos contenidos suman esfuerzos para promover el aprovechamiento sustentable de los tiburones, así como la conservación y protección de las especies de elasmobranquios.

j) Incluir información sobre cómo se diferencian en el comercio los especímenes criados en cautividad o reproducidos artificialmente de los especímenes capturados en el medio silvestre, según proceda.

No aplica, debido a que no hay especímenes criados en cautividad con el fin de ser utilizados para el comercio y exportación. Aunque existe manejo en cautiverio en México para tiburones (p.e. acuarios), los requerimientos ambientales son complejos y sus características biológicas (madurez sexual tardía, longevidad, reproducción baja entre otras) hacen poco factible su uso comercial por los cuidados que conlleva (p.e. enfermedades, problemas de adaptación).

5. Ordenación de la especie (explotación en el medio silvestre)

k) Proporcionar información sobre la explotación / medidas de gestión del comercio actualmente en vigor (o propuestas), incluyendo cualquier programa de supervisión, evaluaciones de las amenazas, estrategias de gestión adaptables y consideraciones de los niveles de cumplimiento, y/o explotación o cupos de comercio (tanto para los mercados nacionales como internacionales, inclusive cómo se determinan los cupos y cómo se asignan regionalmente, según proceda).

La gestión nacional de las especies de tiburón martillo *Sphyrna lewini* y *Sphyrna mokarran* en México se encuentra a cargo de la Comisión Nacional de Acuacultura y Pesca (CONAPESCA), con base en opiniones técnicas del Instituto Nacional de Acuacultura y Pesca (INAPESCA).

La CONAPESCA regula la emisión y renovación de permisos de pesca con base en el Art. 8 fracciones IX y XXII de la Ley General de Acuacultura y Pesca Sustentables (LGPAS, SAGARPA, 2007). Actualmente no se permite el incremento (permisos) del esfuerzo de pesca para el aprovechamiento de tiburones, conforme a lo dispuesto en el numeral 4.3.1 de la NOM-029-PESC-2006 (DOF 14/02/2007).

Los permisionarios de pesca de tiburón cuentan con un permiso expedido por la CONAPESCA y el concesionario o permisionario deberá tener siempre a bordo el documento que demuestre que la embarcación está autorizada para operar, la cual deberá tener matrícula y bandera mexicanas y estar registrada en el Registro Público Marítimo Nacional, en los términos de la Ley de Navegación, así como en el Registro Nacional de Pesca y Acuacultura (Art. 46 de la LGPAS).

Después de realizar la captura de ejemplares, los permisionarios de pesca de tiburón tienen que llenar el formato de aviso de arribo **Anexo 5** ya sea para embarcaciones mayores o menores (Art. 4, fracción VI de la LGPAS). Este aviso de arribo puede ser llenado de forma presencial en una de las 103 oficinas de pesca ubicadas a lo largo de ambos litorales mexicanos, o bien pueden acceder a la plataforma del Sistema de Información de Pesca y Acuacultura (SIPESCA) via web

El inventario de especies en veda (*CONAPESCA-01-069, Inventario de Existencias de Especies en Veda, para su comercialización al mayoreo o industrialización*) es un reporte con carácter de obligatorio que tienen que entregar a la CONAPESCA los titulares al inicio de un período de veda, a fin de que puedan movilizar y comercializar los productos pesqueros que se tengan almacenados y que conforme a ese reporte se demuestre fueron extraídos o capturados antes del inicio de la veda. El inventario de veda debe de hacer referencia al folio del aviso de arribo en el que se hayan capturado los ejemplares que se pretende documentar. La entrega de ese formato aplica tanto para embarcaciones mayores como para embarcaciones menores, según sea el caso del recurso aprovechado.

Para el rastreo de las embarcaciones mayores aplica la observancia obligatoria de la NOM-062-SAG/PESC-2014 (DOF 03/07/2015) a fin de ubicarlas geográficamente en tiempo real. Para algunos recursos pesqueros, incluido el tiburón, el INAPESCA en colaboración con el FIDEMAR

ejecuta el programa de observadores a bordo, personal técnico que realiza labores exclusivamente científicas y no de vigilancia.

Para la comercialización del producto capturado, el traslado por vía terrestre, marítima o aérea de productos pesqueros vivos, frescos, enhielados o congelados provenientes de la pesca o acuacultura deberá realizarse al amparo de la guía de pesca (Art. 76 de la LGPAS; (**Anexo 6**). La guía de pesca debe de hacer referencia al folio del aviso de arribo en el que se hayan capturado los ejemplares que se pretende movilizar.

En caso de compra-venta en el territorio nacional, las facturas deben de contener además de la descripción de producto, peso e importe; los números de folio del aviso de arribo del que se deriva (Art. 13 del reglamento de la LGPAS).

De acuerdo con el Reglamento de la LGPAS (Titulo quinto) es responsabilidad de la SADER y de la Secretaría de la Marina, la inspección y vigilancia en territorio nacional de los productos pesqueros.

Al estar listadas en la CITES, la Autoridad Administrativa de la CITES (Dirección General de Vida Silvestre, DGVS-SEMARNAT), es la encargada de emitir la documentación CITES necesaria para su comercio internacional. En cumplimiento con el Artículo IV de la CITES, la DGVS-SEMARNAT solicita a la Autoridad Científica (Comisión Nacional para el Conocimiento y uso de la Biodiversidad, CONABIO), un Dictamen de Extracción no perjudicial (NDF) de forma previa a la autorización de la documentación CITES para su exportación. Finalmente, los permisos que fueron autorizados por la DGVS-SEMARNAT, son verificados en frontera por la Autoridad CITES de Aplicación de la Ley en México (Procuraduría Federal de Protección al Ambiente; PROFEPA).

Las atribuciones legales establecidas para la PROFEPA en el RISEMARNAT relacionadas con el movimiento transfronterizo de especies silvestres (artículos 43 fracción XX, 52 fracción I y 55), señalan que su principal función es verificar el cumplimiento de las Regulaciones y Restricciones No Arancelarias en los movimientos transfronterizos de especímenes de especies sujetas a regulación por parte de la SEMARNAT. Esto lo hace en concordancia con la Ley General de Vida Silvestre y su reglamento, así como las leyes en materia de comercio exterior y aduanas.

De este modo, se da un servicio de verificación con la finalidad de que el actor de comercio exterior cumpla con lo dispuesto en el artículo 36-A de la Ley Aduanera y promocione el despacho de sus mercancías en algún régimen aduanero como la importación o exportación, temporal o definitiva. En este caso se realiza la verificación documental y la revisión física de la mercancía y, en caso de cumplimiento de los requisitos legales, se emite una constancia para uso en el despacho aduanero y se descargan los permisos CITES emitidos por la Autoridad Administrativa mexicana.

En el caso de los tránsitos por territorio nacional, se realiza dicho proceso a solicitud de la autoridad aduanera o del actor de comercio exterior.

En el caso de los transbordos, la PROFEPA actúa a llamado de la autoridad aduanera y generalmente se hace para emitir una opinión técnica sobre la mercancía observada por esa autoridad aduanera por métodos no intrusivos. Lo anterior debido a que la mercancía no tiene por finalidad su introducción a territorio nacional bajo un régimen aduanero (importación) ni cumple con la condición de temporalidad para ser considerada una importación temporal con su respectiva reexportación.

En cualquiera de los casos mencionados anteriormente, la PROFEPA no puede violar los candados fiscales por lo que actúa sobre documentos y mercancía puesta a vista por terceros.

La PROFEPA cuenta con una plataforma informática para poder gestionar la verificación de los movimientos transfronterizos de mercancías reguladas por la SEMARNAT, denominada Sistema Institucional de Registro de Verificación (SIREV). En ésta se incluyen los embarques de especímenes de las especies citadas. El porcentaje de cumplimiento para especies silvestres, ya sea las reguladas por la CITES o incluidas en alguna categoría de riesgo en la legislación nacional, a junio de 2023 es del 99.97% considerando las estadísticas de operación interna del Programa de Verificación e Inspección Ambiental en Puertos, Aeropuertos y Fronteras.

Detalles sobre la evaluación de amenazas y cupos puede encontrarse en las secciones 3 y 4, respectivamente.

l) Detalles sobre los métodos de captura / tasas de mortalidad antes de la exportación (es decir, durante y después de la captura) y cómo se toma esto en consideración al formular los dictámenes de extracción no perjudicial.

No aplica, pues no se tiene registro de exportación de ejemplares vivos de estas especies de tiburón martillo en México.

6. Ordenación de la especie (especímenes criados en granjas)

m) Proporcionar información sobre la gestión de los animales criados en granjas en el comercio (p.ej., detalles de las instalaciones de cría en granjas, inclusive el número del plantel (macho : hembra), los niveles de producción anual, la tasa de supervivencia de las hembras utilizadas en el establecimiento de cría) y detalles de los impactos sobre las poblaciones silvestres (según proceda).

En México no existen títulos emitidos para el cultivo o crianza comercial de tiburones en medios controlados.

7. Leyes y reglamentos

n) Detalles de las leyes y reglamentos nacionales o subnacionales para la especie relacionadas con la explotación (p.ej., temporadas de caza y de veda, límites legales para la explotación, gestión comunitaria o límites habituales/derecho consuetudinario).

Considerando que México es uno de los países con alta diversidad de especies de tiburones y uno de los principales países productores y exportadores de productos derivados de estas especies a varias partes del mundo, nuestro país ha evolucionado en la elaboración y estructuración de un marco jurídico amplio para el manejo y conservación de los tiburones y rayas a nivel nacional e internacional, que se encuentra en constante fortalecimiento, ante lo cual se desarrollan diversos instrumentos de manejo con la finalidad de lograr un aprovechamiento sustentable de los recursos pesqueros nacionales.

A escala internacional, México se ha incorporado voluntariamente y acata las recomendaciones y resolutivos del Código de Conducta para la Pesca Responsable,Código de Conducta para la Pesca Responsable, al Plan de Acción Internacional para la Conservación y Ordenación de Tiburones de la FAO (PAI-TIBURONES; 1999) la CITES, la Comisión Internacional para la Conservación del Atún Atlántico (CICAA), la Comisión Inter-Americana del Atún Tropical (CIAT)y el Comité Científico Internacional para el Atún y Especies Afines en el Pacífico Norte (ISC). A nivel nacional, las estrategias para el aprovechamiento sostenible y conservación a largo plazo de tiburones y rayas se basan en el Plan de Acción Nacional para el Manejo y Conservación de Tiburones, Rayas y Especies Afines en México (PANMCT, próximo a publicar su actualización; (CONAPESCA-INP, 2004), la Norma Oficial Mexicana NOM-029-PESC-2006, Pesca responsable de tiburones y rayas. Especificaciones para su manejo (DOF, 14/02/2007); el Acuerdo por el que se modifica el Aviso por el que se da a conocer el establecimiento de épocas y zonas de veda para la pesca de diferentes especies de la fauna acuática en aguas de jurisdicción federal de los Estados Unidos Mexicanos, publicado el 16 de marzo de 1994 para establecer los periodos de veda de tiburones y rayas en el Océano Pacífico y tiburones en el Golfo de México (DOF, 07/07/2021).);); el Acuerdo por el que se establece veda permanente para la pesca de tiburón blanco (*Carcharodon carcharias*) en aguas de jurisdicción federal de los Estados Unidos Mexicanos (DOF, 27/01/2014) y el Acuerdo por el que se modifica el Aviso por el que se da a conocer el establecimiento de épocas y zonas de veda para la pesca de diferentes especies de la fauna acuática en aguas de jurisdicción federal de los Estados Unidos Mexicanos, publicado el 16 de marzo de 1994 para modificar el periodo y zonas de veda de tiburones en el Golfo de México y Mar Caribe (DOF, 15/05/2014).

Adicionalmente se cuenta con veda permanente para algunas especies Numeral 4.2.2. de la NOM: “En ningún caso se podrán capturar y retener ejemplares de cualquiera de las siguientes especies: tiburón ballena (*Rhincodon typus*), tiburón peregrino (*Cetorhinus maximus*), tiburón blanco (*Carcharodon carcharias*), pez sierra (*Pristis perotteti, P. pectinata y P. microdon*) y mantarraya gigante (*Manta birostris, Mobula japanica, M. thurstoni, M. munkiana, M. hypostomata y Mobula tarapacana*). Cualquier ejemplar de estas especies capturado incidentalmente deberá ser regresado al agua. Estas especies no podrán ser retenidas, vivas, muertas, enteras o alguna de sus partes y en consecuencia, no podrán ser objeto de consumo humano ni comercialización”. (Norma Oficial Mexicana NOM-029-PESC-2006 ;Diario Oficial de la Federación 27 de enero de 2014; Diario Oficial de la Federación 25 de marzo de 1994)

Dentro de los instrumentos creados para apoyar la Política Nacional de Pesca y Acuacultura se encuentran los Planes de Manejo Pesquero (PMP) definidos como el conjunto de acciones encaminadas al desarrollo de la actividad pesquera de forma equilibrada, integral y sustentable; basadas en el conocimiento actualizado de los aspectos biológicos, pesqueros, ambientales, económicos, culturales y sociales que se tengan de ella. La Ley general de Pesca y Acuacultura Sustentables (LGPAS) señala que el Instituto Nacional de Pesca y Acuacultura (INAPESCA) es el encargado de elaborar dichos planes, es por ello que recientemente el INAPESCA a través de la Dirección de Investigación Pesquera en el Atlántico por conducto del Programa Regional de Investigación Pesquera de Elasmobranquios han elaborado y publicado el Plan de Manejo Pesquero de Tiburones y Rayas del Golfo de México y Mar Caribe, mismo que se publicó en el Diario Oficial de la Federación el 09 de junio de 2022 y que sin duda establece los mecanismos y estrategias para el manejo y conservación de estas especies. Así mismo se encuentra en revisión y actualización la propuesta del Plan de Manejo de Tiburones y Rayas del Pacífico mexicano, la cual fue elaborada por la Dirección de Investigación Pesquera en el Pacífico en el 2014.

Por otra parte, la Carta Nacional Pesquera (CNP) es el instrumento vinculante para la toma de decisiones administrativas por parte de la autoridad pesquera en México es un instrumento esencial que se presentan fichas técnicas de las pesquerías que se aprovechan en México.

Estas fichas contienen el resumen de la información del diagnóstico y evaluación de las pesquerías, dicha información permite conocer dónde, cuándo y cuánto se permite pescar sin alterar el equilibrio ecológico y la forma más adecuada para extraer especies susceptibles de aprovechamiento. Es decir, la Carta Nacional Pesquera nos ayuda a identificar las estrategias y acciones que se deben cumplir para controlar el esfuerzo pesquero en México: para el caso específico de los tiburones, la última ficha técnica publicada para los tiburones del Golfo de México y Mar Caribe fue en el 2022 en la que se establece que su estatus poblacional se encuentra en el Máximo Aprovechamiento Sustentable, incluyendo las poblaciones de *Sphyrna lewini* y *Sphyrna mokarran;* para el caso del Pacífico mexicano, la última actualización de la ficha de Tiburones que incluye a *S. lewini, S. zygaena* y *S. mokarran*, fue recientemente en el 2023 y se establece que sus poblaciones se encuentran Aprovechadas al Máximo Sustentable. Todas las versiones de la CNP pueden ser consultadas en línea.

Además de los instrumentos anteriormente citados que coadyuvan en el manejo y conservación de los tiburones en México, incluyendo todas las especies del género *Sphyrna*, existe un Acuerdo de veda que los protege durante su principal periodo de reproducción y nacimiento. En el Golfo de México y Mar Caribe, actualmente la veda de tiburones es temporal y dividida en dos principales regiones, la primera comprende los Estados de Tamaulipas, Veracruz y Quintana Roo durante el periodo que abarca del 1 de mayo al 30 de junio de cada año; mientras que, para la región que comprende Tabasco, Campeche y Yucatán el periodo abarca a partir del 1 de mayo al 15 de junio y posteriormente del 1 al 29 de agosto de cada año, este último periodo fue establecido con la finalidad de proteger específicamente el principal pico reproductivo y alumbramiento de *S. tiburo* en la Sonda de Campeche donde la especie es más abundante, mientras que los otros periodos de veda están centrados en proteger el principal pico reproductivo y alumbramiento de la especie más abundante en el GDMMC que es *Rhizoprionodon terraenovae*, aunque esta también protege a otras especies como la *S. lewini* y *S. mokarran*.

o) Detalles de las leyes y reglamentos nacionales o subnacionales para la especie relacionadas con el comercio (p.ej., disposiciones específicas para la exportación de la especie, leyes de exportación.

La Ley General de Vida Silvestre establece las especificaciones para el comercio de éstas especies; en el caso de las exportaciones de ejemplares, partes y derivados, se describe en el artículo 55, que señala lo siguiente:

"La importación, exportación y reexportación de ejemplares, partes y derivados de especies silvestres incluidas en la Convención sobre el Comercio Internacional de Especies Amenazadas de Fauna y Flora Silvestres (CITES), se llevarán a cabo de acuerdo con esa Convención, lo dispuesto en la presente Ley y las disposiciones que de ellas se deriven…"

Lo dispuesto por esta Ley se complementa con lo establecido en el artículo 56 del Reglamento de la Ley General de Vida Silvestre, el cual especifica:

"La importación, exportación y reexportación de material biológico de especies incluidas en los apéndices de CITES, se sujetará a lo señalado en dicha Convención"

Adicionalmente, en el artículo 65, se establece que los interesados en realizar exportaciones o reexportaciones de ejemplares, partes o derivados que han de requerir permisos CITES, deberán solicitarlo a la Secretaría en cumplimiento de los siguientes requisitos:

"I. Indicar si la exportación es de forma definitiva o temporal "II. En el caso de movimientos temporales, señalar el periodo de permanencia en el extranjero", "III. Si se trata de ejemplares vivos, partes o derivados", "IV. La aduana de salida. En el caso de reexportaciones se indicará, asimismo, la aduana de entrada", "V. El país o países de destino" y, "VI. La finalidad del movimiento."
Adicionalmente a lo enunciado en el párrafo anterior, el artículo 66 describe la información que se deberá incluir anexa a la solicitud referida en el artículo 65:

I. Relación y en su caso descripción de los ejemplares, partes o derivados de la vida silvestre, en la que se indiquen nombre científico, nombre común, país de origen, país de procedencia y cantidad, y II. El sistema de marca con las especificaciones correspondientes, cuando sea requerido por las disposiciones o resoluciones CITES…"

En concordancia con la legislación vigente antes mencionada, los promoventes que deseen importar, exportar o reexportar ejemplares, partes y derivados de especies silvestres listadas en CITES (p.e. *Sphyrna lewini* y *Sphyrna mokarran*), deberán gestionar, obligatoriamente, el trámite SEMARNAT-08-009, *Autorización, permiso o certificado de importación, exportación o reexportación de ejemplares, partes y derivados de la vida silvestre*, el cual podrá ser llevado a cabo presencialmente ante el Espacio de Contacto Ciudadano (ECC) en la Ciudad de México, o las respectivas Representaciones Federales de la SEMARNAT en los estados de la República Mexicana, o bien, de forma virtual, a través de la Ventanilla Única de Comercio Exterior Mexicana (VUCEM).

Los requisitos solicitados para este trámite y su fundamento jurídico se listan a continuación:

1. - Relación y descripción de los ejemplares, partes y derivados de la vida silvestre; con fundamento jurídico en el artículo 63 y 66 (descrito anteriormente), del Reglamento de la Ley General de Vida Silvestre.

El artículo 63 establece lo siguiente:

"… I. Relación y descripción de los ejemplares, partes y derivados de la vida silvestre, en la que se indique nombre científico, nombre común, país de origen, país de procedencia y cantidad", "II. Copia simple del permiso o certificado CITES de exportación del país de origen o procedencia a nombre del solicitante o de la empresa representada", y "III. Sistema de marca con las especificaciones correspondientes, cuando sea requerido por las disposiciones o resoluciones de la CITES".

1. Comprobante de pago de derechos del trámite; con base en el artículo 194-F-B-II de la Ley Federal de Derechos, vigente.
2. Copia de la documentación que acredite la legal procedencia de los ejemplares, partes o derivados. Estos pueden ser, facturas, o notas de venta, o autorización de aprovechamiento, o autorización de subsistencia); con fundamento en el artículo 63.
3. Copias simples de todos los permisos o certificados CITES de exportación y reexportación de los países de origen o procedencia inmediata; con base en el artículo 63 y 64 del Reglamento de la Ley General de Vida Silvestre.

A este respecto, el artículo 64 señala lo siguiente:

"Los interesados en obtener un permiso o certificado CITES que ampare diversas importaciones, deberán acompañar a la solicitud a que se refiere el artículo anterior, copias simples de todos los permisos o certificados CITES de exportación y reexportación de los países de origen o procedencia inmediata, expedidos a nombre del solicitante o de la empresa representada…"

1. Copia de los documentos que acrediten la personalidad del solicitante; con base legal en el artículo 12, párrafo segundo, de la Ley General de Vida Silvestre.

Este precepto legal dicta lo siguiente:

"… En cada trámite que se realice deberá presentarse copia de la identificación oficial o el acta constitutiva en caso de personas morales, o bien, el número de Registro de Personas Acreditadas en caso de contar con el mismo…"

Al tratarse de especies marinas, la forma de comprobar la legal procedencia de las especies sujetas de aprovechamiento tiene fundamento en la Ley General de Pesca y Acuacultura Sustentable, específicamente en el artículo 75, el cual señala:

"La legal procedencia de los productos pesqueros y acuícolas, se acreditará con los avisos de arribo, de cosecha, de producción, de recolección, permiso de importación y con la guía de pesca, según corresponda, en los términos y con los requisitos que establezca esta Ley y su reglamento. Para las especies obtenidas al amparo de permisos de pesca deportivo-recreativa, la legal procedencia se comprobará con el permiso respectivo.

Para la comercialización de los productos de la pesca y de la acuacultura, los comprobantes fiscales que emitan deberán incluir el número de permiso o concesión respectiva".

Para tal efecto, el artículo 10 del Reglamento de la Ley General de Pesca y Acuacultura Sustentable, dicta el procedimiento como sigue:

"La legal procedencia de los productos pesqueros se comprobará:

"I. Desde el momento de desembarque o cosecha, hasta su enajenación a terceros por cualquier título, con el aviso de arribo, cosecha, producción o recolección…"

Por último, en acuerdo con el trámite SEMARNAT-08-009, toda solicitud de exportación de estas especies requiere que el exportador presente los siguientes 4 documentos:

1. Aviso de arribo
2. Guía de pesca
3. Permiso de pesca
4. Factura

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Anexo 1

A. Análisis de Productividad, Susceptibilidad y Vulnerabilidad (PSA) y Riesgo por manejo (MRisk) en la captura de especies de tiburones mexicanos listados en la CITES
B. Factores de conversión entre especímenes de especies de tiburones mexicanos lsitados en la CITES
C. Otras actividades que ha lidereado la CONABIO para generar información base para emitir NDF.

A. Análisis de Productividad, Susceptibilidad y Vulnerabilidad (PSA) y Riesgo por manejo (MRisk) en la captura de especies de tiburones mexicanos listados en la CITES

Uno de esos métodos es la Evaluación de Riesgo Ecológico por Efectos de la Pesca (ERAEF, por sus siglas en inglés) propuesto por Hobday y colaboradores (2007) y que ha sido utilizado para evaluar el impacto de las pesquerías en tiburones (Braccini *et al*., 2006; Walker et al. 2007; Cortés et al. 2010; Patrick et al. 2010; Tovar et al. 2010). Este análisis consta de tres niveles: 1) un nivel cualitativo de Análisis de Escala, Intensidad y Consecuencias (sica, por sus siglas en inglés); 2) un análisis semicuantitativo conocido como Análisis de Productividad y Susceptibilidad (psa, por sus siglas en inglés); y 3) un nivel de análisis cuantitativo (p.e. un análisis demográfico) (Hobday et al. 2011).

La CONABIO, en colaboración con expertos (INAPESCA, CICESE, CICIMAR-BCS y ECOSUR-Campeche) adaptaron las metodologías de PSA (Patrick *et al*., 2010) y de Riesgo por Manejo (MRISK; Lack *et al*., 2014) a México para evaluar la vulnerabilidad de las especies de tiburones mexicanos listados en la CITES considerando seis Zonas de Pesca a lo largo de los dos litorales del país y dos tipos de embarcaciones (artesanales y de altura).

Estas dos metodologías fueron aplicadas en un taller en la CDMX (8-10 de julio de 2015) con participación de 34 expertos de 5 dependencias de gobierno (CONABIO, INAPESCA, CONAPESCA, SEMARNAT y CONANP), 7 instituciones académicas (CICESE, CICIMAR, ECOSUR, UNAM, Universidad de Guadalajara, Universidad del Mar y Universidad Veracruzana), 3 asociaciones civiles (SOMEPEC A. C., IEMANYA Oceánica A. C. y COBI A. C.) y consultores independientes.

Análisis de Productividad, Susceptibilidad y Vulnerabilidad (PSA)

Las metodologías de PSA son semi-cuantitativas y evalúan la vulnerabilidad que presentan las especies a las presiones de aprovechamiento con base en su Productividad (biología de la especie), Susceptibilidad (presión de aprovechamiento) y Manejo (gestión de la especie a nivel nacional).

El informe y resultados del taller del 2015 están disponibles en la página web de la CONABIO: https://www.biodiversidad.gob.mx/planeta/cites/index/convocatorias-y-talleres/taller-de-evaluacion-y-manejo-de-tiburones-mexicanos.

Evaluación de riesgo de manejo (MRisk)

Con base en la evaluación de MRisk, y una puntuación con la escala de evaluación propuesta por Lack y colaboradores (2014; 6 a 28 puntos donde 6 a 13 indica riesgo alto, 13 a 21 riesgo intermedio y 21 a 28 menor riesgo), el Riesgo por Manejo de estas especies en México es alto (de 6 a 13 puntos), siendo de 10 (embarcaciones de altura) y 11.2 (embarcaciones artesanales).

La confiabilidad de la información utilizada se evaluó en una escala de 1 a 50 puntos (1 a 20 indica confiabilidad alta, 20 a 40 media y de 40 a 50 baja), resultando en una confiabilidad alta (1 a 20 puntos) 10 puntso para embarcaciones de altura y 14 puntos para embarcaciones artesanales. No obstante, al comparar los valores de la flota de altura y artesanales, el riesgo por manejo es menor para las especies en la flota de altura respecto a las flotas artesanales, independientemente del litoral en el que se capturen (**Cuadro A1**).

Cuadro A1. Valores de MRisk para flotas mayores y menores de acuerdo con la metodología adaptada de Lack y colaboradores (2014) publicadas en Benitez y colaboradores (2015). *Multiplicado por un factor de 0.8 de acuerdo con Lack y colaboradores (2014) al ser una especie con alta demanda internacional. **Basado en una modificación de la escala de calificación de 1 a 5, donde 1 representa la mejor calidad de información.

Flotas artesanales						
Categoría		**Valor**	**Ponderación**	**Resultado**	**Factor de comercio**	**Calidad****
		Promedio			**internacional***	
Estado de la población	1	2	2	1.6	0.8	1
Sistema de manejo	2	4	8	6.4	0.8	9
Adaptativo						
Manejo genérico	2.7	1	2.7	2.2	0.8	4
Valor final				**10.2**		**14**
Flotas de altura						
Categoría		**Promedio**	**Ponderación**	**Resultado**	**Factor de comercio**	**Calidad****
					internacional*	
Estado de la población	1	2	2	1.6	0.8	1
Sistema de manejo	2.1	4	8.5	6.8	0.8	7
Adaptativo						
Manejo genérico	3.2	1	3.2	2.6	0.8	2
Valor final				**11**		**10**

El riesgo por manejo estimado contempla que en México se realizan esfuerzos de manejo genérico (ver **Anexo 1**), debido a la cantidad de especies bajo explotación y la diversidad de pesquerías que las impactan. Una recomendación central durante los talleres fue la necesidad de contar con evaluaciones semi-cuantitativas y cuantitativas, y darle seguimiento al cumplimiento de las medidas de manejo establecidas.

Posteriormente las especies incluidas en la CoP17 (Sudáfrica, 2016) en un taller virtual en el 2017 (4 de abril, 2017) y en marzo de 2018 se actualizaron las evaluaciones de todas las especies y se publicaron en el capítulo 14 del libro "Conservación, uso y aprovechamiento sustentable de tiburones mexicanos listados en la CITES" (Pérez-Jiménez *et al.*, 2022; **Figura A1**).

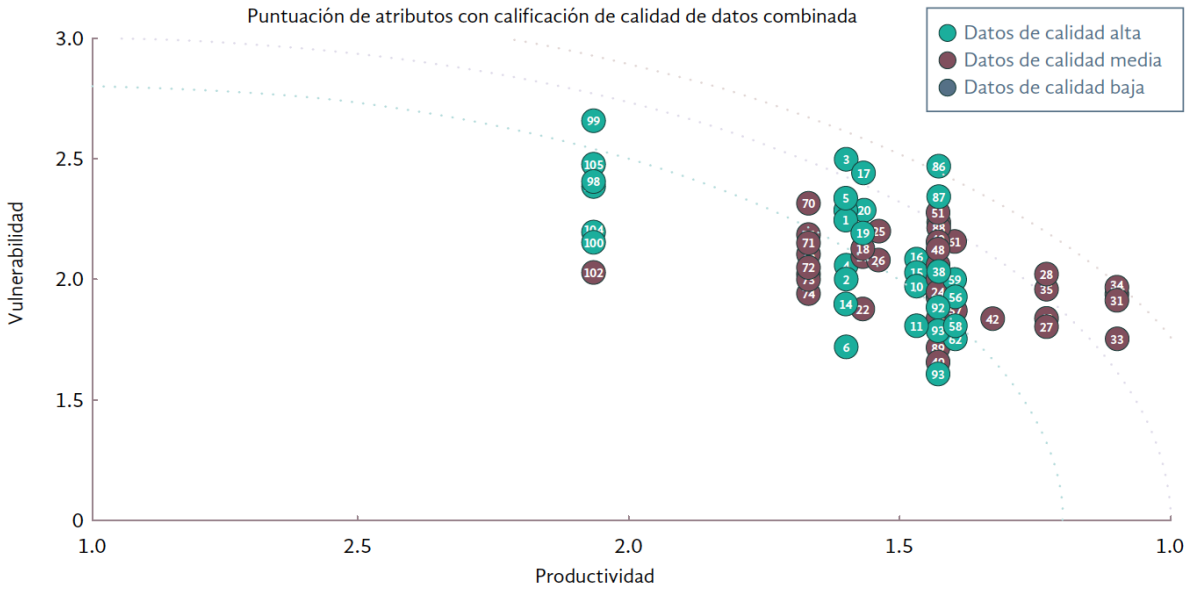

Figura A1. Valor de Vulnerabilidad de cada unidad de análisis empleada. Los números indican: 1-16 *Sphyrna lewini*, 17-26 *S. zygaena*, 27-37 *S. mokarran*, 38-45 *Carcharhinus longimanus*, 46-55 *Alopias pelagicus*, 56-69 *A. superciliosus*, 70-81 *A. vulpinus*, 82-97 *C. falciformis*, 98-105 *Prionace glauca*. Los valores puntuales se encuentran en el cuadro 14.4 en Pérez-Jiménez *et al*., 2022.

Estos análisis (PSA y MRisk) fueron escalados por los participantes del "Taller de Fortalecimiento de capacidades técnicas y administrativas en la emisión de permisos de exportación de tiburones mexicanos listados en la CITES" (CDMX, junio 2019) a la aplicación de una metodología para la estimación de Rendimiento Máximo Sostenible (RMS) a partir de capturas, desarrollada por Martell y Froese (2013) con un modelo simple de producción excedente de Schaefer (1954) (ver apartado 2d sobre estimación de la población), que fueron la base para establecer los VES.

B. Factores de conversión entre especímenes de especies de tiburones mexicanos lsitados en la CITES

Para facilitar la estimación de equivalencias entre las cantidades de exportación (principalmente aleta seca) y las de captura desembarcados (tiburón entero, troncho, aletas frescas), la Autoridad Científica implementó la siguiente metodología para seleccionar los factores de conversión más precisos para México (Rivera-Téllez, et al., en preparación):

1. Recopilación de trabajos, informes, tesis, entre otros, sobre factores de conversión entre todos los especímenes de tiburón (entero, troncho, aletas frescas, secas y pieles) reportados a lo largo de la cadena comercial en México (desde el desembarque hasta la exportación).
2. Clasificación y puntuación de la información recopilada en tres categorías sucesivas, usando como criterios:
   Exactitud taxonómica. A. Información específica a nivel de especie, B. Información a nivel de género, C. Información a nivel taxonómico superior o con nombre común. Precisión regional. 1. Un estudio realizado en México, 2. Un estudio realizado en América, 3. Un estudio realizado en cualquier otra parte del mundo Tamaño de la muestra. i. Tamaño de la muestra superior a 30, ii. Tamaño de la muestra inferior a 30

3. Para cada especie y espécimen, se seleccionó el factor de conversión con la clasificación más alta de estas categorías.
4. Todos los factores seleccionados fueron validados en dos talleres con expertos en 2015 (Benítez et al., 2015) y 2017 (taller virtual) que contaron con la participación de autoridades pesqueras (CONAPESCA, INAPESCA), expertos académicos, pescadores y Autoridades CITES de México.
5. Los factores de conversión fueron presentados a la CITES en la 31a reunión del Comité de Fauna (AC31, 2021; reunión virtual; Grupo de Trabajo sobre Tiburones y Rayas; punto de agenda 25; **Cuadro A2**) y se encuentran publicados en el portal de Tiburones y Rayas de CITES y Colegio Virtual CITES y se pueden descargar directamente en la siguiente liga: https://cites.org/sites/default/files/CONABIO_NDF_tiburones1.pdf

Por otra parte, también se estimó un factor de conversión para estimar el rendimiento de piel (m^2) respecto al peso y tamaño de un ejemplar adulto de *Carcharhinus falciformis*. Para ello, Corro-Espinosa y Rivera-Velázquez (2019) realizaron un análisis del cálculo del área y peso de pieles de la especie en muestras secas de ejemplares capturados en el Golfo de México en el año 2018, indicando que la Longitud Total (LT) promedio de piel de individuos más comunes en la captura es de 90 cm, con un peso promedio de piel fresca por individuo estimada de 2.1 kg y aproximadamente 1.47 kg de piel seca (considerando un 30% de diferencia entre la piel fresca y la seca), y un área aproximada de 0.33m^2 por ejemplar (Cuadro A2).

Cuadro A2.- Factores de conversión en porcentaje que representa el peso de aletas secas (AS), frescas (AF), tiburón completo (TC), troncho de tiburón (TT) y piel (m^2) para 10 especies de tiburones mexicanos listados en la CITES.

Especie	%AF:TT	%AF:TC	%AF:AS	%TC:TT	Piel (m^2) por individuo	Referencia
Sphyrna lewini	2.85	1.66	40 (NMFS, 1993)*			Cortés y Neer (2006)
Sphyrna zygaena	8.79	5.77				Neves dos Santos y García (2008)
Sphyrna mokarran	2.94	1.96				Cortés y Neer (2006); Biery y Pauly (2012)
Carcharhinus longimanus	16.52	7.34				Biery y Pauly (2012); Neves dos Santos y García (2008)
Carcharhinus falciformis	2.53	1.45			0.33**	Cortés y Neer (2006)
Alopias vulpinus	6.26	2.06				Mejuto *et al.* (2004) y Cortés y Neer (2006)
Alopias pelagicus	6.26	4.31				Mejuto *et al.* (2004)
Alopias superciliosus	6.26	3.7				Mejuto *et al.* (2004) y An *et al.* (2009)
Isurus oxyrinchus	2.99	1.76		68.6		Cortés y Neer (2006); Mejuto, *et al.* (2008)
Isurus paucus	6.26	4.38				Mejuto *et al* (2009)

*De acuerdo a lo estimado por Biery (2012).
**Acorde a lo estimado por Corro-Espinosa y Rivera-Velázquez (2019).

C. Otras actividades que ha lidereado la CONABIO para generar información base para emitir NDF.

Para lograr tener toda esta información, desde 2014 la Autoridad Científica ha realizado esfuerzos para incrementar las capacidades de México en la elaboración de NDF de tiburones, como el desarrollo de materiales de identificación, estudios poblacionales, intercambio de técnicas y metodologías, desarrollo de planes de acción y cooperación internacional, así como la organización y participación en talleres de expertos destacando:

- En el marco de un taller internacional sobre NDF para tiburones, realizado del 20 de agosto al 22 (2014) en Bonn, Alemania, México (Tovar-Ávila y Castillo-Géniz) presentó el caso de la pesca de *Sphyrna lewini* en el sureste de México (Chiapas). El principal resultado del taller fue la elaboración de una guía general para la elaboración de NDF de tiburones listados en la CITES (https://www.bfn.de/fileadmin/MDB/documents/service/skript358.pdf).
- México participó el taller sobre tiburones-NDF que se celebró del 24 a 28 noviembre 2014 en Santa Marta, Colombia, y el cual tuvo como objetivo dar seguimiento a la labor realizada por los talleres anteriores (como el taller de Bonn, ver par. 2.1), y entre sus principales resultados estuvo la presentación de la "isharkfin", que es un software de identificación elaborado por la FAO (una aplicación para ayudar a la identificación de tiburones aletas a través de fotografías). La Autoridad CITES de aplicación de Ley (PROFEPA) se encuentra empleando de forma rutinaria el software de "isharkfin" en los embarques de aleta de tiburón que cuentan con permisos CITES de exportación y han sido verificados en los principales puertos marítimos e interiores, aeropuertos internacionales y fronteras del País.
- 2015, CDMX: Taller de Evaluación de Productividad, Susceptibilidad y Manejo de Tiburones Mexicanos listados en el Apéndice II de la CITES (8 al 10 de julio de 2015). Se analizaron los métodos de Análisis de Productividad y Susceptibilidad (PSA; Patrick, et al., 2010) y de Riesgo por Manejo (MRISK; Lack, et al., 2014), y se adaptaron a México para evaluar la vulnerabilidad de las especies de tiburón martillo y puntas blancas.
- 2017, CDMX: Plan de acción de América del Norte para un comercio sustentable de especies de tiburón (17 al 18 enero del 2017). Plan de acción con el objetivo de fomentar el comercio lícito, sustentable y trazable de tiburones. Contar con asesoramiento de las autoridades responsables de la aplicación de la CITES en Canadá, Estados Unidos y México.
- 2017, Virtual: Teleconferencia para la Evaluación de Productividad, Susceptibilidad (PSA, por sus siglas en ingles) y Manejo de Tiburones Mexicanos listados en el apéndice II de la CITES y del Tiburón azul. (4 de abril de 2017). Se evaluó evaluar con el método de PSA (Productivity and Susceptibility Analysis, Patrick, et al, 2010) a las especies de tiburones mexicanos de la CITES (*Carcharhinus falciformis, Alopias vulpinus, A. pelágicus, A. superciliosus*) y adicionalmente al tiburón azul (*Prionace glauca*) como referencia en el análisis.
- 2018 Vancouver, Canadá: Taller de capacitación sobre identificación de aletas de tiburón y comercio ilícito transnacional. (10 al 12 de julio de 2018.) Como resultado del trabajo conjunto entre los gobiernos de Canadá, Estados Unidos y México encaminado a fomentar el comercio lícito, sustentable y trazable de ciertas especies nativas de América del Norte incluidas en el Apéndice II de la CITES.
- 2018, CDMX: Taller de expertos: Fortalecimiento de la propuesta de enmienda para Tiburón Mako. (19 de octubre de 2018.) Parámetros biológicos, Aprovechamiento y comercio (nacional e internacional) y Gestión (nacional e internacional).
- 2019, CDMX: Taller de Fortalecimiento de capacidades técnicas y administrativas en la emisión de permisos de exportación de tiburones mexicanos listados en la CITES. (6 y 7 de junio de 2019). Se analizaron estrategias y oportunidades que garanticen que el aprovechamiento y comercio internacional de ocho especies de tiburones mexicanos incluidas en la Convención sobre el Comercio Internacional de Especies Amenazadas de Fauna y Flora Silvestres (CITES) sea legal, sustentable y trazable.
- 2022, CDMX: Strengthening the implementation of CITES in Mexico for Appendix II listed sharks (SOMEPEC-CONABIO-WWF; financiado por SharkConservation Fund). Se capacitaron a Embajadores de sustentabilidad pesquera (estudiantes e investigadores) originarios en los principales campamentos pesqueros en Baja California Sur, Sinaloa, Chiapas y Colima (estados con mayores volúmenes de desembarco de especies CITES en las solicitudes de NDF) para impartir talleres regionales.
- 2022, CDMX: Publicación del libro "Conservación, uso y aprovechamiento sustentable de tiburones mexicanos listados en la CITES", Este libro compila la actual información

científica disponible sobre 12 tiburones mexicanos que se encuentran listadas en los Apéndices de la CITES.

Anexo 2 (en digital)

ACUERDO por el que se modifica el Aviso por el que se da a conocer el establecimiento de épocas y zonas de veda para la pesca de diferentes especies de la fauna acuática en aguas de jurisdicción federal de los Estados Unidos Mexicanos, publicado el 16 de marzo de1994 para modificar el periodo y zonas de veda de tiburones en el Golfo de México y Mar Caribe.

Anexo 3.- Información presentada por México ante la CITES sobre el trabajo realizado para generar información base para el desarrollo de NDF de tiburones.

Documento	Información presentada a la CITES sobre elaboración de NDF en México	Recomendaciones del Grupo de Trabajo	Recomendación del AC
AC28 Doc. 17.1.1 Annex7 (2015) AC28 Inf. 27(2015)	Información adicional sobre las medidas de gestión de la pesca de Tiburones: a) Participación de México en taller sobre NDF en 2014 (Bonn, Alemania) b) Taller de Evaluación de Productividad, Susceptibilidad y Manejo de tiburones mexicanos listados en el Apéndice II de la CITES (8 al 10 de julio del 2015, CDMX): Participación de 34 expertos (academia, gobierno, asociaciones civiles y consultores independientes). Evaluación de PSA y MRisk, de las 4 especies mexicanas de tiburones incluidas en la CITES sujetas a pesca y comercio internacional en México (*S. lewini, S. mokarran, S. zygaena y C. longimanus*).	Tomar nota de los ejemplos de aplicación del método MRisk (AC28 Inf. 27)	El AC tomó nota de las recomendaciones del Grupo de Trabajo de tiburon
AC29 Doc. 23 A1 (Rev. 1) (2017)	Respuesta a la Notificación 031/2017 Solicitud de nueva información sobre las actividades de conservación y gestión de tiburones y rayas: a) Información cientifica sobre tiburones méxicanos y actividades de investigación en Pacífico y Atlántico. b) Taller Virtual para evaluar (PSA y MRisk) a las especies de *Alopias spp* y *Cacharhinus falciformis* a nivel nacional (abril, 2017).	Sin recomendaciones especificas sobre las respuestas de los países a la Notificación 2017/031.	El AC adoptó las recomendaciones del GT, sin recomendaciones especificas a las Partes que respondieron a la Notificación 2017/031.
AC30 Doc. 20 A1 (2018)	Respuesta a Notificación 2018/041 Solicitud de nueva información sobre actividades de conservación y gestión de tiburones y rayas, incluida legislación: a) Taller sobre aplicación de la ley (Vancouver, 10-12 de julio 2017) en el marco del proyecto CEC Norteamérica. b) Compilación de datos específicos por especie sobre actividades de captura y pesca de tiburón, con énfasis en especies listadas en la CITES c) Emisión de NDF d) Creación de capacidades de identificación e) Actualización de la legislación	Sin recomendaciones especificas sobre las respuestas de los países a la Notificación 2018/041.	El AC tomó nota del documento y de las recomendaciones del GT sin recomendaciones especificas a las Partes que respondieron a la Notificación 2018/041.
AC31 Doc. 25 A2 (2020)	Respuesta a la Notificación 2020/016 Solicitud de nueva información sobre actividades de conservación y gestión de tiburones y rayas, incluyendo el título de la legislación: a) Elaboración de NDF b) Proyecto CCA. "Apoyo al Comercio Sustentable de Especies CITES" (2017-2018) en seguimiento al Proyecto de la CCA del plan operativo de 2015-2016 "Fortalecimiento de la Conservación y Producción Sostenible de Especies Selectas del Apéndice II en Norteamérica"	Sin recomendaciones especificas sobre las respuestas de los países a la Notificación 2020/016.	El AC adoptó las recomendaciones del GT, sin recomendaciones especificas a las Partes que respondieron a la Notificación 2020/016.

	c) "Taller de Fortalecimiento de capacidades técnicas y administrativas en la emisión de permisos de exportación de tiburones mexicanos listados en la CITES" (junio, 2019) para analizar estrategias y oportunidades que fortalezcan el aprovechamiento y comercio internacional legal, sustentable y trazable de ocho especies de tiburones mexicanos incluidas en la CITES.		
AC31 Doc.14.1 (2021) NDF Guidance (2021)	En respuesta a la Notificación a las partes 2021/007 se presentó el "Manual de procedimientos para emitir consideraciones técnicas por especie para la formulación de Dictámenes de Extracción No Perjudicial (NDF): Tiburones"	---	Sin recomendaciones específicas sobre las respuestas de los países a la Notificación 2021/007
CoP19 Inf. 59 (2023)	Se informó a la CoP sobre la publicación del libro "Conservación, uso y aprovechamiento sustentable de tiburones mexicanos listados en la CITES" cuyo objetivo es fortalecer la implementación del Apéndice II para los tiburones y contar con información científica base para elaboar NDF. Publicado por la CONABIO en colaboración con expertos del INAPESCA y CICESE y 36 expertos.	---	---
AC32 Doc.37 A2 (2023)	Respuesta a la Notificación 2023/027 Solicitud de nueva información sobre actividades de conservación y gestión de tiburones y rayas: a) Emisión de NDF por parte de México b) Publicación de materiales de apoyo y actualización de documentos de gestión. c) Factores de conversión con mayor precisión para México (tiburón entero, troncho, aletas frescas)	Sin recomendaciones específicas sobre las respuestas de los países a la Notif 2023/027 por parte del GT	El AC adoptó las recomendaciones del GT, sin recomendaciones especificas a las Partes que respondieron a la Notificación 2023/027

Anexo 4

Cursos

1. 2023. Identificación de especies de tiburón a través de sus aletas. Centro Regional de Investigación Acuícola y Pesquera en Lerma, Campeche. Instituto Nacional de Pesca y Acuacultura.
2. 2023. Se realizó una plática de inducción al uso de tecnologías dirigida a la plantilla de inspectores, como la app FinFinder, como herramienta para la identificación de aletas, el 16 de agosto de 2023.
3. 2022. *Strengthening the implementation of CITES in Mexico for Appendix II listed sharks* (SOMEPEC/CONABIO/WWF-México; financiado por *SharkConservation Fund*): se realizaron 5 talleres de capacitación regional para el llenado de avisos de arribo e identificación de especies en los campamentos con mayor registro de capturas para exportación.
4. 2021. Creación de capacidades para la elaboración de dictámenes de extracción no perjudicial (NDF, por sus siglas en inglés) para los siguientes tiburones mexicanos listados en la CITES: *Sphyrna lewini, S. mokarran, S. zygaena, Alopias vulpinus, A. pelagicus, A. superciliosus, Carcharhinus falciformis, C. longimanus, Isurus oxyrinchus* e *I. paucus* (RE007). CONABIO. 15 de junio de 2020 a 16 de junio de 2021.
5. 2021: Videocápsula para el fortalecimiento de los Dictámenes de Extracción no Perjudicial (NDF) de tiburones y rayas incluidas en el Apéndice II de la CITES: se resaltó la relevancia del correcto llenado de los avisos de arribo y el papel esencial que juegan los pescadores en la descripción de las especies (nombre común y nombre científico). Colaboración entre CONABIO y WWF-México.
6. 2019. Taller de Fortalecimiento de capacidades técnicas y administrativas en la emisión de permisos de exportación de tiburones mexicanos listados en la CITES. CONABIO-INAPESCA-CCA. 6 a 7 de junio de 2019. CDMX.
7. 2018. La correcta identificación de los especímenes en tránsito del comercio nacional e internacional es rectificada por Oficiales Federales de Pesca de la CONAPESCA y por la Procuraduría Federal de Protección al Ambiente (PROFEPA) quienes también han recibido cursos de capacitación para ello en el Taller de capacitación sobre la identificación de aletas de tiburón y comercio ilícito transnacional en Vancouver, Canadá del 10 al 12 de julio 2018.
8. 2014-2015. CONAPESCA impartió ocho cursos de capacitación sobre la correcta identificación mediante guías visuales en ocho estados de la República: Sinaloa, Sonora, Oaxaca, Campeche, Colima, Veracruz, Tamaulipas y Baja California. Los cursos se han desarrollado en colaboración con el Instituto Nacional para el Desarrollo de Capacidades del Sector Rural, A. C. (INCA Rural) y han contado con la participación de 270 pescadores, con el propósito de mejorar los informes específicos de las capturas de cada especie de tiburones martillo por medio de señales visuales.

Materiales de identificación (o apoyo)

1. 2022 Publicación del libro "Conservación, uso y aprovechamiento sustentable de tiburones mexicanos listados en la CITES": la AC-CITES (CONABIO) promovió en conjunto con el Centro de Investigación Científica y de Educación Superior de Ensenada (CICESE) y el Instituto Nacional de Pesca y Acuacultura (INAPESCA), y 38 autores, esta obra para generar una línea base del estado de conocimiento actual sobre la biología, el estado de conservación y el aprovechamiento sustentable de las especies de tiburones mexicanos enlistadas en la CITES, incluyendo detalles sobre su morfología.
2. 2022. Manual de acompañamiento para los embajadores de la sustentabilidad pesquera: Contiene información mínima sobre disposiciones legales para el aprovechamiento y comercio de tiburones a nivel nacional, la reglamentación para el

comercio internacional de los tiburones listados en la CITES, lecciones aprendidas para fomentar precios justos entre eslabones de la cadena de comercialización y herramientas para fomentar su uso sustentable, legal y trazable. Su objetivo es llevar la información necesaria y las herramientas que deben conocer los pescadores para llenar los avisos, de arribo, conocer programas de gobierno, leyes vigentes, entre otros.

3. 2022: Carteles de difusión que tienen por objetivo apoyar a distintos actores de la cadena comercial de ejemplares, partes y derivados de tiburones mexicanos listados en la CITES desde pescadores hasta comercializadores, incluyendo la identificación de especies.
4. Compilación de diferentes guías de identificación para tiburones mexicanos listados en la CITES para descarga en la página de internet de la AC –CITES.
    a. Cantú JC. Tiburones de México, Centro América y el Caribe. *Humane Society International-MarViva-Defenders of Wildlife-Teyeliz-PRETOMA*.
    b. Cantú JC. Tiburones de sur América del Océano Pacífico. *Humane Society International-MarViva-Defenders of Wildlife-Teyeliz-PRETOMA*.
    c. Castellanos-Betancourt JC, CE Ramírez-Santiago y JL Castillo Géniz. 2013. Catálogo de Aletas, tronchos y cabezas de tiburones en el Pacífico Mexicano. *INAPESCA*.
    d. Castro JI, Castillo-Géniz JL y JF Márquez-Farías. Guía para la Identificación de las Especies de Tiburones de Importancia Comercial en el Océano Pacífico. *CONAPESCA*.
5. Castro JI, Castillo-Géniz JL y JF Márquez-Farías. Guía para la Identificación de las Especies de Tiburones de Importancia Comercial en el Golfo de México. *CONAPESCA*.
6. Domingo A, E Cortés, R Forselledo y W Driggers. Guía para la Identificación de Tiburones del Océano Atlántico. *Comisión Internacional para la Conservación del Atún Atlántico*.
7. Martínez-Ortíz J. 2009. Guía de Campo para la Identificación de los Principales Tiburones del Océano Pacífico Oriental. *Proyecto APEC FWG 01/2001 T*. Primera edición. Guayaquil, Ecuador. 20 pp.
8. NOAA. Guía de Identificación de tiburones. Bajo el Permiso Comercial Caribeño de Botes Pequeños de Especies Altamente Migratorias.

Otros

1. 2022. Tiburones y Rayas del Sureste del Golfo de México, ponencia realizada en el marco del 60 Aniversario del INAPESCA en el Centro Regional de Investigación Acuícola y Pesquera en Ciudad del Carmen. Información que se presentó al sector pesquero Tabasco y sur de Campeche.
2. 2021. Taller para Actualizar el Plan de Acción Nacional para Manejo y Conservación de Tiburones y Rayas (PANMCTR). INAPESCA-CONAPESCA-WWF. 23 de abril de 2021.
3. 2021: Videocápsula para el fortalecimiento de los Dictámenes de Extracción no Perjudicial (NDF) de tiburones y rayas incluidas en el Apéndice II de la CITES: Se resaltó la relevancia del correcto llenado de los avisos de arribo y el papel esencial que juegan los pescadores en la recopilación de información para evaluar el estado del recurso que aprovechan. Colaboración entre CONABIO-WWF.
4. 2019. Reunión informativa para dar a conocer los aspectos más importantes e implicaciones de las investigaciones sobre los tiburones en el sureste del Golfo de México, Centro regional de Investigación Acuícola y Pesquera en Ciudad del Carmen. Instituto Nacional de Pesca y Acuacultura.

Anexo 5. Formato de aviso de arribo para embarcaciones mayores y menores (en digital)

Anexo 6. Formato de Guía de Pesca (en digital)

DOF: 15/05/2014

ACUERDO por el que se modifica el Aviso por el que se da a conocer el establecimiento de épocas y zonas de veda para la pesca de diferentes especies de la fauna acuática en aguas de jurisdicción federal de los Estados Unidos Mexicanos, publicado el 16 de marzo de 1994 para modificar el periodo y zonas de veda de tiburones en el Golfo de México y Mar Caribe.

Al margen un sello con el Escudo Nacional, que dice: Estados Unidos Mexicanos.- Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación.

ENRIQUE MARTÍNEZ Y MARTÍNEZ, Secretario de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación, con fundamento en lo dispuesto en los artículos 26, 35, fracciones XXI y XXII de la Ley Orgánica de la Administración Pública Federal; 4o. de la Ley Federal de Procedimiento Administrativo; 4o. y 9o. de la Ley de Planeación; 1o., 4o., fracción XLVII, 8o., fracciones I, III, V, IX, XII, XIX, XXII, XXIII, XXXVIII, XXXIX y XLI, 10, 29, fracciones I, II y XII, 72, segundo párrafo, 75, 76, 77, 124, 125, 132, fracción XIX, 133, 137, fracción I, 138 fracción IV, 140, 141, 142, 143 y 144 de la Ley General de Pesca y Acuacultura Sustentables; 1o., 2o. letra "D" fracción III, 3o., 5o. fracción XXII, 44 y Octavo Transitorio del Reglamento Interior de la Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación, vigente; en correlación con los artículos 37 y 39 fracción VII del Reglamento Interior de la Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación, publicado en el Diario Oficial de la Federación el día 10 de julio de 2001; 1o., 2o. y 3o. del Decreto por el que se establece la organización y funcionamiento del organismo descentralizado denominado Instituto Nacional de Pesca, publicado en el Diario Oficial de la Federación el 1 de julio de 2013; de conformidad con la "Norma Oficial Mexicana NOM-029-PESC-2006, Pesca responsable de tiburones y rayas, especificaciones para su aprovechamiento" y de conformidad con la "Norma Oficial Mexicana NOM-009-PESC-1993, Que establece el procedimiento para determinar las épocas y zonas de veda para la captura de las diferentes especies de la flora y fauna acuáticas, en aguas de jurisdicción federal de los Estados Unidos Mexicanos", y

CONSIDERANDO

Que es facultad de la Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación a través de la Comisión Nacional de Acuacultura y Pesca, administrar y regular el uso, así como promover el aprovechamiento sustentable de los recursos de la flora y fauna acuáticas, ordenando las actividades de las personas que intervienen en ella y estableciendo las condiciones en que deberán realizarse las operaciones pesqueras;

Que la pesquería de tiburón constituye una importante actividad del sector pesquero desde el punto de vista económico, alimentario y social, en virtud de la generación de empleos directos en su fase de captura, manejo, proceso primario de la producción, distribución y comercialización de productos y subproductos pesqueros;

Que el 11 de junio de 2012, se publicó en el Diario Oficial de la Federación el Acuerdo por el que se modifica el Aviso que establece de épocas y zonas de veda para la pesca de diferentes especies de la fauna acuática en aguas de Jurisdicción Federal de los Estados Unidos Mexicanos, publicado el 16 de marzo de 1994, para establecer, entre otros, los periodos y zonas de veda para la pesca de tiburones en el litoral del Golfo de México;

Que alrededor del 90% de la producción de tiburón se destina al consumo nacional, proporcionando carne de bajo costo a amplios sectores de la sociedad, con lo cual adquiere gran importancia alimentaria;

Que las especies de tiburón que mayormente se capturan en el Golfo de México y Mar Caribe son el cazón de ley (*Rhizoprionodon terraenovae)*, cazón pech (*Sphyrna tiburo)*, tiburón puntas negras (*Carcharhinus limbatus)*, cazón limón (*Carcharhinus acronotus)*, tiburón martillo (*Sphyrna lewini)*, tiburón toro (*Carcharhinus leucas)*, tiburón sedoso (*Carcharhinus falciformis),* tiburón poroso *(Carcharhinus porosus)* y tiburón curro (*Carcharhinus brevipinna),* de las cuales *Rhizoprionodon terraenovae* es la especie más importante en el Golfo de México y Mar Caribe, mientras que *Sphyrna tiburo* es de las más importantes para las costas de Tabasco, Campeche y Yucatán;

Que de acuerdo con investigaciones realizadas por el Instituto Nacional de Pesca (INAPESCA), aproximadamente el 50% de la producción de especies de importancia comercial de la pesca artesanal del Golfo de México está integrada por organismos inmaduros, presentándose indicios de sobreexplotación de especies del Orden *Carcharhiniformes* (cazón de ley, *Rhizoprionodon terraenovae* y el tiburón sedoso *Carcharhinus falciformis*, el tiburón puntas negras, *Carcharhinus limbatus* y el tiburón toro *Carcharhinus leucas*, entre otros);

Que el sector productivo de Campeche ha solicitado que se modifique el periodo de veda de tiburón a efecto de generar mayores beneficios socioeconómicos durante una parte del mes de mayo, sin menoscabo de la protección al recurso durante su mayor época de reproducción y nacimiento.

Que en la Opinión Técnica del INAPESCA generada en el mes de abril del presente año se señala que en el Banco de Campeche la presencia de hembras grávidas de *Rhizoprionodon terraenovae* ocurre en un 62% y para *Sphyrna tiburo* en un 78% durante el mes de agosto y que en Tabasco la incidencia de captura de

Rhizoprionodon terraenovae y *Sphyrna lewini* durante mayo y junio ocurre sobre tallas de organismos neonatos, por lo que con base en la información técnica reciente, se presentan nuevos escenarios de veda para la protección de las especies de tiburón y a la vez se atienden los planteamientos de los sectores productivos;

Que en consecuencia, motivándose las presentes disposiciones en razones de orden técnico y de interés público, he tenido a bien emitir el siguiente:

ACUERDO POR EL QUE SE MODIFICA EL AVISO POR EL QUE SE DA A CONOCER EL ESTABLECIMIENTO DE ÉPOCAS Y ZONAS DE VEDA PARA LA PESCA DE DIFERENTES ESPECIES DE LA FAUNA ACUÁTICA EN AGUAS DE JURISDICCIÓN FEDERAL DE LOS ESTADOS UNIDOS MEXICANOS, PUBLICADO EL 16 DE MARZO DE 1994 PARA MODIFICAR EL PERIODO Y ZONAS DE VEDA DE TIBURONES EN EL GOLFO DE MÉXICO Y MAR CARIBE

ARTÍCULO PRIMERO. Se modifica el numeral Segundo, fracción XXIV, incisos b) y c) del Aviso por el que se da a conocer el establecimiento de épocas y zonas de veda para la pesca de diferentes especies de la fauna acuática en aguas de jurisdicción federal de los Estados Unidos Mexicanos, publicado en el Diario Oficial de la Federación del 16 de marzo de 1994, para quedar como sigue:

SEGUNDO.- [...]

I. a XXIII. [...]

XXIV. [...]

a) [...]

b) De Tamaulipas, Veracruz y Quintana Roo a partir del día de la publicación del presente Acuerdo y hasta el 30 de junio del año 2014 y en los años subsecuentes durante el periodo del 1 de mayo al 30 de junio de cada año.

c) De Tabasco, Campeche y Yucatán a partir del 15 de mayo al 15 de junio y posteriormente del 1 al 29 de agosto de cada año.

TERCERO AL QUINTO [...]

ARTÍCULO SEGUNDO. Las personas que incumplan o contravengan el presente Acuerdo, se harán acreedoras a las sanciones que para el caso establece la Ley General de Pesca y Acuacultura Sustentables y demás disposiciones legales aplicables.

ARTÍCULO TERCERO. Las personas que en la fecha de inicio de las vedas señaladas mantengan existencias de las diferentes especies de tiburón en estado fresco, enhielado, congelado, seco-salado o en cualquier otra forma de conservación proveniente de la pesca para su procesamiento y posterior movilización para su comercialización, indicadas en el presente Acuerdo (con excepción de las especies que se encuentran en veda por tiempo indefinido), deberán formular inventario de sus existencias de las especies a que se refieren las vedas conforme al formato CONAPESCA-01-019 Inventario físico de productos de pesca en veda para su comercialización al mayoreo o industrialización; para su presentación a la Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación a través de la oficina correspondiente, en un plazo de tres días hábiles contados a partir del inicio de veda.

ARTÍCULO CUARTO. Para transportar por las vías generales de comunicación, desde las zonas litorales en donde se establecen las vedas, embarques de las diferentes especies de tiburón en estado fresco, enhielado, congelado, seco-salado o en cualquier otra forma de conservación, inventariados en los términos del Artículo anterior, los interesados deberán solicitar la Guía de Pesca en la oficina correspondiente de la autoridad pesquera, previamente a su transportación.

ARTÍCULO QUINTO. Para dar cumplimiento a lo dispuesto en los Artículos Tercero y Cuarto del presente Acuerdo, los trámites relativos deberán realizarse por los interesados ante las oficinas correspondientes de la Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación.

ARTÍCULO SEXTO. La vigilancia del cumplimiento de este Acuerdo estará a cargo de la Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación por conducto de la Comisión Nacional de Acuacultura y Pesca, y de la Secretaría de Marina, cada una en el ámbito de sus respectivas competencias.

TRANSITORIO

ÚNICO. El presente Acuerdo entrará en vigor el día de su publicación en el Diario Oficial de la Federación.

México, D.F., a 29 de abril de 2014.- El Secretario de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación, **Enrique Martínez y Martínez**.- Rúbrica.

gob.mx

Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación
Comisión Nacional de Acuacultura y Pesca

Homoclave del formato
FF-CONAPESCA-005
*Fecha de publicación del formato en el DOF
30 / 09 / 2015 (DD / MM / AAAA)

Aviso de arribo de embarcaciones mayores de 10 toneladas de registro bruto

Con fundamento en los artículos 45 fracción VIII y 47 del Reglamento de la Ley de Pesca

Folio
Fecha de solicitud del trámite
DD / MM / AAAA

Datos generales del solicitante

1. Lugar / oficina de pesca:
2. Clave oficina de pesca:
3. Período que ampara: DD / MM / AAAA - DD / MM / AAAA
4. Duración del viaje de pesca: _____ días
5. Días efectivos de trabajo de pesca: _____ días
6. Nombre o razón social del Permisionario,concesionario o autorizado:
7. Clave R.N.P.A del permisionario :
8. Nombre de la embarcación:
9. Clave R.N.P.A. de la embarcación:
10. Matrícula:
11. Puerto de salida:
12. Clave puerto de salida:
13. Puerto de desembarque:
14. Clave puerto de desembarque:
15. Lugar de captura:
16. Clave lugar de captura:

17. Especie, presentación y preservación	18. Permiso, concesión o autorización			19. Clave de la especie	20. Peso en kilogramos	21. Precio por kilogramo (Para fines estadísticos)
	Número	Fecha de expedición	Vigencia al			
				22. Total		

Información del trámite

23. Documentos anexos a presentar
1. Los permisionarios, concesionarios o autorizados deberán anexar la bitácora del viaje de pesca objeto de la presentación de este aviso de arribo si se estipula en la norma correspondiente.

Los datos consignados en el presente documento son absoluta responsabilidad del declarante, Artículo 45 Fracción VIII y Artículo 47 del Reglamento de la Ley de Pesca.

Importante: este documento no es válido si lleva tachaduras o enmendaduras, utilice el reverso para notificaciones o sellos de control interno.

Acuse de recibo de la oficina de SAGARPA/CONAPESCA

Nombre: _____
Cargo: _____
Firma y sello: _____

El declarante

Nombre: _____
Cargo: _____
Firma: _____

Términos y condiciones: Conforme al Artículo 132, Fracción XXII de la Ley General de Pesca y Acuacultura Sustentable (LGPAS), es infracción "no proporcionar la información en los términos y plazos que solicite la secretaría o incurrir en falsedad al rendir esta"; y podrá ser objeto de las sanciones administrativas a que se refiere el Artículo 133 de la LGPAS.
De conformidad con los Artículos 4 y 69-M, Fracción V de la Ley Federal de Procedimiento Administrativo, los formatos para solicitar trámites y servicios deberán publicarse en el Diario Oficial de la Federación (DOF).

MUESTRA NO VÁLIDA

Contacto:
Av. Camarón Sábalo S/N Esq. Tiburón,
Fracc. Sábalo Country Club
Mazatlán, Sinaloa, México C.P. 82100
Teléfono: 01 800 667 74022

Instructivo para el uso y llenado del formato de solicitud CONAPESCA-01-023-A

(Aviso de arribo de embarcaciones mayores)

Esta forma debe ser utilizada por el permisionario para cumplir con la obligación de manifestar sus capturas en un plazo de 72 horas hábiles a partir del día de su llegada, presentarla a la oficina de pesca más próxima, conforme lo dispuesto en los artículos 45 fracción VIII y 47 del Reglamento de la Ley de Pesca.

Es importante hacer notar que la legal procedencia de los productos pesqueros, luego de ser desembarcados, se comprueba con el aviso de arribo, por lo que independientemente del plazo al que se alude anteriormente, los permisionarios deberán registrar su producción en avisos de arribo.

A. Se entiende por titular a toda persona física o moral que posea uno o varios permisos, concesiones o autorizaciones de pesca.

B. Las oficinas de pesca proporcionarán a los titulares de su jurisdicción la dotación suficiente de avisos de arribo en blanco, por lotes numerados y en orden. El titular es responsable del uso que se le da a cada una de las formas de aviso de arribo que le sean entregadas y deberá utilizarlas en orden, siguiendo de manera progresiva la numeración de los folios del lote más antiguo.

C. El titular es responsable del llenado del presente documento. Las oficinas de pesca orientarán a los permisionarios en esta tarea sin costo alguno.

D. Este documento deberá ser llenado a máquina o con tinta negra utilizando letra de molde clara y legible. Cuando se cometa un error al llenar el documento se deberá elaborar uno nuevo y entregar ambos formatos en la oficina.

E. El llenado de claves requeridas (áreas sombreadas) en el documento, es responsabilidad directa del jefe de la oficina de pesca.

Nota: no escriba en las áreas sombreadas.

1.- Lugar / oficina de pesca. Anotar el nombre de la localidad o municipio, y Estado. Ejem. Cd. Obregón Son.

2.- Clave oficina de pesca. Anotar la clave de la Oficina de Pesca. Ejem. 2508. Para ser llenado por el jefe de oficina.

3.- Período que ampara. Anotar los días de operación de pesca que se ampara día/mes/año con el aviso de arribo. Ejem. 21/10/2007 a 23/10/2007.

4.- Duración del viaje de pesca. Escriba el número de días que duró el viaje, considerándose desde su salida hasta su arribo al puerto. Ejem. 25 días.

5.- Días efectivos de trabajo de pesca. Anote únicamente los días trabajados, es decir, sólo los días en que la embarcación operó en la pesca. Ejem. 25 días.

6.- Nombre o razón social del permisionario, concesionario o autorizado. Escriba el nombre y apellidos completos o la razón social del permisionario como aparece en el permiso, concesión o autorización respectiva. Asimismo, escriba la clave que tiene asignada como Unidad Económica.

7.- R.N.P.A. del permisionario. Anotar la clave asignada del R.N.P.A.

8.- Nombre de la embarcación. Anotar el nombre de la embarcación. (En los casos en que aplique).

9.- R.N.P.A. de la embarcación. Anotar la clave asignada del R.N.P.A. de la embarcación.

10.- Matrícula. Anotar la matrícula otorgada por la S.C.T.

11.- Puerto de salida. Especificar el puerto de salida de la embarcación. Ejem. Mazatlán.

12.- Clave puerto de salida. Anotar la clave del puerto de salida. Ejem. 25D. Para ser llenado por el jefe de oficina.

13.- Puerto de desembarque. Especificar el puerto de desembarque de la embarcación. Ejem. Topolobampo.

14.- Clave puerto de desembarque. Anotar la clave correspondiente al puerto de desembarque. Ejem. 25A. Para ser llenado por el jefe de oficina.

15.- Lugar de captura. Escriba el nombre del campo pesquero de la zona de mayor captura donde operaron las embarcaciones. Ejem. Punta Ballenas.

16.- Clave lugar de captura. Anotar la clave correspondiente al Lugar de Captura. Para ser llenado por el jefe de oficina.

17.- Especie, presentación y preservación. Se contestará con a) el nombre de la especie, b) su presentación al momento de desembarque y c) su preservación. Ejemplo: Camarón con Cabeza Fresco.

18.- Permiso, concesión o autorización. Anote el número del (los) permiso(s) por especie otorgado(s) por la SAGARPA para las embarcaciones o equipos de pesca cuyas capturas se manifiestan. En la columna "Fecha de Expedición", anote la fecha en que fue expedida y a continuación, en la columna de "Vigencia" escriba la fecha en que prescribe, anotando con números el día, mes, año: 23 09 2007.

19.- Clave de la especie. Anotar la clave de la especie correspondiente. Ejem. 0091025H. Para ser llenado por el jefe de oficina.

20.- Peso en kilogramos. Para cada una de las especies capturadas, anote su peso en kilogramos al momento del desembarque.

21.- Precio por kilogramo. Anote el precio de playa o de primera mano para cada una de las especies desembarcadas (peso en kilogramos), sólo para fines estadísticos.

22.- Total. Se anotará la suma del total de kilogramos reportados como capturados o sea la suma que se reporta en la columna.

23.- Documentos a anexar. Deberá entregar la Bitácora de Pesca en los casos que la norma lo establezca.

MUESTRA NO VALIDA

Contacto:
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Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación
Comisión Nacional de Acuacultura y Pesca

Homoclave del formato
FF-CONAPESCA-004
*Fecha de publicación del formato en el DOF
30 / 09 / 2015 (DD / MM / AAAA)

Aviso de arribo de embarcaciones menores de 10 toneladas de registro bruto

Artículos 10, 35, 45 Fracción VIII y 47 del Reglamento de la Ley de Pesca

Folio
Fecha de solicitud de trámite
DD / MM / AAAA

MUESTRA NO VÁLIDA

Datos generales del solicitante

1. Lugar / oficina de pesca:	2. Clave oficina de pesca:
3. Periodo que ampara: DD / MM / AAAA - DD / MM / AAAA	4. Días de trabajo de pesca: _____ días
5. Nombre o razón social del permisionario, concesionario o autorizado:	6. R.N.P.A del permisionario:
7. Nombre de la embarcación:	8. R.N.P.A. de la embarcación: / 9. Matrícula
10. Número de embarcaciones utilizadas: / 11. Sitio de desembarque:	12. Clave sitio de desembarque:
13. Lugar de captura:	14. Clave lugar de captura:
15. Zona de pesca: L B E C	16. Pesquería acuacultural: Si ○ No ○

17. Especie, presentación y preservación	18. Permiso, concesión o autorización			19. Clave de la especie	20. Peso en kilogramos	21. Precio por Kilogramo
	Número	Fecha de expedición	Vigencia al			
				22. Total		

Información del trámite

23. Documentos anexos a presentar

1. Los permisionarios, concesionarios o autorizados deberán anexar la bitácora del viaje de pesca objeto de la presentación de este aviso de arribo si se estipula en la norma correspondiente.

Los datos consignados en el presente documento son absoluta responsabilidad del declarante, Artículo 45 Fracción VIII y Artículo 47 del Reglamento de la Ley de Pesca.

Importante: este documento no es válido si lleva tachaduras o enmendaduras, utilice el reverso para notificaciones o sellos de control interno.

Acuse de recibo de la oficina de SAGARPA/CONAPESCA

Nombre: _____

Cargo: _____

Firma y sello: _____

El declarante

Nombre: _____

Cargo: _____

Firma: _____

Términos y condiciones: Conforme al Artículo 132, Fracción XXII de la Ley General de Pesca y Acuacultura Sustentable (LGPAS), es infracción "no proporcionar la información en los términos y plazos que solicite la secretaría o incurrir en falsedad al rendir esta"; y podrá ser objeto de las sanciones administrativas a que se refiere el Artículo 133 de la LGPAS. De conformidad con los Artículos 4 y 69-M, Fracción V de la Ley Federal de Procedimiento Administrativo, los formatos para solicitar trámites y servicios deberán publicarse en el Diario Oficial de la Federación (DOF).

Página 1/2

Contacto:
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Fracc. Sábalo Country Club
Mazatlán, Sinaloa, México C.P. 82100
Teléfono: 01 800 667 74022

Instructivo para el uso y llenado del formato de solicitud CONAPESCA-01-023-B

(Aviso de arribo de embarcaciones menores)

Esta forma debe ser utilizada por el permisionario para cumplir con la obligación de manifestar sus capturas en un plazo de 72 horas hábiles a partir del día de su llegada, presentarla a la oficina de pesca más próxima, conforme lo dispuesto en los artículos 45 fracción VIII y 47 del Reglamento de la Ley de Pesca.

Es importante hacer notar que la legal procedencia de los productos pesqueros, luego de ser desembarcados, se comprueba con el aviso de arribo, por lo que independientemente del plazo al que se alude anteriormente, los permisionarios deberán registrar su producción en avisos de arribo.

A. Se entiende por titular a toda persona física o moral que posea uno o varios permisos, concesiones o autorizaciones de pesca.

B. Las oficinas de pesca proporcionarán a los titulares de su jurisdicción la dotación suficiente de avisos de arribo en blanco, por lotes numerados y en orden. El titular es responsable del uso que se le da a cada una de las formas de aviso de arribo que le sean entregadas y deberá utilizarlas en orden, siguiendo de manera progresiva la numeración de los folios del lote más antiguo.

C. El titular es responsable del llenado del presente documento. Las oficinas de pesca orientarán a los permisionarios en esta tarea sin costo alguno.

D. Este documento deberá ser llenado a máquina o con tinta negra utilizando letra de molde clara y legible. Cuando se cometa un error al llenar el documento se deberá elaborar uno nuevo y entregar ambos en la oficina.

E. El llenado de claves requeridas (áreas sombreadas) en el documento, es responsabilidad directa del jefe de la oficina de pesca.

Nota: no escriba en las áreas sombreadas

1.- Lugar / oficina de pesca. Anotar el nombre de la localidad o municipio, y Estado. Ejem. Cd. Obregón,

2.- Clave oficina de pesca. Anotar la clave de la Oficina de Pesca. Ejem. 2508. Para ser llenado por el jefe de oficina.

3.- Período que ampara. Anotar los días de operación de pesca que se ampara día/mes/año con el aviso de arribo. Ejem. 21/10/2007 a 23/10/2007.

4.- Número de días efectivos de trabajo de pesca. Anote únicamente los días trabajados, es decir sólo los días que las embarcaciones operaron en la pesca. Ejem. 5 días.

5.- Nombre o razón social del permisionario, concesionario o autorizado. Escriba el nombre y apellidos completos o la razón social del permisionario como aparece en el permiso, concesión o autorización respectiva. Asimismo, escriba la clave que tiene asignada como Unidad Económica.

6.- R.N.P.A. del permisionario. Anotar la clave asignada del R.N.P.A.

7.- Nombre de la embarcación. Anotar el nombre de la embarcación. (En los casos en que aplique).

8.- R.N.P.A. de la embarcación. Anotar la clave asignada del R.N.P.A. de la embarcación.

9.- Matrícula. Anotar la matrícula otorgada por la S.C.T.

10.- Número de embarcaciones utilizadas. Escriba el número total de embarcaciones, o en su caso, el de equipos de pesca operados sin embarcación, que participaron.

11.- Sitio de desembarque. Anotar el nombre como se conoce localmente el sitio o lugar donde se efectuó el desembarque. Ejem. Laguna Salada.

12.- Clave sitio de desembarque. Anotar la clave correspondiente al sitio de desembarque. Ejem. 0200601. Para ser llenado por el jefe de oficina.

13.- Lugar de captura. Escriba el nombre del campo pesquero de la zona de mayor captura donde operaron las embarcaciones. Ejem. Punta Ballenas.

14.- Clave lugar de captura. Anotar la clave correspondiente al Lugar de Captura. Ejem. 0201118. Para ser llenado por el jefe de oficina.

15.- Zona de pesca. Cruce con una (X) el lugar o lugares en donde realizó la captura (L) Litoral, (B) Bahía, (E) Aguas Estuarinas o (C) Aguas Continentales o Cuerpos de Agua Lacustre.

16.- Pesquería acuacultural. Indicar si el producto se deriva de la producción pesquera en embalses epicontinentales sustentada tanto en las siembras sistemáticas de crías de especies tales como tilapia, bagre y lobina, así como en las derivadas del manejo de existencias silvestres de crías de peces, postlarvas de langostino, renacuajos y similares. Para ser llenado por el jefe de oficina.

17.- Especie, presentación y preservación. Se contestará con a) el nombre de la especie, b) su presentación al momento de desembarque y c) su preservación. Ejemplo: Camarón con Cabeza Fresco.

18.- Permiso, concesión o autorización. Anote el número del (los) permiso(s) por especie otorgado(s) por la SAGARPA para las embarcaciones o equipos de pesca cuyas capturas se manifiestan; En la columna "Fecha de Expedición", anote la fecha en que fue expedida y a continuación, en la columna de "Vigencia" escriba la fecha en que prescribe, anotando con números el día, mes, año: 23 09 2007.

19.- Clave de la especie. Anotar la clave de la especie correspondiente. Ejem. 0091025H. Para ser llenado por el jefe de oficina.

20.- Peso en kilogramos. Para cada una de las especies capturadas, anote su peso en kilogramos al momento del desembarque.

21.- Precio por kilogramo. Anote el precio de playa o de primera mano para cada una de las especies desembarcadas, sólo para fines estadísticos.

22.- Total. Se anotará la suma del total de kilogramos reportados como capturados o sea la suma que se reporta en la columna.

23.- Documentos a anexar. Deberá entregar la Bitácora de Pesca en los casos que la norma lo establezca.

MUESTRA NO VALIDA

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Teléfono: 01 800 667 74022

SECRETARIA DE AGRICULTURA, GANADERIA, DESARROLLO RURAL, PESCA Y ALIMENTACION

FORMATO de la Guía de Pesca.

Al margen un sello con el Escudo Nacional, que dice: Estados Unidos Mexicanos.- Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación.

JAVIER BERNARDO USABIAGA ARROYO, Secretario de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación, con fundamento en lo dispuesto por los artículos 35 fracción XXI de la Ley Orgánica de la Administración Pública Federal; 3o. de la Ley de Pesca; 1o., 3o. y 6o. del Reglamento Interior vigente de esta dependencia y en cumplimiento a lo establecido en el artículo tercero transitorio del Decreto por el que se reforma, adicionan y derogan diversas disposiciones del Reglamento de la Ley de Pesca, publicado en el **Diario Oficial de la Federación** el 28 de enero de 2004, doy a conocer el:

FORMATO DE LA GUIA DE PESCA

Dado en la Ciudad de México, Distrito Federal, a treinta de enero de dos mil cuatro.- El Secretario de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación, **Javier Bernardo Usabiaga Arroyo**.- Rúbrica.

SECRETARIA DE AGRICULTURA, GANADERIA, DESARROLLO RURAL, PESCA Y ALIMENTACION

GUIA DE PESCA

COMISION NACIONAL DE ACUACULTURA Y PESCA

FOLIO:

1. LUGAR DE EMBARQUE:
2. FECHA DE EMBARQUE: 3. HORA DE SALIDA:
4. NOMBRE O RAZON SOCIAL DEL PROPIETARIO O POSEEDOR DE LOS PRODUCTOS PESQUEROS:
5. DOMICILIO FISCAL O LEGAL (CALLE Y No.)
6. COLONIA:
7. LOCALIDAD: 8. MUNICIPIO:
9. ESTADO 10. C.P.:
11. DATOS DEL VEHICULO:
NOMBRE Y MATRICULA (EMBARCACION):
TIPO Y NUMERO DE PLACAS (VEHICULOS TERRESTRES):
NOMBRE DE LA COMPAÑIA AEREA, FECHA Y NUMERO DE VUELO:
12. DOMICILIO DEL DESTINO FINAL:

13. ESPECIE	PRESENTACION, CONSERVACION Y EMPAQUE	VOLUMEN

DOCUMENTOS QUE AMPARAN LA LEGAL PROCEDENCIA

14. No. DE FOLIO Y FECHA DEL AVISO DE ARRIBO, COSECHA, RECOLECCION O PRODUCCION, DE LOS QUE SE DERIVEN LOS PRODUCTOS PESQUEROS A TRANSPORTAR:
15. No. DE FOLIO Y FECHA DE FACTURA:
16. No. DE FOLIO Y FECHA DE CONSTANCIA DE DONACION O DE ADJUDICACION:
17. DATOS DEL INVENTARIO DE ESPECIES EN VEDA, PEDIMENTO DE IMPORTACION, CERTIFICADO CITES Y/O CERTIFICADO DE SANIDAD:

LOS SIGUIENTES ESPACIOS SON PARA LLENADO EXCLUSIVO DE LA SECRETARIA

OFICINA DE SAGARPA-CONAPESCA | NOMBRE Y CARGO DEL FUNCIONARIO QUE ASIGNA EL FOLIO, SELLA Y FIRMA | FIRMA

lugar de asignación de folio, sello y firma A día DE mes DE año

ESTE DOCUMENTO DEBERA ACOMPAÑAR A LOS PRODUCTOS PESQUEROS DURANTE SU TRANSPORTE DESDE EL LUGAR DE ORIGEN HASTA SU DESTINO FINAL

VIGENCIA: 3 DIAS HABILES

IMPORTANTE: ESTE DOCUMENTO NO ES VALIDO, SI LLEVA TACHADURAS O ENMENDADURAS

ESTE DOCUMENTO ESTA FUNDAMENTADO EN LOS ARTICULOS 10, 14, 14 bis, 14 bis 1, 14 bis 2, 14 bis 3 y 15 DEL REGLAMENTO DE LA LEY DE PESCA

INSTRUCTIVO PARA EL USO Y LLENADO DEL FORMATO DE LA GUIA DE PESCA

A. LA GUIA DE PESCA AMPARA EL TRANSPORTE DE PRODUCTOS PESQUEROS ENTRE LOS ESTADOS CON LITORAL MARINO Y DE CUALQUIERA DE ELLOS HACIA LOS ESTADOS DEL INTERIOR.

B. SE LLENARA UN FORMATO POR TRIPLICADO CADA VEZ QUE SE TRANSPORTEN PRODUCTOS PESQUEROS.

C. LA GUIA DE PESCA PUEDE OBTENERSE EN LAS PAGINAS DE INTERNET DE LA SAGARPA Y DE LA CONAPESCA, O EN CUALQUIERA DE LAS OFICINAS DE PESCA DE LA SECRETARIA Y TRAMITARSE LA ASIGNACION DEL FOLIO, FIRMA Y SELLO DE LA MISMA, EN LAS DELEGACIONES DE SAGARPA, SUBDELEGACIONES Y OFICINAS DE PESCA DE LOS ESTADOS CON LITORAL MARINO, EN DIAS Y HORAS HABILES.

D. LOS INTERESADOS DEBERAN PRESENTAR EL FORMATO DE GUIA DE PESCA, PROPORCIONANDO LA INFORMACION INDICADA EN LOS CAMPOS DEL 1 AL 13, ANEXANDO PARA SU COTEJO, LA DOCUMENTACION CON LA QUE SE ACREDITA LA LEGAL PROCEDENCIA DE LOS PRODUCTOS PESQUEROS A TRANSPORTAR A FAVOR DE SU PROPIETARIO, QUE PUEDEN SER AVISOS DE ARRIBO, COSECHA, RECOLECCION O PRODUCCION, CUANDO LOS PRODUCTOS A TRANSPORTAR CONTINUEN SIENDO PROPIEDAD DE CONCESIONARIOS O PERMISIONARIOS DE PESCA Y ACUACULTORES; FACTURA O CONSTANCIA DE DONACION O ADJUDICACION CUANDO LOS PRODUCTOS PESQUEROS A TRANSPORTAR YA HUBIERAN SIDO ENAJENADOS POR QUIENES LOS CAPTURARON, CULTIVARON O PRODUJERON EN LABORATORIO.

E. CUANDO SE TRATE DE ESPECIES DECLARADAS EN VEDA SE DEBERA PRESENTAR EL INVENTARIO DE EXISTENCIA DE ESPECIES EN VEDA. EN CASO DE PRODUCTOS PESQUEROS PROVENIENTES DEL EXTRANJERO, DEBERA PRESENTARSE EL PEDIMENTO DE IMPORTACION Y EL CERTIFICADO CITES, SI SE TRATA DE ESPECIES DE FAUNA AMENAZADAS. EN CASO DE TRATARSE DE ORGANISMOS ACUATICOS VIVOS O PRODUCTOS PESQUEROS QUE REQUIERAN DE CERTIFICADOS DE SANIDAD ESTABLECIDOS EN UNA NORMA OFICIAL MEXICANA, ADEMAS DE LOS DOCUMENTOS QUE PROCEDAN SEGUN EL CASO, SE DEBERA ACOMPAÑAR DE LOS CERTIFICADOS CORRESPONDIENTES.

ESPACIOS PARA SER LLENADOS EN EL FORMATO POR EL PROPIETARIO O POSEEDOR DE LOS PRODUCTOS PESQUEROS

1. **LUGAR DEL EMBARQUE.** Se indicará el lugar, municipio o localidad en que se realizará el embarque. Ejemplo: Acapulco, Guerrero.
2. **FECHA DE EMBARQUE.** Se deberá anotar el día y el año utilizando números arábigos. Ejemplo: 20 de octubre de 2002.
3. **HORA DE SALIDA.** La hora de salida del producto que se pretende transportar. Ejemplo: 14:30 P.M. (la fecha de embarque y hora de salida marcarán la vigencia de 3 días hábiles del presente documento).
4. **NOMBRE O RAZON SOCIAL DEL PROPIETARIO O POSEEDOR DE LOS PRODUCTOS PESQUEROS:** Anote nombre y apellidos completos, como aparecen en el Acta de Nacimiento o el Acta Constitutiva. Ejemplo: S.C.P.P. La Huachinanga, S.C.L.
5. **DOMICILIO FISCAL O LEGAL.** Indique el nombre de la calle y número exterior donde tiene su domicilio fiscal el solicitante.
6. **COLONIA.** Anotar el nombre de la colonia donde se ubica el domicilio.
7. **LOCALIDAD.** Anotar la localidad o población del domicilio del solicitante**.**
8. **MUNICIPIO.** Anotar el municipio del domicilio del solicitante.
9. **ESTADO.** Se anotará el nombre del Estado de la República de la ubicación del domicilio del solicitante.
10. **CODIGO POSTAL.** Se anotará el número de la zona postal que corresponda al domicilio del solicitante indicado.
11. **DATOS DEL VEHICULO.** Anotar en su caso el nombre y matrícula de la embarcación en la cual se transportará el producto pesquero o bien el tipo y número de placas tratándose de vehículos terrestres o si es por vía aérea, la compañía, fecha y el número de vuelo.
12. **DOMICILIO DEL DESTINO FINAL.** Anotar el domicilio del destino final de los productos pesqueros**.**
13. **ESPECIE(S).** Anotar la especie o especies a transportar, su estado de presentación, conservación y empaque, así como el volumen en kilogramos o unidad de medida correspondiente de los productos a transportar.
    DOCUMENTOS QUE AMPARAN LA LEGAL PROCEDENCIA: Se refiere a la documentación que deberá presentar según su situación particular para el trámite de la Guía de Pesca. (Los documentos exhibidos para su cotejo, serán devueltos al particular de manera inmediata una vez efectuado el procedimiento).
14. **No. DE FOLIO DEL AVISO DE ARRIBO O RECOLECCION DE LOS QUE SE DERIVEN LOS PRODUCTOS PESQUEROS A TRANSPORTAR.** Si se trata de permisionarios o concesionarios de pesca, anotar, en su caso, el número del folio del aviso de arribo o de recolección de los que se deriven los productos pesqueros a transportar; **No. DE FOLIO(S) DEL(OS) AVISO(S) DE COSECHA DEL(OS) QUE SE DERIVEN LOS PRODUCTOS PESQUEROS A TRANSPORTAR,** si se trata de acuacultores, anotar, en su caso, el número(s) del folio del aviso(s) de cosecha del que se derive(n) los productos pesqueros a transportar. **No. DE FOLIO(S) DEL(OS) AVISO(S) DE PRODUCCION DEL(OS) QUE SE DERIVEN LOS PRODUCTOS PESQUEROS A TRANSPORTAR,** si se trata de laboratorios productores de larvas, crías o reproductores para destinarlos a la acuacultura, anotar, en su caso, el número(s) del folio del aviso(s) de producción de los que se deriven los productos pesqueros a transportar. (El dato del numeral 14 se llena solamente en el caso en que los productos no han sido enajenados y su transportación la realice directamente quien captura, cultiva o produce dicho producto pesquero).
15. **No. FOLIO Y FECHA DE FACTURA.** Si el producto ha sido enajenado, anotar, en su caso, el número de folio y fecha (día, mes y año) de la factura que ampara la legal procedencia del producto pesquero a transportar, ésta debe contener el nombre y domicilio del comprador así como la descripción del producto, cantidad o peso y su importe. La factura de primera mano, debe contener los números de folio del aviso de arribo, de cosecha, recolección o producción del que se deriva. Las facturas subsecuentes contendrán el número de factura de la que provienen.
16. **No. DE FOLIO FECHA DE LA CONSTANCIA DE DONACION O ADJUDICACION:** En el caso de que el producto haya sido donado o adjudicado anotar el folio (si la constancia lo contiene, si no poner s/n) y la fecha (día, mes y año) en que se expidió la constancia de donación o adjudicación del producto pesquero.
17. **DATOS DEL INVENTARIO DE ESPECIES EN VEDA, PEDIMENTO DE IMPORTACION, CERTIFICADO CITES Y/O CERTIFICADO SANITARIO:** Anotar el número de folio y fecha del "Inventario de Existencia de Especies en Veda" si se trata de especies inventariadas por encontrarse en veda; anotar la fecha y aduana de entrada si se trata de productos pesqueros procedentes del extranjero: Anotar el número y fecha del Certificado CITES (Convención Sobre el Comercio Internacional de Especies Amenazadas de Fauna y Flora Silvestre) si los productos a transportar provienen de especies incluidas en los apéndices de dicha Convención; en el caso que una Norma Oficial Mexicana lo requiera, anotar fecha y nombre o razón social de la autoridad o laboratorio que expida el Certificado de Sanidad.

ESPACIOS PARA SER LLENADOS POR LA SECRETARIA

OFICINA DE SAGARPA-CONAPESCA: Anotar el nombre de la Oficina de SAGARPA o CONAPESCA en donde se asigna el folio, sello y firma a la Guía de Pesca.

NOMBRE Y CARGO DEL FUNCIONARIO QUE ASIGNA EL FOLIO, SELLA Y FIRMA. Escribir el nombre y cargo que desempeña el funcionario que valida la información, asigna el folio, sella y firma la Guía de Pesca**.**

FIRMA. Firma de funcionario que valida la información, asigna el folio, sella y firma la Guía de Pesca**.**

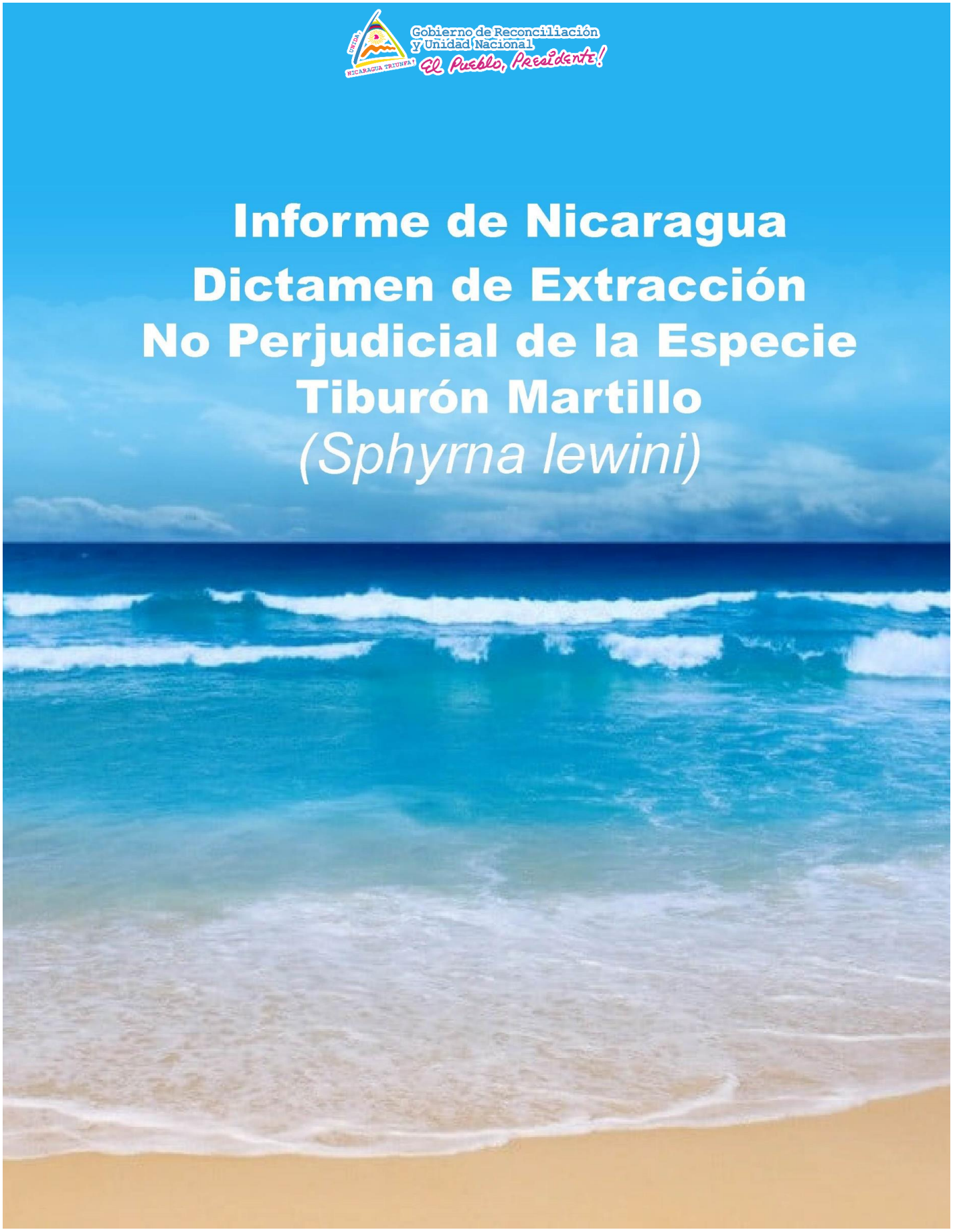
LUGAR DE ASIGNACION DE FOLIO, SELLO Y FIRMA: Se indicará el lugar, municipio o localidad en la cual se asigna el folio, sello y firma a la Guía de Pesca.

DIA, MES Y AÑO: Se anotarán el día, mes y año en el que se asigna el folio, sello y firma a la Guía de Pesca, utilizando números arábigos.

Para cualquier aclaración, duda y/o comentario con respecto a este trámite, sírvase llamar al sistema de Atención Telefónica a la Ciudadanía (SACTEL) a los teléfonos 54-80 20-00 en el D.F. y área metropolitana, del interior de la República sin costo para el usuario al 01-800-00-14800 o desde Estados Unidos y Canadá al 1-888-594-3372

QUEJAS AL TELEFONO
01 669 913 09 24

RESPONSABLE DEL TRAMITE
DIRECCION GENERAL DE ORDENAMIENTO PESQUERO Y ACUICOLA CONAPESCA
01 669 913 09 25


Gobierno de Reconciliación y Unidad Nacional
El Pueblo, Presidente!
Informe de Nicaragua
Dictamen de Extracción
No Perjudicial de la Especie
Tiburón Martillo
(Sphyrna lewini)

Índice

I. Introducción

Tomando en consideración la Resolución Conf. 12.8 (Rev. CoP18), los Comités de Fauna y de Fauna de la CITES han examinado los datos biológicos y los datos sobre el comercio de especies del Apéndice II sometidas a niveles significativos de comercio, con el fin de identificar los problemas y las soluciones correspondientes para la aplicación del Artículo IV, párrafos 2(a), 3 y 6(a) de la Convención.

Sobre la base de esta información y de otros datos disponibles, el Comité de Fauna seleccionó una serie de combinaciones de especie/país para que fuesen examinadas, entre ellas la especie *Sphyrna lewini*.

Nicaragua a través de este informe proporciona la base científica sobre la que determina que las exportaciones de la especie *Sphyrna lewini* no son perjudiciales para la supervivencia de las especies concernidas y son conformes a lo previsto en el Artículo VI de la Convención CITES:

II. Características morfológicas

La familia de los tiburones martillo (*Sphyrnidae*) se distingue fácilmente de otras familias de tiburones por la estructura característica de su cabeza, en forma de "martillo". El tiburón martillo común *Sphyrna lewini*, también conocido como cornuda rosada, se distingue de otras especies de su género por una marcada hendidura central en el margen anterior de la cabeza y dos hendiduras laterales a cada lado de esa hendidura central, cuyo efecto visual combinado otorga a la cabeza su característica apariencia de estar "abollada". La boca es amplia y arqueada, y el margen posterior de la cabeza está ligeramente arrastrado hacia atrás. La dentición de *S. lewini* consiste de dientes triangulares relativamente pequeños y angostos, ligeramente aserrados en individuos grandes, y similares en tamaño en ambas mandíbulas.

Los dientes frontales tienen cúspides erectas, mientras que los dientes subsecuentes tienen cúspides oblicuas. Los dientes inferiores son más 4erectos que los superiores. El cuerpo de *S. lewini* es fusiforme, con una gran aleta dorsal y aletas dorsal secundaria y pélvica menores. La primera aleta dorsal es moderadamente enganchada, con su origen sobre o ligeramente detrás de, las inserciones de las aletas pectorales, y su punta trasera se ubica frente de los orígenes de la aleta pélvica.

La altura de la segunda aleta dorsal es menor que la altura de la aleta anal y tiene un margen posterior que es aproximadamente dos veces la altura de la aleta, con una punta trasera libre que casi alcanza la foseta precaudal.

Por otra parte, *Sphyrna mokarran* se distingue por ser la especie de tiburón martillo que alcanza el mayor tamaño (reportada hasta 6 m de longitud corporal, aunque suele ser de mucho menor tamaño). Su gran cabeza tiene un nudo en el centro. S. zygaena, es otra especie de gran envergadura (máxima longitud registrada es 5 m, aunque suele variar entre 2.5 y 3 m de longitud). Su cabeza es aplanada y con el borde liso.

A pesar de estas características morfológicas, las tres especies del género *Sphyrna* no han sido reconocidas como tal por las estadísticas pesqueras, por lo que no existen registros históricos por especie, complicando el adecuado registro de las capturas y los usos específicos por especie. Esta situación es aún más complicada si se trata de aletas u otras partes anatómicas separadas del cuerpo del individuo.

Por esta razón, mucha de la información disponible para tiburones martillo del género *Sphyrna* incluye datos combinados de las tres especies. Es importante resaltar que *S. zygaena y S. lewini* son las especies más abundantes reportadas en la pesquería, por lo que son principalmente estas especies las que integran la categoría de “tiburones martillo” mencionadas a lo largo de este documento.

La inclusión de tres especies de tiburón martillo (*S. lewini, S. zygaena, y S. mokarran*) en el Apéndice II de CITES implica la necesidad de acompañar cualquier exportación de la especie y de sus productos de un Permiso CITES expedido por la Autoridad Administrativa.

III. Pesquería de tiburones

En Nicaragua no existe pesca dirigida hacia los tiburones, siendo capturados de manera incidental por la flota artesanal. Está flota opera en la zona costera (Hasta 40 millas de la costa). sus productos son desembarcados principalmente en el puerto de San Juan del sur y playas de Masachapa, Corinto y Jiquilillo.

La totalidad de las aletas de los tiburones martillo capturados incidentalmente y descargados en Nicaragua se destinan a la exportación, dado que no hay evidencia de consumo interno de este producto. La totalidad de la carne se destina al consumo doméstico. La flota de pequeña escala o artesanal también captura tiburones martillo, sobre todo en estados de desarrollo juveniles la cual también es consumida localmente.

La exportación de aletas de tiburón martillo de cualquiera de las tres especies (*Sphyrna lewini, S. mokarran y S. zygaena*) está sujeta a los controles de la Convención CITES.

Nicaragua posee costas en el mar Caribe y en el Océano Pacífico. Por la autonomía de las embarcaciones, puede afirmarse que los especímenes de *S. lewini* descargados en puertos y playas de Nicaragua por la flota artesanal provienen de las siguientes dos subpoblaciones: el Segmento Distinto de la Población SDP del Atlántico Central y Suroccidental, y el SDP del Pacifico Oriental.

Existe dificultad de diferenciar las tres especies del género *Sphyrna* entre sí a partir de sus aletas una vez cercenadas (y por cuya razón se incluyeron a las tres especies en Apéndice II de CITES).

Para determinar el stock de origen de tiburones martillo capturados y comercializados en Nicaragua no se considera necesaria prueba alguna, pues debido tanto a las restricciones impuestas por las licencias de pesca, la autonomía misma de las embarcaciones nacionales, y la distribución geográfica del SDP (Sur de California hasta el Norte de

Chile), la probabilidad de que un espécimen provenga de otro SDP es sumamente remota.

IV. Control de las Exportaciones

En Nicaragua, existe actualmente un sistema de seguimiento para la exportación de productos de tiburón, que es el siguiente:

El desembarco de productos pesqueros por parte de la flota artesanal palangrera nacional ocurre en algunos muelles y playas nacionales, tanto en la costa Pacífica como en el Caribe. La descarga debe realizarse ante la presencia de un inspector de INPESCA quien debe verificar el cumplimiento de la normativa que exige la descarga de los tiburones con las aletas adheridas en forma natural al cuerpo (Ley 489, ley de pesca y acuicultura de Nicaragua, en su capítulo III, Arto. 75, prohíbe la captura de tiburones en aguas continentales y marinas con el único propósito de cortarles cualquiera de sus aletas, incluyendo la cola, desechando el resto del cuerpo de la especie en alta mar, zonas costeras, u otros sitios).

Antes de autorizar su comercialización para la exportación, como parte imprescindible del trámite, el inspector de INPESCA verifica el cumplimiento de las normativas pesqueras y emite un acta de inspección en la que no se clasifica la descarga de tiburones por especie y por peso, únicamente se toma en cuenta el peso total de la carne de todas las especies desembarcadas y se registra el peso de las aletas por especie una vez que han sido cercenadas.

Una vez recibidos, los productos son comercializados en los muelles o puntos de descarga a terceros, con su respectiva acta de inspección y traslado, estas actas son utilizadas como guías de transporte durante el proceso y verificación del producto que llevan a cabo funcionarios de otras autoridades pertinentes (Policía Nacional, INPESCA, Fuerza Naval) a lo largo de la cadena de custodia comercial. Actualmente, toda exportación de productos de tiburón (aletas) debe ir acompañada de su respectiva acta de inspección, permiso de exportación emitido por el INPESCA (Autoridad nacional de Pesca) y el permiso de exportación emitido por la autoridad administrativa CITES.

Para realizar una solicitud de exportación de productos de tiburones incluidos en el Apéndice II de CITES, el comerciante debe realizar la solicitud ante el INPESCA y posteriormente ante la Autoridad Administrativa CITES, entidad que verifica el cumplimiento de la normativa vigente.

Posteriormente, el comerciante presenta la autorización al INPESCA, entidad que verifica la veracidad de la documentación, mediante un proceso de revisión de cada uno de los documentos presentados, para garantizar que el peso seco de la aleta solicitada para exportar corresponde al peso fresco justificado en los documentos oficiales de descarga. Finalmente, se realiza un proceso de inspección y verificación en el puerto de exportación. Posteriormente se ingresa la información al sistema aduanero. Además, en este proceso participa el Instituto de protección de sanidad agropecuaria (IPSA) el que emite resultado de la inspección un certificado sanitario del producto.

El sistema actual establece una estrecha comunicación entre las agencias gubernamentales que actúan en el proceso (INPESCA, IPSA, CITES y DGA).

V. Legalidad del Tiburón capturado

La captura de tiburones martillo está permitida en el país, realizándose de manera incidental con artes de pesca autorizados, utilizando anzuelos circulares y cumpliendo con la legislación existente.

Además, al ser Nicaragua miembro de la Comisión Interamericana del Atún Tropical (CIAT), el país cumple con las diferentes resoluciones adoptadas en el marco de dicha OROP. Entre ellas, la Resolución C-05-03 relacionada a tiburones y la C-11-10 relacionada a la conservación del tiburón punta blanca oceánica *Carcharhinus longimanus.*

Adicionalmente, Nicaragua da cumplimiento al Reglamento de la Organización del Sector Pesquero y Acuícola de Centroamérica OSPESCA - OSP-05-11 para prohibir la práctica del aleteo del tiburón en los Países Parte del Sistema de Integración Centroamericana (SICA). Este reglamento indica que "las aletas de tiburón no adheridas al cuerpo de manera natural o parcial, que ingresen a los países parte del SICA o que fueren exportados por éstos, deberán estar acompañadas del documento expedido por la autoridad competente del respectivo país de origen, en el que se garantice que no son producto de la práctica del aleteo".

La captura de *S. lewini* así como de otras especies del género no es ilegal en el país, ni es ilegal su consumo dentro del territorio nacional, siempre y cuando la descarga se realice respetando la normativa vigente (con las aletas adheridas, la captura no se realice en zonas restringidas, y se cumplan las regulaciones de la CIAT.

Se puede asegurar con cierto grado de certeza que los tiburones martillo capturados incidentalmente y descargados en Nicaragua provienen del Pacífico Oriental.

Exportaciones Registradas en Nicaragua de aletas secas de *Sphyrma lewini* período 2018-2022

Como se puede observar en la siguiente tabla 1, el promedio anual de las exportaciones de aleta seca es de 665 kilogramos, lo que no es significativo.

En Nicaragua, la captura incidental de *S. lewini* y otras especies de tiburones se realiza principalmente con palangre y anzuelos circulares.

La especie *Sphyrna lewini* está incluida en el Apéndice II de CITES, donde se incluyen “especies que podrían llegar a estar amenazadas de extinción a menos de que su tráfico y comercio sea controlado”. La Lista Roja de Especies Amenazadas de la UICN, cataloga a *S. lewini* como una especie en Peligro de Extinción, principalmente por ser vulnerable a pesquerías durante todos los estadios de su ciclo de vía y por la captura reportada de un número de juveniles en aguas costeras.

El manejo de tiburones en Centroamérica y el Caribe todavía aún no está bien organizado debido a que esta región está integrada por múltiples países soberanos NOAA (2014), con asimetrías en cuanto a la existencia de regulaciones básicas de pesca y su implementación.

Tabla 1. Exportaciones de aletas de tiburón

Año	Kilogramos
2018	5
2019	109.57
2020	750.93
2021	1,728.42
2022	736
Total	**3,329.92**

Fuente: MARENA-CITES Nicaragua

VI. Evaluaciones de los Stocks

Lack et al. 2014 revisó recientemente información sobre las evaluaciones de stock existentes para *S. lewini* por parte de los OROPs. Según estos autores, esta es la situación a escala global:

(1) IATTC: Estado de stock correspondiente = Desconocido. No se ha realizado una evaluación, ni hay una declaración sobre patrones observados en el stock.

(2) ICCAT: Estado de stock correspondiente = Desconocido. El Consejo Internacional Para la Exploración Marina (, International Council for the Exploration of the Sea, ICES) no pudo realizar una evaluación del stock en el 2012 debido a la insuficiencia de datos.

(3) IOTC: Estado de stock correspondiente = Incierto. Conclusión del Comité Científico de IOTC (2012)

(4) NAFO: Estado de stock correspondiente = Sobre pescado. Las evaluaciones del stock correspondientes indican un 95% de probabilidad de que el stock haya sido sobre pescado y 73% de que la sobrepesca ocurra actualmente (Hayes et al. 2009).

(5) WCPFC: Estado de stock correspondiente = Desconocido. No se ha realizado una evaluación ni hay una declaración sobre patrones observados en el stock.

En el caso de *S. lewini* en Nicaragua, los stocks correspondientes son revisados por la IATTC y ICCAT. El estado del stock en el Pacífico Oriental es menos conocido que el del Atlántico Noroccidental; y debido a lo extenso de su distribución es posible que involucre múltiples patrones de decline en diferentes zonas.

VII. Información específica al contexto/stock

Para la región Pacífica, le corresponde a la Comisión Interamericana de Atún Tropical (InterAmerican Tropical Tuna Commission, IATTC), cuyo fin es asegurar la conservación y uso de atún y especies similares, así

como de otras especies marinas (como *S. lewini*) que puedan ser capturadas por las operaciones dirigidas al atún en el Pacífico Oriental. Los países miembros incluyen: Belice, Canadá, China, Colombia, Costa Rica, Ecuador, El Salvador, Unión Europea, Francia, Guatemala, Kiribati, 44 Japón, México, Nicaragua, Panamá, Perú, República de Korea, Taipei Chino, USA, Vanuatu, y Venezuela.

En el ámbito centroamericano, la Organización del Sector Pesquero y Acuícola de Centroamérica OSPESCA es la entidad que coordina el manejo de pesquerías y actividades de acuacultura en un esfuerzo por mejorar el proceso de integración de los países de Centroamérica y República Dominicana. Sus miembros son: Belice, Costa Rica, República Dominicana, El Salvador, Guatemala, Honduras, Nicaragua, y Panamá.

La pesca de las especies de tiburón martillo del género *Sphyrna* (*incluida S. lewini*) en Nicaragua actualmente es presentada como pesca incidental, tanto por el sector pesquero como por la autoridad reguladora de la pesca, el INPESCA.

Los desembarcos de tiburón martillo registrados por el INPESCA como pesca incidental son bajos si se comparan con los registrados por otras pesquerías incidentales. Para el período 2018- 2022, las exportaciones registras del género *Sphyrna* sumaron un total de 3,329.92 Kg. de aletas secas, un promedio de 665 kg por año (tabla 1).

VIII. Tipos de pesquería

En Nicaragua la captura incidental de adultos y sub adultos de tiburones martillo se da en la zona económica exclusiva por la flota artesanal empleando principalmente líneas de palangre pelágicas.

IX. Unidades de gestión a nivel regional

En Nicaragua el stock de *S. lewini* tanto del Caribe como del Pacífico es gestionado por el INPESCA, institución gubernamental miembro de la

Organización del Sector Pesquero y Acuícola de Centroamérica OSPESCA.

La carne de tiburón en general, y la de *S. lewini* en particular, es poco apetecida, e incluso se considera desagradable en muchos países, incluyendo Nicaragua. Supuestamente este rechazo resulta de la gran concentración de urea que se almacena en la carne y piel de los tiburones adultos, aunque es evidente que también existe consumo local, principalmente neonatos y recién nacidos.

Debido al poco aprecio del cual goza entre consumidores, el precio de la carne de tiburón martillo (y otras especies) es considerablemente menor que de sus aletas.

X. Información e intercambio de datos

La captura incidental de *S. lewini* por parte de la pesca artesanal es posiblemente mayor, especialmente en la costa Pacífica, aunque la información esta notablemente dispersa.

XI. Embarcaciones que están involucradas en la captura de esta especie

En Nicaragua se clasifica la flota pesquera en dos categorías: artesanal (hasta 15 metros de eslora) e industrial (mayores de 15 metros de eslora). La flota artesanal incluye aproximadamente 350 embarcaciones de pequeña escala que opera en zonas costeras (INPESCA).

La flota industrial incluye 1 embarcación palangrero en el océano pacífico y 3 en el mar caribe, las cuales operan en la zona económica exclusiva.

XII. Medidas de gestión realizadas en el país

Nicaragua cuenta con normativas nacionales para la conservación de los tiburones, entre ellas están, el Plan de Acción para la Conservación y Ordenación de los Tiburones en Nicaragua PAN – Tiburones que fue elaborado en el año 2010 con el apoyo de la FAO y de la Organización

Pesquera de Centroamérica OSPESCA en base a los antecedentes del PAI Tiburones.

El país se ha caracterizado por ser garante en la protección de los elasmobranquios, en ese sentido, la Ley 489, Ley de Pesca y Acuicultura de Nicaragua, en su Capítulo III, Arto. 75, prohíbe la captura de tiburones en aguas continentales y marinas, con el único propósito de cortarle cualquiera de sus aletas, incluyendo la cola, desechando el resto del cuerpo de la especie en alta mar, zonas costeras u otros sitios.

De igual forma, se encuentra regulado el desembarque, transporte, almacenamiento y comercialización de aletas de tiburón frescas, congeladas, secas o saladas.

El Reglamento de la Ley No. 489, Decreto No. 9-2005 en el Capítulo VI, mediante el artículo 42 inciso 3, prohíbe a toda embarcación llevar a bordo o desembarcar una cantidad de aletas con un peso superior al cinco (5) por ciento del peso total de los cuerpos de los tiburones capturados y encontrados a bordo.

Para poder exportar aletas de tiburón es necesario que los exportadores demuestren con facturas y/o constancia la comercialización de la carne de todo el cuerpo. El incumplimiento de esta disposición, implica la aplicación de una sanción establecida en el numeral 5 del Arto. 123 de la Ley No. 489.

Nicaragua como país miembro de la Organización del Sector Pesquero y Acuícola de Centroamérica aplica los siguientes Reglamentos: Reglamento OSP 0511: Reglamento Regional para Prohibir la Práctica del Aleteo del Tiburón en los países parte del SICA, Reglamento Regional OSP 07-2014: Reglamento Regional para Fortalecer la Sostenibilidad Poblacional del Tiburón Ballena (*Rhincodon Typus*) en los países miembros del SICA y las siguientes Resoluciones de CIAT: Resolución C-21-06: Enmienda de la Resolución C-19-05, Medidas de Conservación para las Especies de Tiburones con especial énfasis en

el Tiburón Sedoso (*Carcharhinus falciformis*), para los años 2022 y 2023, Resolución CIAT C-19-06: Conservación de Tiburones Ballena, Resolución CIAT C-16-05: Resolución sobre la Ordenación de las Especies de Tiburones, Resolución CIAT C-11-10: Resolución sobre la Conservación del Tiburón oceánico Punta Blanca capturado en asociación con la pesca en el área de la Convención de Antigua,

De igual manera, el Ministerio del Ambiente y de los Recursos Naturales (MARENA), mediante Resolución Ministerial No. 028-2023, publicada en el Diario Oficial la Gaceta No. 96, establece una veda permanente a 3 especies de tiburones. *Carcharhinus leucas, Rhincodon typus y Carcharhinus longimanus*.

XIII. Dictamen del DENP para especies del género *Sphyrna* de Nicaragua.

En cuanto a la elaboración de dictámenes de extracción no perjudicial (DENP) para los tiburones el país aún no cuenta con un instrumento oficial donde se dictaminen las extracciones no perjudiciales, realizando inspecciones de las especies que se desembarcan, control de la comercialización de la carne con respecto a los porcentajes de aletas destinadas a la exportación.

Además, no se cuenta con factores de conversión para la estimación del peso vivo de las especies.

Por lo que solicitamos a la Secretaría de la Convención CITES apoyo técnico y económico para desarrollar un formato específico para dictaminar la extracción no perjudicial de las especies de tiburones y rayas y también para estimar los factores de conversión del peso vivo de las distintas especies de elasmobranquios que se desembarcan en nuestro país.

RESPUESTAS DE NICARAGUA

TIBURON MARTILLO *Sphirna lewini*

Distribución de S. lewini en aguas nicaragüenses, incluida la presencia de la especie en zonas protegidas.

El tiburón martillo S. lewini se encuentra distribuido en el Océano Pacífico y en el mar Caribe de Nicaragua. Por la autonomía de pesca de las embarcaciones, puede afirmarse que los especímenes de *S. lewini* capturados incidentalmente son descargados en puertos y playas de Nicaragua estas poblaciones de tiburones provienen de las siguientes dos subpoblaciones: el Segmento Distinto de la Población SDP del Atlántico Central y Suroccidental, y el SDP del Pacifico Oriental.

Tamaño, estado y tendencias de la población de S. lewini en aguas nicaragüenses y en cualquier otra zona de pesca pertinente, incluidos los detalles de sistemas de seguimiento de la población que se estén aplicando.

Nicaragua no cuenta con un programa de monitoreo de tiburones por lo que se desconoce el estado poblacional de esta especie.

Únicamente se registra la información de desembarques de tiburones martillo con las aletas adheridas al cuerpo y exportaciones de aletas.

El país cuenta con normativas para la conservación de los tiburones, entre ellas están, el Plan de Acción para la Conservación y Ordenación de los Tiburones en Nicaragua PAN – Tiburones, elaborado en el año 2010 con el apoyo de la FAO y de la Organización Pesquera de Centroamérica OSPESCA en base a los antecedentes del PAI Tiburones.

Amenazas pertinentes para S. lewini en Nicaragua (y medidas adoptadas para reducirlas).

No se cuenta con información que indique que esta especie se encuentre amenazada en Nicaragua.

Datos de desembarques de S. lewini de las principales flotas nicaragüenses (incluidas las flotas artesanales e industriales, y si los especímenes desembarcados son adultos o juveniles), detalles del tamaño de estas flotas, las zonas clave donde se pesca la especie, y si la especie se captura como especie objetivo o como captura incidental en cada pesquería.

En Nicaragua se clasifica la flota pesquera en dos categorías: artesanal (hasta 15 metros de eslora) e industrial (mayores de 15 metros de eslora). La flota artesanal incluye aproximadamente 350 embarcaciones de pequeña escala que opera en zonas costeras (INPESCA).

La flota industrial incluye 1 embarcación palangrero en el océano pacífico y 3 en el mar caribe, las cuales operan en la zona económica exclusiva.

En Nicaragua el tiburón martillo es capturado de forma incidental en estado de adultos y sub adultos en la zona económica exclusiva con la participación de una flota artesanal que dirige su pesca a las escamas y emplea principalmente líneas de palangre pelágicas.

Nicaragua cuenta con información sobre capturas incidentales que realizan pescadores artesanales que utilizan palangre para la pesca de diferentes especies de escamas en el Litoral Pacífico y Mar Caribe; dicha información está disponible en la página web del INPESCA. En su mayoría los especímenes capturados incidentalmente son adultos.
http://inpesca.gob.ni/images/Anuarios%20Pesqueros/Anuario%20pesquero%20y%20acuicola%202021-011222%20BCN-FINAL%202A.pdf

Datos sobre las organizaciones regionales de ordenación pesquera de las que Nicaragua es parte contratante.

Nicaragua es miembro de la Comisión Interamericana del Atún Tropical (CIAT) y de la Comisión Internacional del Atún del Atlántico (ICCAT) el país cumple con las diferentes resoluciones adoptadas en el marco de estas OROP. Entre ellas, la Resolución C-05-03 de la CIAT relacionada a tiburones y la C-11-10 relacionada a la conservación del tiburón punta blanca oceánica *Carcharhinus longimanus.*

Es país parte de la Organización Centroamericana de Pesca y Acuicultura OSPESCA y da cumplimiento al Reglamento OSP-05-11 de esta organización el cual prohibe la práctica del aleteo del tiburón en los Países Parte del Sistema de Integración Centroamericana (SICA).

Detalles sobre el uso y comercio doméstico de S. lewini.

La totalidad de las aletas de los tiburones martillo capturados incidentalmente y descargados en Nicaragua se destinan a la exportación, dado que no hay evidencia de consumo interno de este producto. La totalidad de la carne se destina al consumo doméstico. La flota de pequeña escala o artesanal también captura incidentalmente tiburones martillo, sobre todo en estados de desarrollo juveniles la cual también es consumida localmente.

Detalles sobre cómo se gestiona y regula la captura y el comercio de S. lewini en Nicaragua, incluyendo si existen restricciones para la exportación de la especie. Le agradeceríamos que nos facilitara copias de la legislación pertinente.

El país se ha caracterizado por ser garante en la protección de los elasmobranquios, en ese sentido, la Ley 489, Ley de Pesca y Acuicultura de Nicaragua, en su Capítulo III, Arto. 75, prohíbe la captura de tiburones en aguas continentales y marinas, con el único propósito de cortarle cualquiera de sus aletas, incluyendo la cola, desechando el resto del cuerpo de la especie en alta mar, zonas costeras u otros sitios.

La captura de *S. lewini* así como de otras especies del género no es ilegal en el país, ni es ilegal su consumo dentro del territorio nacional, siempre y cuando la descarga se realice respetando la normativa vigente (con las aletas adheridas, la captura no se realice en zonas restringidas, y se cumplan las regulaciones establecidas.

Nicaragua también cuenta un Plan de Acción para la Conservación y Ordenación de los Tiburones en Nicaragua PAN – Tiburones, elaborado en el año 2010 con el apoyo de la FAO y de la Organización Pesquera de Centroamérica OSPESCA, para garantizar la conservación de todos los tiburones incluido la Sphirna lewini.

De igual manera a través del Ministerio del Ambiente y los Recursos Naturales (MARENA) mediante Resolución ministerial que se actualiza anualmente se establece una veda permanente a 5 especies de tiburones.

http://inpesca.gob.ni/index.php/en/direcciones/dopa/leyes-decretos/ley-de-pesca-no-489

https://www.iattc.org/GetAttachment/3fdbac75-af12-4bb5-98b5-92845231b95d/NIC-C-05-03-C-16-04_Tiburones.pdf

https://www.sica.int/busqueda/busqueda_archivo.aspx?Archivo=odoc_53387_1_12102010.pdf

http://digesto.asamblea.gob.ni/consultas/util/pdf.php?type=rdd&rdd=0kNa2F%2BGthY%3D#:~:text=La%20preservaci%C3%B3n%20del%20ambiente%20y,bajo%20procesos%20transparentes%20y%20p%C3%BAblicos.

Detalles de cómo se realizan los dictámenes de extracción no perjudicial de la CITES para la especie, incluidas las instituciones implicadas en el proceso.

En cuanto a la elaboración de dictámenes de extracción no perjudicial (DENP) para los tiburones el país aún no cuenta con un instrumento oficial donde se dictaminen las extracciones no perjudiciales, realizando inspecciones de las especies que se desembarcan, control de la comercialización de la carne con respecto a los porcentajes de aletas destinadas a la exportación.

Además, no se cuenta con factores de conversión para la estimación del peso vivo de las especies.

Por lo que solicitamos a la Secretaría de la Convención CITES apoyo técnico y económico para desarrollar un formato específico para dictaminar la extracción no perjudicial de las especies de tiburones y rayas y también para estimar los factores de conversión del peso vivo de las distintas especies de elasmobranquios que se desembarcan en nuestro país.

Detalles de actividades conocidas de pesca y comercio ilegal.

No se tiene información de pesca ni de comercio ilegal de S. lewini

Datos de contacto de expertos pertinentes en el país.

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Especialista Pesquero DIP – INPESCA
mtorrez@inpesca.gob.ni

Oman

To the CITES Secretariat

سلطنة عمان
SULTANATE OF OMAN
هيئة البيئة
ENVIRONMENT AUTHORITY

Nº 17/1642/6/3/ 120 /23 Date: 17/08/2023

To: Thea Carroll
Chief/ Science Unit
CITES
Genève, Switzerland
E-mail: info@cites.org

After compliments,

Subject: Review of the Significant Trade of Specimens of Appendix-11 Species { Resolution Conf. 12. 8 (Rev. COP18) }.

With reference to your letter dated 05th July 2023 regarding the abovementioned subject.

The procedures that will be taken by The Sultanate of Oman in this matter which are summarized as follows:

1- Stop the issuance of permits to export shark species listed in appendix-11 in Cites and their derivatives from The Sultanate of Oman for a period of 6 months.
2- (None-Detriment Finding) studies will be implemented firstly on the 2 species, to be announced after that other species listed in Cites appendix-11 list.

It would be highly appreciated if you could take the necessary actions related to this information.

Thank you for your co-operation and best regards

سلطنة عمان
دائرة التعاون الدولي
هيئة البيئة

Dr. Basma Saif Al-Amri
Acting Director of International Co-operation Department

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Tel: +968 24 404500 | Fax: +968 24 404581
PO. Box 323, Muscat, P.C: 100, Sultanate of Oman
هاتف: ٢٤٤٠٤٥٠٠ ٩٦٨+ | فاكس: ٢٤٤٠٤٥٨١ ٩٦٨+
ص.ب: ٣٢٣، مسقط، الرمز: ١٠٠، سلطنة عمان

التصنيف : غير مصنف

الرقم : ٠١-١٥٢٠/١١/٢٠٢٢

التاريخ : 07:20 19/10/2023 AM

Ivonne Higuero

CITES Secretary General

CITES

After Complements ,,,

Oman CITES Non-Detriment Findings for shark spices

I Would like to convey to you the Sultanate of Oman warm greetings and the unwavering commitment to cooperation with CITES Secretary .
Furthermore, I would like to inform you that we have conducted two studies (enclosed) regarding the shark species and would like to request and extension on the trade of shark fins to allow the local companies involved in this trade to correct their situation till December 2023 and then the ban will take effect for six months for the study results to be concluded.

please accept of dearest wishes and regards .

Basma AL-amri

د.بسمة بنت سيف بن سليمان العامري
مديرة دائرة التعاون الدولي
دائرة التعاون الدولي
هيئة البيئة
Thu Oct 19 12:30:21 GST 2023

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ص.ب: ٣٢٣، مسقط، الرمز: ١٠٠، سلطنة عمان

Senegal
To the CITES Secretariat

N° 04 / DEFCCS/DGF/ds

REPUBLIQUE DU SENEGAL
Un Peuple - Un But - Une Foi

MINISTERE DE L'ENVIRONNEMENT
DU DEVELOPPEMENT DURABLE ET
DE LA TRANSITION ECOLOGIQUE

DIRECTION DES EAUX ET FORETS, CHASSES
ET DE LA CONSERVATION DES SOLS

AUTORITE DE GESTION CITES

Dakar, le 04/09/2023

Le Chef de l'Organe
de gestion CITES

Objet : Réponse à la Notification CITES F-Post AC32-SG

Référence : notification **n° DR/TC/RST/2023/SG** en date du 5 juillet 2023

Par notification **n° DR/TC/RST/2023/SG** en date du 5 juillet 2023 portant **Etude du commerce important de spécimens d'espèces inscrites à l'annexe II** de la CITES, le Secrétariat Général a demandé au Sénégal de lui faire parvenir la base scientifique sur laquelle il s'est appuyé pour établir que les exportations de *Carcharhinus longimanus* du pays ne sont pas préjudiciables à la survie de l'espèce en question, conformément à l'Article IV de la Convention.

Faisant suite à ladite notification mentionnée précédemment, le Sénégal transmet, les éléments de réponse afférents à l'augmentation de 1,5% des exportations entre 2021 et 2022, issus de la concertation de tous les acteurs (Organe de gestion CITES, Service des pêches, Scientifiques, Conseil national de la pêche, Mareyeurs…).

En effet, les investigations effectuées après réception de la notification ont révélé que la Direction des Pêches Maritimes (DPM) chargée de l'exploitation, de la gestion et du suivi des captures des ressources halieutiques au niveau national n'a pas répertorié le ***Carcharhinus longimanus*** dans sa base de données statistiques.

De l'avis des acteurs rencontrés, les exportations signalées pour le Sénégal, le seraient en tant que réexportation et non des produits issus d'espèces capturées dans les eaux sénégalaises mais plutôt proviendraient de l'introduction en provenance des eaux internationales.

Par ailleurs, il faut noter que pour l'instant, des études ne sont pas encore menées pour connaitre le statut exact du ***Carcharhinus longimanus*** dans les eaux sénégalaises.

A la lumière des informations reçues, la hausse des exportations signalée pour le ***Carcharhinus longimanus*** au Sénégal ne serait pas la conséquence d'une pêche accrue de l'espèce au niveau de la Zone Economique Exclusive du pays puisque l'espèce n'est pas répertoriée officiellement au niveau des déparquements.

Elle serait plutôt liée à des pratiques d'introduction en provenance de la mer c'est-à-dire des eaux sous aucune juridiction nationale.

Pour mieux contribuer au contrôle et à la bonne mise en application de la Convention, le Sénégal s'engage à surveiller davantage, plus strictement les opérations d'importations-réexportations de spécimens d'espèces inscrites à l'Annexe II de la CITES.

A cet égard, le Sénégal, sollicite officiellement, l'accompagnement technique et financier du Secrétariat de la CITES, pour arriver à faire des avis de commerce non préjudiciable pour les espèces concernées en vue d'une exploitation durable des ressources halieutiques.

Madame le Secrétaire Général, le Sénégal réitére sa profonde préoccupation pour œuvrer à l'application correcte des directives de la CITES pour inscrire le commerce des espèces sauvages dans la durabilité.

Franche collaboration.

Direction des Eaux, Forêts, Chasses et la Conservation des Sols

Doudou SOW

A
Madame, la Secrétaire générale
De la CITES
Genève- Suisse

From:	doudou sow
To:	Dejana Radisavljevic
Cc:	Rokhaya Pléa; Mathias Loertscher; Karen Gaynor; Thea Henriette Carroll; Hyeon Jeong Kim
Subject:	Re: Lettre jointe: Étude du commerce important de spécimens d"espèces inscrites à l"Annexe II [Résolution Conf. 12.8 (Rev. CoP18)]
Date:	Wednesday, 5 July, 2023 11:00:30
Attachments:	image002.png image003.png image004.png image005.png image006.png

Bonjour chers collegues. Nous accusons bonne reception . Cependant nous invitons a un accompagnement scientifique et materiel pour arriver a faire l,etude du commerce important . L,etude biologique de espece en question requiert les grands moyens et une expertise speciale, sans soutien du Secretariat de la CITES, nous serons dans l,impossibite de realiser l ,ACNP de cette combinaison espe ce/pays.
Cordialement.

Le mer. 5 juil. 2023, 06:44, Dejana Radisavljevic <dejana.radisavljevic@cites.org> a écrit :

> Chers collègues,
>
> Veuillez trouver ci-joint une lettre de la part de Mme Thea Carroll, Cheffe de l'Unité scientifique du Secrétariat CITES au sujet de l' Étude du commerce important de spécimens d'espèces inscrites à l'Annexe II [Résolution Conf. 12.8 (Rev. CoP18)].
>
> N'hésitez pas à me contacter pout toute question à cet égard.
>
> Cordialement,
>
> DEJANA RADISAVLJEVIC (she/her)
>
> **Research Assistant/Assistante de recherche/Auxiliar de investigaciones**
>
> Science Unit/Unité scientifique/Unidad cientifica
>
> CITES Secretariat/Secrétariat CITES/Secretaria CITES
>
> E-mail: dejana.radisavljevic@cites.org
> radisavljevicd@un.org

Telephone: +41(0) 22 917 91 28

CITES Secretariat, Palais des Nations,
Ave. de la Paix 8-14, 1211 Geneve, Switzerland

MIE, 11 Chemin des Anémones,
1219 Châtelaine-Genève, Switzerland

Senegal
To UNEP-WCMC

N° 009 / DEFCCS/DGF/dd

REPUBLIQUE DU SENEGAL
Un Peuple - Un But - Une Foi

MINISTERE DE L'ENVIRONNEMENT
DU DEVELOPPEMENT DURABLE ET
DE LA TRANSITION ECOLOGIQUE

DIRECTION DES EAUX ET FORETS, CHASSES
ET DE LA CONSERVATION DES SOLS

AUTORITE DE GESTION CITES

Dakar, le 31/10/2023

Le Chef de l'Organe
de gestion CITES

Objet : Réponse à la Demande d'information concernant une espèce soumise à l'Étude du commerce Important CITES

Référence : N. réf. : DR/TC/RST/2023

Le Centre mondial pour le suivi de la conservation du Programme des Nations Unies pour l'environnement (UNEP-WCMC), chargé de rassembler des informations concernant l'espèce *Carcharhinus longimanus* du Sénégal, qui a été retenue pour inclusion dans l'étape 2 du processus lors de la 32ème réunion du Comité pour les animaux (AC32) nous a contacté pour obtenir toute information sur la biologie, la gestion et le commerce de *Carcharhinus longimanus* au Sénégal,

Par lettre n° 04 / DEFCCS/DGF/ds du 04 septembre 2023, l'organe de gestion de la CITES du Sénégal après concertation avec les acteurs (Direction des Eaux et Forêts et Chasses, Direction des Parcs Nationaux, Direction des Aires Marines protégées, Organe de gestion CITES, Service des pêches, Scientifiques, Conseil national de la pêche, Mareyeurs…) avait informé le secrétariat de la CITES que :

- ***Carcharhinus longimanus*** n'est pas répertoriée officiellement au niveau des déparquements et dans la base de données statistiques de la Direction des Pêches Maritimes (DPM) chargée de l'exploitation, de la gestion et du suivi des captures des ressources halieutiques au niveau national ;
- Les exportations signalées pour le Sénégal, le seraient en tant que réexportation et non des produits issus d'espèces capturées dans les eaux sénégalaises mais plutôt proviendraient de l'introduction en provenance des eaux internationales. ;
- L'espèce n'est pas pêchée au Sénégal et n'a aucune incidence économique pour les mareyeurs.

Fort d toutes ces considérations, le Sénégal a transmis le 30 octobre 2023 une notification au secrétariat de la CITES pour déclarer **un quota zéro exportation volontaire pour le Requin Longimane** le temps de réaliser l'ACNP de l'espèce, seul gage d'une exploitation durable.

Pièces jointes ***:***

- Lettre de notification au Secrétariat de la CITES

Au
Responsable du Centre mondial pour le suivi de la conservation du Programme des Nations Unies pour l'environnement (UNEP-WCMC)
Cambridge- Angleterre

REPUBLIQUE DU SENEGAL
Un Peuple - Un But - Une Foi

MINISTERE DE L'ENVIRONNEMENT
DU DEVELOPPEMENT DURABLE ET
DE LA TRANSITION ECOLOGIQUE

DIRECTION DES EAUX ET FORETS, CHASSES
ET DE LA CONSERVATION DES SOLS

AUTORITE DE GESTION CITES

N° 008 / DEFCCS/DGF/dd

Dakar, le 30/10/2023

Le Chef de l'Organe
de gestion CITES

Objet : Notification de quota zéro volontaire pour le Requin Longimane

Référence : notification **n° DR/TC/RST/2023/SG** en date du 5 juillet 2023

Par notification **n° DR/TC/RST/2023/SG** en date du 5 juillet 2023 portant **Etude du commerce important de spécimens d'espèces inscrites à l'annexe II** de la CITES, le Secrétariat Général a demandé au Sénégal de lui faire parvenir la base scientifique sur laquelle il s'est appuyé pour établir que les exportations de *Carcharhinus longimanus* du pays ne sont pas préjudiciables à la survie de l'espèce en question, conformément à l'Article IV de la Convention.

Par lettre n° 04 / DEFCCS/DGF/ds du 04 septembre 2023, l'organe de gestion de la CITES du Sénégal avait transmis une réponse après concertation avec les acteurs (Direction des Eaux et Forêts et Chasses, Direction des Parcs Nationaux, Direction des Aires Marines protégées, Organe de gestion CITES, Service des pêches, Scientifiques, Conseil national de la pêche, Mareyeurs...) pour souligner que :

- ***Carcharhinus longimanus*** n'est pas répertoriée officiellement au niveau des déparquements et dans la base de données statistiques de la Direction des Pêches Maritimes (DPM) chargée de l'exploitation, de la gestion et du suivi des captures des ressources halieutiques au niveau national ;
- Les exportations signalées pour le Sénégal, le seraient en tant que réexportation et non des produits issus d'espèces capturées dans les eaux sénégalaises mais plutôt proviendraient de l'introduction en provenance des eaux internationales. ;
- L'espèce n'est pas pêchée au Sénégal et n'a aucune incidence économique pour les mareyeurs.

BP 1831, Dakar Hann -Téléphone 00221 33 831 01 01 - Email : laforez@yahoo.fr

Scanné avec CamScanner

Fort de toutes ces considérations, tous les acteurs ont décidé d'un commun accord de déclarer un quota zéro exportation volontaire pour le Requin Longimane.

Ainsi, pour s'inscrire dans une logique d'exploitation durable et être en phase avec la convention, **le Sénégal déclare un quota zéro exportation volontaire pour le Requin Longimane** et sollicite par la même occasion l'accompagnement technique et financier du Secrétariat de la CITES pour faire l'avis de commerce non préjudiciable pour ladite espèce afin de mieux cerner son exploitation future en vue du respect du commerce international des espèces inscrites en annexe II, seul gage d'une exploitation durable.

A
Madame, la Secrétaire
Générale de la CITES
Genève- Suisse

Dairou DIALLO
Ingénieur des Eaux et Forêts

BP 1831, Dakar Hann -Téléphone 00221 33 831 01 01 - Email : laforez@yahoo.fr

Scanné avec CamScanner

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வனசீவராசிகள் பாதுகாப்புத் திணைக்களம்
DEPARTMENT OF WILDLIFE CONSERVATION
ප්‍රධාන කාර්යාලය - අංක : 811/ A, ජයන්තිපුර පාර, බත්තරමුල්ල 10120
பிரதான அலுவலகம் - இல : 811/ A, ஜயந்திபுர வீதி, பத்தரமுல்லை 10120
Head Office - No : 811/ A, Jayanthipura Road, Battaramulla 10120

මගේ අංකය / எனது இல. / My No.	WL/05/15/05/01	ඔබේ අංකය / உமது இல. / Your No.	DR/TC/RST/2023/LK	දිනය / திகதி / Date	09 /10/2023

Thea Carroll,
Chief, Science Unit,
CITES Secretariat,
Palais des Nations,
Geneva.

Re: Review of Significant Trade in Appendix-II Species
[Resolution Conf. 12.8 (Rev. COP18)]

I hope this letter finds you well. I am writing to express our sincere apologies for the delay in responding to your letter bearing reference DR/TC/RST/2023/LK, dated 5/07/2023, regarding the Review of Significant Trade in specimens of Appendix-II species, as regulated by Resolution Conf. 12.8 (Rev. COP18) of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The delay in our response was primarily due to the time taken to thoroughly study the context and implications of your communication.

02 At Department of Wildlife Conservation, we take our responsibilities under CITES very seriously, particularly concerning the conservation and sustainable management of species listed under Appendix II. Over the past years, our department has restricted the issuance of permits for the trade of specimens from these species to safeguard their survival and ensure that their international trade is conducted sustainably.

03 In accordance with our commitment to responsible trade, we have consistently sought recommendations from the Department of Fisheries and Aquatic Resources, which serves as our designated Scientific Authority, prior to issuing any permits. This consultation process has been instrumental in evaluating the potential impact of trade on these species.

04 In light of the recent statistics that indicate a significant change in the export of the mentioned species, we acknowledge the need to revisit our recommendation procedures and initiate thorough assessments to establish non-detrimental findings. We recognize the importance of involving stakeholders and collaborating closely with the Scientific Authority in this endeavor.

05 To this end, we are actively working in partnership with the Chair of the Animals Committee to develop and establish non-detrimental findings. Furthermore, we are in close coordination with the Ministry of Foreign Affairs to ensure full compliance with all relevant international conventions in this context.

06 We kindly request your understanding and patience as we undertake these critical assessments and procedures to fulfill our obligations under CITES. The complexity of the issue necessitates a comprehensive approach, and we are committed to providing you with a detailed report as per the requirements outlined in Appendix D of your letter.

07 Please be assured that our department is dedicated to upholding the highest standards of compliance with the Convention on International Trade in Endangered Species of Wild Fauna and Flora. We value the conservation and sustainable management of these species as a top priority.

දුරකථන தொலைபேசி Telephone
අධ්‍යක්ෂ ජනරාල් - 011 2888581
අධ්‍යක්ෂ (පාලන) - 011 2888583
අධ්‍යක්ෂ (මෙහෙයුම්) - 011 2871530
අධ්‍යක්ෂ (රක්ෂිත ප්‍රදේශ කළමනාකරණ) - 011 2871531
අධ්‍යක්ෂ (වනජීවී සෞඛ්‍ය) - 011 2871535
අධ්‍යක්ෂ (මුද්‍රල්) - 011 2888584
ප්‍රධාන කාර්යාලය / அலுவலகம் / Head Office: 011 2888585
ෆැක්ස් / தொலைநகல் / Fax : 011 2883355
ඊ-මේල් / மின்னஞ்சல் / E- mail : dg@dwc.gov.lk
වෙබ් අඩවිය / வலைப்பின்னல் / Website : www.dwc.gov.lk

07 Please be assured that our department is dedicated to upholding the highest standards of compliance with the Convention on International Trade in Endangered Species of Wild Fauna and Flora. We value the conservation and sustainable management of these species as a top priority.

08 Thank you for your understanding, and we appreciate your cooperation as we work diligently to address this matter. If you have any further inquiries or require additional information, please do not hesitate to contact us.

Sincerely,

M.G.C. Sooriyabandara
Director General
Head, CITES Management Authority, Sri Lanka

M. G. C. SOORIYABANDARA
Director General
Department of Wild Life Conservation
No. 811/A, Jayanthipura Road,
Battaramulla.

Université de Lomé

AUTORITE SCIENTIFIQUE CITES DU TOGO
FACULTE DES SCIENCES

REPUBLIQUE TOGOLAISE
Travail-Liberté–Patrie

N° 009 / AS/CITES/T/2023

Lomé, le 16 octobre 2023

L'Autorité Scientifique CITES Togo

À

Thea Carroll
Cheffe, Unité scientifique, Secrétariat CITES
Palais des Nations, Avenue de la Paix 8-14
1211 Geneva 10, Switzerland

Objet: Etude du commerce important de spécimens d'espèces inscrites à l'Annexe II

Le 21 septembre 2023, nous avons reçu la correspondance N. réf.: DR/TC/RST/2023 relative à Étude du commerce important de spécimens d'espèces inscrites à l'Annexe II [Résolution Conf. 12.8 (Rev. CoP18)] (signée Thea Carroll, Cheffe, Unité scientifique), invitant le Togo à coopérer pleinement avec le PNUE-WCMC dans cette étude. Il s'agit d'un travail de recherche pour rassembler des informations sur la biologie, la gestion et le commerce de certaines espèces étudiées par le PNUE-WCMC.

Le document joint à cette correspondance datant du 26 septembre 2023 (signée Ciara Stafford Centre mondial pour le suivi de la conservation du Programme des Nations Unies pour l'environnement (UNEP-WCMC), fait mention de la demande d'information concernant une espèce soumise à l'Étude du commerce important CITES notamment le *Python regius*. La demande concernant le *Python regius* a été faite lors de l'étape 2 du processus lors de la 32ème réunion du Comité pour les animaux (AC32). Dans l'ensemble, les informations demandées par PNUE-WCMC pour cette étude concerne le statut de conservation et le statut CITES de l'espèce au Togo.

Chers collègues, nous pouvons vous rassurer que l'Organe de gestion CITES du Togo et l'Autorité Scientifique CITES du Togo travaille d'arche pied pour répondre aux préoccupations du PNUE-WCMC sur le *Python regius*. Dans ce sens, le Togo a même bénéficié de la part du Secrétariat CITES, un appui financier notamment le Programme d'Aide au Respect de la Convention (PARC), qui est en cours d'exécution. Dans le cadre de ce projet, nous travaillons pour la réalisation des ACNP d'une dizaine d'espèces dont le *Python regius*. Nous venons de valider le protocole de travail en atelier national les 05 et 06 octobre 2023.

Bien évidemment, nous disposons des données élémentaires pour répondre aux préoccupations du PNUE-WCMC et du Comité pour les animaux (AC32). Cependant, nous présumons que ces données seront améliorées dans le cadre du projet PARC. Ainsi dans les 6 prochains mois, avec l'appui du projet

PARC, le Togo travaillera pour fournir au PNUE-WCMC, Comité des Animaux et au Comité Permanent les informations détaillées sur le statut de l'espèce non seulement au Togo, mais également sur l'ensemble de son aire de distribution. Ces données pourront permettre de formuler un avis de commerce non préjudiciable qui, au besoin pourra garantir la durabilité du commerce de l'espèce ou sa suspension pure et simple.

Sur la base de ce qui précède, nous voudrions solliciter auprès du PNUE-WCMC et du Comité des Animaux, un délai de 6 mois pour permettre au Togo de fournir des données détaillées pour l'étude du commerce important du *Python regius*.

En vous remerciant par avance de toute la bienveillance attention avec laquelle vous ferez traiter cette demande, nous vous prions d'agréer ***Madame Thea Carroll***, ***Cheffe, Unité scientifique***, (Secrétariat CITES), l'expression de nôtres cordiales salutations.

Pour l'autorité Scientifique CITES TOGO
Le Coordinateur

Prof. Gabriel Hoinsoudé SEGNIAGBETO

Copie: Organe de gestion CITES Togo
Cheffe, Unité scientifique
Centre mondial pour le suivi de la conservation du Programme des Nations Unies pour l'environnement (UNEP-WCMC)

Uzbekistan

To the CITES Secretariat and UNEP-WCMC

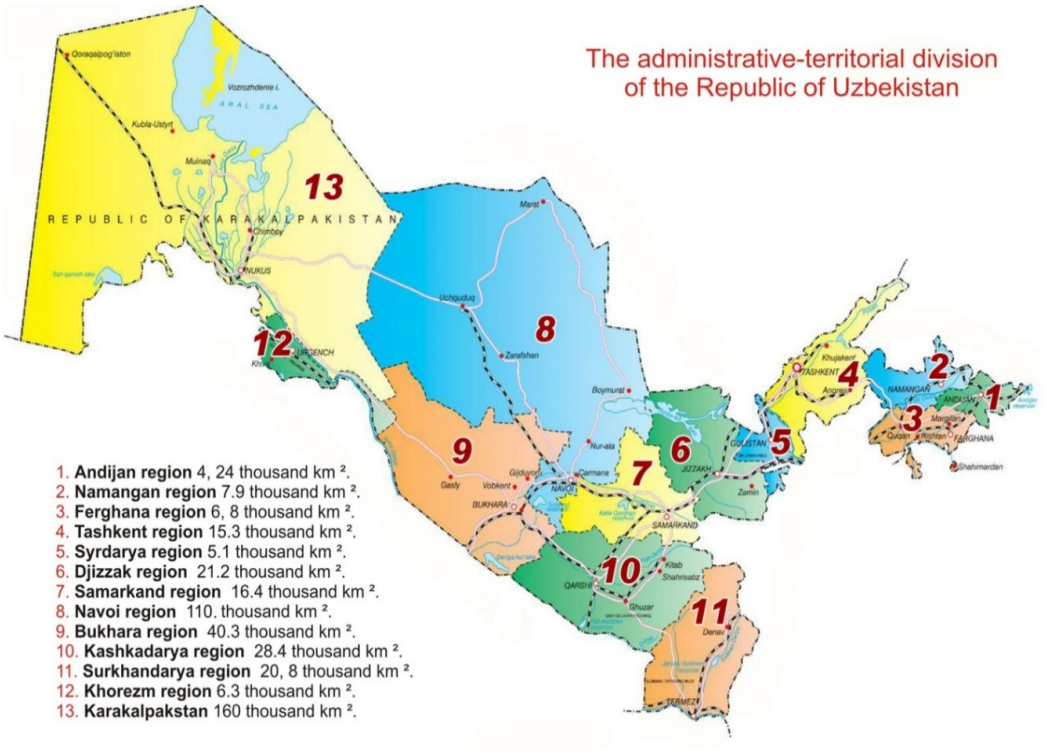
To Thea Carroll, Chief Scientific Unit

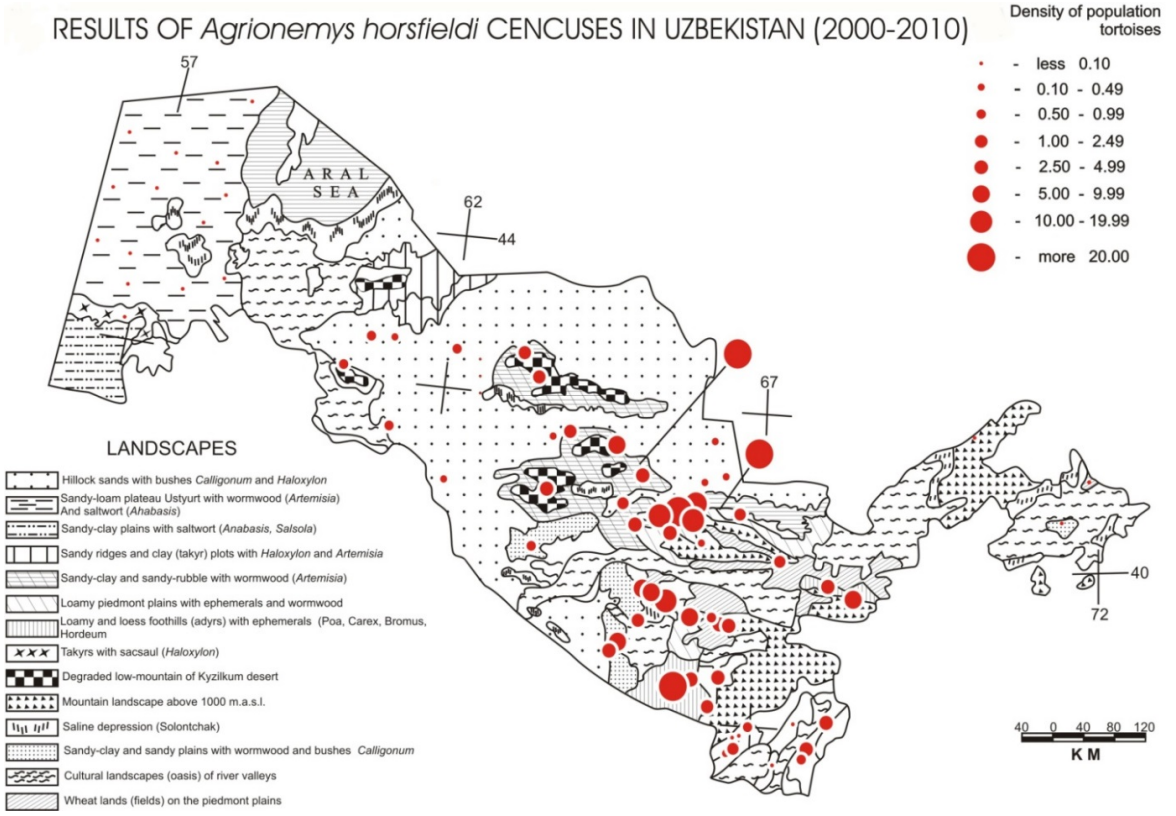
And Ciara Stafford, Nature Conserved UN Environment Programme World Conservation Monitoring Center

Answer on letter DR/TC/RST/2023 (from 21 September 2023)

The Scientific Authority of CITES Uzbekistan, according to Resolution of the Cabinet of Ministers dated April 25, 1997 N 433-I, is part of the Academy of Sciences and is represented by specialists from the Institute of Zoology, who conduct surveys throughout the territory where the Central Asian tortoise lives, and also collect and evaluate all available information, related to *Agrionemys horsfieldii*. Another source of information is Zoocomplex LLC, which, together with the Society of Amphibians and Reptiles (Moscow, Russia), represented by its member D.A. Bondarenko, carried out censuses throughout the Republic. The results of these studies are presented in the articles by Bondarenko D.A. and Peregontsev E.A.

According to the records of 2000-2010. Employees of the Zoocomplex and representatives of the Society for the Protection of Amphibians and Reptiles (Russian Federation (Moscow)) a map of distribution of tortoises in the natural and territorial complexes of Uzbekistan has been drawn up.





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Ministry of Ecology collects applications from nature users and submits them to the Academy of Sciences, its structural unit – the Institute of Zoology. Employees of the Institute of Zoology, who are employees of the CITES Scientific Authority, review this application and, based on the accounting data, conclude on the number of places and timing of the seizure, guided by Article IV 2 (a) of the Convention that this does not threaten the survival of the species. According to Article IV, paragraph 3 of the Convention, at the end of 2019, Uzbekistan CITES Scientific Authority introduced a restriction on the seizure of *Agrionemys horsfieldii* - W and R. The CITES Scientific Authority issues its opinion on each shipment of animals exported. Only the CITES Scientific Authority forms a withdrawal quota and submits it to the Interdepartmental Commission for consideration. After discussion by all interested parties, it is approved and submitted to the CITES Administrative Authority - Ministry of Ecology. The quota is distributed among consumers in accordance with the regulations of the Ministry of Ecology. Each company that has received permission to seize is issued a special numbered permit, which indicates the number of specimens to be seized, the timing of the trapping, the region and district.

All employees of the company that received the permit are given a task plan, which indicates the name and surname of the harvester, the number, the timing of the seizure permit and the area. As well as the number of specimens allowed for seizure. Having gone to the seizure site, employees build a temporary enclosure where the animals are kept before being transported to the facility. Animals are kept in a temporary enclosure for 3 to 10 days, as their intestines must be cleansed. Animals are loaded into special vehicles provided with no more than two layers, or in boxes, no more than 45 heads. This applies to tortoises measuring 10 cm or more. Tortoises for ranching are collected immediately after reaching the surface, from mid-February to March 5-10. Animals are been gathered at this time to prevent infection with helminth fauna, and along with it, infection with herpes of land tortoises (Herpes Virus).

Tortoises are packed in a multi-tiered box with one layer on each tier. After arriving to the facility, tortoises measuring 10 cm or more are placed in quarantine enclosure, where they are bathed in small groups. They are given an antihelminthic pills - albendazole in the bathtub, or, individually, in case of severe infestation, medications are taken internally. The procedure is repeated after 14 days. After that the animals are placed in permanent enclosures. The mortality rate of animals measuring 10 cm or more from the moment of gathering until shipment for export does not exceed 0.1%. Tortoises intended for ranching 3.5 -4.2 cm are quarantined in multi-tiered enclosures and also bathed in albendozole; in 14 days, the bathing procedure in an antihelmintic pill is repeated, and then the animals are transferred to permanent enclosures. The mortality rate of these tortoises during this period does not exceed 1%.

Currently, 16 nurseries are registered in Uzbekistan, who contain breeding stocks amounting to 43,957 heads overall, 20% to 30% are males. The reproductive rate of the breeding stock is 1.8 - 2.3 heads per 1 female.

The mortality rate of breeding stock tortoises in different nurseries (facilities) ranges from 0.1 to 1%, sometimes this indicator can increase to 5-20% provided infection with mycoplasma (*Mycoplasma agassizii*) occurs, although frequent diagnosis and a three-time injection of an antibiotic gives complete recovery. At the same time, late diagnosis leads to the death of animals.

Since 2011, systematic works to count the number of the Central Asian tortoises carried out. These accounting works were carried out by employees of the State Committee on Ecology (nowadays the Ministry of Ecology, Environmental Protection and Climate Change) and representatives of the Institute of Zoology, who are members of the CITES Management Authority.

Census of the Central Asian tortoise in Navai region for 2011

Census territory	Route census	Platforms on field area
Foothills of Nuratau		
T.1	2,3	
T.2	1,4	
Ayakkuduk		
T.1	5,1	
T.2	7	
T.3	13,7	
T.4	3,4	
T.5	0,7	
T.6	2,6	
T.7	1,7	
T.8	23,4	
T.9	0,5	
T.10	0,3	
T.11	6,5	

Navai region Tamdym district	**54**	**46**
Navai region Tamdym district	**36,1**	**34**
Navai region Tamdym district	**33**	**29**
Samarkand region Nurabad district	29,1	30
Samarkand region Nurabad district	19,1	15
Samarkand region Nurabad district	11,5	24
Navai region Novbahor district	29,9	22
Navai region Novbahor district	21,1	20
Navai region Novbahor district	23,1	27

Information on census of the Central Asian tortoise Agrionemys horsfieldii (Gray, 1844) in Uzbekistan for 2012.

№	Territories of census	Route census	Platforms on field area
		Density sp/ha	density sp/ha
1.	Samarkand region Nurabad district	1,3	
2.	Samarkand region Nurabad district	6,5	
3.	Samarkand region Nurabad district	26,3	31
4.	Samarkand region Nurabad district	2,5	
5.	Samarkand region Nurabad district	16,3	
6.	Samarkand region Nurabad district	11,8	11
7.	Samarkand region Nurabad district	6	
8.	Samarkand region Nurabad district	12,5	24
9.	Samarkand region Nurabad district	5,8	
10.	Kashkadarya region Mubarek district	3,5	
11.	Kashkadarya region Mubarek district	0,3	
12.	Navai region Kyzyltepa district	0,8	
13.	Navai region Kyzyltepa district	0,8	

14.	Navai region Kyzyltepa district	28,8	20
15.	Navai region Navbahor district	20,8	19
16.	Navai region Navbahor district	19	26
17.	Jizzakh region Farish district	2,3	
18.	Navai region Tandym district	46,4	39
19.	Navai region Tandym district	32,6	30
20.	Navai region Tandym district	29,6	24

Information on census of the Central Asian tortoise Agrionemys horsfieldii (Gray, 1844) in Uzbekistan for 2013

	Census territory	**Route census**	**Platforms on field area**
		Density sp/ha	**Density sp/ha**
1.	Samarkand region Nurabad district	1,3	
2.	Samarkand region Nurabad district	6,5	31
3.	Samarkand region Nurabad district	26,3	
4.	Samarkand region Nurabad district	2,5	
5.	Samarkand region Nurabad district	16,3	11
6.	Samarkand region		
	Nurabad district	11,8	0
7.	Samarkand region Nurabad district	6	24
8.	Samarkand region Nurabad district	12,5	
9.	Samarkand region Nurabad district	5,8	
10.	Kashkadarya region Mubarek district	3,5	
11.	Kashkadarya region Mubarek district	0,3	
12.	Navai region Kyzyltepa district	0,8	
13.	Navai region Kyzyltepa district	0,8	20
14.	Navai region Navbahor district	28,8	19

15.	Navai region Navbahor district	20,8	26
16.	Navai region Navbahor district	19	
17.	Jizzakh region Farish district	2,3	

Information on census of the Central Asian tortoise Agrionemys horsfieldii (Gray, 1844) in Uzbekistan for 2014

Census territory	Route census	Platforms on field area
	Density sp/ha	Density sp/ha
Sundukli's sands, near lake Sychankul	2	0,15
Kemerikumy sands	0,05	2,3
Foothills Kuldzhuktau	0,9	2,2
Surrounding K. Kinir	0,3	1,0
Navai region Navbahor district	24,3	29
Navai region Central Kyzylkum	2,1	2,65
Navai region Central Kyzylkum	7,35	6,75
Navai region Central Kyzylkum	12,15	6,25
Navai region Central Kyzylkum	8,3	8,3
Navai region Central Kyzylkum	5,5	4,6
Samarkand region Nurabad district	24,1	22
Samarkand region Nurabad district	11	9
Samarkand region Nurabad district	12,2	20
Navai region Navbahor district	26,6	17
Navai region Navbahor district	20,4	20
Navai region Tamdym district	44,6	41
Navai region Tamdym district	31	31
Navai region Tamdym district	26,9	23

Information on census of the Central Asian tortoise Agrionemys horsfieldii (Gray, 1844) in Uzbekistan for 2015

Census territory	Route census	Platforms on field area
	Density sp/ha	density sp/ha

Navai region Balpantau	3,75	
Navai region Balpantau	3,75	
Navai region Bukantau	3,5	
Navai region Bukantau	5,5	
Navai region	0,5	
Navai region	10,5	
Navai region	3,5	
Navai region	5,75	
Navai region	22,5	
Navai region		4,6
Navai region		12,4
Навоийская область Нуратинский район	27,5	29
The foothill steppe between Aydar and ridge Nurata	20	23
The foothill steppe between Aydar and ridge Nurata	29,1	33
The foothill steppe between Aydar and ridge Nurata	29,2	29
Navai y region foothills Nuratau	2,3	
Navai y region foothills Nuratau	6,2	
Navai y region foothills Nuratau	1,4	
Navai y region foothills Nuratau	3,6	
Navai y region foothills Nuratau	3,9	
Samarkand region Nurabad district	24	22
Samarkand region Nurabad district	12,1	8,0
Samarkand region Nurabad district	12,0	17
Navai region Navbahor district	26	17
Navai region Navbahor district	21	19
Navai region Tamdym district	41,1	37
Navai region Tamdym district	31	29
Navai region Tamdym district	27,1	22

Data of monitoring of population 2016 Agrionemys horsfieldii(Gray, 1844)

Territory of monitoring	Routs of monitoring Individuals per hectare	Areas of harvest places Individuals per hectare
Navai region Balpantau	3,6	
Navai region Balpantau	3,8	
Navai region Bukantau	5,6	
Navai region Bukantau	4,4	
Navai region	2,2	
Navai region	11	
Navai region	3	
Navai region	5,0	
Navai region	20	
Navai region		4,4
Navai region		13,1
Navai region Nuratau	26,4	26,1
Desert between Aidarkul and Nuratau area	18	21
Desert between Aidarkul and Nuratau area	28	29
Desert between Aidarkul and Nuratau area	27	24
Navai region near Nuratau mountains area	4,6	
Navai region near Nuratau mountains	6	
Navai region near Nuratau mountains	2	
Navai region near Nuratau mountains	3,3	
Navai region near Nuratau mountains	6,1	19,1
Navai region Novbahor area	23,3	20,1
Navai region Novbahor area	13	7,7
Navai region Novbahor area	39,9	34
Navai region Novbahor area	27,7	24,1
Navai region Tamdy area	29,9	21,2
Samarkand region Nurabad area	26,6	24,4
Samarkand region Nurabad area	12	7,7
Samarkand region Nurabad area	10,1	16
Samarkand region Nurabad area	3,2	
Samarkand region Nurabad area	13,3	
Samarkand region Nurabad area	7,2	
Kashkadarya region, flat sandy soil area	10,1	

Kashkadarya region, flat sandy soil area	3,9	
Kashkadarya region	2,2	
Kashkadarya region soil-sandy desert with hills	6,2	
Kashkadarya region sandy hills	2,2	
Kashkadarya region soil desert near Tubere Oland	10,1	
Kashkadarya region soil desert near Tubere Oland	12,7	
Kashkadarya region soil desert near Tubere Oland	14	
Kashkadarya region near village Dzhankara	28,8	
Kashkadarya region near village Dzhankara	34,1	
Kashkadarya region near village Dzhankara	22,7	
Kashkadarya region near village Dzhankara	39	

Data of monitoring of population in 2017 Agrionemys horsfieldii (Gray, 1844).

Territory of monitoring	Routs of monitoring Individuals per hectare	Areas of harvest places Individuals per hectare
Navai region Balpantau	3,9	
Navai region Balpantau	4,1	
Navai region Bukantau	6,0	
Navai region Bukantau	4,6	
Navai region	3,3	
Navai region	9,9	
Navai region	4,4	
Navai region	5,7	
Navai region	19,7	
Navai region		4
Navai region		11,2
Navai region Nuratau	19	21
Desert between Aidarkul and Nuratau area	14	17,7
Desert between Aidarkul and Nuratau area	19,4	16,5
Desert between Aidarkul and Nuratau area	14,1	15,2
Navai region near Nuratau mountains area	4,4	
Navai region near Nuratau mountains	6,3	
Navai region near Nuratau mountains	3,1	

Navai region near Nuratau mountains	3,7	
Navai region near Nuratau mountains	6	15,1
Navai region Novbahor area	20,2	19,7
Navai region Novbahor area	11,1	7,1
Navai region Novbahor area	37,7	32,1
Navai region Novbahor area	26,5	24
Navai region Tamdy area	28,8	21,3
Samarkand region Nurabad area	23,3	21,7
Samarkand region Nurabad area	13,1	7,9
Samarkand region Nurabad area	11,2	14
Samarkand region Nurabad area	4,2	
Samarkand region Nurabad area	13	
Samarkand region Nurabad area	7,7	
Kashkadarya region, flat sandy soil area	11,2	
Kashkadarya region, flat sandy soil area	3,7	
Kashkadarya region	2,4	
Kashkadarya region soil-sandy desert with hills	6,6	
Kashkadarya region sandy hills	2,5	
Kashkadarya region soil desert near Tubere Oland	10,4	
Kashkadarya region soil desert near Tubere Oland	12	
Kashkadarya region soil desert near Tubere Oland	14,3	
Kashkadarya region near village Dzhankara	27,1	
Kashkadarya region near village Dzhankara	36	
Kashkadarya region near village Dzhankara	23,1	
Kashkadarya region near village Dzhankara	36,6	

From 2018, accounting investigations are carried out only by scientific employees (specialists) of the Institute of Zoology, which includes representatives of the CITES Scientific Authority.

Table 1.

№	**Region**	**Geographical reference of the survey area**	**Survey area (hectare)**	**Approximate abundance of the Central Asian tortoise in the survey area**
1	Jizzakh	Foothill plain of the Nuratau ridge, southern shore of Lake Tuzkan,	13 818 ha	24 734

		western foothills of Pistalitau		
2	Navai	Western part of the foothill plain of the Nuratau ridge, at the T-shaped intersection	15 707 ha	90 838
3	Navai	The vicinity of Lake Ayak-Agitma, the territory above the ledge of the depression, north-eastern of the village of Ayak-Agitma	19 293 ha	15 696
4	Navai	Tamdytau foothill plain, between the city of Zarafshan, the Muruntau mine and the Aktau mountains	12 008 ha	55 845
5	Navai	The southern and western foothills of the Kazakhtau outlier	23 198 ha	342 170
6	Navai	Karakata Depression	7457 ha	21 774
7	Navai	Northern foothill part of the Bukantau outlier	31 182 ha	58 466
8	Bukhara	The western foothills of the Kuldzhuktau outlier near the villages of Dzhangeldy and Kalaata	13 999 ha	3 866

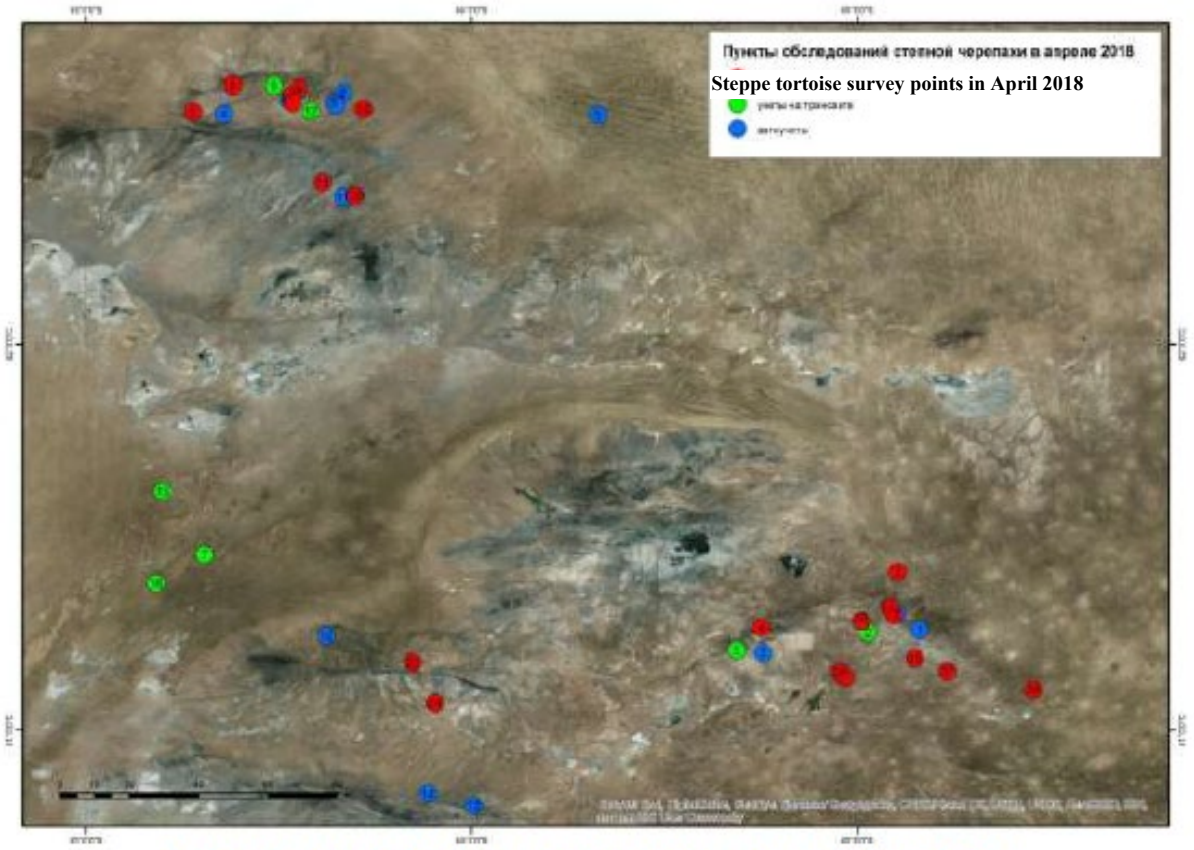


Рис.5. Пункты обследования степной черепахи в апреле 2018г.

Pic. 5. Steppe tortoise survey points in April 2018

Table 1. Data from trial sites

Site No.	Date	Coordinates	Place	Time	Soiltemp. °C	Airtemp. °C	Density sp/ha	Male /female /juveniles
1	08.04.2018	N 41,409027 E 65,104611	Foothills of Kazakhtau	11:00	30	25,9	31	48/13/39
2	08.04.2018	N 41,409027 E 65,104611	Foothills of Kazakhtau	12:00	33,6	28,6	14	57/7/36
3	08.04.2018	N 41,263944 E64,751277	Foothills of Arystantau	15:40	29.6	26.7	31	35/45/19
4	08.04.2018	N 41,263944 E64,751277	Foothills of Arystantau	16:30	23.1	25.7	48	52/32/13
5	11.04.2018	N 42,599277 E 63,276666	Bukantau, Oraagly village	12:50	27,5	17,1	4	75/25/0
6	11.04.2018	N 42,599277 E 63,276666	Bukantau, Oraagly village	13:10	27.5	17.1	3	67/33/0
7	12.04.2018	N 42,666361 E 63,379527	Bukantau	12:30	31.8	25	11	55/45/0
8	12.04.2018	N 42,666361 E 63,379527	Bukantau	12:30	31.8	25	9	67/22/11
9	12.04.2018	N 42,657888 E 63,550222	Bukantau	16:01	34.1	25	4	75/25/0
10	12.04.2018	N 42,657888 E 63,550222	Bukantau	16:01	34.1	25	7	57/43/0
11	13.04.2018	N 42,642944 E 63,532666	Bukantau, surroundings of the	9:45	29.3	25.1	14	86/14/0

			Balkabay collective farm					
12	13.04.2018	N 42,642944 E 63,532666	Bukantau, surroundings of the Balkabay collective farm	9:45	29.3	25.1	4	50/50/0
13	13.04.2018	N 42,623805 E 63,534638	Bukantau, surroundings of the Arkar spring	10:50	30.4	25.4	4	100/0/0
14	13.04.2018	N 42,623805 E 63,534638	Bukantau, surroundings of the Arkar spring	10:50	30.4	25.4	6	33/50/17
15	13.04.2018	N 42,607055 E 63,719416	Bukantau	16:20	31,3	28,3	1	0/100/0
16	13.04.2018	N 42,607055 E 63,719416	Bukantau	16:20	31,3	28,3	2	100/0/0
17	14.04.2018	N 42,417583 E 63,61275	South-west of the Zhaman-Kaskyrtau mountains	10:55	28.6	24.4	11	45/27/27
18	14.04.2018	N 42,417583 E 63,61275	South-west of the Zhaman-Kaskyrtau mountains	10:55	28.6	24.4	6	83/17/0
19	14.04.2018	N 42,417583 E 63,61275	Southern foothills of the Ulken-Kaskyrtau mountains	12:05	28.1	24.7	3	100/0/0
20	14.04.2018	N 42,417583 E 63,61275	Southern foothills of the Ulken-Kaskyrtau mountains	12:05	28.1	24.7	3	33/67/0
21	16.04.2018	N 41,1749752 E 63,847111	Northeastern part of the Auminzatau mountains	10:50	35	19	11	45/36/18
22	16.04.2018	N 41,1749752 E 63,847111	Northeastern part of the Auminzatau mountains	10:50	35	19	10	70/20/10
23	16.04.2018	N 41,069861 E 63,903638	Southeast of the Auminzatau Mountains	12:00	36.9	23.2	2	100/0/0
24	16.04.2018	N 41,069861 E 63,903638	Southeast of the Auminzatau Mountains	12:00	36.9	23.2	4	100/0/0
25	23.04.2018	N 41,135361 E64,968861	South-west of the Kazakhtau mountains	15:45	33.3	28	0	0
26	23.04.2018	N 41,135361 E64,968861	South-west of the Kazakhtau mountains	15:45	33.3	28	8	50/37/13
27	23.04.2018	N 41,135361 E64,968861	South-west of the Kazakhtau mountains	16:30	33.3	28	1	100/0/0
28	23.04.2018	N 41,149305 E64,955333	South-west of the Kazakhtau mountains	16:30	33.3	28	1	100/0/0
29	23.04.2018	N 41,281777 E65,009138	Foothills of Kazakhtau	17:10	31.6	27	36	67/33/0
30	23.04.2018	N 41,281777 E65,009138	Foothills of Kazakhtau	17:10	31.6	27	19	63/26/11
31	25.04.2018	N 41,297222 E65,095583	Kazakhtau	10:20	27.5	19.5	21	38/29/33
32	25.04.2018	N 41,297222 E65,095583	Kazakhtau	11:06	29.6	17	11	55/9/36
33	25.04.2018	N 41,297222 E65,095583	Kazakhtau	11:06	29.6	17	26	38/27/35

34	25.04.2018	N 41,184527 E65,149527	Foothills of Kazakhtau	13:00	29	22	8	63/25/13
35	25.04.2018	N 41,184527 E65,149527	Foothills of Kazakhtau	13:00	29	22	5	40/60/0
36	25.04.2018	N 41,151111 E65,233694	Sands of the south-air mountains of Zhamantau	14:30	32.1	25.2	7	57/43/0
37	25.04.2018	N 41,151111 E65,233694	Sands of the south-air mountains of Zhamantau	14:30	32.1	25.2	4	100/0/0
38	25.04.2018	N 41,104277 E65,456333	Sands southeast of Kazakhtau	15:32	24.8	19	3	67/33/0
39	25.04.2018	N 41,104277 E65,456333	Sands southeast of Kazakhtau	15:32	24.8	19	6	86/14/0

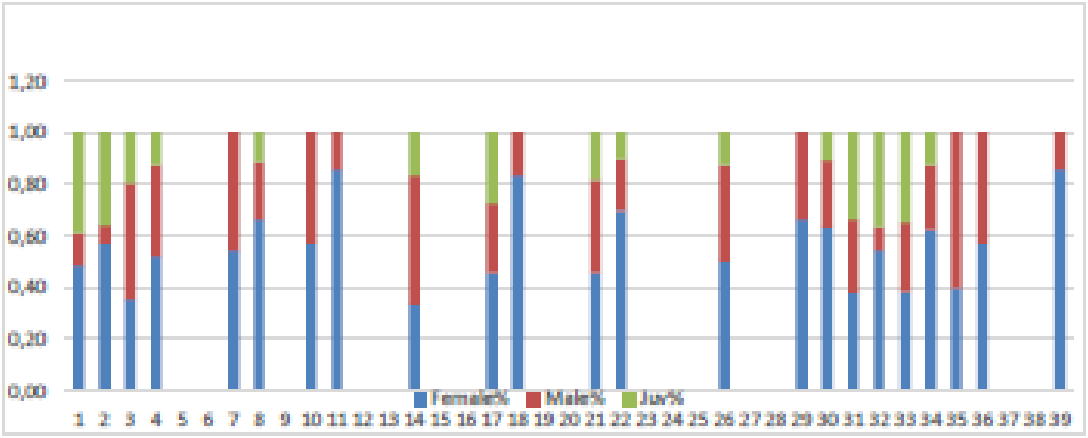


Fig. 6. Sex and age structure of the Central Asian tortoise population at sample sites

Table 2. Transect survey data

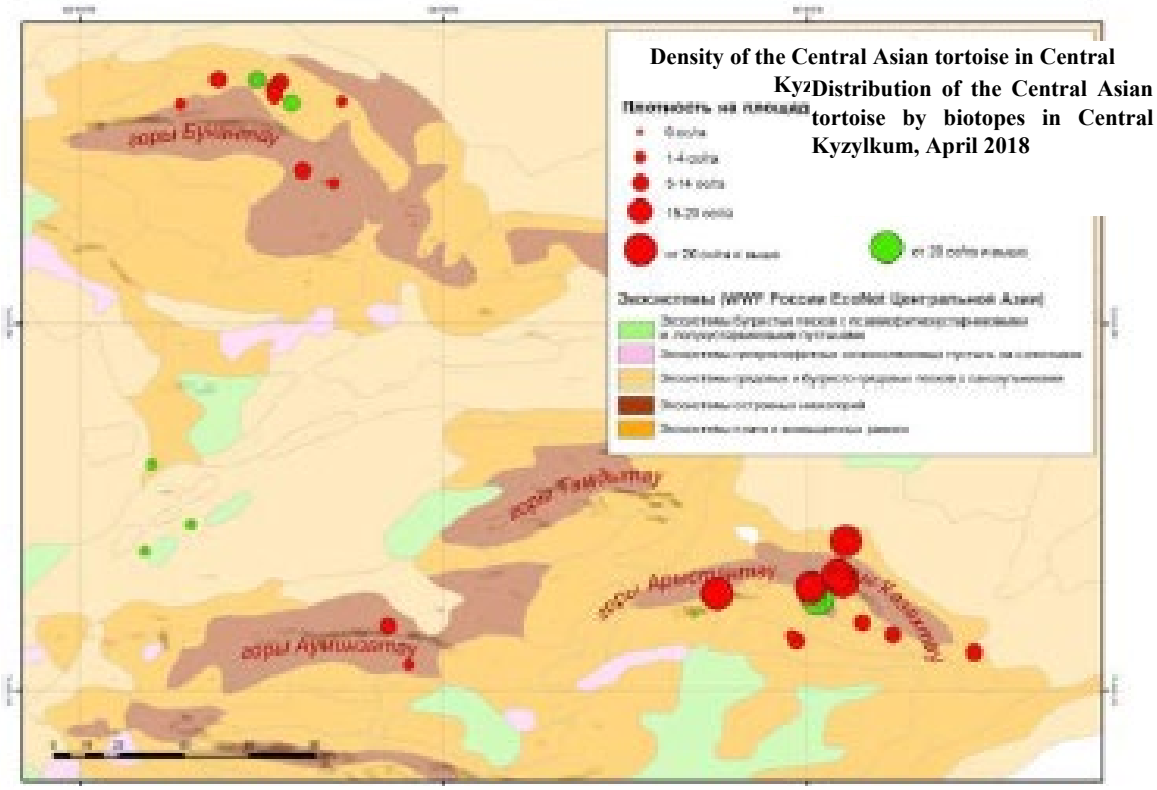
№	Date	Origin coordinates	Transect direction	Place	Start time	End time	Soiltemp. °C	Airtemp. °C	Density sp/ha	Number/sp
1	08.04.2018	N 41,251388 E65,027083	500 meters northeast	Foothills of Kazakhtau	13:05	13:32	33.8	24	27.8±0.22	35
2	08.04.2018	N 41,251388 E65,027083	500 meters north	Foothills of Kazakhtau	13:05	13:34	33.8	24	9.72±0.23	32
3	09.04.2018	N 41,207333 E64,686777	500 meters southeast	Foothills of Arystantau	12:00	12:30	33.2	21.6	0	0
4	09.04.2018	N 41,207333 E64,686777	500 meters southwest	Foothills of Arystantau	12:00	12:32	33.2	21.6	0	0
5	09.04.2018	N 41,453888 E63,305972	500 meters northwest	Foothills of Arystantau	12:00	12:31	33.2	21.6	0	0
6	10.04.2018	N 41,453888 E63,305972	500 meters northeast	Collective farm Koldybay, 40 km north of the Auminzatau mountains	16:00	16:36	24.1	14	0.08±1.45	1
7	10.04.2018	N 41,453888 E63,305972	500 meters east	Collective farm Koldybay,	16:00	16:41	24.1	14	0	0

				40 km north of the Auminzatau mountains						
8	12.04.2018	N 42,665527 E63,486444	500 meters northwest	Bukantau	14:00	14:35	35.1	24.5	9.5±0.55	12
9	12.04.2018	N 42,665527 E63,486444	500 meters northeast	Bukantau	14:00	14:33	35.1	24.5	1.9±0.43	5
10	12.04.2018	N 42,665527 E63,486444	500 meters southwest	Bukantau	14:00	14:38	35.1	24.5	0.14±1.45	1
11	13.04.2018	N 42,602444 E63,581555	500 meters southeast	Bukantau	14:30	14:55	36.2	29.2	0.08±1.45	1
12	13.04.2018	N 42,602444 E63,581555	500 meters southwest	Bukantau	14:30	14:58	36.2	29.2	5.4±0.54	6
13	15.04.2018	N 41,617722 E63,198305	500 meters south	40 km south of the Mynbulak depression	13:39	14:14	30.3	19	0.13±1.45	1
14	15.04.2018	N 41,617722 E63,198305	500 meters northwest	40 km south of the Mynbulak depression	13:39	14:15	30.3	19	0	0
15	15.04.2018	N 41,617722 E63,198305	500 meters northeast	40 km south of the Mynbulak depression	13:39	14:12	30.3	19	0	0
16	15.04.2018	N 41,380277 E63,179611	500 meters southwest	30 km northwest of the Auminzatau mountains	14:50	15:22	30.8	20	0.2±1.45	1
17	15.04.2018	N 41,380277 E63,179611	500 meters southeast	30 km northwest of the Auminzatau mountains	14:50	15:23	30.8	20	0	0
18	15.04.2018	N 41,380277 E63,179611	500 meters north	30 km northwest of the Auminzatau mountains	14:50	15:26	30.8	20	0	0

Table 3. Vehicle registration data

№	Number	Route distance, km	Date	Start coordinates	End coordinates	Place	Start time	End time	Soiltemp. °C	Airtemp. °C	Vehicle speed, km/h	Density sp/ha
1	13	7.1	08.04.2018	41°15’28.3” 65°09’44.9”	41°17’58.3” 65°06’17.6”	Foothills of Kazakhtau	10:08	10:33	26.2	15	15-18	0.9
2	94	10	08.04.2018	41°17’58.3” 65°06’17.6”	41°18’32.6” 65°03’58.3”	Foothills of Kazakhtau	10:35	11:00	29.1	19	15-18	4.7
3	5	10	09.04.2018	41°11’58.9” 64°45’20.6”	41°12’26.4” 64°41’12.4”	Foothills of Arystantau	11:00	11:32	30.8	20.2	15-18	0.25
4	55	6	11.04.2018	42°35’40.1”	42°37’55.3”	Bukantau	12:02	12:30	28.3	16	15-18	4.6

				63°21’25.4”	63°24’31.4”							
5	16	4	11.04.2018	42°35’33.3” 64°19’39.1”	42°34’534” 64°16’35.9”	Bukantau	12:30	12:47	28.7	16.5	10-18	2
6	41	3	13.04.2018	42°37’52.5” 63°31’24.7”	42°38’34.6” 63°31’57.6”	Bukantau	9:30	9:48	29	25	15-18	6.8
7	26	8	13.04.2018	42°38’34.6” 63°31’57.6”	42°42’07.0” 63°30’00.2”	Bukantau	11:25	12:00	30	25.9	6.6-15	1.6
8	103	4	13.04.2018	42°38’57.7” 63°40’00.4”	42°37’27.3” 63°38’35.7	Bukantau	15:20	15:51	32	29.3	15-18	12.9
9	27	1	13.04.2018	42°37’27.3” 63°38’35.7”	42°36’59.9” 63°38’50.2”	Bukantau	16:02	16:11	31.6	28.7	6-10	13.5
10	22	1	13.04.2018	42°36’59.9” 63°38’50.2”	42°36’52.1” 63°39’22.4”	Bukantau	16:13	16:24	31.3	28.3	6-10	11
11	13	3.4	14.04.2018	42°22’46.6” 63°36’54.4”	42°21’44.5” 63°38’01.9”	Section between Bukantau and Aytymtau	12:30	12:48	28.1	24.2	10-12	1.9
12	133	18.2	16.04.2018	41°14’38.7” 63°37’21.6”	41°11’34.1” 63°47’54.7”	Uchtepa city, foothills of Auminzatau	9:35	10:36	23.2	18	20-22	3.6
13	148	17.5	16.04.2018	40°48’15.4” 64°00’16.4”	40°50’04.5” 63°53’15.3”	Foothills of Kuljuktau	15:40	16:42	34	25.3	15-18	4.23
14	27	4	16.04.2018	40°50’04.5” 63°53’15.3”	40°50’25.5” 63°50’41.5”	Foothills of Kazakhtau	16:45	17:14	32	23.8	15-18	3.4



Density of the Central Asian tortoise in Central Kyz

Distribution of the Central Asian tortoise by biotopes in Central Kyzylkum, April 2018

Fig. 8. Map of distribution of the Central Asian tortoise by biotopes in Central Kyzylkum (data for field trip in April 2018)

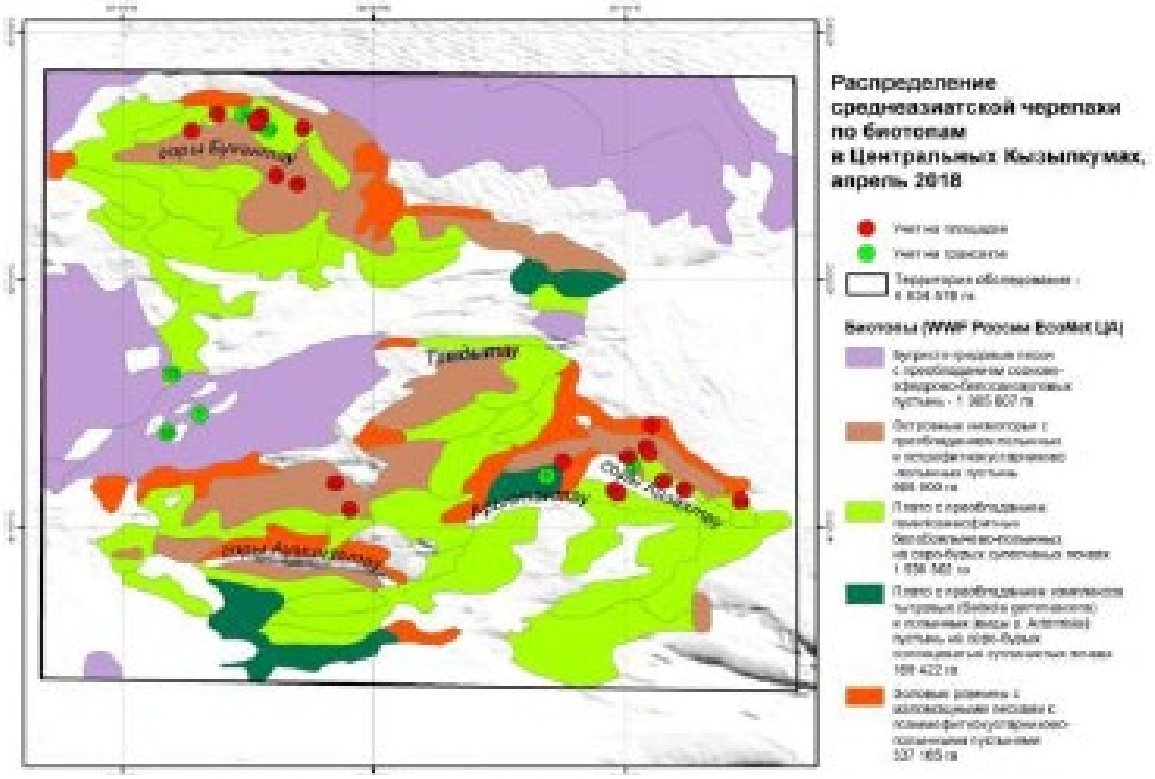


Fig. 7. Map of distribution of different densities of the Central Asian tortoise in Central Kyzylkum, April 2018

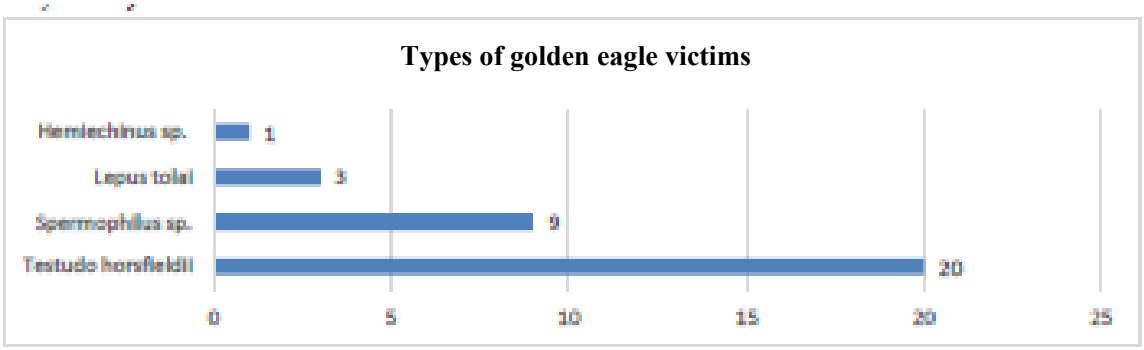


Fig. 17. Golden eagle victims during the period of feeding chicks from April 14 to April 23, 2018 (Ten A., 2018)

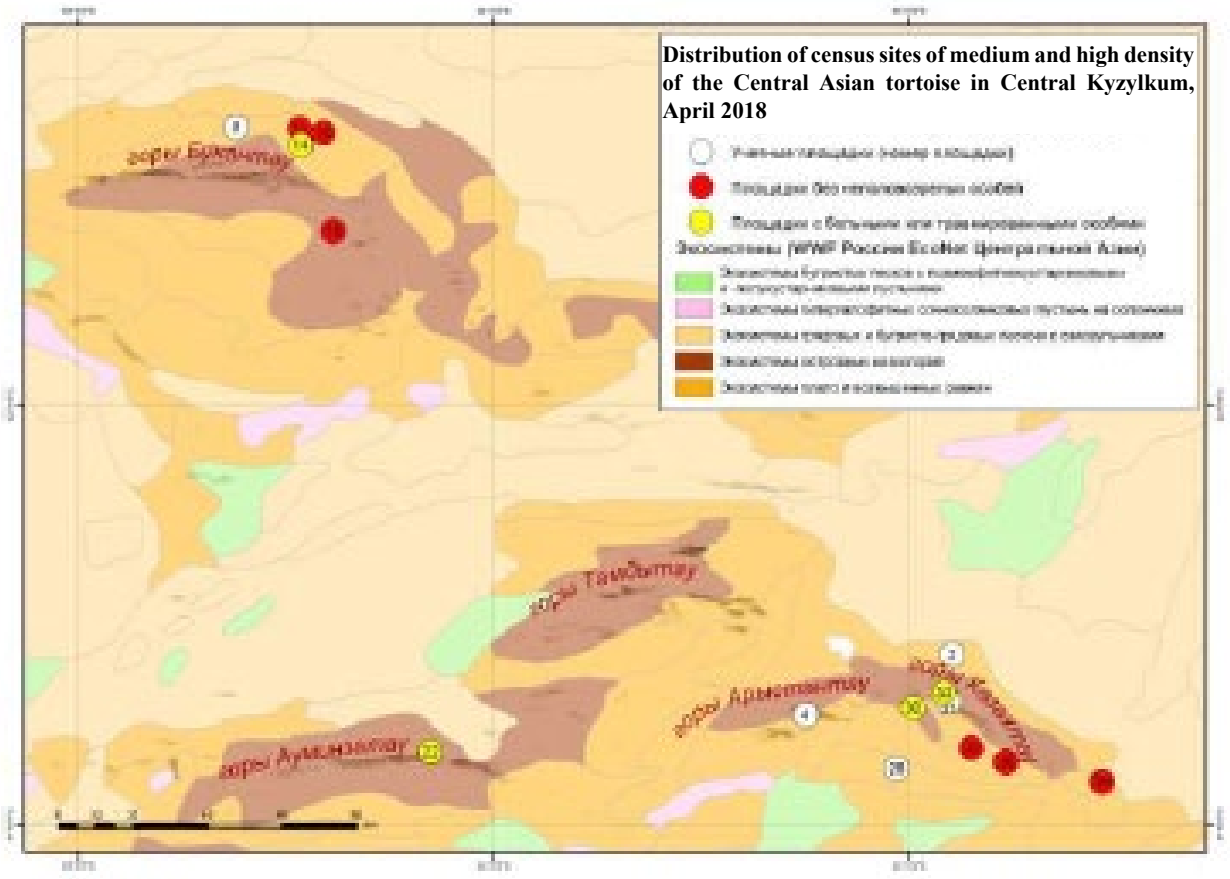


Fig. 19. Distribution of sample plots without immature individuals, as well as with sick and injured individuals

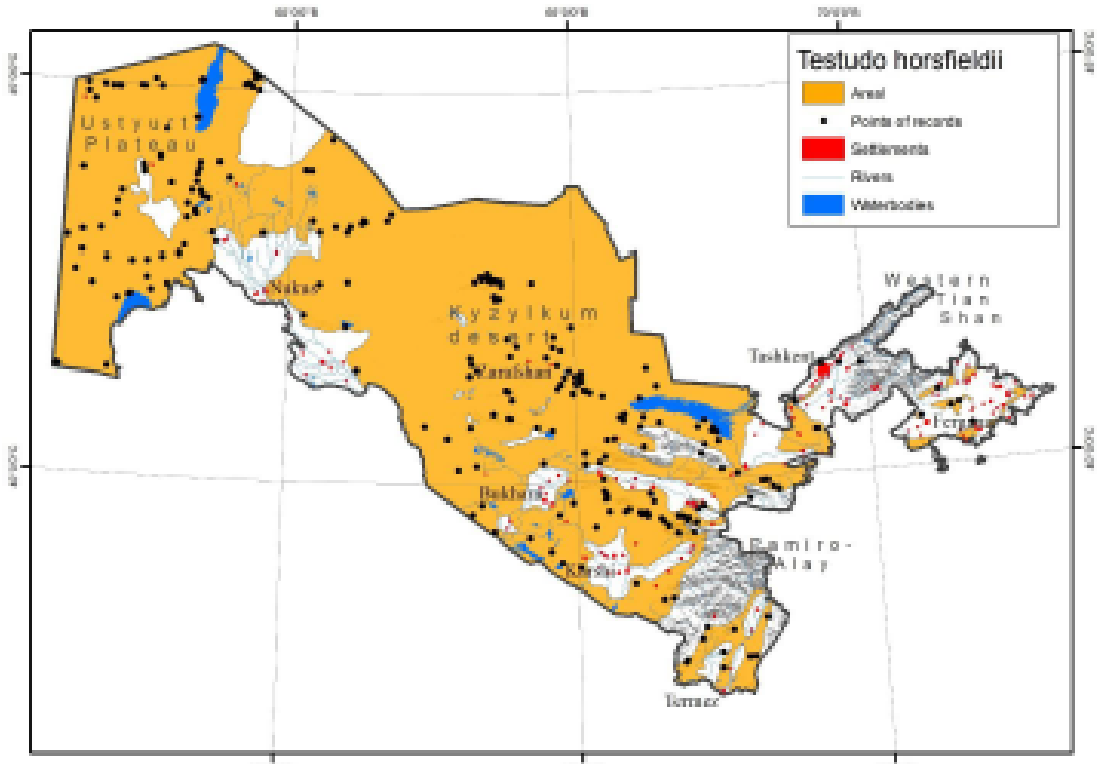


Fig. 6. Map of the modern range of the Central Asian tortoise in Uzbekistan

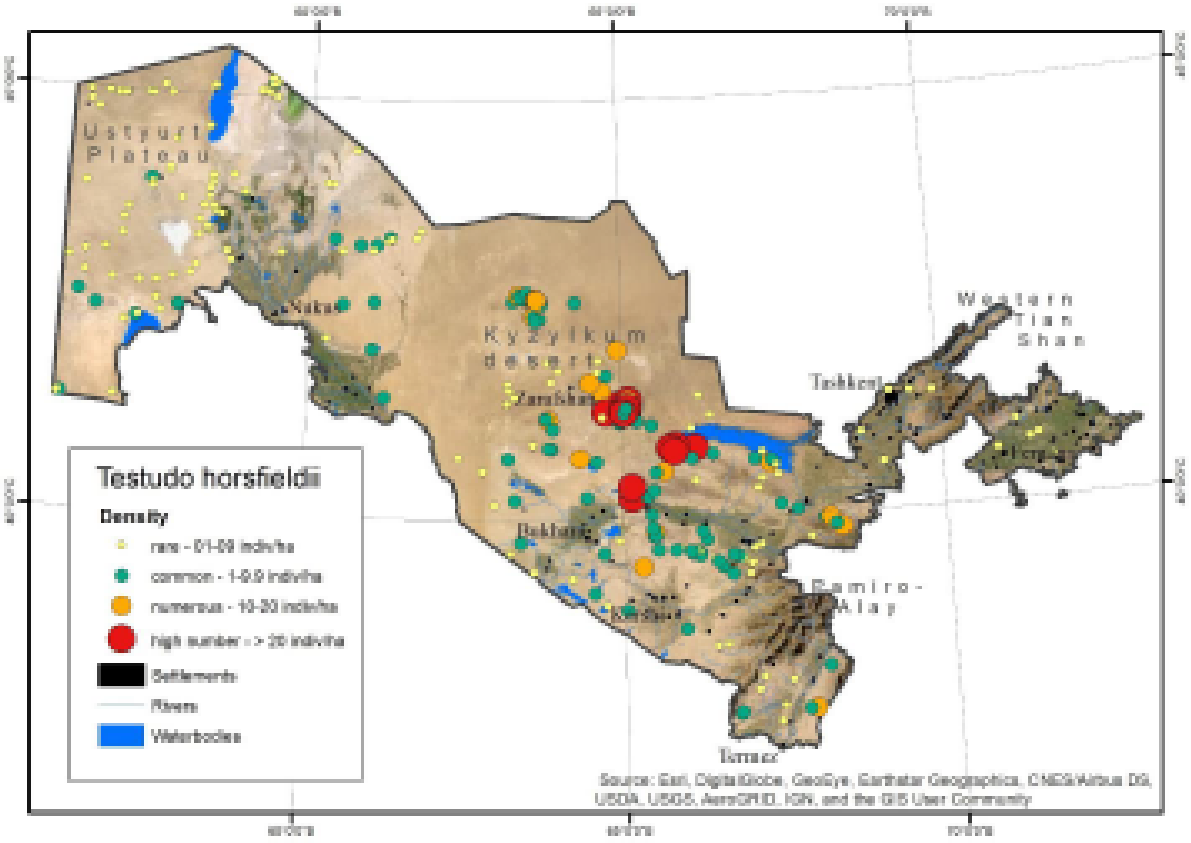


Fig. 11. Density map of the Central Asian tortoise in Uzbekistan

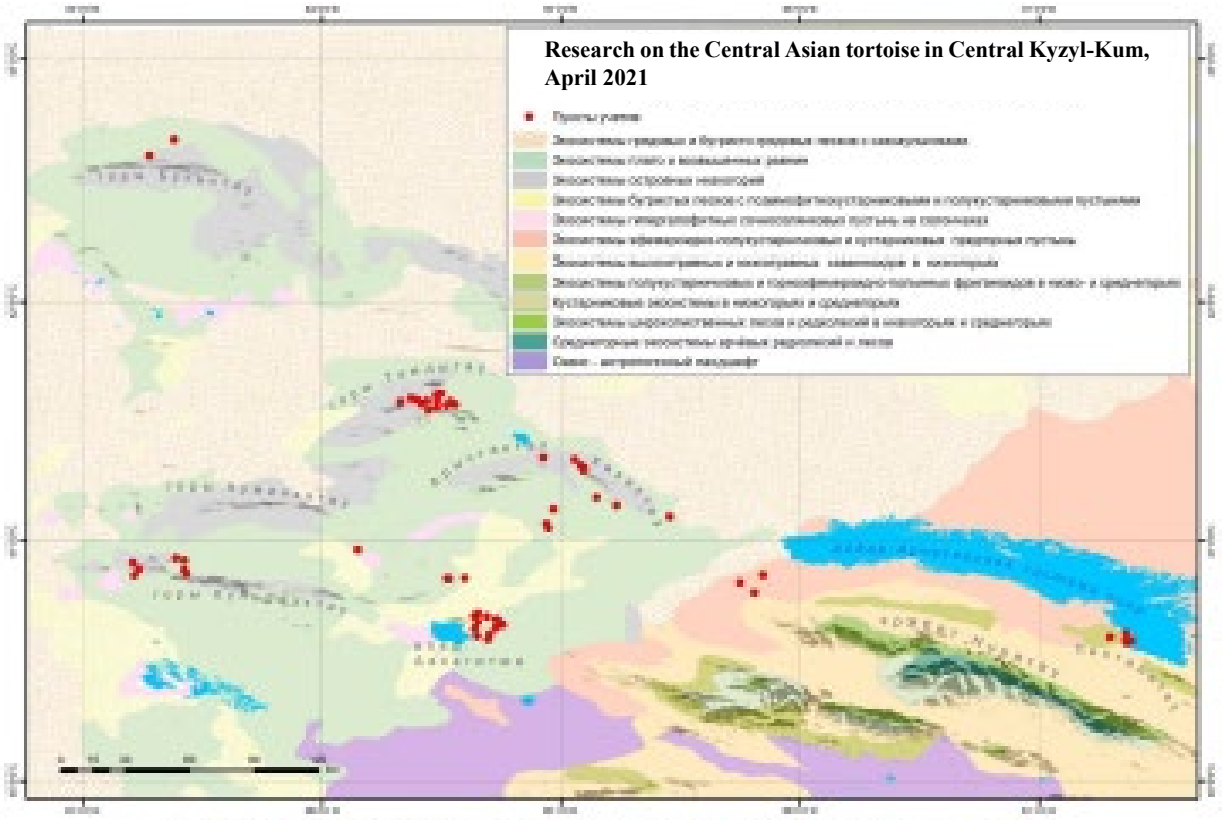


Fig. 10. Steppe tortoise survey points in April 2021

Table 1. Data from trial sites

Site No.	Date	Coordinates	Place	Time	Soiltemp. °C	Airtemp. °C	Density sp/ha	Male/Female, %	Adults/ juveniles
STH-1	11.04.2021	N 41,318004 E 65,084226	Navai region The northwestern part of the foothill plain of the Kazakhtau outlier	16:00	28.5	20	12	8.3/91.7	100/0
STH-2	11.04.2021	N 41,306735 E 65,097792	Navai region, foothills of Kazakhtau, Sangruntau mountains	17:00	24.8	17.7	17	17.6/82.4	88.5/11.8
STH-3	12.04.2021	N 41,342625 E 65,097792	Navai region,Foothills of Kazakhtau	10:00	27.7	16.6	32	15.6/84.4	96.6/3.1
STH-4	16.04.2021	N 41,618947 E 64.499651	Navai region, Tamdytau outlier	9:45	22.9	21.5	14	42.8/57.2	50/50

Table 2. Transect survey data

No.	Date	N	E	Place	Start time	Soiltemp. °C	Airtemp. °C	Humidity, %	Averagedensity, sp/ha
TTH-1	09.04.2021	43,600874	67,30019	Jizzakh region,Nuratau foothill plain, between the ridge and Tuzkan, Fixed	17:40	28.1	21.1	41	1.5

				sands, 800 m south of farm No. 3					
TTH-2	10.04.2021	40,61506	67,36611	Jizzakh region, Nuratau foothill plain, between the ridge and Tuzkan	8:53	22	26.3	41	4.4
TTH-3	10.04.2021	40,57713	67,36761	Jizzakh region, Nuratau foothill plain, between the ridge and Tuzkan	10:00	30.6	24.3	38	3.5
TTH-4	10.04.2021	40,58745	67,36527	Jizzakh region, Nuratau foothill plain, between the ridge and Tuzkan	10:30	33.9	21.7	42	6.8
TTH-5	10.04.2021	40,58666	67,38897	Jizzakh region, Nuratau foothill plain, between the ridge and Tuzkan	11:20	34.4	21.4	36	1.7
TTH-6	10.04.2021	40,78525	65,81045	Navai region, Western part of the Nuratau foothill plain, at the T-junction	16:40	31.9	26.1	19	26.5
TTH-7	10.04.2021	40,859304	65,846361	Navai region, Western part of the Nuratau foothill plain, at the T-junction	17:25	30.1	25.9	22	6
TTH-8	10.04.2021	40,82775	65,74917	Navai region, Western part of the Nuratau foothill plain, at the T-junction	18:20	23.7	24.2	30	2.2
TTH-9	11.04.2021	41,10428	65,45633	Navai region, Eastern part of the Zhamantau outlier	10:30	26.6	16.3	36	7.8
TTH-10	11.04.2021	41,151111	65,233694	Navai region, Foothill plain of the Zhamantau outlier	11:30	29.6	19.5	32	9.3
TTH-11	11.04.2021	41,184528	65,149528	Navai region, South-eastern part of the foothill plain of the Kazakhtau outlier	12:15	37.5	20.7	29	5.9
TTH-12	12.04.2021	41,29717	65,095926	Navai region, Northwestern part of the foothill plain of the Kazakhtau outlier	9:00	19.7	15.6	38	28.02
TTH-13	12.04.2021	41,35116	64,92558	Navai region, Northwestern part of the foothill plain of the Kazakhtau outlier	11:45	32.4	22.8	19	65
TTH-14	13.04.2021	41,055732	64,946835	Navai region,Karakata	8:45	22.9	19.4	35	4.6

				u depression, surroundings of the Madaniyat farm					
TTH-15	13.04.2021	41,075684	64,940616	Navai region, Karakata depression, surroundings of the Nurmakhan farm	9:30	29.2	18.6	36	1.5
TTH-16	13.04.2021	41,135488	64,968961	Navai region, Northern part of the Karakat depression	10:30	34.4	24.9	25	8.5
TTH-17	13.04.2021	42,59923	63,278146	Navai region, Northern foothill part of the Bukantau outlier	17:20	25.7	21.9	24	1.4
TTH-18	14.04.2021	42,665763	63,380549	Navai region, Northern foothill part of the Bukantau outlier	11:50	28.1	21.9	35	6.1
TTH-19	15.04.2021	41,58343	64,32931	Navai region, Tamdytau outlier	12:00	30.9	21.9	29	0.2
TTH-20	15.04.2021	41,598906	64,373529	Navai region, Tamdytau outlier	15:30	30.6	24.8	21	2.06
TTH-21	15.04.2021	41,593129	64,39719	Navai region, Tamdytau outlier	6:40	33.9	24.3	20	2.2
TTH-22	15.04.2021	41,575294	64,417685	Navai region, Tamdytau outlier	17:35	23.3	26	19	0.5
TTH-23	16.04.2021	41,586342	64,439592	Navai region, Tamdytau outlier	8:15	18.7	17.3	30	0.6
TTH-24	16.04.2021	41,61429	64,479092	Navai region, Tamdytau outlier	9:05	25.7	21.6	24	2.9
TTH-25	16.04.2021	41,590403	64,481035	Navai region, Tamdytau outlier	10:50	44.9	23.7	24	10.3
TTH-26	16.04.2021	41,56984	64,52186	Navai region, Tamdytau outlier	11:40	41	23.1	21	5.6
TTH-27	16.04.2021	41,58371	64,53826	Navai region, Tamdytau outlier	15:30	40.3	29.1	18	34.6
TTH-28	16.04.2021	41,573	64,55847	Navai region, Tamdytau outlier	16:10	37.2	25.4	20	4.4
TTH-29	16.04.2021	41,548893	64,446357	Navai region, Tamdytau outlier	17:40	26.6	22.6	21	0.35
TTH-30	16.04.2021	41,561483	64,480087	Navai region, Tamdytau outlier	18:10	22.4	20	23	1.4
TTH-31	17.04.2021	40,884305	63,233001	Bukhara region, foothill plain of the Kuzhuktau outlier	18:15	25.8	23.8	26	0.1
TTH-32	18.04.2021	40,91079	63,20893	Bukhara region, foothill plain of	8:18	20.2	21.1	40	0.1

				the Kuzhuktau outlier					
TTH-33	18.04.2021	40,858232	63,215307	Bukhara region, foothill plain of the Kuzhuktau outlier	10:05	36.8	32.2	24	0.8
TTH-34	18.04.2021	40,919562	63,425213	Bukhara region, foothill plain of the Kuzhuktau outlier	15:55	30	29.5	17	1.6
TTH-35	18.04.2021	40,929844	63,390393	Bukhara region, foothill plain of the Kuzhuktau outlier	16:50	29.2	28.1	18	1.1
TTH-36	19.04.2021	40,87969	63,424652	Bukhara region, foothill plain of the Kuzhuktau outlier	9:10	27.7	27.5	18	1.2
TTH-37	19.04.2021	40,865331	63,433478	Bukhara region, foothill plain of the Kuzhuktau outlier	10:20	37.4	29	18	0.9
TTH-38	20.04.2021	40,638741	64,641116	Navai region, surroundings of Ayak-Agitma Lake	16:50	33.8	28.2	20	1.8
TTH-39	20.04.2021	40,604872	64,649124	Navai region, surroundings of Ayak-Agitma Lake	17:45	28	27.1	22	0.06
TTH-40	21.04.2021	40,688293	64,637495	Navai region, surroundings of Ayak-Agitma Lake	9:50	26	16.5	41	0.1
TTH-41	21.04.2021	40,666033	64,651546	Navai region, surroundings of Ayak-Agitma Lake	10:20	29	19.3	37	0.5
TTH-42	21.04.2021	40,613289	64,702935	Navai region, surroundings of Ayak-Agitma Lake	11:20	35.1	21.7	31	1.7
TTH-43	21.04.2021	40,590639	64,695912	Navai region, surroundings of Ayak-Agitma Lake	16:05	33.6	23.1	19	1.2
TTH-44	21.04.2021	40,640046	64,729273	Navai region, surroundings of Ayak-Agitma Lake	16:35	31.3	23.5	20	2.03
TTH-45	21.04.2021	40,673781	64,72933	Navai region, surroundings of Ayak-Agitma Lake	17:15	29.3	19.1	22	4
TTH-46	18.04.2021	40,846129	64,598282	Bukhara region, between the Akkagytma and Karakata depressions	8:34	34	-	-	12.14
TTH-47	18.04.2021	40,843307	64,530463	Bukhara region, between the Akkagytma and Karakata depressions	9:41	36	-	-	29.55
TTH-48	18.04.2021	40,845015	64,524244	Bukhara region, between the	9:58	37	-	-	51.38

				Akkagytma and Karakata depressions					
TTH-49	19.04.2021	40,966686	64,150543	Bukhara region, Northeast of Kuzhuktau, city of Darbazatepa	10:29	46	-	-	8.33
TTH-50	19.04.2021	40,699688	64,654035	Bukhara region, north of the Akkagytma depression	17:37	36	-	-	16.98
TTH-51	19.04.2021	40,685725	64,691376	Bukhara region, west of the Akkagytma depression	17:52	31.3	-	-	7.32
TTH-52	20.04.2021	40,66728	64,74065	Bukhara region, west of the Akkagytma depression	8:40	30	-	-	20.14
TTH-53	20.04.2021	40,65271	64,75842	Bukhara region, west of the Akkagytma depression	9:57	30	-	-	35.39

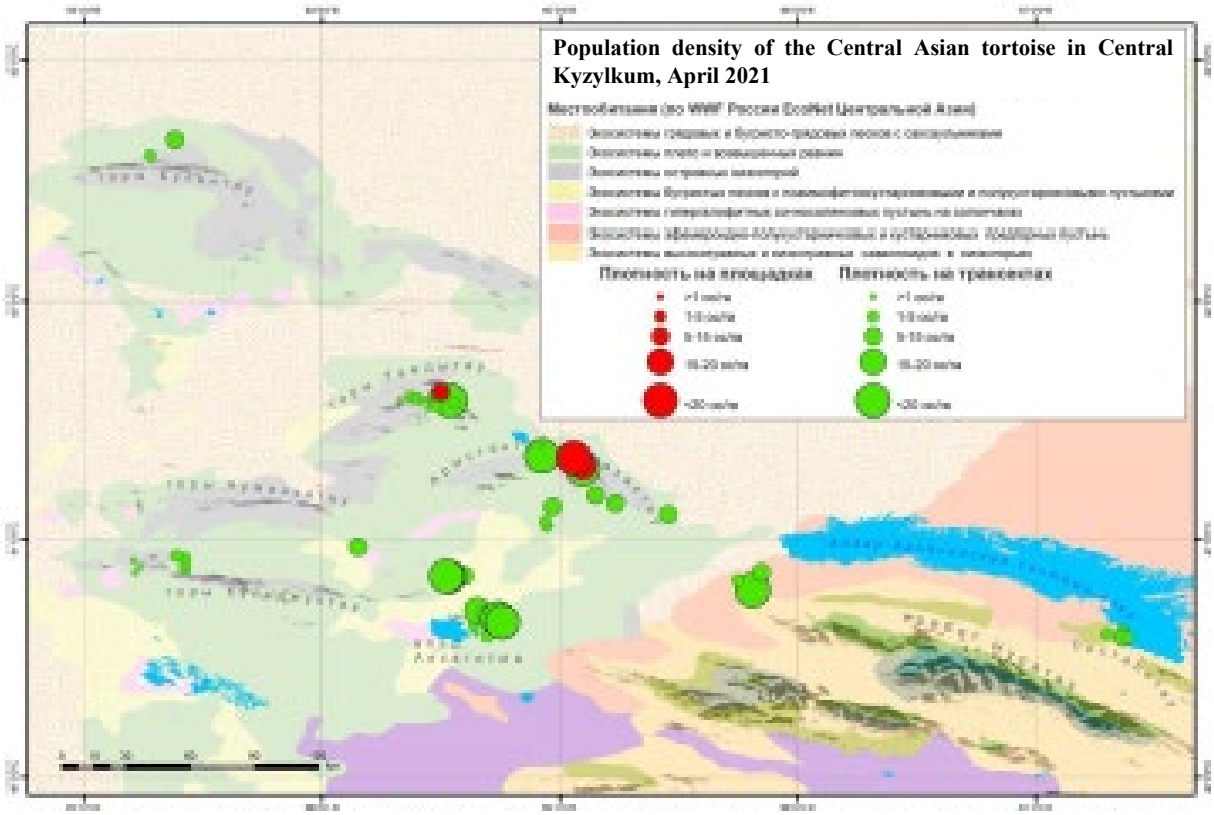


Fig. 12. Density of the Central Asian tortoise at various survey points in April 2021

7	Region	Geographic location of the survey area	Area of suburban biotopes in the survey area (hectare)	Approximate number of Central Asian tortoises in the survey area
1	Jizzakh	Foothill plain of the Nurutau ridge, southern shore of Lake Tuzkan, western foothills of Pistalitau	13 818 ha	24 734
2	Navai	Western part of the foothill plain of the Nuratau ridge, at the T-shaped intersection	15 707 ha	90 838
3	Navai	The vicinity of Lake Ayak-Agitma, the territory above the ledge of the depression, northeast of the village of Ayak-Agitma	19 293 ha	15 696
4	Navai	Tamdytau foothill plain, between the city of Zarafshan, the Muruntau mine and the Aktau mountains	12 008 ha	55 845
5	Navai	The southern and western foothills of the Kazakhtau outlier	23 198 ha	342 170
6	Navai	Karakata Depression	23 198 ha	342 170
7	Navai	Northern foothill part of the Bukantau outlier	31 182 ha	58 466
8	Bukhara	The western foothills of the Kuldzhuktau outlier near the villages of Dzhangeldy and Kalaata	13 999 ha	3 866

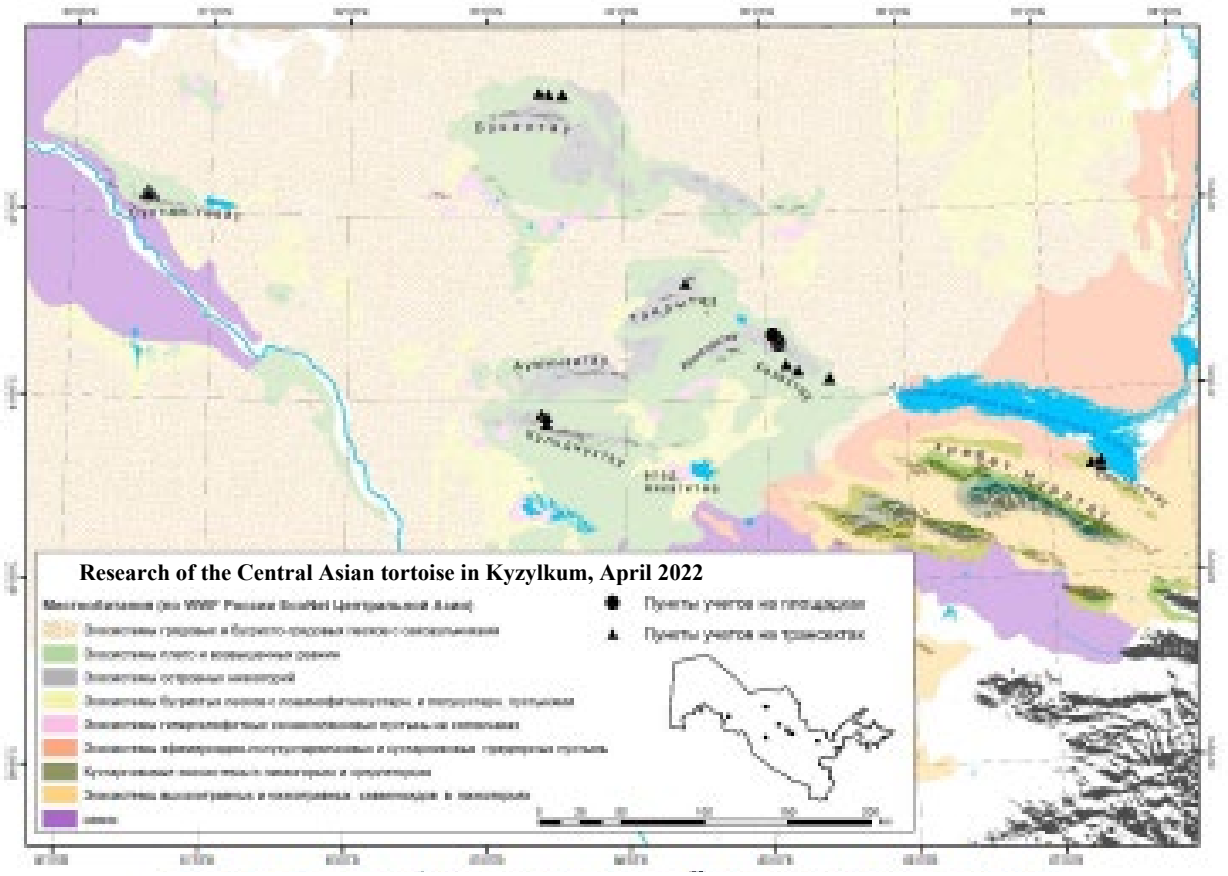


Fig. 13. Steppe tortoise survey points in April 2022

Table 1. Data from trial sites

Site No.	Date	Coordinates	Place	Time	Soiltemp. °C	Airtemp. °C	Density sp/ha	Male/Female, %	Adults/ juveniles
STH-5	11.04.2022	N 41,2926 E 65,09589	Navai region foothills of Kazakhtau, Sangruntau mountains	16:15	25	23	42	35.7/54.8	90.5/9.5
STH-2	11.04.2022	N 41,306735 E 65,097792	Navai region, foothills of Kazakhtau, Sangruntau mountains	9:45	35.2	21.5	57	21.1/77.2	98.2/1.8
STH-1	11.04.2022	N 41,318004 E 65,084226	Navai region, Northwestern part of the foothill plain of the Kazakhtau outlier	11:05	26.6	24.7	36	15.6/84.4	100/0
STH-3	11.04.2022	N 41,342625 E 65.058475	Foothills of Kazakhtau	12:05	27.8	26.8	29	17.2/72.4	89.7/10.3

Table 2. Transect survey data

No.	Date	N	E	Place	Start time	Soiltemp. °C	Airtemp. °C	Humidity, %	Averagedensity, sp/ha
TTH-1	09.04.2022	43,600874	67,30019	Jizzakh region,Nuratau foothill plain, between the ridge and Tuzkan, Fixed sands, 800 m south of farm No. 3	11:03	38.2	31.5	27	1
TTH-2	09.04.2022	40,61506	67,36611	Jizzakh region, Nuratau foothill plain, between the ridge and Tuzkan	10:21	40.4	29.6	29	5.6
TTH-3	09.04.2022	40,57713	67,36761	Jizzakh region, Nuratau foothill plain, between the ridge and Tuzkan	8:43	32.3	28.9	29	3.15
TTH-4	09.04.2022	40,58745	67,36527	Jizzakh region, Nuratau foothill plain, between the ridge and Tuzkan	9:20	31.2	30.4	31	3.38
TTH-9	10.04.2022	41,10428	65,45633	Navai region, Eastern part of the Zhamantau outlier	8:30	24.8	19.7	57	17.97
TTH-10	10.04.2022	41,151111	65,233694	Navai region, Foothill plain of the Zhamantau outlier	10:22	27.3	38.9	30	7.94
TTH-11	10.04.2022	41,184528	65,149528	Navai region, South-eastern part of the foothill plain of the Kazakhtau outlier	11:40	29.6	44.7	26	5.16
TTH-18	13.04.2022	42,665763	63,380549	Navai region, Northern foothill part of the Bukantau outlier	19:15	30.9	22.8	37	12.56
TTH-34	14.04.2022	40,919562	63,425213	Bukhara region, foothill plain of the Kuzhuktau outlier	9:45	24	28.7	31	3.32
TTH-35	14.04.2022	40,929844	63,390393	Bukhara region, foothill plain of the Kuzhuktau outlier	10:25	37.5	28.1	32	2.1
TTH-36	14.04.2022	40,87969	63,424652	Bukhara region, foothill plain of the Kuzhuktau outlier	8:15	26.9	22.4	31	2.73

TTH-54	12.04.2022	41,62994	64,4364	Navai region, foothill plain of Aktau (Tamdytau)	9:30	27.4	28.2	38	0.08
TTH-55	13.04.2022	42,66136	63,44812	Navai region, Northern foothill part of the Bukantau outlier	10:30	26.7	27	33	11.28
TTH-56	13.04.2022	42,657889	63,550222	Navai region, Northern foothill part of the Bukantau outlier	12:00	43.5	32.4	26	2.46
TTH-57	16.04.2022	41,1095	60,52737	Republic of Karakalpakstan, Northern foothill plain of the Sultan-Uvays outlier	9:15	27.1	24.2	38	2.75
TTH-58	16.04.2022	42,11983	60,53118	Republic of Karakalpakstan, Northern foothill plain of the Sultan-Uvays outlier	9:54	32.9	23.5	39	1.4
TTH-59	16.04.2022	42,11842	60,54628	Republic of Karakalpakstan, Northern foothill plain of the Sultan-Uvays outlier	10:32	34.1	24	37	2.7
TTH-60	16.04.2022	42,10073	60,54004	Republic of Karakalpakstan, Northern foothill plain of the Sultan-Uvays outlier	8:38	26.6	23.5	39	3.5
TTH-61	16.04.2022	42,09477	60,57761	Republic of Karakalpakstan, Northern foothill plain of the Sultan-Uvays outlier	11:06	31.2	25.4	32	0.25

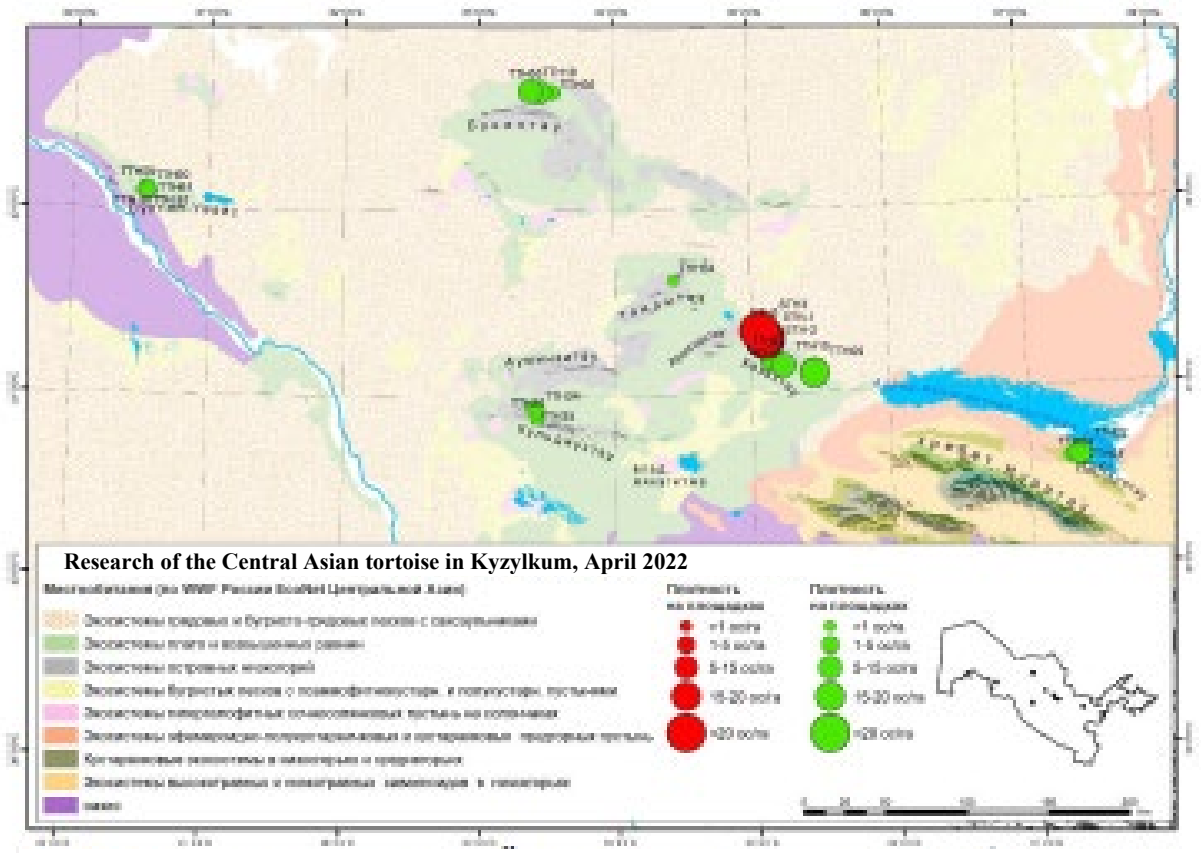


Fig. 15. Density of the Central Asian tortoise at various survey points in April 2022

Studies, over many years, show that in the main habitat the tortoise population is 1.5-2.5 heads/ha. The tortoise is unevenly distributed on the territory of Uzbekistan. The habitat area of this species is estimated at 300 000 km^2. 20 000 000 individuals according to the Cadastral Directory of Uzbekistan inhabit this territory for 1992. The number of tortoises living in the Navai region is estimated at 12 000 000 heads. The Navai region is the largest in territory and has biotopes with the highest density of tortoises, up to 200 tortoises/ha. The bulk of the blanks were produced in three areas.

1. Navai region, Tamdy district, its area is 300 km^2, where the density of tortoises is up to 50-60 wasp/ha, which is a very high figure. The main criterion for determining the number of specimens for possible removal is the determination of population density in adjacent territories and the average statistical value of population density in a given area.

To prevent seizures below the statistical average, constant recording is carried out both in commercial and adjacent territories.

2. Navai region, Nurata district and has an area of 400 km^2, the population density of which ranges from 32 to 64 sp/ha.
3. The area where tortoises are harvested is located in Samarkand region, Nurabad district. The territory of which is 500 km^2, the density of tortoises ranges from 5.8 to 28 sp/ha. The habitat area of Agrionemys horsfieldii tortoises is 300 000 km^2, and cropping is carried out on 1200 km^2, which is 0.4% of the habitat area. The main task of monitoring natural and commercial areas as preventing the tortoise number from falling below from a critical level, which, according to estimates, is 2-5 tortoises/ha.

Starting in 2020, wild tortoises are no longer harvested for export.

The main factors affecting the numbers of the Central Asian tortoise are low survival rate in the initial period of life (1-6 years).1; rarely 3% of the hatched young tortoise survive to sexual maturity. The pressure of predators that feed on the tortoise is significant. To date, the list of tortoise consumers includes 35 species of vertebrates from 14 families. The most numerous group is birds - 19 species, mammals - 13 species, reptiles account for 1 species each from 3 different families. The tortoise is most vulnerable in the first 5-8 years and is 6-8 cm in size. Most often, tortoise suffer from the herpes virus of land tortoise - *Herpes Virus*. Many populations in Uzbekistan infected this virus. Under unfavorable conditions - dry spring, low temperatures - this disease activates the death scale of tortoises to 98-100%, usually during hibernation. The causative agents of this disease persist in the soil in nematode eggs for 3-10 years. The virus is not transmitted from sick parents to small tortoises. Recently, a disease has been observed - mycoplasmosis (caused by *Mycoplasma agassizii*), which can also lead to death. Overgrazing of farm animals has some impact. Spring frosts greatly affect the survival of newborn young tortoises. The development of land for construction and agricultural needs has a negative impact, but to a very small extent, since large-scale seizures have not occurred over the past 70 years.

In the main territory, where the population can appear, the number is quite stable and not inflected to any external influences. The level of illegal seizures ranges decreases from 10 000 to 3 000 animals per year. There have also been cases of smuggling that vary within these limits.

Animals raised in facilities differ significantly from their wild species. In nursery conditions, animals grow faster and their growth is clearly visible, which are not pigmented and remain light yellow color. This is a natural marker, characteristic only of animals raised in a nursery, as opposed to wilds.

There is also a size restriction from European CITES, introduced in 2001, on the possibility of exporting tortoises 6-8 cm raised in a facilities - F and R. Currently, the removal of wild individuals W from nature, as well as the collection of eggs and newborn turtles is closed for ranching – R. New rules and methods are developed for the removal of eggs and tortoise hatchlings, followed by a 10% introduction into the places of removal. Release of turtles 6-7 cm, as the least vulnerable.

Cases of exceeding the quota by the Management Authority were not identified and were also not allowed. The issued permits are issued twice or three times due to expiration of validation of CITES permit. If we see to 11a column, the numbers are the same but issued in different periods. Also it can be replaced with new permit according to changing the recipient.

Article 15 of the Law of the Republic of Uzbekistan “On hunting and hunting farms” establishes the procedure for approving quotas. Applications for quotas for removal from the natural habitat by nature

users or entrepreneurs submit twice a year (autumn and spring). A table is compiled based on applications for the requested quantity and submitted to the Institute of Zoology of the Academy of Sciences of the Republic of Uzbekistan (also known as the CITES Scientific Authority) along with investigation records of the number of wild animals and hunted wild animals. The Institute of Zoology reviews all records and gives its conclusions (along with recommendations) about non-damaging, within the framework of rational use.

An Interdepartmental Commission reviews data on the conclusion (composition: Ministry of Ecology, Academy of Sciences, Institute of Zoology and other interested departments). In accordance with the conclusion of the Academy of Sciences (Scientific Authority) on the recommended number of animals, the leadership of the Ministry of Ecology approves the seizure quota. Trapping – Law of the Republic of Uzbekistan "On hunting and hunting farms":

a) Appendix 2 on the amounts of payments for the trapping of wild animals;
b) Appendix 2 - hunting periods in the Republic of Uzbekistan;
c) Article 23 – hunting season and dates;
d) Article 15 – quota for hunting wild animals;
e) Chapter 3 – Rights and obligations of the hunter and hunting grounds.

2) Resolution of the Cabinet of Ministers of the Republic of UzbekistanNo. 290dated October 20, 2014:
   a) Appendix 14 to the Regulations on the procedure for using objects of the animal world and passing permitting procedures in the field of use of objects of the animal world
   b) Appendix 13 to the Regulations on the procedure for using objects of the animal world and passing permitting procedures in the field of using objects of the animal world
      i) regulations on the procedure for passing permitting procedures in the field of international trade in endangered species of wild fauna and flora (CITES) on the territory of the Republic of Uzbekistan in accordance with Resolution of the Cabinet of Ministers No. 290 of October 20, 2014.
      ii) resolution of the State Committee of the Republic of Uzbekistan for Nature Protection and the Ministry of Internal Affairs of the Republic of Uzbekistan on "On approval of rules for keeping wild animals in populated areas"
      iii) trade in wild animals is carried out in accordance with the rules of retail trade in the Republic of Uzbekistan, approved by Resolution of the Cabinet of Ministers of the Republic of Uzbekistan No. 75dated February 13, 2003.
      iv) Code of the Republic of Uzbekistan on Administrative Liability, Articles 92, 93, 94 and 111 – *addresses issues related to the use and destruction, as well as cruelty to animals on the territory of the Republic of Uzbekistan*
      v) Criminal Code of the Republic of Uzbekistan, articles 202 and 2021 – *considers violation of the order of use of flora and fauna and cruelty to animals.*
      vi) Law of the Republic of Uzbekistan "On the protection and use of fauna" - *General concepts and terminology in the field of protection and use of flora and fauna, as well as the definition of scientific and administrative bodies of CITES.*
      vii) Law of the Republic of Uzbekistan "On Hunting and Hunting Management" – *concepts related to hunting and rules governing hunting (also trophy hunting of animals included in the CITES lists).*
      viii) Law of the Republic of Uzbekistan "On licensing, permitting and notification procedures" - *determines the authorized body responsible for issuing CITES permits*.

UBM Technology LLC. 07/27/2017

Animals Asia LLC. from 06.10.2017

ZOOCOMPLEX LLC. 05/24/2006

AVENUE ALLEYS LLC. 11.10.2019

ZOO AZIA LLC. 03/18/2014

STEPPE TURTLES LLC. 06/21/2018

ZOO ORIGINAL LLC. Temporary foster care in the nursery "TABIAT BAG'RIDA" LLC. from 01/09/2012

GLOBAL MASTER GROUP 12/24/2010

PET FARM SALES LLC. 05/18/2018

Global Reptiles LLC. 09/30/2021

ASIA ECO LIFE LLC. 08/03/2018

ANEXPO LLC. 08/04/2014

TABIAT BAG'RIDA LLC. 07/23/2007

FAUNA PLANET LLC. 01/30/2013

WILD ANIMALS GROUP LLC. 02/09/2022

EXOTISCHETIERELLC. 03/26/2021

All of the above-mentioned nurseries are officially registered in accordance with the legislation of the Republic of Uzbekistan. They were all issued a certificate of state registration. All of them excludes the possibility of wild specimens entering the territory of the nursery, as well as the release of animals from the nursery into the natural environment. Warrens for keeping and mating of breeding stock are equipped on the territory of the nurseries and there are various shelters that imitate natural conditions. Separate rooms are equipped with multi-tiered racks for keeping and raising young tortoise; they have special lighting fixtures, shelters, and optimal temperature is maintaining. There is an enclosure for preparing food, tanks for bathing, an incubator, quarantine enclosures, sanitary and veterinary services are provided at the location of the nursery by regional veterinary hospitals.

The breeding stock acquired in accordance with the legislation of the Republic of Uzbekistan and without harm to the wild population. Mating, egg laying, incubation, and rearing of young tortoise takes place only on the territory of the farm.

The first of all the tortoise trade in Uzbekistan is the Zoocomplex, which founded in 1947. In the early 90s of the last century, this company began developing ranching and breeding methods; by 1998, positive results obtained and until 2012, they had a first in this matter. Since 2011, many specialists from the Zoocomplex have opened their own nurseries, and tortoise-breeding technologies have become the subject of commercial trade. In this regard, there was an increase in the number of nurseries qualification that successfully began breeding farmed population. It was also used the works of the above-mentioned organization, published in print and available in the public domain.

Results of researches are regularly reported at the international conferences:

1 Golenkevich, E. Peregontsev, G. Sorochinsky, I. Sorochinskaya and V. Sorochinsky. Some data of the Steppe tortoise Ranching programme in Uzbekistan, Senegal, Saly Second International Congress of Chelonion Conservation Senegal, Saly (near Dakar) – June 18-22, 2003, 58 p.
2 Golenkevich, E. Peregontsev, G. Sorochinsky, I. Sorochinskaya and V. Sorochinsky. Ranching of Horsfield's tortoise in Uzbekistan. The Fifth World Congress of Herpetology, South Africa, Stellenbosch – June 20-24, 2005, 130 p.
3 E.V. Bykova, V.G. Sorochnsky, A.V. Golenkevich, E.A. Peregontsev, G.Ya. Sorochinsky, I.N. Sorochinskaya. Rearing and ranching of the tortoise Agrionemys (testudo) horsfieldii Gray. The fifth congress of the Nikolsky Herpetological Society, Pushchino, 6-10 October 2000.
4 Elena V. Bykova, Valentin G. Sorochinskiy, GeorgiyYa. Sorochinskiy, Irina N. Sorochinskaya, Evgeny A. Peregontsev, Alexei V. Golenkevich. On establishment of a farm hatching and rearing Agrionemys (Testudo) horsfieldii Gray in Uzbekistan. The 6th International zoo and wildlife research conference on behavior, physiology and genetics, Germany, Berlin – October, 2007, 56 p.
5 Elena V. Bykova, Valentin G. Sorochinskiy, GeorgiyYa. Sorochinskiy, Irina N. Sorochinskaya, Evgeny A. Peregontsev. //Development of keeping and breeding of tortoise (Agrionemys horsfieldii, Gray, 1844) in captivity on the basis of data obtained in the wild. The 7th International zoo and wildlife research conference on behavior, physiology and genetics, Germany, Berlin – 21-24 September, 2009, 40 p.
6 Elena V. Bykova, Valentin G. Sorochinskiy, GeorgiyYa. Sorochinskiy , Irina N. Sorochinskaya,Evgeny A. Peregontsev. On the practical experience of the hatching and rearing of Agrionemys (Testudo) horsfieldiiGray at the Zoocomplex in Uzbekistan.The 6th World Congress of Herpetology was held in Manaus, Brazil17-22 august, 2008.
7 Bykova E.V., Sorochinsky V.G.,SorochinskyG.Ya. .Sorochinskaya I.N &Peregontsev E.A.Effectiveness of use of dietary supplements at cultivation of juveniles of the Central Asian tortoise of Agrionemys horsfieldii (Gray, 1844) in Uzbekistan. Zoological researches of regions of Russia and adjacent territories. Materials of the III International scientific conference. Nizhny Novgorod. On January 13-14 2014.S.265-269.

The following articles were published on this topic

1. V. Sorochinskiy, I. Sorochinskaya, E. Bykova, G. Sorochinskiy. The maintenance and ranching of the Central Asian tortoise Agrionemys (Testudo) horsfieldii gray under conditions of a nursery. EkologicheskiyVestnikuzbekistana [The ecological bulletin of Uzbekistan], 2007, (73), 4.
2. Elena V. Bykova, Valentin G. Sorochinskiy, Georgiy Ya. Sorochinskiy, Irina N. Sorochinskaya, Evgeny A. Peregontsev, Alexei V. Golenkevich. Ranching as a method of conservation of the wild population of horsfield's tortoise, Agrionemys horsfieldii Gray. The Russian herpetology journal, 2007, vol. 4, No 3, pp.232-236.
3. Bektimirov A., Nemchireva T., Abdukhalilova G., Bykova E., Sorochinsky G. &Sorochinsky V. 2008 - The results of bacteriological and parasitological studies of biological material obtained from the Central Asian tortoises. Zooveterinary, 9: 26-27.
4. E.V. Bykova, V.G. Sorochinsky, G.Ya. Sorochinsky, I.N. Sorochinskaya, E.A. Peregontsev Some aspects of the successful breeding of the Central Asian tortoise – Agrionemys (Testudo) Horsfieldii Gray Modern herpetology. 2009. Vol. 9, issue 1/2. P. 3-11
5. Bykova E.V., Sorochinsky V.G., Peregontsev E.A., Sorochinskaya I.N.& Sorochinsky G.Ya. 2010 - The long-term experience of rearing the Central Asian tortoise Agrionemys horsfieldii (Gray, 1844) in Uzbekistan. Herpetological studies in Kazakhstan and adjoining states. Almaty. Pp. 69-74.
6. Bykova E.V., Sorochinsky V.G., Sorochinsky G.Ya., Sorochinskaya I.N.& Peregontsev E.A., Long-term observations of captive tortoises Agrionemys horsfieldii (Gray, 1844). 2011. Scientific readings "Biology. Ecology. Chemistry. Education. Collection of proceedings on the

results of the 57th scientific conference of teachers DVGGU / under the editorship of VT Tagirova, A.F. Dulina Khabarovsk Publishing House of DVGGU - 165 pages. 5-11 pp.
7. Results of long-term studies of the Central Asian tortoise Agrionemys horsfieldii (Gray, 1844) under conditions of captivity by Elena BYKOVA, Valentin SOROCHINSKY, Georgy SOROCHINSKY, Irina SOROCHINSKAYA & Evgeny PEREGONTSEV Bull. Soc. Herp. Fr. (2013) 145-146 : 169-187
8. SorochinskyV.G ,Chirikova M.A., Brushko Z.K., Bondarenko D.A., Tsaruk O.I. Central Asia tortoise in Uzbekistan: status of the species in region, opinions Bulletin of Tumen government Univercity. Ekology and environmental management.2017.Vol.3.№1.pp.108-118.

After submitting an application for registration of a nursery, a group of inspectors - 2-3 people - arrives to the site and inspects the site of the proposed nursery and the corresponding equipment attached to the nursery. Based on the initial inspection, a conclusion that either allows the opening of the nursery or proposes to eliminate the deficiencies, if any, written. After eliminating the deficiencies, the nursery owner submits a request to purchase breeding stock. The nursery owner's knowledge of the biology of the species is also tested. If the Ministry of Environment issues a permit for the removal of breeding stock, then after its acquisition, it registered in nursery and in the regulatory body of the Ministry of Environment.

Every year, nursery owners submit a report on the number of breeding stock, the number of eggs and the young tortoises hatched out the eggs. When inspecting a nursery, documents confirming the competence of the nursery and the legality of the acquisition of breeding stock are checked. Enclosures and all premises for keeping tortoises are inspected to ensure that animals cannot leave the enclosures and that wild animals cannot enter the enclosures. The inspectors get acquainted with the diet of feeding, handling, sanitary conditions, absence of injuries and inappropriate behavior.

Agrionemys horsfieldii, in contrast to closely related species (Testudo graeca & Testudo hermanii), grown in a nursery, is distinguished by feature that the growth zones are not pigmented for a long time. It remains light yellow. The intensity of growth of tortoises in the nursery is determined from them, this can also be a natural marker that allows to accurately identifying tortoises from the nursery bred. All nurseries are inspected once or twice a year, at needed moments in the biological cycle of tortoises-mating, egging, incubation, hatching and the rearing process. If it is impossible to carry out inspections during key cycles, video and photo reports from the nursery provided. Before exporting, photographs of the tortoises in the packaging boxes are taken.

HOW TO DIFFER WILD HORSFIELD TORTOISES Agrionemys (Testudo) horsfieldii FROM THOSE BRED AND REARED IN CAPTIVITY?

Prepared by PEREGONTSEV Evgeniy A. and SOROCHINSKIY Georgiy Y.
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YEAR OLD RANCHED JUVENILE 1-YEAR OLD WILD JUVENILE

Lately in Great Britain and some other countries of EC is observed significant import of land tortoises, the large quantity of which are Horsfield tortoise Agrionemys (Testudo) horsfieldii. The main amount of tortoises is imported legally but illegal import of tortoises also takes place. More often, the contraband tortoises are imported from Central Asian countries via Ukraine and countries of Eastern Europe.
In connection with the ban of the CITES European Commission for import of wild tortoises in the EC countries, the number of nurseries and farms on breading and rearing tortoises in captivity began to develop actively with the aim of further export and trade. However, not all nurseries and ranching farms fulfil their obligations on breeding tortoises conscientiously. There are cases when instead of tortoises bred in captivity are exported wild specimens. Besides, some exporters in EC countries use the documents obtained for import of ranched tortoises to legalize the contraband shipments of wild tortoises.

YEARS OLD RANCHED JUVENILE 2-YEARS OLD WILD JUVENILE

Such situation is negative in many aspects:
- illegal import of animals is a negative phenomenon in itself;
- possible undermining of wild populations;
- the cheaper price on wild tortoises is a negative stimulus for real breeders and have a negative effect on the programs on breeding tortoises in captivity.

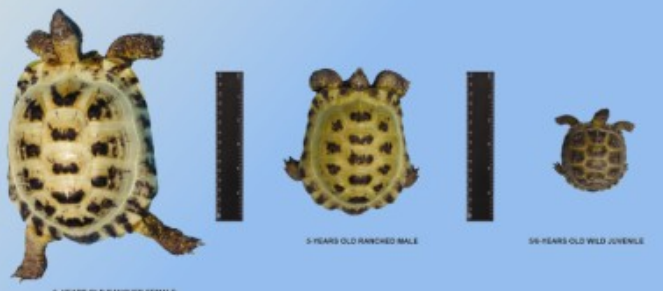
The company "Zoocomplex", having one of the main activity the breeding of tortoises by ranching (incubation of eggs taken from wild females and rearing the young tortoises up to certain dimensions) is also troubled by this situation.Taking into account our own many years experience on breeding and rearing Horfield tortoises, we'd like to propose how one can differ bred tortoises from the wild ones at the young age (since adult tortoises bred in captivity for a long time are available at present in a small number, and it is also scarcely probable, that the nurseries should trade their mature total number and adult tortoises).
According to EC CITES requirements the tortoises imported in EC countries must be no less than 60 mm in length.

YEARS OLD RANCHED JUVENILE 3-YEARS OLD WILD JUVENILE

CONCLUSION
- THE TORTOISE BRED IN CAPTIVITY IS MUCH LARGER THAN THE WILD ONE.
- THE WILD TORTOISE HAS MORE NARROW ANNUAL RINGS, I.E.
- THE LIGHT ZONE OF GROWTH IN WILD TORTOISES IS MUCH MORE NARROW THAT IN TORTOISES BRED IN CAPTIVITY OF THE SAME SIZE.
- THE BRED TORTOISE HAS NO SHABBY SHELL AND

4-YEARS OLD RANCHED FEMALE 4-YEARS OLD RANCHED MALE 4-YEARS OLD WILD JUVENILE

WILD TORTOISE (LEFT) AND RANCHED TORTOISE (RIGHT) IN A PET SHOP IN PARIS, JUNE 2001



5-YEARS OLD RANCHED FEMALE 5-YEARS OLD RANCHED MALE 5/6-YEARS OLD WILD JUVENILE

THE VERY OLD GIANT FEMALE FROM EAST KYZYL KUM DESERT THE GIANT MALE 15-20 YEARS OLD FROM EAST KYZYL KYM DESERT THE STANDARD MORE THAN 20 YEARS OLD MALE THE STANDARD MORE THAN 20 YEARS OLD FEMALE

Already in 2003, Uzbekistan was concerned about the increasing cases of replacement of specimens raised in nurseries with wild specimens. Abovementioned report presented at the Land Turtle World Congress was presented.

Every year, the Ministry of Ecology conducts nursery inspection results. Before the inspection, all documentation is reviewed; the nursery owner is sent a list of questions that are to be answered. The list of aspects of the nursery, which will be inspected. If it is impossible to inspect the nursery, photo and video confirmation of the nursery's activities requested.

Information for each nursery is collected and stored in both digital and paper forms:

1. Availability of nursery registration;
2. Legality of the purchased breeding stock (facility);
3. Availability of documents for additional breeding stock;
4. Composition of the breeding stock;
5. Number of eggs obtained from registered breeding stock;
6. Mortality in the first month of hatching;
7. Application for export indicating the number of tortoises;
8. Annual report indicating all animals, their number and age;
9. Inspection reports carried out by ministry employees;
10. Video and photo reports sent by the nursery owners.

All quotas for the removal of breeding stock from the wild formed because of accounting data carried out by the Academy of Sciences and the Scientific Authority CITES, approved at a meeting of the interdepartmental commission and guided by the principle of not causing damage. The following criteria used as a basis:

1. In places where construction must be carried out
2. Areas where land is taken for agricultural needs
3. Confiscated tortoises, the return of which to their natural habitat is difficult
4. Rearing of juvenile specimens seized based on registration data and justification of the CITES Scientific authority.
5. In places with high population density. In such areas, the Central Asian tortoise's reproductive activity slows down or stops altogether, this occurs when food competition affects survival. Tortoises developed a similar defensive reaction during evolutionary development.

All tortoises declared under export quota code F meet the criteria for that code. All nurseries have registered breeding stock, which was acquired in accordance with the legislation of the Republic of Uzbekistan and on the basis of the provisions of the CITES Convention. All animals are in a controlled environment; mating of animals takes place in nursery enclosures. The conditions necessary to obtain a revivable litter have been created. Raising of juveniles is in multi-tiered enclosures. The main biological cycles are controlled in the nursery.

1. Legality of purchasing breeding stock
2. The presence of light yellow growth zones, which are characteristic only of individuals raised in the nursery, which eliminates the possibility of falsification or manipulation of data.

In relation to species that do not live in the wild of the Republic of Uzbekistan, these are species obtained from animals kept in zoos and circuses that have appropriate documents on legal acquisition or legal import, or obtained from confiscated animals. The offspring obtained from such animals are registered in the enterprise's animal register and this information is transferred to the Ministry.

Alternatively, these are specimens kept in private nurseries, for which there are documents confirming the legal acquisition or legal import into the country of their parents. For the legal import into the Republic of Uzbekistan of animals from third countries, an original CITES permit from the exporting country with a mark from the customs authority of the exporting country is required. In case of import of animals (regardless of the assigned code), the management of the nursery provides a certificate of the offspring received and calls representatives of the Ministry to confirm this report and transfers it to the Ministry of Ecology. Subsequently, this act is the basis for issuing a CITES export permit.

No.	Name of the facilities	Date of organization (*dd/mm/yyyy*)	Purposes
1.	**IP Akhmedjanov Shavkat Khabibullayevich**	04/08/2005	T/B/P
2.	**IP Kuropatka Boris Mikhaylovich**	04/08/2005	T
3.	**National Products Factory LLC**	//2012	T
4.	**Tugan Falconry Club**	18/06/2018	Q/T
5.	**Bukhara Specialized nursery "Jeyran"**		B/T
6.	**Golden Fish Group LLC**	12/04/2019	T
7.	**Emirates Bird Breeding Center for Conservation**		S/N/B
8.	**Emirates Center for Conservation of Houbara**		S/N/B
9.	**IP Kahharov Bakhtiyor**	28/01/2016	T
10.	**Toshkent hayvonotbog'i (Tashkent Zoo)**	08/04/2002	Z/B/T
11.	**IP Shayakubov Begzod Ravshanovich**	22/11/2012	T/P
12.	**IP Rahimov Afzal Akramovich**	22/12/2017	T/P
13.	**CAFC PEREGRINE LLC**	06/16/2021	T/Q
14.	**Animals Asia LLC.**	06/10/2017	T
15.	**AVENUE ALLEYS LLC.**	11/10/2019	T
16.	**ANEXPO LLC.**	08/04/2014	T
17.	**ASIA ECO LIFE LLC.**	08/03/2018	T
18.	**EXOTISCHE TIERE LLC.**	03/26/2021	T
19.	**FAUNA PLANET LLC.**	01/30/2013	T
20.	**GLOBAL MASTER GROUP LLC**	12/24/2010	T
21.	**Global Reptiles LLC.**	09/30/2021	T
22.	**PET FARM SALES LLC.**	05/18/2018	T
23.	**STEPPE TURTLES Farm co.**	06/21/2018	T
24.	**TABIAT BAG'RIDA LLC.**	07/23/2007	T
25.	**UBM Technology LLC.**	07/27/2017	T
26.	**WILD ANIMALS GROUP LLC.**	02/09/2022	T
27.	**ZOO AZIA LLC.**	03/18/2014	T
28.	**ZOO ORIGINAL LLC.**	01/09/2012	T
29.	**ZOOCOMPLEX LLC.**	05/24/2006	T

The first attempts to raise tortoises using the ranching-R method were made in the mid-90s of the last century. The first and main manufacturer with code R was the company Zoocomplex, which conducted many scientific works and specialists herpetologists in this direction. Since December 1999, European CITES has suspended the export of tortoises from all countries, this measure was taken in accordance with Article 4.6 (c) of Council Regulations (EC) No. 338/97. In 2000, the scientific authority CITES of Uzbekistan reported on the possibility of raising in captivity more than 3000 – F and 2000 – R and requested European CITES permission to import these animals (Prof. Azimov, CITES Scientific Authority of Uzbekistan, in litt. ToC. Bail, 1 May 2000). In accordance with the legislation of the Republic of Uzbekistan, all these tortoises were raised in captivity in the nursery of the Zoocomplex (located in Tashkent, between 1997 -1999). At its 17-th meeting held in July 2000 the SRG decided to take a negative opinion on the on the importation of T.horsfieldii with source F and R from Uzbekistan. This decision was reported in Article 4.1(e) of Regulation (EC) 338/97.
In October 2000, Andrei Zatoka, as a representative of Traffic, inspected the Zoocomplex and gave a positive assessment of its activities.
All this became the beginning of the tortoises breeding under the code R and F in Uzbekistan. The activities of the Zoocomplex are represented by the above publications, which formed the basis of ranching in Uzbekistan.
Along with this, records throughout the Republic were kept by the Zoocomplex together with the Society of Amphibians and Reptiles (Russia), which are represented on the map.
According to the records of 2000-2010. Employees of the Zoocomplex and representatives of the Society for the Protection of Amphibians and Reptiles (Russian Federation (Moscow)) a map of distribution of tortoises in the natural and territorial complexes of Uzbekistan was drawn up.

Based on these surveys, the most suitable places for ranching were determined. Many years of research have determined that 1-3% of tortoises survive to sexual maturity. The main death of tortoises occurs in the period from 1 to 6 years, when the shell of tortoises is soft and they are an accessible food source for 35 species of vertebrates from 14 bloodlines. The most numerous group is birds - 19 species belonging to 6 bloodlines; mammals that feed on tortoises include 13 species, the vast majority of which belong to Carnivora. Reptiles account for one species each from three different bloodlines. The rising of young tortoises to the surface at the end of February - beginning of March coincides with the appearance of offspring in these animals.
Another limiting factor is the frosts that occur after the young tortoises reach the surface. Since they are not able to burrow deeply, tortoises 6-8 cm (6-9 years old) easily bury themselves and can even tolerate complete freezing without harm to health. The herpes virus of land tortoises also greatly affects the population size, especially on juveniles, from 3.8 to 9 cm. When the disease is 100%, these size groups die. Many local populations are resistant to this disease and under unfavorable conditions such as lack of food and low temperatures lead to the manifestation of this disease and, as a rule, animals die during hibernation. The virus that causes this disease can survive in the soil for 3-10 years, in the eggs of nematodes. Eggs from resistant and diseased turtles do not carry the virus and therefore can be used for ranching. Young tortoises become infected within the first few weeks when they eat other tortoises' feces and soil. It is worth noting that in Uzbekistan there are populations of land tortoises free from the herpes virus. Another factor that affects the number is spring droughts, which prevent tortoises from coming to the surface. This is accompanied by very low grass cover and leads to the death of young tortoises. Adults can survive in the complete absence of food for more than 2 years, while maintaining reproductive ability.
Another point is important for understanding the determination of places used for collecting eggs and young specimens. During evolutionary development, tortoises have developed a protective reaction that allows them to regulate their numbers. Deserts and semi-deserts are often characterized by sparse vegetation and an overabundance of tortoises can lead to their death. Therefore, when the number increases, a natural process is activated - according to our numerous observations, sexually mature

females either had no embryos at all, or their resorption occurred. The opposite picture was observed at a fairly low density - all females were with embryos. We also noted one characteristic feature - even with a shortage of males, with a ratio of 10:1, females retained reproductive ability. We determined that either the sperm are stored in the female or the embryos, so females are reproductive for up to 3 years without a male. One male can fertilize from 1 to 3-5 females. A feature of spermatogenesis in males is that they produce sperm only once, during hibernation. Knowing this feature and using gonadotropic hormones, it is possible to force male tortoise to produce sperm several times in a nursery. Oogenesis in females is very different - follicle production occurs continuously. This feature is also used when keeping in a nursery. There are from 1 to 16 eggs in a clutch, mostly only 1 clutch. There are unfertilized eggs. Hatching rates are typically 60-92%.With an extremely small number of males or their complete absence, the clutches are empty. Foxes, corsacs, and jackals dig up clutches and feed on eggs.
When conducting surveys, we noted areas where juveniles are almost completely absent. And it is precisely these areas that are distinguished by high reproductive rates; due to the high pressure of predators and other limiting factors, there are practically no juvenile individuals. Based on all this data, areas where eggs and young tortoises are collected for ranching were selected. Due to the fact that 1-3% survive in natural conditions, and we return 10% of the seized amount and specimens that have reached 6 cm, which are much less susceptible to predator pressure, the places where tortoises are removed are not of great importance. The release of young tortoises is carried out where there are no or few juveniles and partly in the area where eggs or young tortoises are collected. Release sites are recommended by the Academy of Sciences and agreed with the CITES Administrative Authority. During the first two years, the survival of the young tortoises is monitored; it ranges from 70 to 96%.In places with an abundance of predators, and especially where there is accessible water, this figure drops to 50%, since these released ones have a brighter carapace and are more noticeable. There is no need to mark the released young tortoises; they differ significantly from their wild relatives, and this difference persists for up to two or more years.
In 2018, 10,000 specimens were seized for ranching and in 2019, 10,000 specimens were also seized for ranching. The last release of tortoises was in the amount of 1,332 specimens in 2019.From 2020 to 2023, no wild specimens or eggs were taken for ranching.
The mortality rate of young tortoises in nurseries mainly occurs in the first month and amounts to 3-4%, the main amount of which are young tortoises hatched from the last clutches, in which, as a rule, young tortoises with various defects and low weight are hatched. Sometimes, after 4-6 months, 1-3% mortality occurs due to decalcification. This defect occurs due to a lack of vitamin D3.There are no tortoise food manufacturers in Uzbekistan. Feed is purchased from farmers or on the market, where there is no control over its quality. A slight excess of herbicides, pesticides and nitrates leads to this. Also, there are no manufacturers of UVB lamps on the Uzbek market. This percentage includes conjunctivitis. The maximum mortality recorded in nurseries can reach 10%.

There are 16 tortoise breeding nurseries registered in our country, the list of which is indicated in answer C1.In all of these nurseries, inspectors from the Ministries of Natural Resources, Environmental Protection and Climate Change carried out inspections as indicated in answer C2.All nurseries submit an annual report to the Ministry of Natural Resources indicating the number of breeding stock, offspring produced and any other changes. Any purchase of animals is recorded in the nursery and the Ministry of Natural Resources. When inspecting nurseries, all records relating to acquisition and breeding are also checked. At the end of each year, the nursery owner or manager submits an application for export. The CITES Management Authority, which is required to participate in inspections, determines that the animals in the nursery meet the criteria of Conference Regulation 12.3, that is, they were bred in an artificial environment, the breeding stock was legally acquired, mating and egg production took place in the nursery, incubation and raising also took place under controlled conditions. Only in this case a CITES certificate is issued.

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Yemen

To the CITES Secretariat and UNEP-WCMC

Republic of Yemen

Ministry of Water & Environment
Environment Protection Authority

No/Ref:
Date:
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الصادر
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التاريخ ٢٢ / أغسطس / ٢٠٢٣

Date:22/08/2023
Ref.: H-B- 2023 – 306

To: Thea Carroll
Chief, Science Unit at CITES secretariat

Subject: Re: Review of Significant Trade in specimens of Appendix-II species
[Resolution Conf. 12.8 (Rev. CoP18)]

Dear Thea Carroll

Yemen expresses high appreciation to cooperate with CITES secretariat, and do hereby confirm the we make great efforts to play the required role in this field even of the exceptional and difficult circumstances that our country passes through. And in responding to your letter Our ref.: DR/TC/RST/2023/YE, dated 5th July 2023, the Fisheries Authority and exporters were informed immediately that we took a decision to stop exporting the two species: (Carcharhinus longimanus and Sphyrna lewini) , until an NDF study done.

We are now with the IFAW to provide the technical and financial support to make that, and I find it a chance to remind that we have already address the CITES secretariat (see attachment dated 28th August 2021) officially to provide support to execute the NDF study for sharks and sea cucumber in Yemen.

Thank you for cooperation

Mr. Faisal S. Obaid Al Thalabi
Chairman of Environment Protection Authority
Aden, Republic of Yemen

Copy with regards to:

- Minister of Water & Environment

Yemen - Aden
www.epa-ye.org
info@epa-ye.org

Republic of Yemen
Ministry of Water & Environment
Environment Protection Authority

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التاريخ ٢٠٢١/٨/٢٨

Date: 28/08/2021
Ref.: H-B- 2021 – 141

To: Ivonne Higuero,
CITES Secretary General
CITES Secretariat
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From: Ammar N. Aulaqi
Chairman,
Environment Protection Authority
Aden- Yemen
Tel: 00967 2 270445
Email: info@epa-ye.org, Ammar.aulaqi@gmail.com

Subject: Support and implementation of the CITES NDF study of sharks and sea cucumbers in Yemen.

We highly appreciate the continuous cooperation of the CITES secretariat, and would like to notify that Yemen is considered one of the countries in the region that depends on fisheries for its economy. Due to the fact that some sharks and sea cucumbers have been included in Appendix II to the CITES Convention, the CITES Management Authority in Yemen is requesting your technical and financial cooperation to implement the NDF study for these species. This is since the war in the country has caused a scarcity of financial resources thereby making it difficult to finance this study locally to estimate the stock of these species in order to propose future plans and policies for appropriate sustainable exploitation.

Best regards,

Mr. Ammar N. Al-Aulaqi
Chairman,
Environment Protection Authority

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وزارة المياه والبيئة
الهيئة العامة لحماية البيئة
Republic of Yemen
Environmental Protection Authority
Ministry of Water & Environment

Copy with regards to:
- Minister of Water & Environment

From: CITES YEM <cites.yem@gmail.com>
Sent: 01 December 2023 12:22
To: Ciara Stafford; Thea Henriette Carroll
Cc: info@epa-ye.org; mwe@mwe-ye.org; Claire McLardy; species
Subject: Re: Review of taxa in Yemen subject to the CITES Review of Significant Trade

To: Thea Carroll

Chief, Science Unit

CITES secretariat

In reference to our letter No. H-B- 2023-306 dated 08/22/2023 regarding reviewing the important trade in specimens of the species listed in Appendix II (*Carcharhinus longimanus, Sphyrna lewini*), you have been notified that our country has stopped trade in these two species immediately upon receiving your letter. Then, as a result of the economic conditions that Yemen is experiencing, there is not sufficient support available to conduct any evaluation of trade operations, so we were proactive in requesting your help since the year 2021, and currently we in coordination with IFAW to conduct an NDF study.

- Regarding the distribution of *Carcharhinus longimanus (Sphyrna lewini)* in Yemeni waters and natural reserves, there are no recent studies on the presence of these two species in specific areas. However, all the information recorded through local expertise working in the field confirms that the presence of sharks in various locations as well as in waters close to Socotra Island marine reserve.

- There is a great demand for shark fishing by local fishermen, and this may not be the main reason for the threat to them, but in recent years there are commercial companies that have begun fishing for sharks, and this may constitute a depletion of shark stocks. However, these companies do not target only these two species, but all sharks.

- For hundreds of years, the local population in the eastern regions of Yemen have been almost the only consumers of shark meat in the Arabian Peninsula region, and shark meat still constitutes a daily food for those population groups.

- The deteriorating situation and the lack of response of some international organizations to provide the necessary support for all protection efforts in light of

the conditions that Yemen is experiencing was the reason for the absence or weakness of some field work crews, especially monitoring and evaluation teams. Therefore, there are violations of protection regulations in natural reserves, and the regulations are not applied effectively.

- Despite the difficulties, the CITES management Authority is making great efforts and is seeking to coordinate with some international organizations to implement the NDF study of all sharks and sea cucumbers. At the same time, there are efforts being made to prevent the smuggling of sharks from neighboring countries overlooking the Red Sea and the Gulf of Aden. Therefore, the role of those countries in carrying out this same action on their part will be an incentive for us to provide more effort. We also aspire to the cooperation of the CITES Secretariat, which we addressed before, to be present in helping Yemen to assess the stocks of sharks and cucumbers.

TAXON/COUNTRY COMBINATIONS SELECTED FOR REVIEW BY THE ANIMALS COMMITTEE FOLLOWING COP19*

The CITES Secretariat commissioned UNEP-WCMC to prepare this assessment under the current Project Cooperation Agreement.

The CITES Secretariat and UNEP-WCMC would like to thank the range States and other experts who provided valuable data and opinions in the compilation of this report.

* *The geographical designations employed in this document do not imply the expression of any opinion whatsoever on the part of the CITES Secretariat (or the United Nations Environment Programme) concerning the legal status of any country, territory, or area, or concerning the delimitation of its frontiers or boundaries. The responsibility for the contents of the document rests exclusively with its author.*

Contents

Executive summary

This report provides accounts for eight animal taxa that were selected for inclusion in Stage 2 of the CITES Review of Significant Trade (RST) at the 32nd meeting of the Animals Committee. It aims to assist the Animals Committee in categorising taxon/country combinations based on the effects of international trade, and to highlight problems concerning the implementation of Article IV of the Convention.

The UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) was asked by the CITES Secretariat to compile reviews for 20 of the animal taxon/country combinations (Table i) that were selected for inclusion in Stage 2 of the RST following CoP19. All range States were consulted by the CITES Secretariat and later by UNEP-WCMC, and asked to provide information on the scientific basis by which they had established that exports of relevant taxa were non-detrimental and compliant with Article IV. Range States were also asked to provide details of the population status and threats to the relevant taxon within their country, as well as information on trade, legal protections, management and monitoring.

Table i: Taxon/country combinations that UNEP-WCMC was requested by the CITES Secretariat to compile reviews for.

Species	Country
Python regius	Benin, Ghana, Togo
Siebenrockiella crassicollis	Indonesia
Kinixys homeana	Ghana
Testudo horsfieldii	Uzbekistan
Carcharhinus longimanus	Kenya, Senegal, Oman, Yemen
Sphyrna lewini	China, Indonesia, Kenya, Mexico, Nicaragua, Oman, Sri Lanka, Yemen
Sphyrna mokarran	Mexico
Mobula spp.	Sri Lanka

Each taxon/country combination was assigned one of three provisional categorisations ('*Action is needed*', '*Unknown status*' or '*Less concern*'), in accordance with paragraph 1(e) of Resolution Conf. 12.8 (Rev. CoP18). For the 20 combinations reviewed:

- 12 are provisionally categorised as '**Action is needed**' on the basis that available information suggests that the provisions of Article IV, paragraph 2 (a), 3 or 6 (a), are not being implemented;
- 6 are provisionally categorised as '**Less concern**', either because available information suggests that the provisions of Article IV paragraph 2 (a), 3 or 6 (a) are being implemented, or on the basis that no wild-sourced trade (codes W, R, U and source unreported) is anticipated.
- 2 are provisionally categorised as '**Unknown status**' on the basis that available information was insufficient to confidently determine whether or not the provisions of Article IV paragraph 2 (a), 3 or 6 (a) are being implemented.

A summary of findings and a justification for the provisional categorisations of each of the 20 combinations under review is provided in Table ii.

Based on the taxon accounts, the following additional findings may also be appropriate for the Animals Committee, Standing Committee and/or Secretariat to consider, as appropriate:

Capacity building

1. A lack of **financial and technical capacity to conduct non-detriment findings** was highlighted by a number of range States under review, with Nicaragua, Senegal and Yemen in particular requesting support from CITES to undertake the work required. More support is particularly needed to help Parties develop non-detriment findings for shark and ray species.

2. **Misapplication of source codes** was raised as an issue in the reviews for *Python regius*, *Kinixys homeana* and *Testudo horsfieldii*. While some of these concerns relate to the laundering of specimens, others relate to a potential misunderstanding of the circumstances under which particular source codes should be applied; in this regard, the relevant Parties may benefit from capacity building on what CITES source codes should be used in different production systems.

3. The lack of trade records for introduction from the sea for marine species suspected to be caught in Areas Beyond National Jurisdiction (ABNJ) implies there is a need to **build capacity on reporting** of this type of trade. The current *Guidelines for the preparation and submission of CITES annual reports* could be expanded to include **guidance** and examples of how to report different trade scenarios involving **source X specimens**.

Legal acquisition

4. Questions emerged in the reviews of all four elasmobranch taxa regarding the implications of Regional Fisheries Management Organisation **retention bans for CITES Legal Acquisition Findings (LAFs).** In the case of the reviews for *Carcharhinus longimanus* and *Mobula* spp., it additionally became apparent that there is a lack of clarity regarding how a **species listing in CMS Appendix I should be taken into account within a CITES LAF.** The Standing Committee could be requested to consider this issue, liaising with CMS, relevant RFMOs and relevant CITES Parties as necessary, with a view to publish guidance or update Resolution Conf. 18.7 (Rev. CoP19) on Legal Acquisition Findings, as needed.

Table ii: Recommended categorisations for 20 taxon/country combinations that were selected for Stage 2 of the RST following CoP19, based on the effects of international trade and problems concerning the implementation of Article IV.

Species (Common name)	Range State under Review (Response received to the consultation?)	Summary	Provisional category
REPTILIA			
PYTHONIDAE			
Python regius (Ball python)	Overview	Globally **Near Threatened** (2021 assessment). The population size is unknown but considered to be declining at an unknown rate, possibly >30% over three generations (15 years). The species is subject to high levels of exploitation across its range.	
	Benin (No response received)	The current population size is unknown, but anecdotal evidence from hunters and farmers suggests significant population declines and local extirpations. Benin has submitted annual reports for all years 2013- 2022. Direct exports 2013-2022 were predominantly in live ranched pythons for commercial purposes (137 602 reported by Benin and 116 948 as reported by importers), and were within the annual ranched quota (most recently set at 32 000 specimens in 2021-2023) for all years. Benin's quota for 1000 wild *P. regius* appears to have been exceeded by 707 specimens in 2013 as reported by importers; however permit analysis suggests that the majority of this trade was associated with year-end trade from 2012, and the adjusted 2013 total did not exceed the quota. Trade routes between Ghana, Benin and Togo appear highly connected, with Ghana the main re-exporter of live ranched *P. regius* from Benin and Togo. Few details of Benin's production system for *P. regius* could be located, but it appears to include the collection of gravid females, and therefore would not meet the definition of ranching in Res. Conf. 11.6 (Rev. CoP15). No management plan appears to be in place, and it is unclear how the release of adults collected for ranching is monitored. In addition to the wild harvest of pythons to supply ranching facilities for the international pet trade, there is a substantial domestic harvest of *P. regius* for bushmeat and belief-based uses. Females and young of *P. regius* are protected under Beninese law, and it is unclear how harvest for ranching is regulated within the country's legal framework. Decision 17.276.b directed Benin to implement a management plan, develop non-detriment findings (NDFs) and strengthen national regulations for this species; however at AC30, it was noted that no information had been received from Benin on its progress towards these objectives. Given the poor conservation status of the species in Benin and outstanding recommendations relating to the development of management practices to ensure sustainable harvest of the species, categorised as **Action is needed.**	**Action is needed**

Python regius (cont.)	Ghana (Response received)	Ghana reported that *P. regius* could be found throughout the country and was common in farmlands in the Eastern, Greater Accra, Central, Volta, and Savannah regions; however, no current information on population size or trend could be located. Ghana has submitted annual reports for all years 2013-2022, with the exception of 2016 and 2020. Direct exports 2013-2022 were predominantly in live ranched pythons for commercial purposes (176 755 reported by Ghana, and 162 130 reported by importers), and were within the annual quota of 60 000 ranched specimens for all years. Ghana also published quotas for wild-sourced and captive-bred specimens in various years 2014-2022; captive-bred trade reported by importers appeared to have exceeded quotas for 2014 and 2018, however, permit analysis suggests this may have been due to misreporting of source codes by importers. Trade routes between Ghana, Benin and Togo appear highly connected, with Ghana the main re-exporter of live ranched *P. regius* from Benin and Togo. Ghana noted that an NDF had not yet been conducted for *P. regius* due to limited financial resources. While a quota system is in place, this appears to have no scientific basis, and no management plan or monitoring appears to be in place to assess the sustainability of harvest from the wild. It is also unclear whether ranching facilities are required to return a set percentage of hatchlings to the wild to counteract the effect of harvest. While Ghana described the number of permits issued to collect adults for captive breeding facilities to be "limited", total wild harvest for direct export and to support other production systems (R and C) are unclear. *P. regius* is a partially protected species in Ghana; legislation prohibits the hunting or capture of juveniles or adults accompanied by young, but it is unclear if there is a derogation from this law for the purpose of ranching. Given the lack of data on the status of the species in Ghana, uncertainty regarding the scientific basis of the current quota system, and the lack of monitoring or management in place for a globally declining species, categorised as **Action is needed.**	**Action is needed**
	Togo (Response received)	Reported to be widespread in the country but information on the population size and trend is lacking; anecdotal evidence based on interviews with hunters in Togo in 2020 suggested increased harvesting effort and less availability of the species in markets compared to the previous five years. Togo has submitted annual reports for all years 2013-2022. Togo was the largest global exporter of live ranched *P. regius* over this period: direct exports 2013-2022 predominantly consisted of 553 237 live ranched individuals for commercial purposes (537 198 reported by importers). The annual quota of 62 500 ranched specimens appears to have been exceeded in 2020-2022 according to Togo and 2013, 2020, and 2021 according to importers; permit analysis suggests the importer-reported excess could be reduced to one year only (2019). Togo's quota for 1500 wild-sourced *P. regius* also appears to have been exceeded in 2021 according to Togo, and in 3-4 years according to importer-reported data. Trade routes between Ghana, Benin and Togo appear highly connected, with Ghana the main re-exporter of live ranched *P. regius* from Benin and Togo. Togo has indicated that it plans to conduct a study to gather detailed information on the status of *P. regius*, with a view to develop an NDF, and indicated this information could be provided in early 2024. Descriptions of the ranching system in use by Togo imply that this involves the collection of gravid females, and thus would not meet the definition of ranching described in Res. Conf. 11.6 (Rev. CoP15). It is unclear if a management plan is in place and how the release of gravid females collected for their eggs is monitored, but studies suggest the practice is largely unregulated. Togo's national legislation prohibits hunting of gravid females and juveniles, collection of eggs, and destruction of nests of all animal	**Action is needed**

Python regius (cont.)	Togo (cont.)	species, and no exception to this law for the purposes of ranching could be identified. Experts have noted that Togo's legislation relating to the commercial trade of *P. regius* is complex, and have suggested that streamlining of relevant legislation would greatly benefit efforts to protect the remaining wild population in Togo. The basis for NDFs for export of wild and ranched *P. regius* has not been provided; given the lack of monitoring or management for a globally declining species, categorised as **Action is needed**.	
		GEOMYDIDAE	
Siebenrockiella crassicollis (Black marsh turtle)	Overview	Globally **Endangered** (2018 assessment), based on a suspected 55% population decline over the past three generations (54 years) due to exploitation for national and international consumption, trade and habitat loss.	
	Indonesia (Response received)	*S. crassicollis* occurs in Sumatra, central and western Java, eastern, western, central and southern Kalimantan on Borneo, and Belitung Island. The species has been described as relatively common in Indonesia but there has been a suspected population decline of c. 30% in the country. Trapping surveys conducted in 2018 in palm oil plantations where the species is subject to harvest recorded densities of 3-16 ind./ha. *S. crassicollis* is sold both as a food species and as a pet in Indonesia, and its carapace and plastron have been exported for use in Traditional East Asian Medicine. Overexploitation is recognised to be one of the principal global threats to the species. Indonesia has submitted annual reports for all years 2013-2022, and has published CITES export quotas for live, wild-sourced *S. crassicollis* for all years 2013-2023 with the exception of 2019; trade was within quota for all years. Direct exports 2013-2022 predominantly comprised live, wild-sourced individuals for commercial purposes (34 383 individuals reported by Indonesia and 13 225 individuals reported by importers); 15 000 kg of wild-sourced carapaces were also exported for commercial purposes in 2014 as reported by Indonesia. *S. crassicollis* is not included in Indonesia's list of protected species which cannot be traded or hunted, but the species is managed via a quota system. Alongside CITES export quotas Indonesia has issued quotas for lower levels of domestic harvest (approx. 500-700 individuals per year 2015-2018, reduced to 150 live individuals per year for use as pets 2020-2023). Indonesia's non-detriment finding (NDF) for *S. crassicollis* was based on the simplified template developed at the 2023 CITES International Workshop on NDFs. This assigned scores to four parameters: annual harvest level, area of occupancy, life-history, and levels of illegal trade. The NDF concluded that current trade levels in the species were non-detrimental. Nevertheless, Indonesia has proposed to lower the annual export quota for the species by 70% to 839 individuals, and to continue to apply a maximum harvest carapace length of ≤15 cm. Assuming that the quota for domestic harvest is maintained at 150 individuals, this would amount to a total of 989 individuals harvested per annum. Information on the population status of *S. crassicollis* in Indonesia is scarce, and the scale of studies conducted to date is very small. However, the area of occupancy of the species in Indonesia is likely to be very high, and the species occurs in human modified habitats such as canals in oil palm plantations. A harvest level of 989 juvenile and small adult individuals spread over eight collection areas therefore appears to be conservative; on this basis, categorised as **Less concern**.	**Less concern**

TESTUDINIDAE			
Kinixys homeana (Home's hinged-backed tortoise)	Overview	Globally **Critically Endangered** (2019 assessment), based on an estimated 90% decline in suitable habitat over the past three generations (45 years), and past and projected population reductions of c. 30% per generation. *K. homeana* from all range States was previously included in the RST as a priority species for review at AC25.	
	Ghana (Response received)	*K. homeana* occurs in the South of Ghana. It has been described as an increasingly uncommon species in the country and occurs at relatively low densities; surveys in two protected areas found a decrease in density from 3 individuals/ha in 2012 to 1.4 individuals/ha in 2017. Concerns have been raised regarding the possible extirpation of the species in Muni-Pomadze (a Ramsar protected site), and of large adults in a number of national parks, principally as a result of over-exploitation. The sale of *K. homeana* in bushmeat and fetish markets in Ghana was described to be widespread. Traders surveyed in June 2022 in Kumasi (south-west Ghana) reported selling an average of 104 *K. homeana* per month. Ghana has submitted annual reports for all years 2013-2022 with the exception of 2016 and 2020. Ghana's annual export quota of 340 wild-sourced *K. homeana* was published on the CITES website for the years 2014-2018, 2021, and 2023; zero quotas were also published for captive-bred and ranched specimens in 2021. Export quotas were apparently exceeded in 2018 (by 140 individuals according to Ghana) and 2021 (by 30 individuals according to Ghana, and 10 individuals according to importers). The CITES MA of Ghana stated that annual quotas for 340 wild-sourced individuals have been in place since 2000; the 2022 quota was apparently exceeded by 30 individuals according to Ghana. Direct exports 2013-2022 predominantly comprised live, wild-sourced individuals for commercial purposes (2152 individuals reported by Ghana and 1759 individuals reported by importers). Harvest of *K. homeana* is prohibited without a permit and hunting of young individuals is prohibited. There is an annual closed season for hunting and capture of wildlife (August-November), however concerns have been raised that weak law enforcement has meant that *K. homeana* has continued to be captured during this time. It should also be noted that this period does not appear to cover the breeding season for the species (December-January). A non-detriment finding in compliance with Article IV has not been conducted for *K. homeana* in Ghana due to a lack of resources, and the basis for the establishment of an export quota of 340 wild individuals is unclear. Given that the species is Critically Endangered, local extirpations and declines have been reported, there is a high level of domestic trade, and issues relating to the enforcement of closed seasons are also apparent, categorised as **Action is needed.**	**Action is needed**
Testudo horsfieldii (Steppe tortoise)	Overview	Globally **Vulnerable** (1996 assessment) on the basis of a population reduction of ≥30% as a result of overexploitation. The IUCN Red List assessment is annotated as 'needs updating'.	
	Uzbekistan (Response received)	*T. horsfieldii* is widespread but is unevenly distributed in Uzbekistan. The population was estimated at 20 million individuals but the data for this figure are over 30 years old; the population overall is declining primarily due to legal and illegal collection for the pet trade. Long-term monitoring of the species has been conducted since 2000, with systematic surveys conducted since 2011. Population densities generally range from 150-200 individuals/km^2.	**Conditional upon annual publication of a zero export quota, Less concern**

Testudo horsfieldii (cont.)	Uzbekistan (cont.)	Uzbekistan has submitted annual reports for all years 2013-2022. The country published annual CITES export quotas for live wild-sourced (up to 85 000) and ranched (up to 50 000) *T. horsfieldii* for the years 2013-2022. Export quotas for live captive-produced specimens (sources C and F) have also been published. Direct exports 2013-2022 mainly comprised 361 266 wild-sourced, 248 663 ranched, and 233 670 captive-born (source F) live individuals for commercial purposes according to Uzbekistan (336 928, 200 961, and 141 275 live individuals, respectively, as reported by importers). Quotas for each source appear to have been exceeded for several years, according to both exporter- and importer-reported data. Uzbekistan reported that no harvest of wild specimens for export, or of eggs or juveniles for ranching, has taken place since 2020. However, the country exported high volumes of wild-sourced and ranched specimens in all years 2020-2022 (though decreasing over time), and published export quotas for source W and R 2020-2022. A shift in export source codes from ranched and wild specimens to source F/C specimens has been observed from 2019-onward, and accordingly, Uzbekistan was included in Res. Conf. 17.7 (Rev. CoP19) at AC32. *T. horsfieldii* is listed in Uzbekistan's Red book of wild animals; as such, any act that may lead to the death or decline of the species or the destruction of its habitat is prohibited by legislation. On the basis that no legal export of wild or ranched specimens is anticipated, and conditional upon the annual publication of a zero quota on the CITES website for source W and R, categorised as **Less concern.** Uzbekistan could be asked to clarify why there were high levels of exports of wild-sourced specimens reported in 2020 and 2021 (years in which harvest from the wild was reported to have stopped), and could also be requested to provide information on the level of offtake from the wild to supplement captive breeding operations.	
ELASMOBRANCHII			
CARCHARHINIDAE			
Carcharhinus longimanus (Oceanic whitetip shark)	Overview	Globally as **Critically Endangered** (2018 assessment). The global population size is unknown but steep declines inferred in all ocean basins due to targeted fisheries and bycatch. Retention of *C. longimanus* is prohibited by RFMOs which cover all countries under review, with certain exemptions. The species was listed in CMS Appendix I in 2020, which requires CMS Parties to prohibit take also with limited exceptions. RFMO measures that do not relate to the implementation of Article IV, paragraphs 2 (a), 3 or 6 (a) are reflected on in section E of this review; the CITES Secretariat has reached out to the relevant secretariats to request clarification, as appropriate.	
	Kenya (Response received)	The status of *C. longimanus* in Kenyan waters is not known, although the species is listed as Vulnerable in national legislation. The status in the wider Indian Ocean is also unknown, though severe declines of over 80% in three generations have been inferred. Reported as bycatch in Kenya in several studies. Kenya has submitted annual reports for all years 2014-2022. Direct trade from Kenya 2014-2022 comprised 315 kg of wild-sourced fins exported in 2021, reported by Kenya only; Kenya did not report any imports of the species from Areas Beyond National Jurisdiction (ABNJ) 2014-2022.	**Conditional upon annual publication of a zero export quota, Less concern**

Carcharhinus longimanus (cont.)	Kenya (cont.)	Kenya reported that trade in the species was prohibited in June 2021, and plans are underway to undertake non-detriment finding (NDF) studies. A draft National Plan of Action for Sharks (NPOA-Sharks) is being finalised. The basis for NDFs for export of *C. longimanus,* which has unknown status in Kenya, has not been provided. The impact of trade is not known but likely to be detrimental given the Critically Endangered status of the species. On the basis that no legal export of wild specimens is anticipated, and conditional upon the annual publication of a zero quota on the CITES website, categorised as **Less concern.** Any planned changes to the zero quota should be communicated to the Secretariat and Chair of the Animals Committee, along with a justification of how the change is based on estimates of sustainable offtake using best available scientific information, for their agreement. Any proposal for a resumption in trade should take into account restrictions on take that have been agreed by RFMOs and other international conventions.	
	Oman (Response received)	The status of *C. longimanus* in Omani waters is not known, with few records of occurrence. The status in the wider Indian Ocean is also unknown, though severe declines of over 80% in three generations have been inferred. Oman has submitted annual reports for all years 2014-2022; direct trade mainly comprised wild-sourced fins (13 082 kg and 500 fins as reported by Oman, and 6939 kg as reported by importers). Oman did not report any imports of the species from ABNJ 2014-2022. The country is in the process of developing an NPOA-Sharks, but it is unclear when this will be finalised. Oman reported that it would cease issuing permits for Appendix II shark species for six months from December 2023 (i.e. until June 2024), to allow NDF studies to be undertaken. The basis for NDFs for export of *C. longimanus*, which has unknown status in Oman, has not been provided. The impact of trade is not known but likely to be detrimental given the Critically Endangered status of the species. Given that the country specified that permits will cease to be issued for a limited period only, categorised as **Action is needed.** However, Oman could be categorised as Less concern if the country agrees to publish an annual zero export quota, with any changes to the quota subject first to the agreement of the Secretariat and the Chair of the Animals Committee.	**Action is needed**
	Senegal (Response received)	The status of *C. longimanus* in Senegalese waters and the broader eastern Atlantic is not known. Senegal has submitted annual reports to CITES for all years 2014-2022 except for 2017; a zero quota for all specimens of source W and X was published in 2024. Direct trade in *C. longimanus* from Senegal 2014-2022 was reported by importers only and totalled 420 kg of fins and 700 kg of dried fins, all wild-sourced traded for commercial purposes. The CITES MA of Senegal stated that any exports reported for Senegal were re-exports of specimens caught in ABNJ; as reported by Senegal, these re-exports included 2919 kg of fins and 1758 kg of dried fins for commercial purposes. These introductions from the sea were not reported as imports in Senegal's CITES annual reports. Permit analysis suggests that the direct trade reported by importers is associated with the shipments reported by Senegal to be re-exports.	**Conditional upon annual publication of a zero export quota, Less concern**

Carcharhinus longimanus (cont.)	Senegal (cont.)	Senegal adopted an NPOA-Sharks in 2006. The country reported that a zero export quota has been established until an NDF can be undertaken, and noted that it has requested technical and financial support from CITES to undertake the work necessary for an NDF and to support improved monitoring and implementation of the Convention. The basis for NDFs for export of *C. longimanus*, which has unknown status in Senegal, has not been provided. The impact of trade is not known but likely to be detrimental given the Critically Endangered status of the species. On the basis that no legal export of wild specimens is anticipated, and conditional upon the annual publication of a zero quota on the CITES website, categorised as **Less concern.** Any planned changes to the zero quota should be communicated to the Secretariat and Chair of the Animals Committee, along with a justification of how the change is based on estimates of sustainable offtake using best available scientific information, for their agreement. Any proposal for a resumption in trade should take into account restrictions on take that have been agreed by RFMOs and other international conventions.	
	Yemen (Response received)	The status of *C. longimanus* in Yemeni waters is not known. The status in the wider Indian Ocean is also unknown, though severe declines of over 80% in three generations have been inferred. Yemen has submitted annual reports for all years 2014-2021; the report for 2022 has not yet been received. Direct trade in *C. longimanus* from Yemen 2014-2022 comprised wild-sourced fins (14 306 kg as reported by Yemen and 2899 kg as reported by importers) and dried fins (1526 kg reported in 2022 by importers only). Yemen did not report any imports of the species from ABNJ 2014-2022. Yemen reported that further exports of *C. longimanus* will not be permitted until an NDF has been undertaken, and is working with IFAW to secure funding to undertake this work. To date, Yemen has not developed an NPOA-Sharks. The basis for NDFs for export of *C. longimanus,* which has unknown status in Yemen, has not been provided. The impact of trade is not known but likely to be detrimental given the Critically Endangered status of the species. On the basis that no legal export of wild specimens is anticipated, and conditional upon the annual publication of a zero quota on the CITES website, categorised as **Less concern.** Any planned changes to the zero quota should be communicated to the Secretariat and Chair of the Animals Committee, along with a justification of how the change is based on estimates of sustainable offtake using best available scientific information, for their agreement. Any proposal for a resumption in trade should take into account restrictions on take that have been agreed by RFMOs and other international conventions.	**Conditional upon annual publication of a zero export quota, Less concern**
SPHYRNIDAE			
Sphyrna lewini (Scalloped hammerhead shark)	Overview	Globally **Critically Endangered** (2018 assessment), based on an estimated population reduction of 77-97% over the past three generations (72 years) as a result of overexploitation. ICCAT Recommendation 10-08 prohibits the retention and sale of hammerhead sharks (except *S. tiburo*) with an exemption for developing coastal Contracting Parties for local consumption. The Recommendation further states that developing coastal Contracting Parties should endeavour not to increase their catches of Sphyrnidae and take measures to ensure these species (except *S. tiburo*) will not enter international trade.	

Sphyrna lewini (cont.)	Overview (cont.)	RFMO measures that do not relate to the implementation of Article IV, paragraphs 2 (a), 3 or 6 (a) are reflected on in section E of this review; the CITES Secretariat has reached out to the relevant secretariats to request clarification, as appropriate.	
	China (Response received)	*S. lewini* is reported to be common in Chinese waters and to occur, *inter alia*, in the South China Sea, East China Sea, Yellow Sea and Bohai Sea. China did not consider there to have been a decline in its general shark resources to date, however there is some evidence of population declines of the species in the Northwest Pacific. The status of the species in the wider North Pacific is unknown. *S. lewini* was reported only to be caught as bycatch in China, with most individuals caught in the East China and South China Sea; however, one author noted the species was targeted by longline fishing fleet with the flag of Taiwan, Province of China. Catches were reported to comprise both adults and juveniles. China has submitted annual reports for all years 2013-2022 and has not published any export quotas for this species. Direct trade in *S. lewini* from China 2013-2022 predominantly comprised 199 670 kg of pre-Convention meat for commercial purposes reported by China (79% of direct exports by weight) between 2016-2018. The remaining trade almost entirely comprised wild-sourced trade for commercial purposes, which included 34 500 kg of bodies and 17 000 kg of fins reported by China. China did not report any imports of the species from Areas Beyond National Jurisdiction (ABNJ) 2013-2022. No fishing licences are reported to have been approved for fisheries to target sharks, either in Chinese waters or in ABNJ. There is a general closed season in the East China Sea. While China noted that the species has been scientifically evaluated by research institutions, a document outlining the scientific basis for the non-detriment finding (NDF) for current exports was not provided. A National Plan of Action for Sharks (NPOA-Sharks) has not yet been developed. China is a Contracting Party to the IATTC, ICCAT, IOTC and WCPFC. While *S. lewini* is only reported to be caught as bycatch, given the Critically Endangered status of the species, the scarcity and conflicting nature of the species' status in relevant fisheries, and the unclear scientific basis for NDFs for current exports, categorised as **Action is needed.**	**Action is needed**
	Indonesia (Response received)	The distribution of *S. lewini* in Indonesia includes the Indian Ocean, Makassar Strait, Java Sea, South China Sea, and most waters around Sumatra, Kalimantan, Sulawesi, Maluku, Nusa Tenggara, and Papua. No national stock assessments for the species have been conducted, and there are no well-established systems to assess the scale of domestic trade. An assessment of a targeted fishery in West Nusa Tenggara Province indicated that the species is being over-exploited in that location. *S. lewini* in Indonesia is particularly threatened by bycatch, particularly of juveniles. Indonesia has submitted annual reports all years 2013-2022 and published exports quotas for 2020-2021 for number of fins. Additional quotas for individuals were also set, but not submitted to the CITES Secretariat. Direct trade in *S. lewini* from Indonesia 2013-2022 was reported in 2021 and 2022, and predominantly comprised wild-sourced trade for commercial purposes; in dried fins (7935 kg reported by Indonesia and 6077 kg reported by importers), fins (1897 kg reported by Indonesia and 4102 kg reported by importers) and bones (2983 kg reported by Indonesia only). It is difficult to assess whether trade was within quota for 2021 because the published quota used the unit of measure 'number of specimens' but trade was reported both by number and in kg. Indonesia did not report any imports of the species from ABNJ 2013-2022.	**Action is needed**

Sphyrna lewini (cont.)	Indonesia (cont.)	A conditional positive NDF by the Scientific Authority of Indonesia concluded that the species did not face a severe threat if appropriately managed. However, the NDF recommended that the Management Authority should complete a number of actions before conducting international trade in *S. lewini;* these included improving catch recording, the implementation of a catch quota based on a population estimate, the establishment of a size limit for individuals landed and derivatives traded, and the protection of mating and nursery grounds. Indonesia developed an NPOA-sharks for the periods 2010-2014 and 2016-2020; the next phase of the plan for 2020-2024 was reported to be in progress. Indonesia is a Contracting Party to the CCSBT, IOTC and WCPFC, and is a cooperating non-member of the IATTC. Indonesia is commended on making a first step in terms of formulating a conditional NDF. However, the status of implementation of the NDF's conditions is unclear, and it is not known if Indonesia intends to cease trading until the conditions are fulfilled. There does not appear to be a scientific basis for determining the export quota for recent levels of international trade (exports occurred in 2022, the last year for which data is available). Given the Critically Endangered status of the species, the absence of a national stock assessment to determine sustainable harvest, the indication that the population is being overexploited in at least one location, and a lack of monitoring of domestic catch, categorised as **Action is needed.**	
	Kenya (Response received)	*S. lewini* is thought to have a coast-wide distribution in Kenya, but the status of the species in Kenyan waters is not known. The wider status in the Indian Ocean is also unknown, though severe declines of over 80% in three generations have been inferred. Surveys of landings from Kenya's coastal fishery found *S. lewini* to be one of the five most commonly landed shark species along the Kenyan coast, with juveniles accounting for almost 90% of individuals caught. Artisanal elasmobranch landings in Kenya were reported to have decreased by c. 83% between 1983-2011, likely as a result of overfishing. This has led some authors to raise concerns about the long-term sustainability of the fishery and to call for the introduction of management measures such as a seasonal closure of inshore pupping grounds. Kenya has submitted annual reports for all years 2013-2022 and has not published any export quotas for this species. Direct trade in *S. lewini* from Kenya 2013-2022 comprised 60 kg of wild-sourced fins and 65 live wild-sourced individuals as reported by Kenya, all for commercial purposes (40 live wild-sourced individuals almost entirely for commercial purposes as reported by importers). Kenya did not report any imports of the species from ABNJ 2013-2022. Although an NDF has not yet been completed, Kenya explained that a rapid assessment of *S. lewini* conducted in 2018 "established sustainable levels of harvesting and maximum exportable quantities of live specimens of the species at 50" (no methodology was provided). While exports 2018-2022 appear to fall within this quota, data reported to the FAO/IOTC indicate that catches of *S. lewini* over this period were much higher. Kenya noted that plans were underway to undertake NDF studies for the species. A draft NPOA-Sharks is being finalised. Kenya is a Contracting Party to the IOTC.	**Action is needed**

Sphyrna lewini (cont.)	Kenya (cont.)	Given the Critically Endangered status of the species; its unknown status in the wider Indian ocean; the absence of a national stock assessment in Kenyan waters; indications that the population is being overexploited; and the lack of a scientifically based NDF, categorised as **Action is needed**.	
	Mexico (Response received)	*S. lewini* is found off Mexico's Pacific and Atlantic coastlines. The extinction risk of the three relevant distinct population segments (DPSs) for the country (Northwest Atlantic and Gulf of Mexico, Central and Southwest Atlantic, and Eastern Pacific) has been assessed as low, moderate, and high respectively, though data on the species status in the latter two DPSs are considered to be scarce. Data on the status of the Northwest Atlantic and Gulf of Mexico DPS are contradictory, but some analyses have found evidence of population recovery following the implementation of management measures. Overfishing, loss of habitat (particularly of nursery areas) and climate change are the principal threats in the country. *S. lewini* is caught as a target and non-target species by fisheries on both coasts, however the majority of catches are reported to come from targeted artisanal fisheries. Mexico has submitted annual reports for all years 2013-2022, and has not published any export quotas for this species. Direct trade in *S. lewini* from Mexico 2013-2022 predominantly comprised wild-sourced fins for commercial purposes (53 886 kg reported by Mexico and 26 801 kg reported by importers). Mexico did not report any imports of the species from ABNJ 2013-2022 but noted that it fishes in areas "adjacent to the EEZ". Closed seasons are in place, and there is a moratorium on the issuance of new shark fishing permits to ensure that current effort is not increased. Mexico currently sets yearly sustainable export volumes (SEVs) using a catch-MSY model, although the Management Authority noted its ambition to refine the production models used and eventually introduce a model structured by age class. The SEV for *S. lewini* for 2023 was estimated at 1958.6 tonnes for the Pacific, and 2062.32 tonnes for the Atlantic. Mexico published an NPOA-Sharks in 2004; an update to this plan was noted to be in preparation. Mexico is a Contracting Party to the ICCAT, IATTC and ISC. Mexico should be commended for the implementation of a strong management framework for the species in order to comply with Article IV. However, given the mixed conservation status of the three principal DPSs in which Mexico is fishing, further information may be required to ensure that all populations are being harvested sustainably (particularly the Central and Southwest Atlantic and the Eastern Pacific DPSs, for which the least data are available). On this basis, categorised as **Unknown status**. Mexico could be invited to provide a progress report on the update of its NPOA-Sharks and the introduction of a more refined model to calculate sustainable export levels.	**Unknown status**
	Nicaragua (Response received)	*S. lewini* is found off the Pacific and Caribbean coasts of Nicaragua. The status of the species in Nicaraguan waters is not known. At the wider scale, the Eastern Pacific DPS of *S. lewini* has been classified as having a high risk of extinction, while the Central and Southwest Atlantic DPS (for which abundance and catch statistics are scarce) was classified as having a moderate risk of extinction. While no targeted shark fishing was reported to occur in the country, *S. lewini* are caught as bycatch by artisanal fleets. Most individuals caught are adult or sub-adult, although the small-scale artisanal fleet has been known to catch juveniles. While fins are exported, meat is consumed domestically.	**Action is needed**

Sphyrna lewini (cont.)	Nicaragua (cont.)	Nicaragua has submitted annual reports all years 2013-2022 and has not published any export quotas for the species. Direct trade in *S. lewini* from Nicaragua 2013-2022 almost entirely comprised wild-sourced fins for commercial purposes (4521 kg of fins reported by Nicaragua, 3611 kg of fins and 646 kg of dried fins reported by importers), with a peak of 1728 kg of fins reported by Nicaragua in 2021. Nicaragua did not report any imports of the species from ABNJ 2013-2022. Nicaragua adopted an NPOA-Sharks in 2010. The country is a Contracting Party to the IATTC and ICCAT, and is a cooperating non-member of the WCPFC. Noting that there is a lack of capacity to conduct NDFs for shark species, the CITES Authorities in Nicaragua have requested technical and economic support from the Secretariat to develop a specific format for this group. While *S. lewini* is only reported to be caught as bycatch, given the Critically Endangered status of the species, the high extinction risk for the Eastern Pacific DPS, the unknown status of the species in Nicaraguan waters, and the lack of an NDF, categorised as **Action is needed**.	
	Oman (Response received)	The status of *S. lewini* in Omani waters is not known, although it has been recorded as a commonly landed species. The status of *S. lewini* in the wider Indian Ocean is also considered unknown, though severe declines of over 80% in three generations have been inferred. In the Arabian Sea region, the species is estimated to have declined by >50% over the past three generations. Omani fishers interviewed in 2013 perceived a 75% decline in overall shark abundance since 2001. Oman has submitted annual reports for all years 2013-2022 and has not published any export quotas for the species. Direct trade in *S. lewini* from Oman 2013-2022 entirely comprised wild-sourced fins, predominantly for commercial purposes, of which the majority were reported by weight (7700 kg as reported by Oman; 8620 kg as reported by importers), as well as 1500 fins reported by number by Oman only. Oman did not report any imports of the species from ABNJ 2013-2022. Oman reported that it would cease issuing permits for Appendix II shark species for six months from December 2023 (i.e. until June 2024), to allow NDF studies to be undertaken. The country is in the process of developing an NPOA-Sharks, but it is unclear when this will be finalised. Oman is Contracting Party to the IOTC. Given the Critically Endangered status of the species, wider declines reported in the Arabian Sea region, the unknown status of the species in Omani waters, the lack of an NDF, and that Oman has specified that permits will cease to be issued for a limited period only, categorised as **Action is needed**. However, Oman could be categorised as Less concern if the country agrees to publish an annual zero export quota, with any changes to the quota subject first to the agreement of the Secretariat and the Chair of the Animals Committee.	**Action is needed**
	Sri Lanka (Response received)	The status of *S. lewini* in Sri Lankan waters is not known, however anecdotal information suggests there has been a decline in landings over the past decade, despite no change in fishing gears and an increase in fishing effort over the same period. The status of the species in the wider Indian Ocean is also considered unknown, though severe declines of over 80% in three generations have been inferred.	**Action is needed**

Sphyrna lewini (cont.)	Sri Lanka (cont.)	Sri Lanka has submitted all annual reports for all years 2013-2022 and has not published any export quotas for the species. Direct trade in *S. lewini* from Sri Lanka 2013-2022 primarily comprised 19 518 kg of wild-sourced fins for commercial purposes as reported by Sri Lanka (3409 kg of fins and 1517 kg of dried fins reported by importers); trade peaked in 2022 with 10 281 kg of fins. Sri Lanka did not report any imports of the species from ABNJ 2013-2022. A positive conditional NDF, subject to improvement of fisheries management, compliance, monitoring, and research, was made for the species for 2017-2019; however no updates appear to have been published. This NDF noted that landings mainly comprise adults, however landings data show that juveniles account for a high proportion of individuals caught. Sri Lanka's NPOA-Sharks was reported to be in the process of being revised. The country is a Contracting Party to the IOTC. Given the Critically Endangered status of the species, its unknown status in Sri Lankan waters and in the wider Indian Ocean, and the lack of a current scientifically based NDF, categorised as **Action is needed.**	
	Yemen (Response received)	The status of *S. lewini* in Yemeni waters is not known. The status of *S. lewini* in the wider Indian Ocean is also considered unknown, though severe declines of over 80% in three generations have been inferred. In the Arabian Sea region, the species is estimated to have declined by >50% over the past three generations. Yemen has noted a lack of monitoring and evaluation of shark populations in the country. *S. lewini* is caught as both a target and bycatch species in Yemen's national waters and is considered one of the most important commercial shark species; the country has a large domestic market for shark meat but also exports shark derivatives. Fishers across the Arabian Sea and adjacent waters have been reported to target shark breeding aggregations and nursery areas, landing high volumes of juveniles and newborn sharks, however it was not possible to confirm whether this was the situation for *S. lewini*. Noting the current political instability in the country, Yemen reported that regulations have not been effectively applied and that there are violations of these regulations in protected areas. Yemen published a reservation for the species on 12 June 2013. Yemen has submitted annual reports for all years 2013-2022 and has not published any export quotas for the species. Direct trade in *S. lewini* from Yemen 2013-2022 entirely comprised wild-sourced fins for commercial purposes reported in 2018 and 2021-2022 (totalling 22 204 kg as reported by Yemen; 5675 kg of fins and 3769 kg of dried fins as reported by importers). Yemen did not report any imports of the species from ABNJ 2013-2022. In August 2023 Yemen reported that exports of *S. lewini* have been prohibited until an NDF has been undertaken. Yemen reported it was working with IFAW to secure funding to undertake this work and has requested technical and financial support from the CITES Secretariat. To date, Yemen has not developed an NPOA-Sharks. The country is a Contracting Party to the IOTC. On the basis that no legal export of wild specimens is anticipated, and conditional upon the annual publication of a zero quota on the CITES website, categorised as **Less concern.** Any planned changes to the zero quota should be communicated to the Secretariat and Chair of the Animals Committee, along with a justification of how the change is based on estimates of sustainable offtake using best available scientific information, for their agreement.	**Conditional upon annual publication of a zero export quota, Less concern**

Sphyrna mokarran (Great hammerhead shark)	Overview	Globally **Critically Endangered** (2018 assessment), based on an estimated population reduction of 50.9%-62.4% over the past three generations (71-74 years) as a result of overexploitation. ICCAT Recommendation 10-08 prohibits the retention of hammerhead sharks (except *S. tiburo*) with an exemption for developing coastal Contracting Parties for local consumption. The Recommendation further states that developing coastal Contracting Parties should endeavour not to increase their catches of Sphyrnidae and take measures to ensure these species (except *S. tiburo*) will not enter international trade. RFMO measures that do not relate to the implementation of Article IV, paragraphs 2 (a), 3 or 6 (a) are reflected on in section E of this review; the CITES Secretariat has reached out to the relevant secretariats to request clarification, as appropriate.	
	Mexico (Response received)	*S. mokarran* is found off Mexico's Pacific and Atlantic coastlines. Data on the status of the species in the Northwest Atlantic and Gulf of Mexico are contradictory, but some analyses have found evidence of population recovery following the implementation of management measures. No information on population trends for *S. mokarran* in the Pacific Ocean could be located, although possible extirpations have been reported in the Gulf of California. Overfishing, loss of habitat (particularly of nursery areas) and climate change are the principal threats to the species in Mexico. *S. mokarran* is caught as a target and non-target species by fisheries on both coasts. Mexico has submitted annual reports for all years 2013-2022, and has not published any export quotas for this species. Direct trade in *S. mokarran* from Mexico 2013-2022 almost entirely comprised wild-sourced fins for commercial purposes (14 117 kg of fins reported by Mexico, and 6128 kg of fins and 1639 kg of dried fins reported by importers). Trade in wild-sourced fins peaked in 2015 according to Mexico and importers. China was the primary importer of wild-sourced fins as reported by Mexico, accounting for >99% of exports. Mexico did not report any imports of the species from ABNJ 2013-2022 but noted that it fishes in areas "adjacent to the EEZ". Closed seasons are in place, and there is a moratorium on the issuance of new shark fishing permits to ensure that current effort is not increased. Mexico currently sets yearly sustainable export volumes (SEVs) using a catch-MSY model, although the Management Authority noted its ambition to refine the production models used and eventually introduce a model structured by age class. The SEV for *S. mokarran* for 2023 was estimated at 29.11 tonnes for the Pacific, and 370.99 tonnes for the Atlantic. Mexico published an NPOA-Sharks in 2004; an update to this plan was noted to be in preparation. Mexico is a Contracting Party to the ICCAT, IATTC and ISC. Mexico should be commended for the implementation of a strong management framework for the species in order to comply with Article IV. However, given the scarcity of data on the species' status in the Pacific Ocean, further information may be required to ensure that all populations are being harvested sustainably. On this basis, categorised as **Unknown status**. Mexico could be invited to provide a progress report on the update of its NPOA-Sharks and the introduction of a more refined model to calculate sustainable export levels.	**Unknown status**

MYLIOBATIDAE			
Mobula spp.	Overview	Seven *Mobula* species occur in Sri Lanka; all are globally **Endangered** with a decreasing population trend (estimated 50-79% decline over past three generations) with a further reduction suspected over next three generations. All *Mobula* spp. considered in this review were listed in CMS Appendix I in 2014, which requires CMS Parties to prohibit take with limited exceptions. Retention of *Mobula* spp. was prohibited by the IOTC in 2019 (with an exemption for subsistence fisheries). RFMO measures that do not relate to the implementation of Article IV, paragraphs 2 (a), 3 or 6 (a) are reflected on in section E of this review; the CITES Secretariat has reached out to the relevant secretariats to request clarification, as appropriate.	
	Sri Lanka (Response received)	Fishing mortality, both incidental and targeted, is the main driver of declines for *Mobula* spp. globally. Sri Lanka has one the world's largest mobulid fisheries, and while current catch rates are unknown, one modelling study estimated that over 100 000 mobulids were landed annually in Sri Lanka in the early 2010s. The same study noted declining catch rates despite increases in fishing effort, as well as evidence of an overexploited population due to declining disc widths and the high proportions of juveniles fished. According to the CITES Trade Database, direct trade in *Mobula* spp. from Sri Lanka 2014-2022 predominantly comprised 80 118 kg wild-sourced gill plates for commercial purposes as reported by Sri Lanka; Hong Kong SAR accounted for 99% of imports of this trade and reported 15 348 kg gill plates over the same period. According to Sri Lanka, exports in 2022 represented the highest level of direct trade over the nine-year period (37 124 kg gill plates), almost tripling compared to the previous year. Most trade reported at the species level was in *M. japanica* and *M. tarapacana*. While there are anecdotal reports that the issuance of export permits ceased "in recent years", it is unclear if this was a temporary measure or if exports remain restricted. Sri Lanka reported that it has banned the retention of mobulids since 2020 in compliance with IOTC Resolution 19/03; however, the piece(s) of legislation that implement this ban could not be located, and high levels of trade in *Mobula* spp. have been reported in 2021 and 2022. The basis for non-detriment findings for export of wild-sourced specimens has not been provided, and it is likely that international trade is having a detrimental impact on the population; therefore categorised as **Action is needed.**	**Action is needed**

Introduction

The Review of Significant Trade (hereafter abbreviated to RST) was established to ensure that international trade of species listed in Appendix II of CITES is sustainable and does not threaten their survival. It does so by examining whether the provisions of Article IV of the Convention, specifically paragraphs 2 (a), 3 and 6 (3) relating to non-detriment findings, are being properly applied to Appendix II species.

The RST has multiple stages, which are set out in Resolution Conf. 12.8 (Rev. CoP18). As part of Stage 1 of the process, at AC32 the Animals Committee identified 20 species/country combinations and one genus/country combination for inclusion in Stage 2 of the RST (AC32 Sum. 4 (Rev.1)). This stage focuses on consultation with the relevant selected range States and compilation of relevant information. Paragraph 1 (d) ii) specifically directs the Secretariat to compile, or appoint consultants to compile, a report about the biology and management of trade in the selected species, including any relevant information from the range State. As such, the UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC) was asked by the Secretariat to compile reviews for the 20 animal species or genus/country combinations shown in Table i.

This report provides an overview of conservation and trade status of those taxon/country combinations for review by the Animals Committee, provisionally classifying each into one of three categories as defined in paragraph 1 (e) of Resolution Conf. 12.8 (Rev. CoP18):

- **Action is needed**: taxon/country combinations for which the available information suggests that the provisions of Article IV, paragraph 2 (a), 3 or 6 (a), are not being implemented;
- **Unknown status**: taxon/country combinations for which the Secretariat (or consultants) could not determine whether or not these provisions are being implemented; and
- **Less concern**: taxon/country combinations for which the available information appears to indicate that these provisions are being met.

The provisional categories assigned for the 20 taxon/country combinations assessed can be found in Table ii.

Methodology

Each taxon/country review provides the following information: history of the CITES RST process for the taxon; taxon biology and current distribution; conservation status; population trends and threats; recent trade; management of the taxon in each range State, including any relevant legislation; and issues identified that are not related to the implementation of Article IV, paragraphs 2(a), 3 or 6(a). The national legislation category as defined under the CITES National Legislation Project is based on the most recent update available (November 2023) at the time of writing (April 2024). Where there are multiple range States reviewed for a particular taxon, an overview of global distribution, conservation status, threats, trade and management is also provided. Where possible, literature was reviewed by a native speaker of the language it was written in; machine translations were used when this was not possible.

CITES trade data are provided for the period 2013-2022. Data were downloaded from the CITES Trade Database (trade.cites.org) on 11 April 2024[1]. Unless otherwise specified, trade tables include all

[1] This includes data from all annual reports and query replies received by UNEP-WCMC by 14 January 2024.

sources, terms and units reported in trade. The unit 'number of specimens' includes trade data reported with unit code 'NAR' or where the unit column is blank. With the publication of revised *Guidelines for the preparation and submission of CITES annual reports* in November 2022 (Notification to the Parties No. 2023/039), the trade term 'fins' (FIN) was replaced with the terms 'fin (dried)' (DFN) and 'fin (wet)' (FFN). As such, trade data reported for the period 2013-2022 include a combination of these terms, which are distinguished in written summaries and trade tables.

Trade volumes are provided as reported by both exporters and importers, and direct trade and indirect trade (re-exports originating from the range State under review) are reported separately. Imports by the countries under review from areas beyond national jurisdiction (ABNJ) (which are represented by imports reported with exporter 'HS' and/or source code 'X') are included in the analysis where relevant. A list of CITES annual reports received from each range State relevant to the reviews, along with the date each became a Party to CITES, is provided in Table iii.

For marine taxa, a section on capture production is included summarising nominal catch (landings converted to a live weight basis) reported in the FAO's global capture production database, as well as any pertinent catches reported to relevant Regional Fisheries Management Organisations (RFMOs); timespans used for these data are shown in Table iv, and run up to the latest year for which data was available at the time of writing. It should be noted that RFMOs differ in their reporting requirements, and that the same catches may be reported to FAO and relevant RFMOs using different codes (e.g. a generic 'various sharks' code, or family or species-specific codes). This makes direct comparisons between data sources challenging.

Table iv: Timespans used for data obtained from FAO and relevant RFMOs.

Fisheries Body	Timespan
FAO	2013-2021
RFMOs	
Inter-American Tropical Tuna Commission	
International Commission for the Conservation of Atlantic Tunas	2013-2022
Indian Ocean Tuna Commission	
Western and Central Pacific Fisheries Commission	

CITES Management Authorities for each range State were contacted both by the Secretariat and by UNEP-WCMC, and asked to provide information relevant to the formation of non-detriment findings, including information on the distribution, conservation status, trade and management of each taxon. Where possible, national experts were also contacted to provide additional country-specific information. Responses were received from all range States (China, Ghana, Indonesia, Kenya, Mexico, Nicaragua, Oman, Senegal, Sri Lanka, Togo, Uzbekistan and Yemen) except for Benin, who had not responded to the consultation by the time of report submission (April 2024). A compilation of range State responses is provided in AC33 Doc. 14.3.2 Annex 1.

Table iii: Overview of annual report submissions by range States under review, 2013-2022.

Country	Date of joining CITES	Entry into force of CITES	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Benin	28/02/1984	28/05/1984	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
China	08/01/1981	8/04/1981	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Ghana	14/11/1975	12/02/1976	✓	✓	✓	✕	✓	✓	✓	✕	✓	✓
Indonesia	28/12/1978	28/03/1979	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Kenya	13/12/1978	13/03/1979	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Mexico	02/07/1991	30/09/1991	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Nicaragua	06/08/1977	04/11/1977	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Oman	19/03/2008	17/06/2008	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Senegal	05/08/1977	03/11/1977	✓	✓	✓	✓	✕	✓	✓	✓	✓	✓
Sri Lanka	04/05/1979	02/08/1979	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Togo	23/10/1978	21/01/1979	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Uzbekistan	10/07/1997	08/10/1997	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Yemen	05/05/1997	03/08/1997	✓	✓	✓	✓	✓	✓	✓	✓	✓	✕

Key: ✓: annual report received. ✕: annual report not received.

Taxon reviews

Python regius: Benin, Ghana, Togo

A. Summary

CRITERIA MET:	Criterion iii) sharp increase in trade from Ghana and criterion v) high volume of trade in a globally threatened species.
GLOBAL STATUS:	Globally Near Threatened (2021 assessment). The population size is unknown but considered to be declining at an unknown rate, possibly >30% over three generations (15 years). The species is subject to high levels of exploitation across its range.
BENIN: No response received to the consultation relating to the RST	The current population size is unknown, but anecdotal evidence from hunters and farmers suggests significant population declines and local extirpations. Benin has submitted annual reports for all years 2013- 2022. Direct exports 2013-2022 were predominantly in live ranched pythons for commercial purposes (137 602 reported by Benin and 116 948 as reported by importers), and were within the annual ranched quota (most recently set at 32 000 specimens in 2021-2023) for all years. Benin's quota for 1000 wild *P. regius* appears to have been exceeded by 707 specimens in 2013 as reported by importers; however permit analysis suggests that the majority of this trade was associated with year-end trade from 2012, and the adjusted 2013 total did not exceed the quota. Trade routes between Ghana, Benin and Togo appear highly connected, with Ghana the main re-exporter of live ranched *P. regius* from Benin and Togo. Few details of Benin's production system for *P. regius* could be located, but it appears to include the collection of gravid females, and therefore would not meet the definition of ranching in Res. Conf. 11.6 (Rev. CoP15). No management plan appears to be in place, and it is unclear how the release of adults collected for ranching is monitored. In addition to the wild harvest of pythons to supply ranching facilities for the international pet trade, there is a substantial domestic harvest of *P. regius* for bushmeat and belief-based uses. Females and young of *P. regius* are protected under Beninese law, and it is unclear how harvest for ranching is regulated within the country's legal framework. Decision 17.276.b directed Benin to implement a management plan, develop non-detriment findings (NDFs) and strengthen national regulations for this species; however at AC30, it was noted that no information had been received from Benin on its progress towards these objectives.
PROVISIONAL CATEGORY:	Given the poor conservation status of the species in Benin and outstanding recommendations relating to the development of management practices to ensure sustainable harvest of the species, categorised as **Action is needed.**

GHANA: Responded to the consultation relating to the RST	Ghana reported that *P. regius* could be found throughout the country and was common in farmlands in the Eastern, Greater Accra, Central, Volta, and Savannah regions; however, no current information on population size or trend could be located. Ghana has submitted annual reports for all years 2013-2022, with the exception of 2016 and 2020. Direct exports 2013-2022 were predominantly in live ranched pythons for commercial purposes (176 755 reported by Ghana, and 162 130 reported by importers), and were within the annual quota of 60 000 ranched specimens for all years. Ghana also published quotas for wild-sourced and captive-bred specimens in various years 2014-2022; captive-bred trade reported by importers appeared to have exceeded quotas for 2014 and 2018, however, permit analysis suggests this may have been due to misreporting of source codes by importers. Trade routes between Ghana, Benin and Togo appear highly connected, with Ghana the main re-exporter of live ranched *P. regius* from Benin and Togo. Ghana noted that an NDF had not yet been conducted for *P. regius* due to limited financial resources. While a quota system is in place, this appears to have no scientific basis, and no management plan or monitoring appears to be in place to assess the sustainability of harvest from the wild. It is also unclear whether ranching facilities are required to return a set percentage of hatchlings to the wild to counteract the effect of harvest. While Ghana described the number of permits issued to collect adults for captive breeding facilities to be "limited", total wild harvest for direct export and to support other production systems (R and C) are unclear. *P. regius* is a partially protected species in Ghana; legislation prohibits the hunting or capture of juveniles or adults accompanied by young, but it is unclear if there is a derogation from this law for the purpose of ranching.
PROVISIONAL CATEGORY:	Given the lack of data on the status of the species in Ghana, uncertainty regarding the scientific basis of the current quota system, and the lack of monitoring or management in place for a globally declining species, categorised as **Action is needed**.
TOGO: Responded to the consultation relating to the RST	Reported to be widespread in the country but information on the population size and trend is lacking; anecdotal evidence based on interviews with hunters in Togo in 2020 suggested increased harvesting effort and less availability of the species in markets compared to the previous five years. Togo has submitted annual reports for all years 2013-2022. Togo was the largest global exporter of live ranched *P. regius* over this period: direct exports 2013-2022 predominantly consisted of 553 237 live ranched individuals for commercial purposes (537 198 reported by importers). The annual quota of 62 500 ranched specimens appears to have been exceeded in 2020-2022 according to Togo and 2013, 2020, and 2021 according to importers; permit analysis suggests the importer-reported excess could be reduced to one year only (2019). Togo's quota for 1500 wild-sourced *P. regius* also appears to have been exceeded in 2021 according to Togo, and in 3-4 years according to importer-reported data. Trade routes between Ghana, Benin and Togo appear highly connected, with Ghana the main re-exporter of live ranched *P. regius* from Benin and Togo. Togo has indicated that it plans to conduct a study to gather detailed information on the status of *P. regius*, with a view to develop an NDF, and indicated this information could be provided in early 2024. Descriptions of the ranching system

	in use by Togo imply that this involves the collection of gravid females, and thus would not meet the definition of ranching described in Res. Conf. 11.6 (Rev. CoP15). It is unclear if a management plan is in place and how the release of gravid females collected for their eggs is monitored, but studies suggest the practice is largely unregulated. Togo's national legislation prohibits hunting of gravid females and juveniles, collection of eggs, and destruction of nests of all animal species, and no exception to this law for the purposes of ranching could be identified. Experts have noted that Togo's legislation relating to the commercial trade of *P. regius* is complex, and have suggested that streamlining of relevant legislation would greatly benefit efforts to protect the remaining wild population in Togo.
PROVISIONAL CATEGORY:	The basis for NDFs for export of wild and ranched *P. regius* has not been provided; given the lack of monitoring or management for a globally declining species, categorised as **Action is needed**.

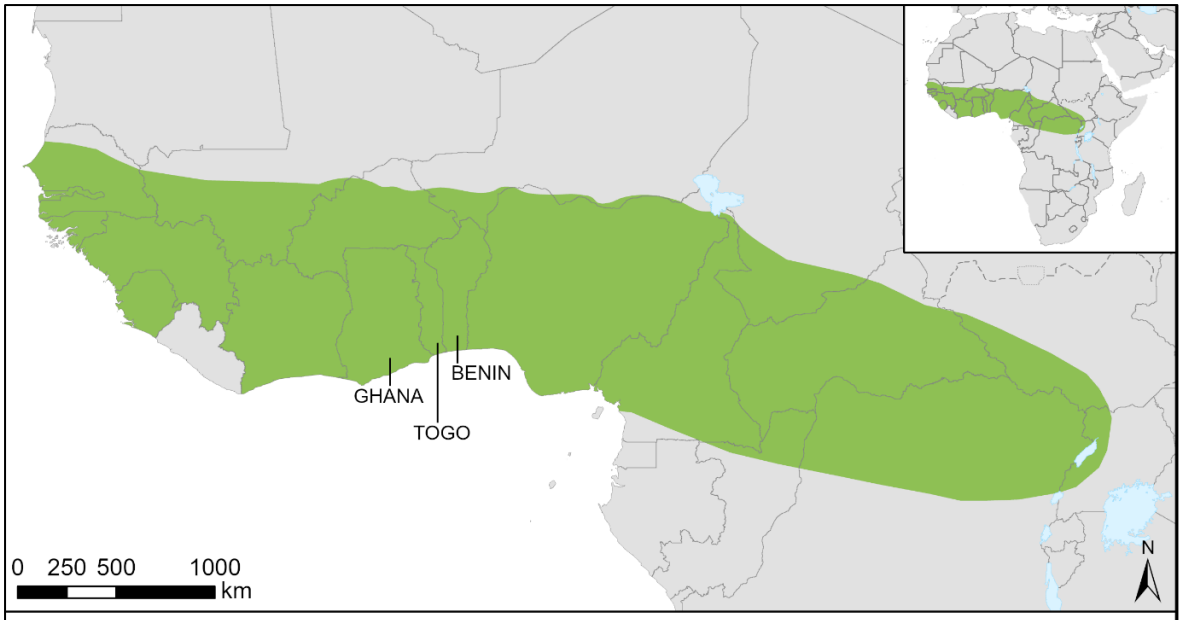
B. RST background

P. regius was identified as a priority species subject to significant levels of exports by the Animals Committee (Resolution Conf. 8.9) in 1992, and was reviewed for AC6. Recommendations were directed to Ghana and Togo to inform the Secretariat of measures to control exports and to ensure that future exports are made on the basis of a scientifically based management programme; by CoP11 in 2000, these recommendations were considered implemented (CoP11 Doc 11.41.1).

C. Species characteristics

Biology: *Python regius* (ball python), is a medium-sized, non-venomous constricting snake (Aubret *et al*., 2003, 2005a, 2005b). The species occurs in a wide range of habitats, including open woodlands, rainforest margins, savannahs and grasslands (Auliya *et al*., 2020; Harrington *et al*., 2020; O'Shea, 2011), in addition to anthropogenically disturbed habitats such as farmland (Aubret *et al*., 2003; D'Cruze *et al*., 2022; Harris, 2002). It can be found resting in abandoned rodent burrows, termite mounds or under piles of vegetation during the day (D'Cruze *et al*., 2020c). *P. regius* is thought to be generally sedentary, with a limited dispersal capacity and narrow home range (Auliya *et al*., 2020; Toudonou pers. comm. 2020 in: Auliya *et al*., 2020).

With an average length of 1-2 m (Aubret *et al*., 2003, 2005a), female *P. regius* are typically larger than males (Luiselli & Angelici, 1998), and each sex reaches reproductive maturity at 27-31 months and 16-18 months, respectively (AC28 Inf. 4). The breeding season typically falls between September-February, with oviposition occurring March-June (Hedley, 2021). Females lay an average of 3-14 eggs per clutch (Aubret *et al*., 2003; Chippaux, 2006) that incubate for 56-64 days (Hedley, 2021). Aubret *et al*. (2003) reported hatching success rates of 96.6% in clutches incubated in captivity. The average lifespan for *P. regius* in the wild was estimated at 10 years (Gorzula, 1997; Bartlett *et al*., 2001 in: AC28 Inf.4) with lifespans of 20-30 years reported in captivity (Hedley, 2021).



Range Data: IUCN 2012. *Python regius. The IUCN Red List of Threatened Species. Version 2023-1*. Downloaded 23 February 2024.
Basemap: United Nations Geospatial, 2024. Projection: WGS84.

Disclaimer: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined. Final status of the Abyei area is not yet determined.

Figure 1.1: Range of *P. regius*.

Distribution: *P. regius* occurs from Senegal and Sierra Leone in West Africa through to Uganda, Sudan and into parts of Kenya in the east (Chippaux, 2006; O'Shea, 2011; Trape & Mané 2006), although only a single source could be identified confirming its presence in Kenya (O'Shea, 2011). Toudonou (2015 *in* AC28 Inf. 4) reported that the distribution of *P. regius* is discontinuous and populations are fragmented; detailed studies on the species' distribution were also noted to be lacking (Auliya *et al*., 2020).

Population status and trends: *P. regius* was classified globally as Near Threatened in a 2021 IUCN Red List assessment (D'Cruze *et al*., 2022). The population was reported to be decreasing due to overexploitation and habitat degradation (D'Cruze *et al*., 2022), but the decline was not thought to be uniform across the species' range (Toudonou and Penner *pers. comm*. 2012 in: D'Cruze *et al*., 2022). While declines have been reported in most West African range States (D'Cruze *et al*., 2022; Reading *et al*., 2010), *P. regius* was thought to remain locally common in parts of Togo (G. H. Segniagbeto *et al*., 2011) and northern Sierra Leone (Branch *pers. comm*. 2014 in: D'Cruze *et al*., 2022).

Systematic research into rates of decline is lacking, but globally these were assumed to have exceeded 30% over three generations (15 years) (D'Cruze *et al*., 2022). The IUCN Red List assessment concluded that *P. regius* may be close to qualifying for a threatened category based on recent or likely future declines, and concerns were expressed over the species' long-term survival in West Africa (D'Cruze *et al*., 2022).

Threats: *P. regius* is harvested in the wild to supply the international pet trade (Auliya *et al*., 2020; Auliya & Schmitz, 2010; Harrington *et al*., 2020; O'Shea, 2011). Global demand is met predominantly through

ranching, which occurs almost exclusively in three West African range states: Benin, Ghana and Togo (Harrington *et al*., 2020). As part of this trade, hunters typically collect gravid females, clutches of eggs, and/or juveniles that are sold to snake farms (D'Cruze *et al*., 2020c) (though see discussion below about the harvest of gravid females not meeting the definition of ranching as outlined in Res. Conf. 11.6 (Rev. CoP15)). At least in Togo, hunters reported that collected gravid females are released back into the wild after they have laid their eggs (D'Cruze *et al*., 2020c), but it is unclear if this occurs consistently as it has been reported that some of these individuals enter the bushmeat trade (AC28 Inf. 4; D'Cruze *et al*., 2020c). Several authors have questioned the sustainability of legal trade in *P. regius* (Chippaux, 2006; D'Cruze *et al*., 2022), and it has been suggested that the repeated loss of clutches to the pet trade could result in local extirpation of the species in West Africa (Spawls *et al*. 2018 *in* D'Cruze *et al*., 2022).

Domestic harvest for bushmeat (AC28 Inf. 4; Auliya & Schmitz, 2010; Ineich, 2006), leather (Auliya, M. & Schmitz, A., 2010; Chippaux, 2006; D'Cruze *et al*., 2022) and traditional medicine (D'Cruze *et al*., 2022; D'Cruze, Assou, *et al*., 2020; G. Segniagbeto *et al*., 2013) has also been suggested to present an increasing threat to the species (Toudonou *et al*., 2022). Additional threats include habitat loss through agricultural intensification (AC28 Inf. 4) and encroachment into protected areas (Harris, 2002 *in* D'Cruze *et al*., 2020c), as well as the increased use of chemical pesticides (AC28 Inf. 4).

Overview of trade and management: *P. regius* was listed in CITES Appendix II on 1 July 1975 as part of the genus listing for *Python* spp.; it was subsequently included in the family listing for Pythonidae on 4 February 1977. According to the CITES Trade Database, global direct trade in *P. regius* 2013-2022 predominantly comprised live individuals reported by number, with nearly 1.1 million pythons reported by exporters and 1.07 million reported by importers. Approximately 79% of the direct trade in live pythons was in ranched individuals for commercial purposes, with the remainder predominantly captive-bred (~15%). Wild-sourced direct trade almost entirely consisted of 21 882 live individuals according to exporters (43 512 as reported by importers).

According to exporter-reported data, Togo, Ghana, and Benin were the only direct exporters of ranched and wild-sourced live pythons 2013-2022 (accounting for 64%, 20%, and 16% of ranched trade and 43%, 53%, and 5% of wild trade respectively), while direct exports of live captive-bred pythons were mainly by the United States of America (hereafter US) (61%), Canada (15%) and Germany (12%). Direct trade in live *P. regius* has fluctuated over time with peaks in 2013 (154 889 individuals according to exporters) and 2022 (178 399 individuals). According to exporter-reported data, the US accounted for the majority of imports of live *P. regius* reported by number 2013-2022 (66%); other main importers were Japan (8%) and Hong Kong Special Administrative Region of China (hereafter Hong Kong SAR) (4%).

The IUCN Red List assessment for *P. regius* suggested that management decisions across West Africa were based on an "*ad hoc* commercial basis without reference to scientific data", and that as such, there was no way to ensure that harvest of *P. regius* was sustainable (D'Cruze *et al*., 2022). N. D'Cruze (pers. comm. 2023) stated that "urgent and substantial action is required to safeguard wild *Python regius* populations from local extinctions (and halt fragmentation of populations) across range States due to the pressures imposed by both domestic and international exploitation". As a minimum measure, N. D'Cruze (pers. comm. 2023) recommended that export quotas for ranched individuals from all countries under review should be reduced; several authors have also noted the need for common legal tools between Benin, Ghana, and Togo so that a consistent regional approach to management of *P. regius* trade can be developed (Auliya *et al*., 2020; D'Cruze *et al*., 2020b; Gorzula, 1997; Ineich, 2006; Jenkins, 1998).

D. Country reviews

Benin

Distribution: No detailed distribution information was identified; N. D'Cruze (pers. comm. 2023) noted this information was urgently needed. *P. regius* was reported to have a fragmented population, and to be found mainly in areas of Benin where the species is considered sacred, and thus may benefit from protection as a result of local traditions and taboos (Gorzula, 1997; AC28 Inf. 4).

Population status and trends: No quantitative information on the population size of *P. regius* within Benin could be found, however anecdotal evidence from hunters and farmers has indicated that the population is under severe threat (Meirte. 1999 *in* AC28 Inf. 4; Toudonou 2007 *in* AC28 Inf. 4). For example, collectors have reported a decrease in harvest rate from 5-10 snakes per day in the late 1990s to less than one snake per day in 2014, despite an increase in collection effort, costs, and hunting localities (AC28 Inf. 4). Toudonou (2015 *in* AC28 Inf. 4) concluded that *P. regius* may have been extirpated in some areas where no individuals were found during surveys and that both the area of occupancy and extent of occurrence for *P. regius* within Benin have decreased by approximately 20% and 60%, respectively. Accordingly, Toudonou (2015 *in* AC28 Inf. 4) stated that the species should be considered Endangered in the country.

Threats: According to data reported by Benin in the CITES Trade Database, Benin was the third largest exporter of live *P. regius* globally 2013-2022 after Togo and Ghana (see *Trade* section below); the species is mostly exported for the international pet trade (AC28 Inf. 4). Outside of the peak period for export of pythons for the international trade (November-February), hunters appear to switch to domestic trading of adult pythons for meat and medicine (Toudonou *et al*., 2022).

A 2020 interview-based study estimated that 21 python hunters collected between 576 - 5083 individuals from the wild per year, collectively (equivalent to an average of 129 *P. regius* per person per annum) (Toudonou *et al*., 2022). Harvesting was reported to be concentrated in all areas of southern Benin except in the Littoral province, where it was reported to be limited to only a few districts as a result of low harvest rates in 2020 and 2021 (Toudonou *et al*., 2022). Earlier work by Ineich (2006) noted that the species was rarer in areas where the consumption of snakes was highly developed (in this case Le Plateau, Mono and Aguégués). In addition to concerns regarding the sustainability of harvest itself (D'Cruze *et al*., 2022; Toudonou *et al*., 2022), concerns have been expressed regarding the techniques of harvest employed by local collectors for the pet trade, which cause the destruction and/or spoiling of female oviposition sites (Harris, 2002; Toudonou 2007 *in* AC28 Inf. 4).

While *P. regius* was reported to benefit from traditional and taboo protection in regions of southern Benin (Gorzula, 1997; AC28 Inf. 4), this is limited to certain ethnic groups (Ineich, 2006). It remains unclear if these beliefs provide effective protection, as declines have also been reported in areas where these traditional beliefs are observed (D'Cruze *et al*., 2022).

Trade: Benin has submitted all annual reports to CITES for the period 2013-2022, and has published annual export quotas for wild (between 200 to 1000) and ranched (between 22 000 to 45 000) specimens for all years 2013-2023 (Tables 1.1-1.2), as well as for 500 captive-bred specimens for each of the years 2021-2022 (Table 1.3). Trade in live[2] wild-sourced *P. regius* appears to have exceeded the

[2] The published export quotas did not specify any trade term(s), however the only direct trade in whole organism equivalent terms reported over this period was in live individuals.

2013 quota according to importers; however permit analysis suggests that only 150 of these individuals were traded on export permits from 2013 and the remainder were associated with year-end trade from 2012. Trade in live ranched and captive-bred *P. regius* has remained within quota in every year where a quota was published, according to both exporter- and importer-reported data.

Table 1.1: CITES export quotas published for **wild** *P. regius* from Benin, 2013-2024, and global direct exports of live wild-sourced individuals as reported by Benin and importers, 2013-2023. Hyphens indicate years where quotas were not published or where exporter CITES annual reports have not been received; importer trade data for 2023[3] and both importer and exporter trade data for 2024 are not yet available. Apparent quota excesses are indicated by **bolded** quantities.

Wild	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Quota	1000	1000	1000	1000	1000	500	200	200	200	200	200	-
Reported by Benin	70	120	170	195	200	80	50		100	60	50	-
Reported by importer	**1707**	162	239	90	195		30	116	150	48	-	-

Source: CITES Trade Database, 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Table 1.2: CITES export quotas published for **ranched** *P. regius* from Benin, 2013-2024, and global direct exports of live ranched individuals as reported by Benin and importers, 2013-2023. Hyphens indicate years where quotas were not published or where exporter CITES annual reports have not been received; importer trade data for 2023[3] and both importer and exporter trade data for 2024 are not yet available.

Ranched	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Quota	45000	45000	45000	45000	45000	22000	22000	22000	32000	32000	32000	-
Reported by Benin	22835	8680	8460	6902	20130	2470	5570	13530	20885	28140	1770	-
Reported by importer	13645	9015	8683	6000	18282	1985	2000	8635	22693	26010	-	-

Source: CITES Trade Database, 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Table 1.3. CITES export quotas published for **captive-bred** *P. regius* from Benin, 2013-2023, and global direct exports of live captive-bred individuals as reported by Benin and importers, 2013-2023. Hyphens indicate years where quotas were not published or where exporter CITES annual reports have not been received; importer trade data for 2023[3] and both importer and exporter trade data for 2024 are not yet available.

Captive-bred	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Quota	-	-	-	-	-	-	-	-	500	500	-	-
Reported by Benin					2000							-
Reported by importer					1200			7000			-	-

Source: CITES Trade Database, 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Direct trade in *P. regius* from Benin 2013-2022 was predominantly in live ranched pythons for commercial purposes: 137 602 individuals reported by Benin and 116 948 reported by importers

[3] The CITES annual report deadline for trade in the year 2023 is not until 31 October 2024. However, Benin has already submitted its annual report for 2023, and these data are included in Tables 1.1-1.3.

(Table 1.4). Direct trade in live ranched pythons for commercial purposes fluctuated 2013-2022, with peaks in 2013 (22 835), 2017 (20 130), and 2022 (28 140) according to data reported by Benin; direct exports in 2022 increased by 35% compared to the previous year. The US was the main importer of live ranched *P. regius*, accounting for 86% of all direct exports reported by Benin 2013-2022. Other trade over this period reported by Benin included the direct export of 2000 live captive-bred pythons (8200 according to importers) and 1045 live wild-sourced pythons (2737 reported by importers) for commercial purposes. The US also reported 7910 live confiscated (source 'I') individuals. Benin has submitted its 2023 CITES annual report ahead of the deadline, and trade reported for this year consisted of live individuals from ranched (1770), captive-born (200), and wild (50) sources; ranched trade decreased by approximately 94% compared to 2022.

Indirect trade in *P. regius* originating in Benin mostly comprised 5752 live ranched animals reported by re-exporters (4154 by importers) for commercial purposes (Table 1.5). Ghana was the main re-exporter of live ranched *P. regius* originating in Benin, accounting for 79% of re-exports according to re-exporters (90% according to importers).

Table 1.4: Direct exports of *P. regius* from Benin, 2013-2022.

Term	Unit	Purpose	Source	Reported by	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
leather products (small)	number of specimens	T	R	Exporter											
				Importer	150										150
live	number of specimens	T	C	Exporter					2000						2000
				Importer					1200			7000			8200
			I	Exporter											
				Importer	6660	550				700					7910
			R	Exporter	22835	8680	8460	6902	20130	2470	5570	13530	20885	28140	137602
				Importer	13645	9015	8683	6000	18282	1985	2000	8635	22693	26010	116948
			W	Exporter	70	120	170	195	200	80	50		100	60	1045
				Importer	1707	162	239	90	195		30	116	150	48	2737
		-	-	Exporter				300							300
				Importer											

Source: CITES Trade Database 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Table 1.5: Indirect exports of *P. regius* originating in Benin, 2013-2022.

Term	Unit	Purpose	Source	Reported by	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
leather products (small)	number of specimens	T	R	Exporter	5										5
				Importer											
live	number of specimens	B	C	Exporter											
				Importer			20								20
		P	W	Exporter											
				Importer					1						1
		T	C	Exporter	5										5
				Importer				500							500
			R	Exporter	1516	3788	436		2	10					5752
				Importer	129	2954	187		876	8					4154
			W	Exporter		25	12								37
				Importer		44	2								46

Source: CITES Trade Database 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Management:

Legislation: From July 2021, all species in Appendix II of CITES (including *P. regius*) were included as "Category II" species under Law No. 2021-04 of Benin. The protection measures afforded to *P. regius* by this classification are assumed to correspond to Category B (partially protected species) as described in Law 2002-16: the hunting, capture or collection of the species (including its eggs) is allowed on a limited basis, but females and young are fully protected. This would imply that legal collection for ranching purposes would be limited to eggs, and would exclude juveniles. Law No. 2002-16 additionally prohibits the hunting and capture of wild animals in protected areas.

The CITES national legislation project currently classifies Benin as a Category 2 Party (legislation that is believed generally to meet one to three of the four requirements for effective implementation of CITES). The most recent legislative status table (updated November 2023) noted that new legislation had need enacted, with next steps involving the finalisation of implementing regulations.

Wild harvest: Over the past decade, Benin has decreased its annual export quota for wild-taken *P. regius*, from 1000 individuals 2013-2017 to 500 individuals in 2018. For the years 2019-2023, the quota was further reduced to 200 individuals per year. It is unclear how the quota of 200 wild-caught individuals to be sold for export is subdivided between hunters, and whether there are additional domestic harvest quotas in place for stock to supplement ranching of the species.

N. D'Cruze (pers. comm. 2023) reported that no official or effective monitoring system or management plan was in place for the harvest of *P. regius* in Benin.

Production system: The production system for *P. regius* in Benin exported using source code R is likely to be similar to that described in Togo (see country review for *Togo* below), where gravid females, as well as eggs and neonates, are harvested to provide specimens for ranching operations. It should be noted that the definition of ranching described in Res. Conf. 11.6 (Rev. CoP15)[4] restricts collection from the wild to eggs and juveniles (high mortality life stages), and that collection gravid females would fall outside of this definition. In some instances, females were reported to be consumed as bushmeat after egg collection (Toudonou, 2015 *in* AC28 Inf. 4).

A census carried out by the CITES MA of Benin in August 2021 identified 21 ranching and captive breeding facilities that held CITES-listed species in the country (CITES MA of Benin *in litt*. to UNEP-WCMC, 2021 in SC74 Doc. 30.2); of these, seven were reported to hold *P. regius*, five of which were identified as ranching facilities. An additional facility was reported to use source W but was described as a ranching facility, while another facility was described as a captive-breeding facility but was reported to use source code R (CITES MA of Benin *in litt*. to UNEP-WCMC, 2021 in SC74 Doc. 30.2). The CITES MA of Benin (*in litt*. to UNEP-WCMC, 2021 in SC74 Doc. 30.2) reported that the standards of a CITES breeding facility were not met at most locations, and that training sessions were required for breeders on species biology, husbandry requirements, stock management, and marking techniques. The MA (*in litt*. to UNEP-WCMC, 2021 in SC74 Doc. 30.2) also reported that it had attended training organised by IUCN in April 2021 on the application of source codes[5] and the monitoring of breeding centres.

[4] Res. Conf. 11.6 (Rev. CoP15) defines ranching as "*the rearing in a controlled environment of animals taken as eggs or juveniles from the wild, where they would otherwise have had a very low probability of surviving to adulthood*".
[5] Previous issues involving the misapplication of source codes were identified in a 2004 CITES field mission (Ineich, 2006).

Protected areas: *P. regius* likely occurs in several protected areas within its range in Benin, including the Lama forest (Nagel *et al*., 2004), the W Transfrontier Biosphere Reserve (Chirio, 2009) and the Mono Transboundary Biosphere Reserve (shared with Togo) (UNESCO, 2023). It is also likely to occur in a number of 'sacred forests' (Koutchika, 2022; Juhé-Beaulaton, 2010) that are recognised under Beninese law as protected areas (Interministerial Order No.0121, 2012). The IUCN Red List assessment for *P. regius* noted that monitoring of the species within protected areas is urgently needed throughout its range (D'Cruze *et al*., 2022).

Illegal trade: Illegal cross-border collection and trade in *P. regius* has been reported between Ghana, Togo and Benin. Identified as early as 1997 and thought to occur in multiple directions (Gorzula, 1997), this illegal activity was most recently confirmed in 2020 (Auliya *et al*., 2020; D'Cruze *et al*., 2020a; 2020c). A survey of 60 Togolese hunters/traders found that 10% of hunters collected *P. regius* exclusively in Benin and a further 7% hunted in Benin and Ghana (D'Cruze *et al*., 2020c). While Beninese python hunters reported collecting *P. regius* within national borders only, Toudonou *et al*., (2022), and N. D'Cruze (pers. comm. 2023) considered it possible that snakes collected in Benin are sold to neighbouring Ghana and Togo as a means of circumventing the relatively lower trade quota in Benin.

CITES Decisions directed to Benin: At its 17th meeting (CoP17, 2016), the Conference of the Parties discussed concerns over the trade in *P. regius* from Benin (specifically the making of adequate non-detriment findings (NDFs) and management of trade from wild populations) (CoP17 Doc. 71). Several Decisions were adopted, including Decision 17.276b which encouraged Benin to implement a number of actions: these included the design and implementation of a management programme for *P. regius*, the production of NDFs based on studies, basic demographics, harvest, and trade of the species, as well as the strengthening of national regulations relating to the management of trade. Benin was requested to report to the Secretariat on its implementation of these measures, however at AC30 (2018) it was noted that no information had been received from the country (AC30 SR).

Ghana

Distribution: The MA of Ghana (*in litt.* to UNEP-WCMC, 2023) stated that *P. regius* could be found throughout the country and was common in farmlands in the Eastern, Greater Accra, Central, Volta, and Savannah regions. However, N. D'Cruze (pers. comm. 2023) noted that more detailed information regarding the species' distribution in the country was urgently needed.

Population status and trends: N. D'Cruze (pers. comm. 2023) remarked that data on the population size, status and trend of *P. regius* in Ghana are lacking, but highlighted that it was widely accepted that populations are in decline in neighbouring range States. The only information that could be located originates from surveys conducted in 1996: Gorzula *et al*. (1997) surveyed *P. regius* in four regions in the south of Ghana where commercial trapping took place (Central, Eastern, Greater Accra and Volta). The methodology consisted of trappers searching for python burrows in cassava patches, rough pasture and fallow fields; 202 *P. regius* were collected over an area of 86.4 ha, leading the authors to estimate a density of 2.34 *P. regius*/ha. The authors concluded that there was "a stable population made up of mainly adults into which recruitment is low"; the total population of *P. regius* was estimated to be 18 million if based on the estimated density of *P. regius* in "domesticated land", and 6.4 million if based on the estimated density of *P. regius* in cropland (Gorzula *et al*., 1997). Densities of *P. regius* in protected and undisturbed areas were considered likely to be lower (Gorzula *et al*., 1997).

Threats: According to data reported by Ghana in the CITES Trade Database, Ghana was the second largest exporter of live ranched *P. regius* globally 2013-2022 after Togo (see *Trade* section below); as with Benin and Togo, most individuals are exported for the international pet trade (Harrington *et al*., 2020). No information on the impact of wild harvest of *P. regius* in Ghana could be located. Gorzula's 1996 surveys found that captured male *P. regius* outnumbered females by almost 2:1, and hypothesized that this could be due to the fact that males are more easily detected than females during the dry season (Gorzula *et al*. 1997).

Gorzula *et al*. (1997) additionally reported that *P. regius* in Ghana were sometimes killed by farmers out of fear, but that the numbers killed for this reason appeared to be insignificant. In some areas (centred around Afife in the Volta region and Somanya in the eastern region), *P. regius* was considered sacred and traditions forbade killing of the species (Gorzula *et al*., 1997). The conversion of forest to crop lands and pasture was anecdotally reported to favour *P. regius* populations (Gorzula *et al*., 1997), but no empirical evidence to support this statement could be found.

Trade: Ghana has submitted annual reports to CITES for the period 2013-2022 with the exception of 2016 and 2020, which had not yet been received at the time of writing. Ghana published export quotas for various years 2014-2024 for wild (7000), ranched (60 000) and captive-bred (200) *P. regius* (Tables 1.6-1.8)[6]. Trade in live wild-sourced and live ranched *P. regius* remained within quota in every year where a quota was published, according to both exporter- and importer-reported data, while trade in live captive-bred *P. regius* appears to have exceeded the 2014 and 2018 quotas according to importer-reported data only. Regarding the 2014 quota, permit analysis suggests that 3690 individuals reported as captive-bred by importers were reported as ranched by Ghana; if considering the importer-reported source to be misreported, the adjusted total for captive-bred trade in this year as reported by importers was 80 individuals (i.e. within quota). Regarding the 2018 quota, permit analysis suggests that all trade reported by the importer as captive-bred (1600 individuals) was reported by Ghana as wild-sourced, and therefore may not have exceeded the captive-bred quota.

Table 1.6: CITES export quotas published for **wild** *P. regius* from Ghana, 2013-2024, and global direct exports of live wild-sourced individuals as reported by Ghana and importers, 2013-2022; trade data for 2023 and 2024 are not yet available. Hyphens indicate years where quotas were not published or where exporter CITES annual reports have not been received. While no CITES export quota was published for the years 2018-2022, the MA of Ghana (*in litt.* to UNEP-WCMC, 2023) reported that a quota of 7000 was in place for these years.

Wild	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Quota	-	7000	7000	7000	7000	-	-	-	-	-	7000	-
Reported by Ghana	1640	85	1370	-	100	5891	280	-	2120	45	-	-
Reported by importer	80	500	28	460	20	1108	960	716	6945	13333	-	-

Source: CITES Trade Database 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

[6] The published export quotas 2014-2018 did not specify any trade term(s); the ranched and captive-bred quotas 2020-2024 were published for 'all' specimens. The only direct trade from Ghana reported 2013-2022 was in live individuals.

Table 1.7: CITES export quotas published for **ranched** *P. regius* from Ghana, 2013-2024, and global direct exports of live ranched individuals as reported by Ghana and importers, 2013-2022; trade data for 2023 and 2024 are not yet available. Hyphens indicate years where quotas were not published or where exporter CITES annual reports have not been received. While no CITES export quota was published for 2019, the MA of Ghana (*in litt.* to UNEP-WCMC, 2023) reported that a quota of 60 000 was in place for this year.

Ranched	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Quota	-	60000	60000	60000	60000	60000	-	60000	60000	60000	60000	60000
Reported by Ghana	52585	20900	18640	-	1745	10135	10340	-	34810	27500	-	-
Reported by importer	46638	11640	15286	13558	11225	10210	4968	25802	16551	6252	-	-

Source: CITES Trade Database 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Table 1.8: CITES export quotas published for **captive-bred** *P. regius* from Ghana, 2013-2024, and global direct exports of live captive-bred individuals as reported by Ghana and importers, 2013-2022; trade data for 2023 and 2024 are not yet available. Hyphens indicate years where quotas were not published or where exporter CITES annual reports have not been received. Apparent quota excesses are indicated by **bolded** quantities.

Captive-bred	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Quota	-	200	200	200	200	200	-	-	-	-	200	200
Reported by Ghana	166	190	122	-				-			-	-
Reported by importer	1080	**3770**	145	89		**1600**			400	90	-	-

Source: CITES Trade Database 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Direct trade in *P. regius* from Ghana 2013-2022 predominantly comprised 176 655 live ranched pythons as reported by Ghana and 162 130 live ranched pythons as reported by importers, for commercial purposes (Table 1.9). According to both Ghana and importers, 2013 represented the highest level of trade in live ranched pythons over this period (52 585 reported by Ghana; 46 638 reported by importers). While direct exports of live ranched pythons generally declined between 2014-2019, remaining below ~20 000 pythons per year according to Ghana and importers, direct exports reported by Ghana rose significantly 2021-2022. Other trade reported by Ghana 2013-2022 included 11 531 live wild-sourced pythons (24 150 reported by importers) and 478 live captive-bred pythons (7174 reported by importers) for commercial purposes. The US was the main importer of live ranched *P. regius* from Ghana over this period, accounting for approximately 69% of these exports as reported by Ghana and importers.

Indirect trade in *P. regius* originating in Ghana 2013-2022 mainly comprised 4721 live ranched pythons for commercial purposes as reported by re-exporters (12 625 reported by importers) (Table 1.10). The US was the main re-exporter of live ranched pythons according to re-exporters (accounting for 73% of re-exports), whereas Greece was the main re-exporter of live ranched pythons according to importers (63% of re-exports).

Table 1.9: Direct exports of *P. regius* from Ghana, 2013-2022. Hyphens indicate years where exporter annual reports have not yet been received.

Term	Unit	Purpose	Source	Reported by	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
live	number of specimens	T	C	Exporter	166	190	122	-				-			478
				Importer	1080	3770	145	89		1600			400	90	7174
			I	Exporter				-				-			
				Importer						5					5
			R	Exporter	52585	20900	18640	-	1745	10135	10340	-	34810	27500	176655
				Importer	46638	11640	15286	13558	11225	10210	4968	25802	16551	6252	162130
			W	Exporter	1640	85	1370	-	100	5891	280	-	2120	45	11531
				Importer	80	500	28	460	20	1108	960	716	6945	13333	24510
		-	R	Exporter				-		100		-			100
				Importer											

Source: CITES Trade Database 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Table 1.10: Indirect exports of *P. regius* originating in Ghana, 2013-2022.

Term	Unit	Purpose	Source	Reported by	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
live	number of specimens	P	C	Exporter	1										1
				Importer											
		T	C	Exporter		50	3								53
				Importer											
			R	Exporter	2317	1105	50	85	288	442	130		84	220	4721
				Importer	3613	275	50	522	4582	2207	1176			200	12625
			W	Exporter					56						56
				Importer											

Source: CITES Trade Database 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Management:

Legislation: Ghana's Wildlife Conservation Regulations of 1971 (L.I. 685, 1971) includes 'Schedules', comprising lists of species that are afforded stricter protections. *P. regius* is listed in Schedule II: partially protected species, where hunting, capture, or destruction is prohibited between 1 August and 1 December (L.I. 685, 1971). The hunting, capture and destruction of any 'young animal' or animals accompanied by young is also prohibited at all times for Schedule II species (L.I. 685, 1971). It is unclear whether a derogation from these laws exists for ranching of the species (see *Production system* below). The Wildlife Reserves Regulations of 1971 (L.I. 710, 1971) prohibit the hunting and capture of wild animals in protected areas; the MA of Ghana (*in litt*. to UNEP-WCMC, 2023) further clarified that harvesting of wild animals was only permitted on fallow and farmlands outside of conservation areas.

The MA of Ghana (*in litt*. to UNEP-WCMC, 2023) highlighted that a new Wildlife Resources Management Bill had been passed into law July 2023, pending presidential assent, and would supersede the legislation related to wildlife and protected areas described above.

Ghana's national legislation is included in Category 3 in the CITES National Legislation Project (legislation that is believed generally not to meet any of the four requirements for effective implementation of CITES). The most recent legislative status table (updated November 2023) indicated that a Bill had been through a second reading in Parliament; next steps included enactment and submission to the Secretariat for analysis.

Wild harvest: Ghana's annual export quota of 7000 wild-taken *P. regius* has been in place since 1999. While no CITES export quota was published for the years 2018-2022, the MA of Ghana (*in litt.* to UNEP-WCMC, 2023) reported that a quota of 7000 was in place for these years.

Although harvest of wild pythons requires a permit (CITES MA of Ghana *in litt.* to UNEP-WCMC, 2023), it is unclear how the quota of 7000 wild-caught individuals to be sold for export is subdivided between hunters, and whether there are additional domestic harvest quotas in place for stock to supplement ranching and captive breeding facilities in the country.

Production system: The MA of Ghana (*in litt.* to UNEP-WCMC, 2023) described the harvest system for *P. regius* for use in ranching and captive breeding operations as follows:

- Harvesting permits for collection of *P. regius* eggs for ranching are issued to registered breeders and traders;
- Some traders are also permitted to harvest a "limited number" of adult pythons or use a proportion of ranched stock not intended for sale for captive-breeding operations[7];
- Adults collected from the wild for "breeding" are later released back into the wild.

Ranching facilities must be inspected and registered by the Management Authority prior to the issuance of permits for ranched or wild specimens (CITES MA of Ghana *in litt.* to UNEP-WCMC, 2023). While the production capacity for ranching operations across the country is not clear, export levels of ranched *P. regius* since 2014 have been far below the annual quota of 60 000 individuals. Although Gorzula *et al.* (1997) reported a requirement for 10% of surviving hatchlings in ranching operations to

[7] Note that offspring of ranched specimens bred in controlled conditions would meet the definition of first-generation offspring (F1) as per Resolution Conf. 10.16 (Rev. CoP19), and should therefore be traded as source code F. Ghana has not yet reported any *P. regius* exports under this source code.

be released into the wild, the CITES MA of Ghana (*in litt.* to UNEP-WCMC, 2023) did not specify whether this requirement is still in place. It should be noted that the production system described above, which appears to limit collection for ranching to eggs, is different to the system described in 2009 in AC24 Doc. 8., which involved collection of gravid females.

Non-detriment findings: The MA of Ghana (*in litt.* to UNEP-WCMC, 2023) confirmed that no NDF had been conducted for *P. regius* due to the substantial resources required, but noted that management of the species was based on "various legislations, recommendations, and research". It is not clear how these considerations influence the number of harvest permits that are issued for the species, including wild harvest of adults for direct export, wild harvest of eggs for ranching, and wild harvest of adults for captive breeding operations. N/ D'Cruze (pers. comm. 2023) reported that no official or effective monitoring system or management plan was in place for the harvest of *P. regius* in the country.

Protected areas: *P. regius* likely occurs in several protected areas within its range in Ghana, including in the Muni-Pomadze Ramsar Site (Raxworthy & Attuquayefio, 1999) and Kogyae Strict Nature Reserve (Musah *et al*., 2015). The IUCN Red List assessment for *P. regius* noted that monitoring of the species within protected areas is urgently needed throughout its range (D'Cruze *et al*., 2022).

Illegal trade: Gorzula *et al*. (1997) reported there was "sufficient hearsay evidence" to indicate that *P. regius* was being smuggled from Ghana to Togo and Benin, and possibly vice-versa. Ineich (2006) also indicated that Ghana apparently received juvenile *P. regius* specimens from Benin, both legally and illegally. D'Cruze *et al*. (2020c) reported similar findings based on surveys with python hunters in Togo. In the past Ghana has considered the distinction between wild, ranched and captive-bred *P. regius* specimens to be difficult to make, and noted that ranching could provide opportunities for laundering specimens from one range State using permits from a different range State (AC24 Doc. 8.1).

Use of source codes: Ineich (2006) expressed concerns over the unreliable use of source codes for reptiles exported from Ghana, noting that exporters and local CITES authorities were unable to determine whether *P. regius* juveniles traded as source R from West Africa were actually source W; it is unclear whether this continues to be a concern.

Togo

Distribution: No detailed distribution information could be identified for *P. regius* in Togo; N. D'Cruze (pers. comm. 2023) noted this information was urgently needed. However, Segniagbeto *et al*. (2011) suggested that *P. regius* is widespread and most common in Togo's wet south, describing it as abundant in forested areas around lake Togo and in "the Mono" (assumed to refer to the Mono river basin).

Population status and trends: Quantitative information on the population size of *P. regius* within Togo was reported to be lacking (N. D'Cruze pers. comm. 2022). Several reports have suggested that the species remains relatively common in the country (D'Cruze *et al*., 2022; Segniagbeto *et al*., 2011); however, in a recent survey of 60 Togolese python hunters/traders, 75% reported that there were fewer *P. regius* than there were five years ago and several hunters described travelling increased distances to locate them (D'Cruze *et al*., 2020c). Vendors in a traditional medicine market in Lomé also stated that *P. regius* was less available in 2018 compared to the previous five years (D'Cruze et al., 2020a).

In 1999, Harris (2002) recorded population densities of 1.7 individuals/ha in non-hunted agricultural sites and 0.3 individuals/ha in hunted agricultural sites within Togo. Densities in hunted and non-hunted bush vegetation sites were 0.5 individuals/ha and 0.9 individuals/ha, respectively (Harris, 2002). More recent population density estimates could not be located.

Threats: According to data reported by Togo in the CITES Trade Database, Togo was the largest exporter of live *P. regius* globally 2013-2022 (see *Trade* section below); as with Benin and Ghana, most individuals are exported for the international pet trade (D'Cruze *et al*., 2020b; Segniagbeto *et al*., 2011). Collection of pythons for this trade was reported to occur between the months of January-April (D'Cruze *et al*., 2020c), while trade for domestic use (such as for meat and traditional medicine (D'Cruze *et al*., 2020a; Harris, 2002)) was reported to occur year-round (Toudonou *et al*., 2022).

P. regius is sacred in some regions of Togo (Harris, 2002; Ineich, 2006). Whilst these traditional beliefs prevent the harvesting of *P. regius* in several areas in the south of the country (Aubret *et al*., 2005a), it remains unclear if this provides significant protection (D'Cruze *et al*., 2022).

Trade: Togo has submitted annual reports to CITES for all years 2013-2022, and has published export quotas for 62 500 ranched and 1500 wild *P. regius* every year 2013-2024 (Tables 1.11-1.12)[8]. Trade in live wild-sourced *P. regius* appears to have exceeded the quota for 2021 according to Togo, and the 2017, 2019 and 2022 quotas according to importers. Permit analysis suggests that trade reported by importers was often associated with permits from the previous year (i.e. year-end trade); adjusted totals resulted in shifts in the years of apparent importer-reported wild quota excesses to 2016, 2018, 2021, and 2022 (Table 1.11). Trade in ranched *P. regius* appears to have exceeded the quotas for 2020-2022 according to Togo, and the 2013, 2020 and 2021 quotas according to importers. Year-end trade was also suggested by permit analysis of ranched importer-reported trade, and adjusted totals reduced the apparent importer-reported ranched quota excesses to one year only in 2019 (Table 1.12).

Table 1.11: CITES export quotas published for **wild** *P. regius* from Togo, 2013-2024, and global direct exports of wild bodies, live individuals, and skins as reported by Togo and importers, 2013-2022; trade data for 2023 and 2024 are not yet available. Hyphens indicate years where exporter CITES annual reports have not been received. Apparent quota excesses are indicated by **bolded** quantities; adjusted quantities based on permit analysis of importer-reported data are also provided.

Wild	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Quota	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500
Reported by Togo	1250	200	570	600	1130	950	704	570	**1972**	1361	-	-
Reported by importer	810	690			**2950**	973	**5169**	1217	1060	**3897**	-	-
Reported by importers (adjusted total)	*860*	*340*		***2250***	*1230*	***5308***	*647*	*898*	***1686***	***3247***	-	-

Source: CITES Trade Database 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

[8] The published export quotas for 2013-2019 did not specify any trade term(s); the quotas for 2020-2024 were published for 'all' specimens of the relevant source. All direct trade reported 2013-2022 was reported in whole organism equivalent terms and therefore all trade was used to assess quota excesses: wild-sourced bodies (in 2022 only), live specimens (2013-2022), and skins (in 2013 only), and ranched live specimens (2013-2022) and skins (in 2013 only).

Table 1.12. CITES export quotas published for **ranched** *P. regius* from Togo, 2013-2024, and global direct exports of ranched live individuals and skins as reported by Togo and importers, 2013-2022; trade data for 2023 and 2024 are not yet available. Hyphens indicate years where exporter CITES annual reports have not been received. Apparent quota excesses are indicated by **bolded** quantities; adjusted quantities based on permit analysis of importer-reported data are also provided.

Ranched	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Quota	62500	62500	62500	62500	62500	62500	62500	62500	62500	62500	62500	62500
Reported by exporter	56782	62022	37736	50238	17192	21299	28596	**98661**	**89911**	**90800**	-	-
Reported by importer	**75368**	42611	32946	21959	55167	56943	54328	**66785**	**75286**	56065	-	-
Reported by importers (adjusted total)	*58900*	*48015*	*41662*	*47458*	*41517*	*60302*	***65603***	*54649*	*53136*	*48497*	-	-

Source: CITES Trade Database 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Direct trade in *P. regius* from Togo 2013-2022 predominantly comprised 553 237 live ranched individuals for commercial purposes as reported by Togo and 537 198 as reported by importers (Table 1.13). Direct exports of live ranched individuals fluctuated 2013-2022, but increased significantly in 2020-2022. The US was the main importer of live ranched *P. regius* from Togo, accounting for 78% of direct exports reported by Togo 2013-2022. Other notable levels of trade over this period included 40 927 live captive-born (source F[9]) individuals and 9156 live wild-sourced individuals reported by Togo (32 723 and 16 614 pythons reported by importers, respectively), all for commercial purposes.

Indirect trade in *P. regius* originating in Togo mainly consisted of 13 555 live ranched pythons for commercial purposes as reported by re-exporters (18 197 reported by importers) (Table 1.14). Ghana (45%) and the US (30%) were the main re-exporters of live ranched *P. regius* originating in Togo, as reported by re-exporters.

[9] Animals born in captivity (F1 or subsequent generations) that do not fulfil the definition of 'bred in captivity' in Resolution Conf. 10.16 (Rev.), as well as parts and derivatives thereof.

Table 1.13: Direct exports of *P. regius* from Togo 2013-2022.

Term	Unit	Purpose	Source	Reported by	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
bodies	number of specimens	T	W	Exporter										1	1
				Importer											
live	number of specimens	P	W	Exporter											
				Importer								2			2
		T	C	Exporter											
				Importer									264	22005	22269
			F	Exporter		580	2867	6767	344	3559	1950	5405	4680	14775	40927
				Importer		660	1611	21191	3620	1923	91	1529	1060	1038	32723
			I	Exporter											
				Importer						3					3
			R	Exporter	56782	62022	37736	50238	17192	21299	28596	98661	89911	90800	553237
				Importer	75118	42611	32946	21959	55167	56943	54328	66785	75276	56065	537198
			W	Exporter	1250	200	570	600	1130	950	704	570	1822	1360	9156
				Importer	660	690			2950	973	5169	1215	1060	3897	16614
			-	Exporter									180		180
				Importer											
		Z	R	Exporter											
				Importer									10		10
		-	W	Exporter									150		150
				Importer											
skins	number of specimens	T	R	Exporter											
				Importer	250										250
			W	Exporter											
				Importer	150										150

Source: CITES Trade Database 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Table 1.14: Indirect exports of *P. regius* originating in Togo, 2013-2022.

Term	Unit	Purpose	Source	Reported by	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
live	number of specimens	B	R	Exporter											
				Importer			4								4
		P	F	Exporter											
				Importer							1				1
			R	Exporter									1		1
				Importer									2	2	4
		Q	C	Exporter											
				Importer		2									2
		T	C	Exporter											
				Importer					3			500			503
			F	Exporter			500	69	61	30	1	601			1262
				Importer				57	15	29		101			202
			R	Exporter	3761	2666	3669	234	161	1468	158	959	100	379	13555
				Importer	1905	1069	2977	967	1868	2027	793	5880	210	501	18197
			W	Exporter		220	20				2				242
				Importer				91	20		2		50		163
		Z	R	Exporter											
				Importer		10				5					15
skins	number of specimens	T	R	Exporter											
				Importer	250										250
			W	Exporter	400										400
				Importer	150										150

Source: CITES Trade Database 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Management:

Legislation: The status of *P. regius* under Togolese law is unclear. *P. regius* is classified in Ordonnance No. 4 (1968) as a predatory species (Annex II), meaning that killing is normally permitted in inhabited and agricultural areas as part of traditional hunting or in the defence of crops and domestic livestock, but hunting may be regulated in protected areas. The hunting period in Togo was defined by Décret No. 90-178 (1990) as occurring between 1 January and 30 April from 06:00 to 17:00.

Togo's Forest Code (Law No. 2008-09) also states that wild animals are categorised as fully, partially, or unprotected species by the minister responsible for forest resources. However, a list of species associated with Law No. 2008-09 could not be located and it is unclear whether this legislation has superseded Ordonnance No. 4 (1968). The Forest Code also prohibits hunting and capture in national parks or wildlife reserves and requires those hunting for commercial purposes to have a permit issued by the relevant authority. Subsistence hunting by local communities of unprotected species in protected areas is regulated by the acts establishing such protected areas. Finally, the Forest Code prohibits hunting of pregnant females or juveniles, the collection of eggs, and the destruction of nests for all animal species. It is unclear whether a derogation from this law exists for the ranching of *P. regius* (see *Production system* below).

The CITES national legislation project currently classifies Togo as a Category 2 (legislation that is believed generally to meet one to three of the four requirements for effective implementation of CITES). The most recent legislative status table (updated November 2023) indicated that the Secretariat had provided observations on a draft bill, and was working to provide comments on draft legislation.

Wild harvest: Togo's annual export quota of 1500 wild-taken *P. regius* has been in place since 1997. Ineich (2006) described the scientific basis for these wild quotas as 'lacking' and N. D'Cruze (pers. comm. 2023) reported that there is currently no official or effective monitoring system or management plan in place for *P. regius* harvest.

It is unclear how the quota of 1500 wild-caught individuals to be sold for export has been subdivided between hunters, and whether there are additional domestic harvest quotas in place for stock to supplement the production system for source R and F individuals described below. Awareness of the quota system seems to be low; in a recent survey of python hunters in Togo, all participants reported that there were no national quotas for *P. regius*, despite the publication of CITES export quotas by Togo for all years 2013-2020 (D'Cruze *et al*., 2020c).

Production system*:* Based on interviews with python hunters, D'Cruze *et al*., (2020c) described *P. regius* harvest in Togo as follows:

- Hunters reported collecting both live *P. regius* and clutches of eggs. Harvest of live pythons was reported to peak January-March, while harvest of eggs mostly occurred February-March. Seventeen percent of hunters reported harvesting gravid females and keeping them until they laid their eggs.
- Juveniles hatched from eggs were then sold to python farms, from which they are exported for the commercial pet trade.
- Eighty-six percent of hunters stated they released "some" *P. regius* back into the wild to balance offtake. Among hunters that released snakes, most (66%) reported releasing adult females, however others additionally reported releasing juveniles and adult males.

- Released snakes were reported to originate from "middlemen" or snake farms, but a significant proportion of hunters did not report the origin of released snakes.

It should be noted that offspring originating from gravid females collected from the wild would not meet the description of a ranched specimen in Res. Conf. 11.6 (Rev. CoP15), which is restricted to individuals taken from the wild as an egg or as a juvenile.

Ineich (2006) reported that, in Togo, 20% of all juveniles produced by ranching must be released. More recently, D'Cruze *et al*. (2020c) reported that Togo's "national management regulations" require the release of all females after they have laid their eggs, in additional to "a proportion of offspring produced on farms". However, it is unclear if these regulations are a legal requirement and if they reflect current practice. Overall, D'Cruze *et al*. (2020c) concluded that "there was little evidence of regulatory oversight at the hunter level with regard to (1) the release of females after they have laid their eggs, (2) release of 20% of the juveniles produced, or (3) collection of adult males within quotas for wild-caught specimens".

Auliya *et al*. (2020) additionally raised concerns that the release of non-local individuals from breeding farms into the wild may have a long-term negative impact on the conservation of wild populations of *P. regius* through the disruption of spatial genetic structure, alteration of local genetic diversity, and a reduction in the fitness of individual snakes. High stocking density, poor hygiene and lack of space/shelter in Togolese breeding farms have also led to concerns over animal welfare and biosecurity measures (D'Cruze *et al*., 2020b). As a result, Auliya *et al*. (2020) called for increased monitoring and evaluation at ranching facilities.

D'Cruze *et al*. (2020c) noted that it was difficult, if not impossible, to distinguish between wild-sourced and ranched specimens once snakes are in farms, and considered that this "mixed" system created considerable opportunity for misreporting.

Non-detriment findings: The CITES SA of Togo (*in litt*. to UNEP-WCMC, 2023) indicated it planned to conduct a study to gather detailed information on the status of *P. regius*, with the view of developing an NDF, and that this information could be provided in early 2024.

Protected areas: A number of protected areas have been established in the Mono river basin, where the species is thought to be common, including the Mono Transboundary Biosphere Reserve (shared with Benin) (UNESCO, 2023). The IUCN Red List assessment for *P. regius* noted that monitoring of the species within protected areas is urgently needed throughout its range (D'Cruze *et al*., 2022).

Illegal trade: D'Cruze *et al*. (2020c) expressed uncertainty over whether Togolese hunters were in possession of the correct permissions required under Law No. 2008-09 (Articles 79, 80 and 81), and suggested hunters may be in contradiction of Article 78 of the same law, as collection techniques typically resulted in the destruction of oviposition sites and collection of gravid females. In view of the complex and potentially conflicting pieces of domestic legislation that relate to the commercial trade of *P. regius*, D'Cruze *et al*. (2020c) suggested that streamlining of relevant legislation would greatly benefit efforts to protect the remaining wild population in Togo.

Illegal trade in *P. regius* between Togo, Benin and Ghana is thought to be ongoing (D'Cruze *et al*., 2020c). In a recent survey of Togolese python hunters, it was noted that 40% of hunters sourced *P. regius* in Benin and/or Ghana without the required CITES documentation (D'Cruze *et al*., 2020c). A further 7% sold specimens to farms in Benin or Ghana (D'Cruze *et al*., 2020c).

E. Problems identified that are not related to the implementation of Article IV, paras 2(a), 3 or 6(a).

Misapplication of source codes

- While source R is reported for the majority of *P. regius* exported from Benin, Ghana and Togo, Resolution Conf. 11.6 (Rev. CoP15) defines ranching as "*the rearing in a controlled environment of animals taken as eggs or juveniles from the wild, where they would otherwise have had a very low probability of surviving to adulthood*". Production systems for *P. regius* in Benin, Togo and possibly Ghana appear to involve the collection of adult gravid females from the wild, and as such these systems do not meet the definition of ranching as defined in the Resolution.
- Ghana indicated that ranched stock not intended for sale may be used in captive breeding operations; the appropriate source code for offspring from ranched stock bred in controlled conditions would be source code F, as per Resolution Conf. 10.16 (Rev. CoP19): "'*first-generation offspring (F1) are specimens produced in a controlled environment from parents at least one of which was conceived in or taken from the wild*". No direct exports of source F individuals from Ghana have been recorded in the CITES Trade Database 2013-2022, although a quota for captive-bred animals (source C) has been issued 2014-2018 and more recently for 2023-2024.

Given the two issues outlined above, the region may have capacity building needs regarding the application of source codes for different captive-production systems.

Cross-border trade

Several authors (e.g. Auliya *et al*., 2020; D'Cruze *et al*., 2020a, 2020c) reported cross-border trade of *P. regius* between Benin, Ghana, and Togo without the relevant CITES documentation, indicating that stronger regional enforcement effort may be required.

National legislation

It is unclear whether the production systems in place for commercial trade in *P. regius* from Benin, Ghana and Togo are in contradiction of each country's national legislation; for example, all three have legislation that prohibits the collection of eggs and/or juveniles, with no derogations found for the purposes of ranching. Further clarity is needed from Benin, Ghana and Togo regarding whether such a legal derogation exists.

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Siebenrockiella crassicollis: Indonesia

A. Summary

CRITERIA MET:	Criterion i) trade in an endangered species and criterion v) high volume of trade in a globally threatened species.
GLOBAL STATUS:	Globally Endangered (2018 assessment), based on a suspected 55% population decline over the past three generations (54 years) due to exploitation for national and international consumption, trade and habitat loss.
INDONESIA: Responded to the consultation relating to the RST	*S. crassicollis* occurs in Sumatra, central and western Java, eastern, western, central and southern Kalimantan on Borneo, and Belitung Island. The species has been described as relatively common in Indonesia but there has been a suspected population decline of c. 30% in the country. Trapping surveys conducted in 2018 in palm oil plantations where the species is subject to harvest recorded densities of 3-16 ind./ha. *S. crassicollis* is sold both as a food species and as a pet in Indonesia, and its carapace and plastron have been exported for use in Traditional East Asian Medicine. Overexploitation is recognised to be one of the principal global threats to the species. Indonesia has submitted annual reports for all years 2013-2022, and has published CITES export quotas for live, wild-sourced *S. crassicollis* for all years 2013-2023 with the exception of 2019; trade was within quota for all years. Direct exports 2013-2022 predominantly comprised live, wild-sourced individuals for commercial purposes (34 383 individuals reported by Indonesia and 13 225 individuals reported by importers); 15 000 kg of wild-sourced carapaces were also exported for commercial purposes in 2014 as reported by Indonesia. *S. crassicollis* is not included in Indonesia's list of protected species which cannot be traded or hunted, but the species is managed via a quota system. Alongside CITES export quotas Indonesia has issued quotas for lower levels of domestic harvest (approx. 500-700 individuals per year 2015-2018, reduced to 150 live individuals per year for use as pets 2020-2023). Indonesia's non-detriment finding (NDF) for *S. crassicollis* was based on the simplified template developed at the 2023 CITES International Workshop on NDFs. This assigned scores to four parameters: annual harvest level, area of occupancy, life-history, and levels of illegal trade. The NDF concluded that current trade levels in the species were non-detrimental. Nevertheless, Indonesia has proposed to lower the annual export quota for the species by 70% to 839 individuals, and to continue to apply a maximum harvest carapace length of ≤15 cm. Assuming that the quota for domestic harvest is maintained at 150 individuals, this would amount to a total of 989 individuals harvested per annum.
PROVISIONAL CATEGORY:	Information on the population status of *S. crassicollis* in Indonesia is scarce, and the scale of studies conducted to date is very small. However, the area of occupancy of the species in Indonesia is likely to be very high, and the species occurs in human modified habitats such as canals in oil palm plantations. A harvest level of 989 juvenile and small adult individuals spread over eight collection areas therefore appears to be conservative; on this basis, categorised as **Less concern**.

B. RST background

AC32 marked the first time that *S. crassicollis* has been selected for inclusion in Stage 2 of the RST.

C. Species characteristics

Biology: *Siebenrockiella crassicollis* (black marsh turtle), is a small to medium sized freshwater turtle, with a length not exceeding 20 cm (Bonin *et al*., 2006; Hasan *et al*., 2023), that inhabits wetland areas, swamps, peat swamps, secondary forests (Horne *et al*., 2021; Samedi & Iskandar, 2000) and oil palm plantations (Riyanto & Mumpuni, 2018). It is described as inhabiting slow water courses with a mud bottom, as well as marshes, ponds, artificial impoundments, and flooded prairies (Bonin *et al*., 2006; Moll & Moll, 2004). Bonin *et al*. (2006) noted it to be slow and to not fear human presence. It is an omnivorous species, feeding on plants, vegetative debris, and invertebrates (Bonin *et al*., 2006).

The IUCN assessment for *S. crassicollis* (Horne *et al*., 2021) calculated a generation length of approx. 18 years for the species based on an age of first reproduction of seven years, and a lifespan of 35 years. Mumpuni (pers comm. in CITES MA of Indonesia *in litt.* to UNEP-WCMC, 2023) estimated the age of maturity to be 4-7 years. Bonin *et al*. (2006) described the nesting season as lasting from April to June, with 3-4 clutches consisting of 2-5 eggs laid in a season. Incubation was reported to last 60-80 days (Bonin *et al*., 2006).

D. Country reviews

Indonesia

Distribution: *S. crassicollis* has a fragmented range in Southeast Asia (Figure 5.1). In Indonesia, the species is found in Sumatra, central and western Java, and central, eastern, western and southern Kalimantan on Borneo (Samedi & Iskandar, 2000; Horne *et al*., 2021; Ministry of Forestry 2023). The first record of the species from Belitung Island was made in 2023 (Hasan *et al*., 2023) (note that this is not reflected in the range map below). The CITES MA of Indonesia (*in litt*. to UNEP-WCMC, 2023) calculated an estimated area of occupancy for the species of 84 000 km^2.

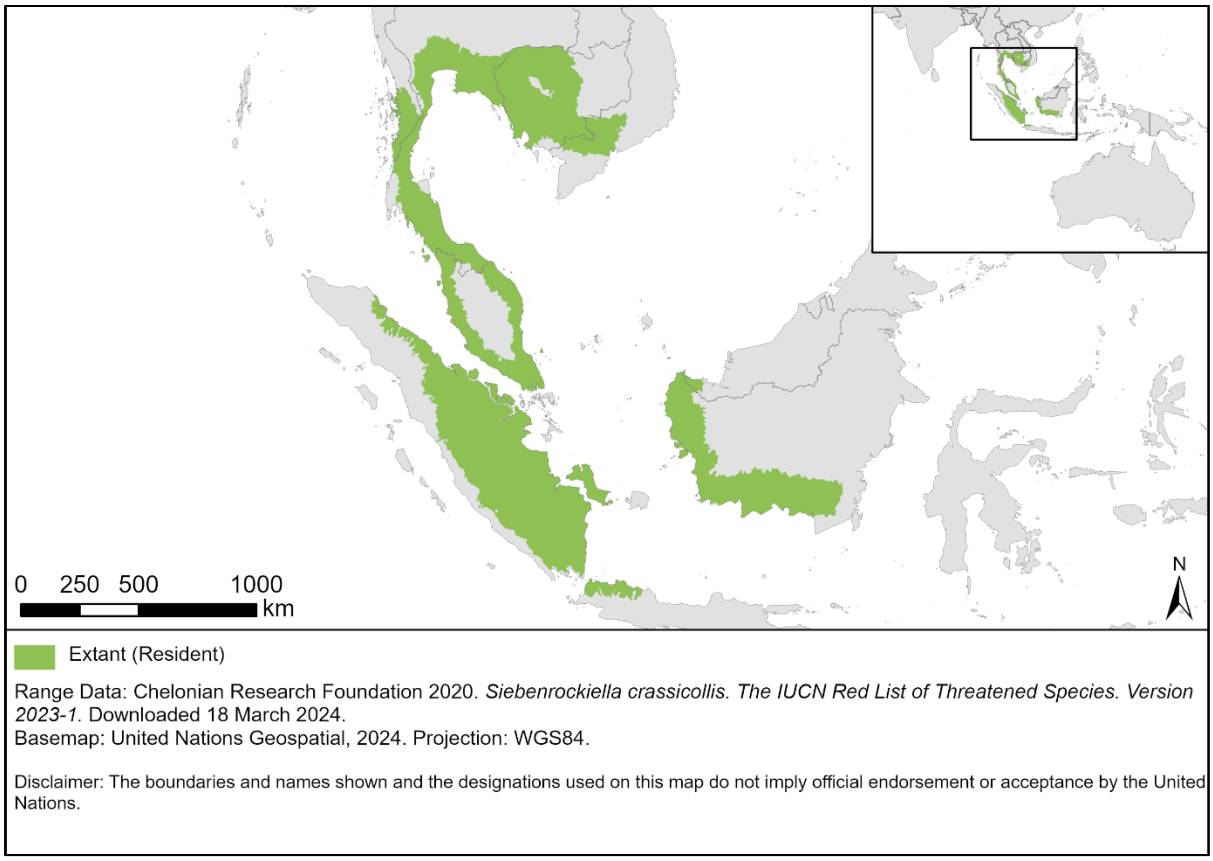

Figure 2.1: Range of *S. crassicollis*.

Population status and trends: After previously being assessed as globally Vulnerable by the IUCN in 2000, *S. crassicollis* was categorised as Endangered in 2018 (Horne *et al*., 2021), on the basis that the species was suspected to have undergone a population decline of 55% over the past three generations (54 years). Indonesia and Malaysia were described by Tana *et al.* (2000) as having the "best" global populations; in Myanmar, Thailand, Viet Nam and Cambodia the species is considered to have declined significantly or to have become very rare (Horne *et al*., 2021).

The IUCN assessment for the species, as well as the CITES Management Authority (MA) of Indonesia (*in litt.* to UNEP-WCMC, 2023), described *S. crassicollis* to be "relatively common" in Indonesia (Horne *et al*., 2021), however Samedi and Iskandar (2001) described it as "uncommon". The IUCN assessment notes that there has been a suspected population decline of c. 30% in the country, but the data this suspected decline is based on are unclear (Horne *et al*., 2021). A trapping survey conducted in 2018, in which a total of 73 traps were set in rivers and waterways in oil palm plantation areas, recorded densities of 3 ind./ha in Jambi (central-southern Sumatra) and 16 ind./ha in North Sumatra. Traps were left for 20 days in Jambi and 14 days in North Sumatra, with the total area of habitat surveyed 0.38 ha and 1.96 ha respectively (Riyanto & Mumpuni, 2018). Catch per unit effort, calculated by dividing the number of individuals caught by the product of the number of traps and the number of days they were active, was 0.12 for North Sumatra and 0.001 for Jambi; an expert considered this rate of capture to indicate that the species was "uncommon to rare" (PP. van Dijk, pers. comm. 2024). It should be noted that the traps were not randomly distributed but set by professional turtle hunters to maximise their chances of catching the species. Most individuals caught were adults (69% and 76% in Jambi and North Sumatra respectively).

Threats: Globally, the main threats faced by the species are overexploitation for national and international consumption (*S. crassicollis* is sold both as a food species and as pets, and its carapace and plastron are used in Traditional East Asian Medicine (Bonin *et al*., 2006; Chen *et al*., 2000; Compton, 2000; Fauzi *et al*., 2020; Samedi & Iskandar, 2000)), as well as habitat loss and fragmentation (mainly resulting from agricultural expansion) (Bonin *et al*., 2006; Horne *et al*., 2021). Despite the practice being reportedly prohibited, Fauzi *et al*. (2020) observed that some of the females harvested during the 2019 nesting season in Indonesia were gravid, and expressed concern about the impacts of this on the wild population. It should be noted that the removal of reproductive-age females in a long-lived, slow-maturing species is likely to have a greater impact on the population than the harvest of other demographics, due to the loss of their future reproductive output.

An online survey conducted in Indonesia over the course of three weeks in 2020 found that the species was widely sold, with most individuals being sold reported to be juveniles (Tartusi *et al*., 2020). Prices were noted to vary across the country but were most commonly IDR 100 000 to 150 000 (c. USD 6.5 – 10) (Tartusi *et al*., 2020); the price of *S. crassicollis* meat was reported to be USD 1.06/kg, which is cheaper than alternative protein sources such as chicken (Fauzi *et al*., 2020). While Indonesia was not previously thought to be a domestic consumer of *S. crassicollis* meat, Fauzi *et al*. (2020) considered domestic consumption of turtle meat to be increasing, and expressed concern that the domestic quotas in place for the species were being exceeded (see *Management* section).

Surveys conducted with turtle trade middlemen in Sampit (Central Borneo) and Palembang (South Sumatra) in April and July 2019 respectively found that 173 and 132 individuals of *S. crassicollis* were sold to middlemen during a one week period (Fauzi *et al*. 2020). The CITES MA of Indonesia (*in litt.* to UNEP-WCMC, 2023) noted that the individuals that were collected in Sampit were harvested illegally, as at the time Central Kalimantan was not included in the list of legal harvest areas for *S. crassicollis.*

Trade: *S. crassicollis* was listed in CITES Appendix II on 13 February 2003. Indonesia has submitted CITES annual reports for all years 2013-2022, and has published CITES export quotas for wild-sourced, live *S. crassicollis* for all years 2013-2023 with the exception of 2019; the quotas for the last three years (2021-2023) stipulate that the quota is for pets (Table 2.1). Trade was within quota all years 2013-2022.

Table 2.1: CITES export quotas published for wild-sourced, live *S. crassicollis* from Indonesia, 2013-2024, and global direct exports as reported by Indonesia and countries of import 2013-2022; trade data for 2023 and 2024 are not yet available. Hyphens indicate years where quotas were not published, or exporter CITES annual reports have not been received.

Wild-sourced, live specimens	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Quota	4500	4500	4500	6008	6008	4523	-	2850	2850 (pets)	2850 (pets)	2850 (pets)	-
Reported by Indonesia	1914	3662	4500	6008	5649	4417	2349	2572	2511	801	-	-
Reported by importer	208	382	1557	3838	3757	2817	204	139	203	140	-	-

Source: CITES Trade Database 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

According to the CITES Trade Database, direct trade in *S. crassicollis* from Indonesia 2013-2022 predominantly comprised live, wild-sourced individuals for commercial purposes (34 383 individuals reported by Indonesia and 13 225 individuals reported by importers), mainly to China and the United States of America (Table 2.2). In 2014, 15 000 kg of carapaces were exported to Taiwan, Province of

China; this was estimated by an expert (PP van Dijk pers. comm. 2024) to represent c. 60 000 animals, on the assumption that an adult carapace weighs 200-300 g.

Indirect trade in *S. crassicollis* originating from Indonesia 2013-2022 comprised 12 live, wild-sourced individuals in 2018 as reported by re-exporters (6 individuals according to importers), and 108 kg of wild-sourced powder in 2014 (reported by the importer only); all trade was for commercial purposes.

The European Union introduced an import suspension for the species/country combination on 10 May 2006, which is still in force.

Table 2.2: Direct exports of *S. crassicollis* from Indonesia, 2013-2022.

Term	Unit	Purpose	Source	Reported by	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
carapaces	kg	T	W	Exporter		15000									15000
				Importer											
live	number of specimens	B	W	Exporter											
				Importer										20	20
		T	W	Exporter	1914	3662	4500	6008	5649	4417	2349	2572	2511	801	34383
				Importer	208	382	1557	3838	3757	2817	204	139	203	120	13255
unspecified	number of specimens	T	W	Exporter					25						25
				Importer											

Source: CITES Trade Database 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Management:

Legislation: *S. crassicollis* is not included in Indonesia's list of protected species which cannot be traded or hunted (Government Regulation No. 7 of 1999), which was last updated in 2018. Government Regulation No. 13 of 1994 sets the regulations for hunting of unprotected wildlife, and specifies that hunting is only permitted with the issuance of a hunting license. The Decree of the Ministry of Forestry No. 447/Kpts-11/2003 states that commercial distribution is only permitted by registered domestic or international distributors. Harvesting within protected areas is prohibited under Law No. 5 of 1990.

Indonesia's national legislation is included in Category 1 in the CITES National Legislation Project (legislation that is believed generally to meet all four requirements for effective implementation of CITES).

Quotas: The CITES MA of Indonesia (*in litt.* to UNEP-WCMC, 2023) explained that the harvest of the species is managed via a quota system; quotas are set based on information on the population and distribution of the species, as well as the "level of trade activities per province, indicated by the previous year's used quota". Quotas are divided by province and managed by the local office of the MA (CITES MA of Indonesia *in litt.* to UNEP-WCMC, 2023). The facilities and employees of each domestic permit holder are registered and may be inspected by provincial field officers at any time (CITES MA of Indonesia *in litt.* to UNEP-WCMC, 2023).

The quotas issued by Indonesia for domestic consumption and export of *S. crassicollis* 2015-2023 are available within national quota books and are summarised in Table 2.3; in each case the quota was specified to be for live pets. The CITES MA of Indonesia (*in litt.* to UNEP-WCMC, 2023) confirmed that it has not established quotas for carapace trade since 2016. The quota books for 2015-2023, as well as Indonesia's 2023 NDF for the species (CITES MA of Indonesia *in litt.* to UNEP-WCMC, 2023), specify that only individuals with a straight carapace length of ≤ 15 cm may be harvested; the quota book for 2022 only states that that harvest of gravid females is prohibited. The highest quotas in 2023 were distributed to provinces in Sumatra (Table 2.4).

Table 2.3: Quotas issued by Indonesia for domestic consumption and export of *S. crassicollis* 2015-2023. Source: Ministry of Environment and Forestry (2015-2023).

Year	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total capture/take	6675	6675	6675	5025	3000	3000	3000	3000	3000
Domestic use						150	150	150	150
Export	6008	6008	6008	4523	2700	2850	2850	2850	2850

Table 2.4: Breakdown of Indonesia's 2023 quota for *S. crassicollis* by province. Source: Ministry of Environment and Forestry (2023).

Island	Province	Quota (no. live individuals)
Sumatra	North Sumatra	48
	Aceh	238
	Jambi	570
	South Sumatra	570
	Lampung	475
	Riau	475
Kalimantan	South Kalimantan	238
	East Kalimantan	238

Based on interviews with middlemen that indicated that over 100 *S. crassicollis* individuals were being harvested in Central Borneo, which at the time was reported to not have an allocated quota, Fauzi *et al.* (2020) raised concerns that the domestic harvest quota for *S. crassicollis* was being exceeded.

Population monitoring: The CITES MA of Indonesia (*in litt.* to UNEP-WCMC, 2023) noted that the three sites surveyed by Riyanto & Mumpuni (2018) in Sumatra were proposed as areas in which to carry out population monitoring, but no further information was provided. It is therefore unclear if any population monitoring has taken place or is ongoing.

Non-detriment findings: The CITES MA of Indonesia provided an NDF for the species which follows the simplified template drafted at the 2023 CITES International Workshop on NDFs held in Nairobi (see https://cites.org/eng/node/138336). The conclusion of the NDF is based on a scoring system, where annual harvest levels, area of occupancy and life-history are given a score of 1-3; an additional point is added in cases where levels of illegal trade are either known, or unknown but suspected to be detrimental.

S. crassicollis is assigned a score of 1 (low) for an average annual harvest level of less than 2000 individuals 2017-2021, a score of 1 (large) for having an area of occupancy of over 20 000 km^2 (based on an estimation of the total area of wetlands in Sumatra, Kalimantan and Java), and a score of 2 (medium) for the speed of its life history. The additional point is allocated on the basis of illegal trade reported in 2019 (see *illegal trade* section) and the species' categorisation as Endangered, giving it a total score of 5. Any score of 5 or below is considered to be non-detrimental by the draft guidance.

It should be noted that the assertion that average harvest levels 2017-2021 were below 2000 individuals is based on data held in the CITES Trade Database reported by importers only. According to Indonesia, the average number of *S. crassicollis* individuals exported over this period was c. 3500 per annum; this would change the NDF's conclusion to "the non-detriment cannot be satisfied, warranting additional information based on other indices to evaluate detriment". The distribution map shown in Figure 2.1 additionally indicates that the species does not occur in all wetlands in Java and Kalimantan, raising the possibility that the area of occupancy of the species has been overestimated. Lastly, concerns have been raised by an expert regarding the classification of the species' life history speed as 'medium' (PP van Dijk pers. comm., 2024).

Indonesia's NDF concluded that trade in *S. crassicollis* was non-detrimental, but nevertheless proposed to lower the annual export quota from 2850 to a precautionary 839 individuals for 2024 (although the NDF suggests this is a 40% decrease, it is a 70% decrease). It is unclear if any changes

are proposed to the yearly domestic quota of 150 individuals that has been in place since 2020; assuming it stays the same, this would mean a total harvest level of 989 individuals.

Protected areas: *S. crassicollis* has been reported to occur in a number of protected areas, including Karang Gading Wildlife Reserve, Kerumatan Baru Nature Reserve, Berbak National Park, Tahura Orang Kayo Hitam protected forest (all in Sumatra), Lake Sentarum Wildlife Reserve, Sebangau National Park, and Timba Raya Biodiversity Reserve (all in Borneo), and Rawa Danau Nature Reserve in Java (Samedi & Iskandar, 2000; CITES MA of Indonesia *in litt.* to UNEP-WCMC, 2023).

Illegal trade: While the TRAFFIC Wildlife Trade Portal holds eight records of seizures involving *S. crassicollis* between 2013–2023 (in Cambodia, China, Thailand, and Viet Nam), no seizures have been recorded in Indonesia (TRAFFIC International, 2023). Tartusi *et al.* (2020) noted that *S. crassicollis* were sold on a number of online platforms that had banned the sale of pets.

E. Problems identified that are not related to the implementation of Article IV, paras 2(a), 3 or 6(a).

None identified.

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Kinixys homeana: Ghana

A. Summary

CRITERIA MET:	Criterion i) trade in an endangered species and criterion v) high volume of trade in a globally threatened species.
GLOBAL STATUS:	Globally Critically Endangered (2019 assessment), based on an estimated 90% decline in suitable habitat over the past three generations (45 years), and past and projected population reductions of c. 30% per generation. *K. homeana* from all range States was previously included in the RST as a priority species for review at AC25.
GHANA: Responded to the consultation relating to the RST	*Kinixys homeana* occurs in the South of Ghana. It has been described as an increasingly uncommon species in the country and occurs at relatively low densities; surveys in two protected areas found a decrease in density from 3 individuals/ha in 2012 to 1.4 individuals/ha in 2017. Concerns have been raised regarding the possible extirpation of the species in Muni-Pomadze (a Ramsar protected site), and of large adults in a number of national parks, principally as a result of over-exploitation. The sale of *K. homeana* in bushmeat and fetish markets in Ghana was described to be widespread. Traders surveyed in June 2022 in Kumasi (south-west Ghana) reported selling an average of 104 *K. homeana* per month. Ghana has submitted annual reports for all years 2013-2022 with the exception of 2016 and 2020. Ghana's annual export quota of 340 wild-sourced *K. homeana* was published on the CITES website for the years 2014-2018, 2021, and 2023; zero quotas were also published for captive-bred and ranched specimens in 2021. Export quotas were apparently exceeded in 2018 (by 140 individuals according to Ghana) and 2021 (by 30 individuals according to Ghana, and 10 individuals according to importers). The CITES MA of Ghana stated that annual quotas for 340 wild-sourced individuals have been in place since 2000; the 2022 quota was apparently exceeded by 30 individuals according to Ghana. Direct exports 2013-2022 predominantly comprised live, wild-sourced individuals for commercial purposes (2152 individuals reported by Ghana and 1759 individuals reported by importers). Harvest of *K. homeana* is prohibited without a permit and hunting of young individuals is prohibited. There is an annual closed season for hunting and capture of wildlife (August-November), however concerns have been raised that weak law enforcement has meant that *K. homeana* has continued to be captured during this time. It should also be noted that this period does not appear to cover the breeding season for the species (December-January).
PROVISIONAL CATEGORY:	A non-detriment finding in compliance with Article IV has not been conducted for *K. homeana* in Ghana due to a lack of resources, and the basis for the establishment of an export quota of 340 wild individuals is unclear. Given that the species is Critically Endangered, local extirpations and declines have been reported, there is a high level of domestic trade, and issues relating to the enforcement of closed seasons are also apparent, categorised as **Action is needed.**

B. RST background

Kinixys homeana from all range States was previously included in the RST as a priority species for review at AC25 (AC25 Summary Record). The inclusion was based on the analysis provided in AC25 Doc. 9.6 and its Annexes, which noted that *K. homeana* met a high-volume trade threshold for a globally threatened species in 2008 and 2009.

No response was received from Ghana at AC26 (AC26 Doc. 12.3); the species/country combination was therefore retained in the review (AC26 Summary Record). Ghana was subsequently removed from the process "in agreement with the AC, although trade was reported from the country" (AC27 Doc. 12.4 (Rev. 1)); no further detail on the justification for its removal could be found.

C. Species characteristics

Biology: *K. homeana* (Home's hinge-backed tortoise) is a small to medium-sized tortoise, with a carapace length of up to 22 cm, that inhabits lowland evergreen forests in West Africa (Luiselli & Diagne, 2013). The species prefers moist forests that provide closed canopy and shady microhabitats which help it avoid overheating (Luiselli, 2005; Mifsud & Stapleton, 2014), but it is also associated with streams and swampy habitats (Branch, 2008). Luiselli (2003) reported that the species can be found in patches of dense vegetation in areas where it is hunted, but that it occupies more varied habitats in areas where it is protected from hunting. Patches of forest that are interconnected by floods during the wet season have been identified as particularly important habitat for the species, as *K. homeana* uses these flooded areas to move from site to site (Luiselli *et al*., 2016). In regions where primary forests have been cleared, the species has been shown to inhabit mature secondary forests/swamp forests (Luiselli *et al*., 2000).

The ecology and life history of *K. homeana* is poorly known, partially due to the species being relatively inactive and difficult to observe (Harwood, 2003). In the forests of the Niger River Delta, southern Nigeria, *K. homeana* exhibits an omnivorous, generalist diet that includes plant material, fungi, oligochaeta, gastropods and various arthropods (Luiselli, 2006). It can also feed on frogs and carrion (Branch, 2008). The age at maturity for this species is unknown but has been estimated at 10 years based on experience in captivity and data available for other forest tortoises; generation time in the wild has been assessed at 15 to 20 years, based on the estimate of the age of maturity above and an estimated longevity (in captivity) of 60 years (Luiselli *et al*., 2021). *K. homeana* produces clutches of 2-4 eggs up to two times per year, generally during the dry season in December and January (Blackwell, 1968 *in* Luiselli *et al*., 2021).

D. Country reviews

Ghana

Distribution: The global distribution of *K. homeana* extends across the coastal regions of the Gulf of Guinea and the continuous Guinea-Congo West Africa rainforest region, spanning from Liberia in the west to Cameroon in the east (Luiselli *et al*., 2021; Figure 3.1). The most recent calculations by Luiselli *et al.* (2021) estimated a global extent of occurrence of 867 000 km^2, but an estimated area of occupancy of only 43 500 km^2. Luiselli *et al.* (2021) noted that many subpopulations of the species are isolated, and that the range of the species in general is severely fragmented.

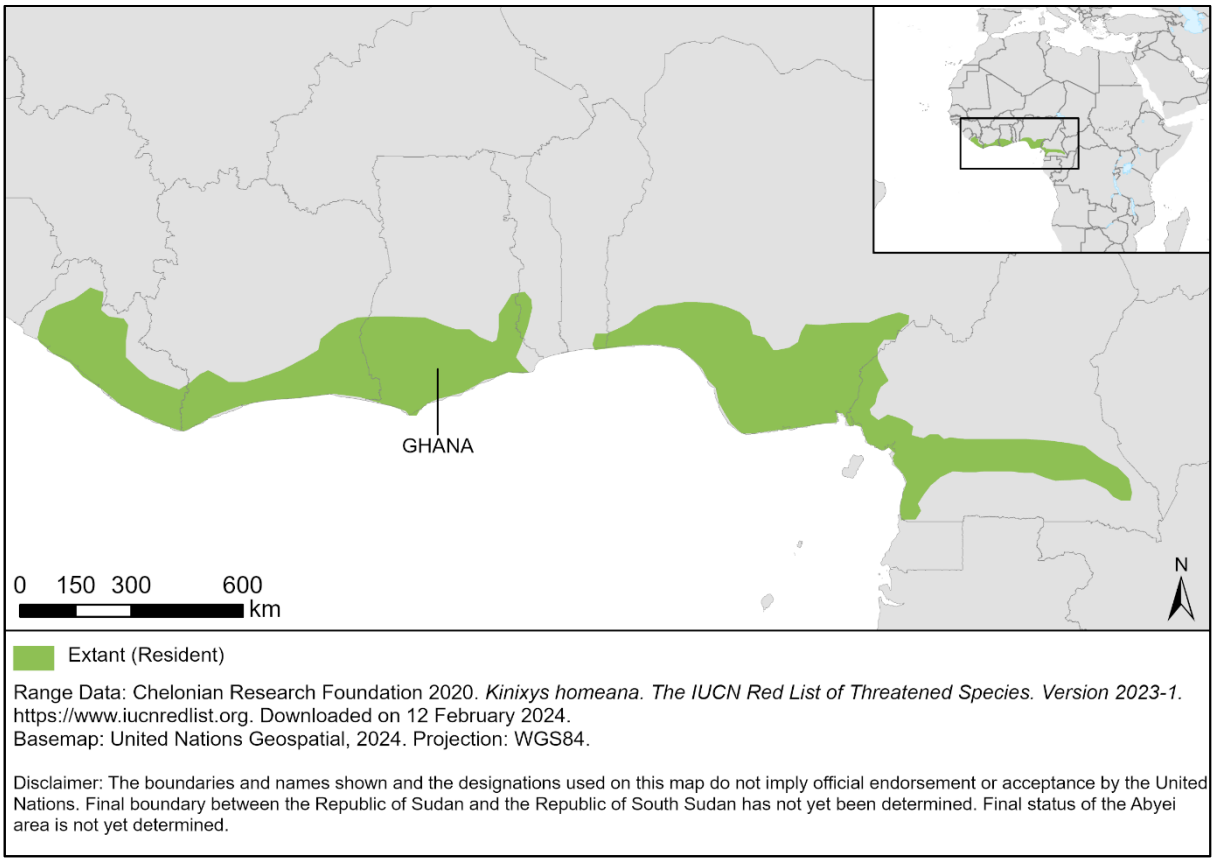

Figure 3.1: Range of *K. homeana*.

In Ghana, *K. homeana* is limited to the south of the country (Figure 3.1) (Luiselli *et al*., 2006, 2021; CITES MA of Ghana *in litt.* to UNEP-WCMC, 2023). There are records of the species in tropical forest-grassy vegetation mosaic surrounding Koforidua, Accra and Cape Coast (Luiselli *et al*., 2008, 2021), including the Muni-Pomadze Lagoon (a Ramsar protected site), and in Kakum National Park and the Pra Suhein Forest Reserve (Luiselli *et al*., 2021). However, the populations at Muni-Pomadze may no longer exist, and the populations at Kakum National Park and Pra Suhein Forest Reserve were reported to have lost all large adults due to intensive poaching and hunting (Luiselli *et al*., 2021).

Population status and trends: After previously being assessed as Vulnerable by the IUCN in 2006, *K. homeana* was categorised as Critically Endangered in 2019 (Luiselli *et al*., 2021). This was based on an estimated 90% decline in suitable habitat over the past three generations (45 years), and past and projected population reductions of c. 30% per generation (estimated at 15 years).

Luiselli *et al.* (2006) estimated the global population of *K. homeana* to be "at best" 4 205 000 individuals; this was calculated assuming a density of 0.53 individuals/ha (representing the average density for *K. homeana* in hunted areas in Nigeria, see Luiselli (2003)) across the entire species range. However, there is widespread evidence that the current population figure is far lower, due to a combination of habitat loss and hunting (Branch, 2008; Luiselli & Diagne, 2013). Field surveys of bushmeat markets across the Niger Delta conducted in 1996-2002 and 2011-2012 revealed a collapse of trade in *K. homeana* with 95% fewer specimens recorded during the later surveys (Luiselli *et al*., 2013).

Although *K. homeana* is thought to naturally occur at low densities, even in highly suitable environments, the IUCN assessment for the species considers it to have become "increasingly

uncommon" in Ghana (Luiselli *et al*., 2021). This is based on a long-term study in Kakum National Park and Pra Suhein Forest Reserve (Allman and Agyekumhene unpubl.data in Luiselli *et al*. 2021), which found that both sites appear to have lost all their large adults due to "intense poaching and hunting"; collectors have also reported increasing difficulty in finding individuals. Recorded densities during field searches at these two sites decreased from 3 individuals/ha in 2012 to 1.4 individuals/ha in 2017 (Allman and Agyekumhene unpubl.data in Luiselli *et al*. 2021). Intensive surveys in Muni-Pomadze, a site where the species had previously been recorded, failed to find any specimens, indicating that the population may have been extirpated (Luiselli *et al*., 2021).

Threats: The principal threats to *K. homeana* populations (with the estimated percentage involvement of the threat in driving the species towards extinction) were reported as: habitat loss (50%), local consumption as bushmeat (40%), and exploitation for the international pet trade (10%) (Luiselli *et al*., 2021). The species is also potentially vulnerable to the impacts of climate change and forest fires (Mifsud & Stapleton, 2014), but little research has examined these threats in detail. The CITES MA of Ghana (*in litt.* to UNEP-WCMC, 2023) considered that habitat loss, due to deforestation and agricultural expansion, was the most significant threat to *K. homeana* in the country.

The sale of *K. homeana* in bushmeat and fetish markets in Ghana was described by Adomako *et al.* (2022) to be widespread. Surveys conducted in June 2022 in Kumasi (south-west Ghana) found that 580 specimens of *K. homeana* were stocked by ten traders, which were mainly sold as shells (used for traditional medicine) and live individuals (Adomako *et al*., 2022). *K. homeana* was reported to be the most traded species of tortoise, with traders reporting that they sold an average of 104 *K. homeana* individuals per month. The average price for a *Kinixys* tortoise was reported to range from 30 GHC to 100 GHC (c. 2- 8 USD) (Adomako *et al*., 2022). All traders interviewed reported that they purchased *Kinixys* within Ghana (Adomako *et al*., 2022).

K. homeana is also considered difficult to keep in captivity; high mortality of the species in captivity has been observed and linked to parasitic infections or inadequate environmental conditions (Farkas & Sátorhelyi, 2006).

Trade: *K. homeana* was listed in CITES Appendix II on 1 July 1975 as part of the genus listing for *Kinixys* spp., and then included in the family listing for Testudinidae spp. on 4 February 1977. Ghana has submitted CITES annual reports for all years 2013-2022 with the exception of 2016 and 2020, which had not yet been received at the time of writing. According to the CITES website, Ghana has published export quotas for wild-sourced *K. homeana* for the years 2014-2018, 2021, and 2023 (Table 3.1). However, the MA of Ghana (*in litt.* to UNEP-WCMC 2023) stated that a quota for 340 wild-sourced individuals has been in place annually since 2000. Zero quotas for captive-bred and ranched specimens of *K. homeana* were additionally published in 2021.

Direct exports appear to have exceeded the quotas for wild-sourced specimens published on the CITES website for 2018 and 2021, as well as the 2022 quota confirmed by the CITES MA of Ghana, as reported by Ghana only; the quota for 2021 was also exceeded according to importers. The MA of Ghana (*in litt.* to UNEP-WCMC 2023) provided explanations for several reporting inaccuracies in their annual reports that have since been updated in the CITES Trade Database; however, quota excesses in the three aforementioned years were still apparent[10].The zero quotas published for captive-bred and ranched specimens in 2021 do not appear to have been exceeded.

[10] UNEP-WCMC has contacted the CITES MA of Ghana regarding further clarifications, but a reply had not been received at the time of writing.

Table 3.1: CITES export quotas published for wild-sourced *K. homeana* from Ghana, 2013-2024, and global direct exports as reported by Ghana and countries of import 2013-2022. Hyphens indicate years where quotas were not published, or exporter CITES annual reports have not yet been received; trade data for 2023 and 2024 are not yet available. Apparent quota excesses are indicated by **bolded** quantities.

Wild-sourced specimens	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Quotas according to the CITES website	-	340	340	340	340	340	-	-	340	-	340	-
Quotas according to CITES MA of Ghana	340	340	340	340	340	340	340	340	340	340	340	-
Reported by Ghana	199	89	204	-	295	**480**	205	-	**370**	**370**	-	-
Reported by importer	148	79	117	140	90	65	341	130	**350**	299		

Source: CITES Trade Database, 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

According to the CITES Trade Database, direct trade in *K. homeana* from Ghana 2013-2022 predominantly comprised live wild-sourced individuals for commercial purposes (2152 individuals reported by Ghana and 1759 individuals reported by importers; Table 3.2), mainly exported to the United States of America. Sixty live wild-sourced individuals were also reported by Ghana without a purpose specified. Trade levels in wild-sourced individuals have fluctuated over this period but peaked in 2018 according to Ghana. Smaller numbers of live captive-bred (40 individuals reported by importers only) and ranched (55 individuals reported by Ghana, 78 according to importers) specimens were also traded 2013-2022, all for commercial purposes.

Indirect trade in *K. homeana* originating from Ghana mainly comprised 44 live wild-sourced specimens for commercial purposes according to re-exporters, with the majority re-exported by Togo (Table 3.3).

Table 3.2: Direct exports of *K. homeana* from Ghana, 2013-2022. Hyphens indicate years where exporter CITES annual reports have not yet been received.

Term	Unit	Purpose	Source	Reported by	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
live	number of specimens	T	C	Exporter				-				-			
				Importer	40										40
			R	Exporter			55	-				-			55
				Importer			48				30				78
			W	Exporter	199	89	204	-	295	470	205	-	370	320	2152
				Importer	148	79	117	140	90	65	341	130	350	299	1759
		-	W	Exporter				-		10		-		50	60
				Importer											

Source: CITES Trade Database 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Table 3.3: Indirect trade in *K. homeana* originating from Ghana, 2013-2022.

Term	Unit	Purpose	Source	Reported by	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
live	number of specimens	B	W	Exporter			1								1
				Importer											
		T	C	Exporter							6				6
				Importer											
			W	Exporter					19		19			6	44
				Importer											
		Z	W	Exporter											
				Importer			1								1

Source: CITES Trade Database 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Management:

Legislation: *Kinixys* spp. are listed in the second schedule of Ghana's Wildlife Conservation Regulations 1971; the hunting, capture or destruction of any species in this schedule is strictly prohibited between 1 August and 1 December. Hunting, capture or destruction of any young animal or adult accompanied by its young of second schedule species is also prohibited at all times (Wildlife Conservation Regulations 1971; note that these do not provide a definition for 'young'). The Wildlife Reserves Regulations 1971 additionally stipulate that harvest, capture or destruction of any animal within a wildlife reserve is prohibited; exceptions can only be given for "conservation and management purposes".

Adomako *et al.* (2022) reported that weak law enforcement meant that *K. homeana* continued to be captured during the closed season described above. Note also that this time period does not appear to cover the breeding season for *K. homeana*, which was reported to occur December-January (see *Biology* section).

Ghana's national legislation is included in Category 3 in the CITES National Legislation Project (legislation that is believed generally not to meet any of the four requirements for effective implementation of CITES). The most recent legislative status table (updated November 2023) noted that a bill had been through a second reading in Parliament; next steps included enactment and submission to the Secretariat for analysis. The MA of Ghana (*in litt.* to UNEP-WCMC, 2023) confirmed that the Wildlife Resources Management Bill was passed into law in July 2023 and is pending presidential approval. Ghana noted that this will continue to protect *K. homeana* and will prohibit harvesting of the species without a valid permit (MA of Ghana *in litt.* to UNEP-WCMC, 2023).

Non-detriment findings: The CITES MA of Ghana (*in litt.* to UNEP-WCMC, 2023) noted that a non-detriment finding has not yet been conducted for *K. homeana* due to a lack of resources, however several institutions were currently researching the species. The MA noted that trade in *K. homeana* is monitored closely through the issuance of permits, but no further details were provided.

Protected areas: Although the species has been observed in Kakum National Park and the Pra Suhein Forest Reserve, these populations were reported to have lost all large adults due to intensive poaching and hunting (Luiselli *et al.*, 2021).

Illegal trade: No seizures involving *K. homeana* were reported within the TRAFFIC Wildlife Trade Portal 2013–2023; the only reported seizure of the species globally recorded in the portal was of 98 live individuals seized at Brussels Airport that originated from Togo (TRAFFIC International, 2023). A

compilation of seizure records contained in CoP17 Doc. 63 (derived from, *inter alia*, the UNODC database of wildlife seizures, the TRAFFIC Bulletin, Robin des Bois' *On The Trai*l and media reports) documented 671 live *K. homeana* seized between 2000-2015 across 15 cases, as well as three seizures of parts and derivatives, although the provenance or locations of these seizures was not provided. Harrington *et al*. (2021) noted the possibility that traders may be exporting *K. homeana* from Ghana in order to circumvent zero export quotas for the species in Togo.

E. Problems identified that are not related to the implementation of Article IV, paras 2(a), 3 or 6(a).

Application of source codes

Concerns were raised in the recent IUCN assessment for the species regarding whether all specimens traded as source R or C were truly ranched or captive-bred (Luiselli *et al*., 2021). The assessment noted that there are no known facilities legitimately using ranching as a production system for the species in West and Central Africa, and that visits to two tortoise facilities in the Accra region suggested that they were only producing *Centrochelys sulcata* (Allman and Agyekumhene unpubl. data in Luiselli *et al*., 2021).

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Testudo horsfieldii: Uzbekistan

A. Summary

CRITERIA MET:	Criterion v) high volume of trade in a globally threatened species.
GLOBAL STATUS:	Globally Vulnerable (1996 assessment) on the basis of a population reduction of ≥30% as a result of overexploitation. The IUCN Red List assessment is annotated as 'needs updating'.
UZBEKISTAN: Responded to the consultation relating to the RST	*T. horsfieldii* is widespread but is unevenly distributed in Uzbekistan. The population was estimated at 20 million individuals but the data for this figure are over 30 years old; the population overall is declining primarily due to legal and illegal collection for the pet trade. Long-term monitoring of the species has been conducted since 2000, with systematic surveys conducted since 2011. Population densities generally range from 150-200 individuals/km^2. Uzbekistan has submitted annual reports for all years 2013-2022. The country published annual CITES export quotas for live wild-sourced (up to 85 000) and ranched (up to 50 000) *T. horsfieldii* for the years 2013-2022. Export quotas for live captive-produced specimens (sources C and F) have also been published. Direct exports 2013-2022 mainly comprised 361 266 wild-sourced, 248 663 ranched, and 233 670 captive-born (source F) live individuals for commercial purposes according to Uzbekistan (336 928, 200 961, and 141 275 live individuals, respectively, as reported by importers). Quotas for each source appear to have been exceeded for several years, according to both exporter- and importer-reported data. Uzbekistan reported that no harvest of wild specimens for export, or of eggs or juveniles for ranching, has taken place since 2020. However, the country exported high volumes of wild-sourced and ranched specimens in all years 2020-2022 (though decreasing over time), and published export quotas for source W and R 2020-2022. A shift in export source codes from ranched and wild specimens to source F/C specimens has been observed from 2019-onward, and accordingly, Uzbekistan was included in Res. Conf. 17.7 (Rev. CoP19) at AC32. *T. horsfieldii* is listed in Uzbekistan's Red book of wild animals; as such, any act that may lead to the death or decline of the species or the destruction of its habitat is prohibited by legislation.
PROVISIONAL CATEGORY:	On the basis that no legal export of wild or ranched specimens is anticipated, and conditional upon the annual publication of a zero quota on the CITES website for source W and R, categorised as **Less concern.** Uzbekistan could be asked to clarify why there were high levels of exports of wild-sourced specimens reported in 2020 and 2021 (years in which harvest from the wild was reported to have stopped), and could also be requested to provide information on the level of offtake from the wild to supplement captive breeding operations.

B. RST background

T. horsfieldii from all range States with the exclusion of China was previously selected for review following CoP14, on the basis that the species was heavily traded (AC23 Summary record). All countries were retained in the process at AC24 (AC24 Summary record) and reviewed for AC25 (AC24 Doc.7.4 (Rev. 1); AC25 Doc. 9.4 Annex). *T. horsfieldii* from Uzbekistan was categorised as of 'possible concern' as specific information on the basis for a non-detriment finding (NDF) for its high quotas was not provided, and the impacts of trade (legal and illegal) were unknown (AC25 Doc. 9.4 Annex; AC25 Summary record). The following recommendations were issued: a) to provide the justification and scientific basis for establishing that the quotas were not detrimental to the survival of the species, taking into account any potential unregulated and/or illegal offtake and trade and b) to provide additional information on how the impact of ranching operations on wild populations was assessed (AC25 Summary record). The Scientific Authority (SA) of Uzbekistan visited the Secretariat in December 2011 to convey information concerning *T. horsfieldii* in response to the recommendations of the AC (AC26 Doc. 12.2). The Secretariat and AC concluded that Uzbekistan had complied with the recommendations and the species was therefore removed from the process at SC62 (SC62 Doc. 27.1 (Rev. 1).

In addition to being included for a second time in Stage 2 of the RST at AC32, the species/country combination was also included in the *Review of trade in animal specimens reported as produced in captivity* (Res. Conf. 17.7 (Rev. CoP19)) at the same meeting. Two criteria were met: ii) significant volume and iii) source code shift (R-CDF 2020; R-CDF 2019).

C. Species characteristics

Taxonomy: *T. horsfieldii* has been variably assigned to *Testudo* or *Agrionemys* (see Fritz and Bininda-Emonds, 2007 and Rhodin *et al.*, 2021), with the genetic evidence for its inclusion in either genus subject to debate (Rhodin *et al.*, 2021). The taxonomy of the species remains in a state of flux; several subspecies of *horsfieldii* (such as *kazachstanica* and *rustamovi*) were elevated as species by Perälä (2001) and several new taxa were described by Chkhikvadze and colleagues (as described in Rhodin *et al.*, 2021). The arrangement of a single species with several subspecies is retained by Rhodin *et al.* (2021), although the authors anticipate further changes to the taxonomy to occur in the future. The current CITES standard nomenclature reference for the species (Fritz & Havaš, 2007) refers to the species as *Testudo horsfieldii* with *horsfieldii*, *kazachstanica*, and *rustamovi* as subspecies.

Biology: *T. horsfieldii* (Central Asian tortoise) is a small-to-medium sized tortoise that is predominantly found in sandy or loamy steppes, and rocky and hilly terrain (Anderson Cohen, 1994; Highfield, 1992). It is frequently found near springs and brooks in these arid habitats (Anderson Cohen, 1994; Highfield, 1992) in tunnels up to two metres long (Mylnarski & Wermuth, 1971 in Highfield, 1992) or in abandoned hedgehog and rodent burrows (Highfield, 1992). Densities vary across habitat types (Bondarenko & Peregontsev, 2006), and may vary widely as a result of seasonal aggregations (PP van Dijk, pers. comm. 2024). The altitude at which *T. horsfieldii* are reported to be found varies in the literature; Highfield (1992) noted a typical altitude range for the species of 800-1600 m, while Bondarenko & Peregontsev (2006) stated that the species was rarely found at altitudes exceeding 1100-1200 m, with the highest densities found in desert biomes of 300-800 m. Low-lying cultivated land is not known to be suitable for *T. horsfieldii*, however a few small isolated populations have been found in irrigated landscapes in southeastern Uzbekistan (Bondarenko & Peregontsev, 2006).

The species has short periods of peak activity (Theile, 2000), with the breeding season typically falling March-June, immediately after hibernation (Terentjef & Chernov, 1949 in Highfield, 1992). Averaging 15-25 cm carapace length (Theile, 2000), male *T. horsfieldii* are typically smaller than females (Lee & Smith, 2010), with the maximum size attained at 19 cm straight carapace length (SCL) in males and 28.6 cm in females (Rhodin *et al.*, 2021). *T. horsfieldii*, like other species in the genus, is slow to reproduce, as individuals reach reproductive maturity at seven to 12 years (Lee & Smith, 2010; Roberts, 1975 in Highfield, 1992; Terentjef & Chernov, 1949 in Highfield, 1992), corresponding to 10-11 cm in males and 13-14 cm in females[11] (Chernov, 1959 in Lee & Smith, 2010).

Females lay 3-12 eggs (Lee & Smith, 2010) in 2-4 clutches per year (Highfield, 1992; Theile, 2000), but these estimates are likely to be based on captive-bred animals; in the wild, multiple clutches per year are considered unlikely due to the species' short activity period (PP Van Dijk, pers. comm. 2024). The CITES Management Authority (MA) of Uzbekistan (*in litt*. to UNEP-WCMC, 2023) reported 1-16 eggs in a clutch with often only one clutch laid per year. The eggs incubate for 80-110 days in the wild (Anderson Cohen, 1994) with hatching rates ranging from 60-92% (CITES MA of Uzbekistan *in litt*. to UNEP-WCMC, 2023). The CITES MA of Uzbekistan (*in litt*. to UNEP-WCMC, 2023) reported that 97-99% of individuals in the wild do not survive to reach reproductive maturity.

D. Country reviews

Uzbekistan

Distribution: *T. horsfieldii* has a widespread distribution across Central Asia (Rhodin *et al.*, 2021; Figure 4.1). The species' historic native range was estimated to be 1 662 984 km^2 (Rhodin *et al.*, 2021), but no current estimates of its extent of occurrence or area of occupancy could be located.

T. horsfieldii is widespread in Uzbekistan, occurring in the desert plains along and to the north, west and south of the Southern Tien-Shan Mountains, as well as the foothills of the Western Tien-Shan Mountains bordering Kyrgyzstan (Bondarenko & Peregontsev, 2017). Approximately 300 000 km^2 (67% of Uzbekistan's land area) is described as suitable habitat for the species, however it is unevenly distributed within this area (Bondarenko & Peregontsev, 2017).

[11] Assumed to be SCL, however the original reference could not be consulted to clarify.

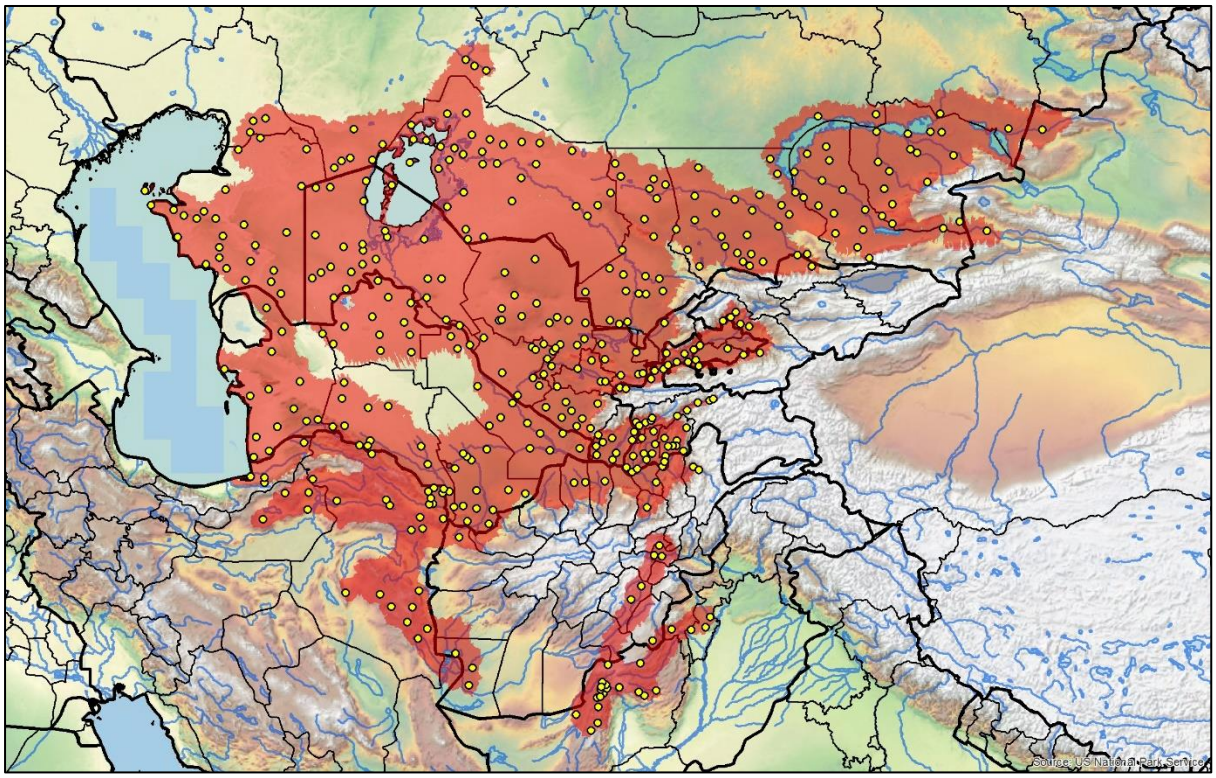

Figure 4.1: Distribution of *T. horsfieldii* (modified from Rhodin *et al.*, (2021) by the Chelonian Research Foundation 2023; reproduced with permission). The boundaries and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Population status and trends: *T. horsfieldii* was categorised globally as Vulnerable in a 1996 IUCN Red List assessment, which has been annotated as "Needs updating" (Tortoise & Freshwater Turtle Specialist Group, 1996). Although no detailed justification is given, the assessment was made on the basis of a population reduction of ≥30% as a result of overexploitation. The population trend for the species was unspecified (Tortoise & Freshwater Turtle Specialist Group, 1996).

The CITES MA of Uzbekistan (*in litt*. to UNEP-WCMC, 2023) reported that the estimated population of *T. horsfieldii* in Uzbekistan is 20 million individuals. However, the basis of this estimate are data from a 1992 cadastral directory (a registry of the extent, value and ownership of lands that could include additional property information); no further details were provided. The population of *T. horsfieldii* was reported to be declining overall (Bondarenko & Peregontsev, 2017; Nuridjanov *et al.*, 2016), although Bondarenko and Peregontsev (2017) noted that populations in desert landscapes were stable and not threatened. Long-term monitoring of *T. horsfieldii* populations at two principal harvesting locations in the Navoiy Region, at the foothills of Nuratau Ridge and in the southern Kyzylkum desert, found population declines (of an unspecified magnitude) in both locations between 1998 and 2018 (Bondarenko, 2022).

The species was reported to have an estimated average population density of 150-250 individuals/km^2 within its primary habitat (CITES MA of Uzbekistan *in litt*. to UNEP-WCMC, 2023), although in SC62 Doc. 27.1 (Rev. 1) typical densities were reported by Uzbekistan to be 0.001-3 individuals/ha (equivalent to 0.1-300 individuals/km^2) in unsuitable habitat, and 50-70 individuals/ha (equivalent to 5000-7000 individuals/km^2) in highly suitable habitat. Most of the population was reported to be found in three areas; the estimated populations and densities in these areas are outlined in Table 4.1. The Navoiy region had the highest densities of *T. horsfieldii* with up to 20 000 individuals/ km^2 and an estimated population of 12 million (CITES MA of Uzbekistan *in litt*. to UNEP-

WCMC, 2023). For most of the species' range however, the population density did not exceed 150-300 individuals/km^2 (Bondarenko & Peregontsev, 2017; Nuridjanov *et al.*, 2016), with densities exceeding 1000 individuals/km^2 only found in 0.6% (approximately 1800 km^2) of the species' habitat (Bondarenko & Peregontsev, 2017).

Table 4.1. Population estimates of *T. horsfieldii* within three areas of Uzbekistan. Source: CITES MA of Uzbekistan *in litt*. to UNEP-WCMC, 2023.

Region	Area (km^2)	Density (Individuals per km^2)	Estimated population (No. of individuals)
Navoiy region			
Tamdy district	300	5000-6000	1.5 -1.8 million
Nurata district	400	3200-6400	1.28-2.56 million
Samarkand region			
Nurabad	500	580-2800	290 000-1.4 million

Threats: Several studies have reported the primary threat to the species to be harvest of individuals, both legal and illegal, predominantly for the international pet trade (Bondarenko & Peregontsev, 2017; Nuridjanov *et al.*, 2016). According to data reported by Uzbekistan in the CITES Trade Database, the country accounted for almost all (>99%) global exports of wild-sourced and ranched *T. horsfieldii* for 2013-2022.

T. horsfieldii was also reported to be threatened by habitat loss, modification and fragmentation due to agricultural activities, urban development, and construction of wind farms, solar farms, and reservoirs (Bondarenko & Peregontsev, 2017; T. Abduraupov pers. comm. 2024); however, the CITES MA of Uzbekistan (*in litt*. to UNEP-WCMC, 2023) noted that this occurs at a very small scale, while Bondarenko & Peregontsev (2017) did not consider it to be a current threat to the species. Bondarenko (2022) also noted that poachers' preference for smaller specimens (<= 12 cm) had potentially resulted in disruption to the age and sex structure of *T. horsfieldii* populations in Uzbekistan (males are smaller than females and are thus preferentially targeted).

The combination of long-term high-levels of offtake and human development between 2000 and 2015 was reported by Nuridjanov *et al.* (2016) to have led to decline and extirpation of the species in some areas in Uzbekistan.

T. horsfieldii was also reported to be threatened by predation as well as the herpes virus that affects several populations of the species (CITES MA of Uzbekistan *in litt*. to UNEP-WCMC, 2023).

Trade: *T. horsfieldii* was first listed in CITES Appendix II on 1 July 1975 as part of the genus listing for *Testudo* spp.; it was subsequently included in the family listing for Testudinidae spp. on 4 February 1977.

Uzbekistan has submitted all annual reports to CITES for the period 2013-2022. Uzbekistan has published annual export quotas for wild and ranched specimens for all years 2013-2022 (Tables 4.2-4.3), and for captive-bred (source C) and captive born (source F[12]) specimens for the years 2015-2022 and 2017-2022, respectively (Tables 4.4-4.5). Uzbekistan additionally published an export quota for 960 seized wild specimens traded for commercial purposes in 2021. Direct exports as reported by Uzbekistan appear to have exceeded the wild-sourced quota in four years, the ranched quota in four

[12] Animals born in captivity (F1 or subsequent generations) that do not fulfil the definition of 'bred in captivity' in Resolution Conf. 10.16 (Rev.), as well as parts and derivatives thereof.

years, the captive-bred (source C) quota in one year, and the captive-born (source F) quota in two years (Tables 4.2-4.5). Adjusted annual totals based on quota years noted in the remarks of Uzbekistan's annual reports indicate a reduction in the number of years with apparent quota excesses for wild-sourced quotas (from four years to the year 2020 only); adjusted annual totals did not change the number of years with potential quota excess for the other sources, though a shift in years for the apparent ranched excesses was suggested. Importers reported apparent quota excesses in three years each for wild-sourced and ranched specimens, and one year each for captive-bred and captive-born specimens (Tables 4.2-4.5).

According to the CITES Trade Database, direct trade in *T. horsfieldii* from Uzbekistan 2013-2022 consisted almost entirely of 919 339 live individuals from mostly wild-sourced (39%), ranched (27%), and captive-born (source F) (25%) sources as reported by Uzbekistan (730 735 live individuals with similar proportions by source reported by importers). According to Uzbekistan, the main importers of live *T. horsfieldii* from all sources over this period were the United States of America (hereafter US) (33%), Italy (19%), the United Kingdom of Great Britain and Northern Ireland (12%), and Germany (12%); these importers varied in their relative proportions of imports from different sources, with the US accounting for 50% of wild-sourced trade.

Direct trade in live wild-sourced *T. horsfieldii* fluctuated 2013-2022, and peaked in 2016 according to Uzbekistan (61 300 individuals) and in 2018 according to importers (51 753). Trade subsequently declined, with the lowest trade in wild-sourced individuals reported in 2022 by Uzbekistan and importers (3700 and 5200 individuals, respectively; Table 4.6). Direct trade in live ranched individuals peaked in 2014 according to Uzbekistan and in 2015 as reported by importers then declined to the lowest reported level in 2022 as reported by both Uzbekistan and importers. Direct trade in captive-bred live individuals peaked in 2017 according to both Uzbekistan and importers. Direct trade in captive-born live individuals has only been reported since 2017 and peaked in 2022 according to both Uzbekistan and importers.

There has been a shift in exports of live *T. horsfieldii* from ranched and wild sources to captive-born (source F) individuals since 2019, according to both Uzbekistan and importers. As reported by Uzbekistan, exports of ranched and wild-sourced individuals declined by 59% and 42%, respectively between 2018 and 2019, and exports of captive-born individuals tripled after the first year of reported trade and then increased annually by 44%-64% compared to the previous year 2019-2022 (Table 4.6).

The MA of Uzbekistan (*in litt*. to UNEP-WCMC, 2023) noted that permits are issued multiple times for the same shipments, due to expiration and changes to recipient information, and this could explain the large discrepancies in trade volumes reported by Uzbekistan and importers[13].

Indirect trade in *T. horsfieldii* originating in Uzbekistan 2013-2022 almost entirely comprised lower levels of wild-sourced, ranched, captive-bred, and captive-born live animals traded predominantly for commercial purposes (Table 4.7). Hong Kong Special Administrative Region of China was the main re-exporter of live *T. horsfieldii*, accounting for approximately 33% of these re-exports, as reported by re-exporters.

[13] Where information on replaced or cancelled permits is provided in annual reports, this is taken into account in management of the CITES Trade Database; issued permits that were subsequently reported as unused are removed from the database.

Table 4.2. CITES export quotas published for live **wild** *T. horsfieldii* from Uzbekistan, 2013-2024, and global direct exports of live wild-sourced individuals as reported by Uzbekistan and importers, 2013-2022; trade data for 2023 and 2024 are not yet available. Hyphens indicate years where quotas were not published. Apparent quota excesses are indicated by **bolded** quantities; adjusted quantities based on permit analysis of exporter-reported data are also provided.

Wild	2013	2014	2015	2016	2017	2018	2019	2020*	2021*^	2022*	2023	2024
Quota	45000	50000	50000	80000	85000	30000	27000	14458	109	6728	-	-
Reported by Uzbekistan	41835	49223	45766	61300	42232	**55831**	**32329**	**21648**	**7400**	3700	-	-
Reported by Uzbekistan (adjusted total)	*41835*	*49923*	*45066*	*74856*	*75234*	*25701*	*20701*	***16848***	*7400*	*3700*	-	-
Reported by importer	42163	43194	49975	50772	25349	**51753**	**38999**	20898	**8625**	5200	-	-

*Quotas published 2020-2022 were specified for commercial purposes only and trade quantities presented for these years are limited to this purpose.
^An additional 2021 quota was published for 960 seized wild specimens traded for commercial purposes.
Source: CITES Trade Database, 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Table 4.3. CITES export quotas published for live **ranched** *T. horsfieldii* from Uzbekistan, 2013-2024, and global direct exports of live ranched individuals as reported by Uzbekistan and importers, 2013-2022; trade data for 2023 and 2024 are not yet available. Hyphens indicate years where quotas were not published. Apparent quota excesses are indicated by **bolded** quantities; adjusted quantities based on permit analysis of exporter-reported data are also provided.

Ranched	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Quota	45000	50000	45000	20000	31300	41650	10000	17100	7125	300	-	-
Reported by Uzbekistan	30900	49702	42881	17200	**34500**	28425	**11600**	13950	**11600**	**7925**	-	-
Reported by Uzbekistan (adjusted total)	*30900*	***54702***	*39381*	*20000*	***31900***	*34825*	*8500*	*9450*	***11600***	***7925***	-	-
Reported by importer	35131	35950	36391	16186	22694	16635	**10799**	11150	**10600**	**5425**	**-**	**-**

Source: CITES Trade Database, 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Table 4.4. CITES export quotas published for live **captive-bred** (source C) *T. horsfieldii* from Uzbekistan, 2013-2024, and global direct exports of live captive-bred individuals as reported by Uzbekistan and importers, 2013-2022; trade data for 2023 and 2024 are not yet available. Apparent quota excesses are indicated by **bolded** quantities; adjusted quantities based on permit analysis of exporter-reported data are also provided.

Captive-bred	2013	2014	2015	2016	2017	2018	2019	2020*	2021	2022	2023	2024
Quota	-	-	5000	15500	30600	11500	11000	6000	2500	10021	-	-
Reported by Uzbekistan		1	4500	8800	16100	8402	4750	4500	**6000**	7000	-	-
Reported by Uzbekistan (adjusted total)		*1*	*4500*	*13300*	*11600*	*8402*	*5750*	*3500*	***6000***	*7000*	-	-
Reported by importer			1300	8030	13200	8791	2500	2500	**7000**	4000	-	-

* Quota published for 2020 was for all specimens bred in captivity; the only captive-bred direct trade reported in this year was live individuals.

Source: CITES Trade Database, 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Table 4.5. CITES export quotas published for live **captive-born** (source F) *T. horsfieldii* from Uzbekistan, 2013-2024, and global direct exports of live captive-born individuals as reported by Uzbekistan and importers, 2013-2022; trade data for 2023 and 2024 are not yet available. Apparent quota excesses are indicated by **bolded** quantities; adjusted quantities based on permit analysis of exporter-reported data are also provided.

Captive-born	2013	2014	2015	2016	2017*	2018*	2019*	2020	2021	2022	2023	2024
Quota	-	-	-	-	11900	32270	55300	26446	47198	106081	-	-
Reported by Uzbekistan					5500	15500	24100	**39517**	**60987**	88066	-	-
Reported by Uzbekistan (adjusted total)				*300*	*8500*	*23700*	*25700*	***27417***	***60987***	*88066*	-	-
Reported by importer					3750	10478	17798	**29567**	37826	41856	-	-

* Quotas published for 2017-2019 included specimens born in captivity as well as parts and derivatives; the only captive-born direct trade reported in these years was live individuals.

Source: CITES Trade Database, 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Table 4.6: Direct exports of *T. horsfieldii* from Uzbekistan, 2013-2022[14].

Term	Unit	Purpose	Source	Reported by	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
live	number of specimens	P	C	Exporter		1				2					3
				Importer											
			F	Exporter									2	2	4
				Importer									1		1
			O	Exporter						3					3
				Importer											
			U	Exporter				3	3		1				7
				Importer											
			W	Exporter	5		5			1	1		2		14
				Importer											
		T	C	Exporter			4500	8800	16100	8400	4750	4500	6000	7000	60050
				Importer			1300	8030	13200	8791	2500	2500	7000	4000	47321
			F	Exporter					5500	15500	24100	39517	60985	88064	233666
				Importer					3750	10478	17798	29567	37825	41856	141274
			I	Exporter	1350		2847	1000		960	3500				9657
				Importer	750									3500	4250
			R	Exporter	30900	49702	42881	17200	34500	28425	11600	13950	11600	7925	248683
				Importer	35131	35950	36391	16186	22694	16635	10799	11150	10600	5425	200961
			W	Exporter	41830	49223	47561	61300	42232	55830	32328	21648	7400	3700	361252
				Importer	42163	43194	49975	50772	25349	51753	38999	20898	8625	5200	336928
			-	Exporter								6000			6000
				Importer											

Source: CITES Trade Database 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

[14] Imports of 200 baleen from *T. horsfieldii* were also reported by one importing country (the Republic of Korea) in 2019; UNEP-WCMC queried the trade term and received clarification from Republic of Korea on 17 June 2024 that the trade was in live specimens of *T. horsfieldii*. Table 4.6 has not been updated following report submission, however the CITES Trade Database has been corrected.

Table 4.7: Indirect exports of *T. horsfieldii* originating in Uzbekistan, 2013-2022.

Term	Unit	Purpose	Source	Reported by	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
derivatives	number of specimens	P	R	Exporter											
				Importer					1						1
leather products (large)	number of specimens	P	R	Exporter							1				1
				Importer											
live	number of specimens	B	C	Exporter											
				Importer					15		20		100		135
			F	Exporter											
				Importer								100	100		200
			R	Exporter											
				Importer									30		30
			W	Exporter											
				Importer				18							18
		P	F	Exporter									2		2
				Importer									2		2
			R	Exporter					2		1		2	2	7
				Importer		1			1			1			3
			W	Exporter	1			1	4		1		1		8
				Importer	1			1							2
		T	C	Exporter			29	2446	1727	1146	176	422	115		6061
				Importer			46	2037	82	194	211	517	715		3802
			F	Exporter						345	735	828	4225	8990	15123
				Importer					10		1083	1730	3900	1275	7998
			R	Exporter	150	51	715	86	133	136	220	40	281	2139	3951
				Importer	119	90	655	50	20	150	132	150	225	539	2130
			W	Exporter	234	157	417	329	280	350	225		49		2041
				Importer	204	107	311	326	2500	60			1906		5414

Source: CITES Trade Database 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Management:

Legislation: *T. horsfieldii* is listed in Uzbekistan's Red Data Book of wild animals (Azimov, 2019); any species included in the Red Book is protected by Uzbekistan's law on the Conservation and Use of Wildlife of 2016 (No. ZRU-408), which prohibits any actions that could lead to their death, decline in population, or disruption of habitat. The harvest and export of these species requires the issuance of permits by the relevant government bodies. Article 15 of the Law of the Republic of Uzbekistan "On hunting and hunting farms" establishes the procedure for approving quotas. Export quotas are reviewed by the CITES SA and approved by the MA (CITES MA of Uzbekistan *in litt*. to UNEP-WCMC, 2023).

Uzbekistan's national legislation is included in Category 2 in the CITES National Legislation Project (legislation that is believed generally to meet one to three of the four requirements for effective implementation of CITES). The most recent legislative status table (updated November 2023) noted that Uzbekistan had been identified as a priority Party by SC69 and draft revised legislation had been prepared with additional observations provided by the Secretariat in 2018, 2021 and 2023; next steps included the finalization and submission to the Secretariat of the revised legislation.

Wild harvest: The CITES MA of Uzbekistan (*in litt*. to UNEP-WCMC, 2023) reported that no wild tortoises have been harvested for export since 2020. However, export quotas for wild-sourced specimens were published by Uzbekistan for the years 2020-2022 (see Table 4.2), and direct exports of wild-sourced *T. horsfieldii* were reported by Uzbekistan each year 2020-2022 though decreasing in quantity over time (21 648, 7400, and 3700 individuals, respectively). Additional notes relating to quota years contained in Uzbekistan's 2020 annual report suggest that 4800 of the wild-sourced individuals reported in 2020 were harvested prior to this year (i.e. for the quota year 2019), resulting in an adjusted wild-sourced export quantity of 16 848 for 2020; no additional information could be found in the annual reports for 2021-2022 to confirm whether harvest of these specimens occurred prior to 2020. In addition, Uzbekistan's response included a number of descriptions of harvest that are in the present tense (e.g. "the area where tortoises are harvested"); it is unclear whether this is a translation issue, or whether harvest in some form has persisted (for example, to supplement breeding stock). If harvest for export has stopped, it is unclear whether Uzbekistan intends to resume this in the future.

Harvest was only reported to occur within 0.4% (1200 km^2) of the species' habitat, particularly within the Samarkand region where population densities are high (CITES MA of Uzbekistan *in litt*. to UNEP-WCMC, 2023). Levels of harvest from the wild were reported to be determined by the average population density in the harvest area and of adjacent areas, with monitoring intended to ensure that harvest does not reduce the population density of the species below the estimated "critical level" of 200-500 individuals/km^2 (CITES MA of Uzbekistan *in litt*. to UNEP-WCMC, 2023). The definition of the "critical level" was not provided by the MA and it is unclear how this was determined. A 12 year rotation system was reported to have been in place (SC62 Doc. 27.1 (Rev. 1)).

Ranching: The CITES MA of Uzbekistan (*in litt*. to UNEP-WCMC, 2023) reported that no eggs and hatchlings had been collected from the wild for the purpose of ranching 2020-2023, but it is unclear whether Uzbekistan intends to resume ranching in the future. It was noted that 10% of individuals caught for ranching were re-released into the wild after reaching the size of 6-7 cm, when they were less susceptible to predation (CITES MA of Uzbekistan *in litt*. to UNEP-WCMC, 2023). Survival rates in the first two years following release were reported to range from 50-96% (CITES MA of Uzbekistan *in litt*. to UNEP-WCMC, 2023).

In the past, Uzbekistan reported the use of adult females in ranching operations (SC62 Doc. 27.1 (Rev. 1); these would be collected, then marked and returned to the wild once they had laid their eggs. It should be noted that this system does not meet the definition of ranching described in Res. Conf. 11.6 (Rev. CoP15), which is restricted to eggs and juveniles taken from the wild.

Captive breeding: The CITES MA of Uzbekistan (*in litt*. to UNEP-WCMC, 2023) noted that breeding stock for captive breeding facilities was acquired legally. The MA reported that there are set criteria for removing individuals from the wild for breeding without causing harm to the wild population; these include restricting harvest to areas with high densities and collection of tortoises from areas that will be subject to land use change (e.g. for construction or agriculture). No estimates were provided of the volume of *T. horsfieldii* that are harvested from the wild to supplement breeding stock.

Protected areas: The species was reported to be protected in the Kyzylkum, Surkhan, and Nurata state reserves (Azimov, 2019).

Monitoring: The CITES MA of Uzbekistan (*in litt*. to UNEP-WCMC, 2023) reported long-term monitoring of *T. horsfieldii* since 2000, with systematic surveys for the species conducted since 2011. The surveys were reported cover all of the species' range, but no information was provided outlining the methodology employed.

Illegal trade: The CITES MA of Uzbekistan (*in litt*. to UNEP-WCMC, 2023) reported seizures of illegally traded tortoises of 3000-10 000 individuals per year, and an expert (T. Abduraupov pers. comm. 2024) noted that the species was sold in large quantities in markets and pet stores in Uzbekistan despite the protections afforded to it by its inclusion in Uzbekistan's Red Data Book. There have been reports of significant numbers of tortoises being illegally transported from Uzbekistan into neighbouring countries, namely Kazakhstan, the Russian Federation, and Ukraine (Bondarenko, 2022; Bondarenko & Peregontsev, 2017; Nuridjanov *et al.*, 2016). Bondarenko (2022) reported the illegal harvest of over 40 000 specimens of *T. horsfieldii* each year 2014-2019.

E. Problems identified that are not related to the implementation of Article IV, paras 2(a), 3 or 6(a).

Significant levels of illegal cross-border trade in *T. horsfieldii* from Uzbekistan into neighbouring countries have been recorded (see Management section).

Past literature has additionally highlighted suspected improper use of CITES source codes for the export of *T. horsfieldii* from Uzbekistan. Lee & Smith (2010) and Bondarenko (2022) reported misdeclaration of ranched and wild-sourced specimens as captive-bred, and Bondarenko (2022) considered that the number of captive-bred/born tortoises that can be produced in Uzbekistan was "substantially below" the issued quotas; however, the CITES MA of Uzbekistan (*in litt.* to UNEP-WCMC, 2023) noted that nurseries are inspected 1-2 times a year and that it was possible to visually distinguish captive-bred specimens from wild ones.

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Carcharhinus longimanus: Kenya, Oman, Senegal, Yemen

A. Summary

CRITERIA MET:	Criterion i) trade in an endangered species, criterion ii) sharp increase in global trade, and criterion iii) sharp increase in trade from Colombia, Kenya, Oman, Senegal and Yemen.
GLOBAL STATUS:	Globally Critically Endangered (2018 assessment). The global population size is unknown but steep declines have been inferred in all ocean basins due to targeted fisheries and bycatch.
INTERNATIONAL MEASURES:	Retention of *C. longimanus* is prohibited by RFMOs which cover all countries under review, with certain exemptions. The species was listed in CMS Appendix I in 2020, which requires CMS Parties to prohibit take also with limited exceptions. RFMO measures that do not relate to the implementation of Article IV, paragraphs 2 (a), 3 or 6 (a) are reflected on in section E of this review; the CITES Secretariat has reached out to the relevant secretariats to request clarification, as appropriate.
KENYA: Responded to the consultation relating to the RST	The status of *C. longimanus* in Kenyan waters is not known, although the species is listed as Vulnerable in national legislation. The status in the wider Indian Ocean is also unknown, though severe declines of over 80% in three generations have been inferred. Reported as bycatch in Kenya in several studies. Kenya has submitted annual reports for all years 2014-2022. Direct trade from Kenya 2014-2022 comprised 315 kg of wild-sourced fins exported in 2021, reported by Kenya only; Kenya did not report any imports of the species from Areas Beyond National Jurisdiction (ABNJ) 2014-2022. Kenya reported that trade in the species was prohibited in June 2021, and plans are underway to undertake non-detriment finding (NDF) studies. A draft National Plan of Action for Sharks (NPOA-Sharks) is being finalised.
PROVISIONAL CATEGORY:	The basis for NDFs for export of *C. longimanus,* which has unknown status in Kenya, has not been provided. The impact of trade is not known but likely to be detrimental given the Critically Endangered status of the species. On the basis that no legal export of wild specimens is anticipated, and conditional upon the annual publication of a zero quota on the CITES website, categorised as **Less concern.** Any planned changes to the zero quota should be communicated to the Secretariat and Chair of the Animals Committee, along with a justification of how the change is based on estimates of sustainable offtake using best available scientific information, for their agreement. Any proposal for a resumption in trade should take into account restrictions on take that have been agreed by RFMOs and other international conventions.

OMAN: Responded to the consultation relating to the RST	The status of *C. longimanus* in Omani waters is not known, with few records of occurrence. The status in the wider Indian Ocean is also unknown, though severe declines of over 80% in three generations have been inferred. Oman has submitted annual reports for all years 2014-2022; direct trade mainly comprised wild-sourced fins (13 082 kg and 500 fins as reported by Oman, and 6939 kg as reported by importers). Oman did not report any imports of the species from ABNJ 2014-2022. The country is in the process of developing an NPOA-Sharks, but it is unclear when this will be finalised. Oman reported that it would cease issuing permits for Appendix II shark species for six months from December 2023 (i.e. until June 2024), to allow NDF studies to be undertaken.
PROVISIONAL CATEGORY:	The basis for NDFs for export of *C. longimanus*, which has unknown status in Oman, has not been provided. The impact of trade is not known but likely to be detrimental given the Critically Endangered status of the species. Given that the country specified that permits will cease to be issued for a limited period only, categorised as **Action is needed.** However, Oman could be categorised as Less concern if the country agrees to publish an annual zero export quota, with any changes to the quota subject first to the agreement of the Secretariat and the Chair of the Animals Committee.
SENEGAL: Responded to the consultation relating to the RST	The status of *C. longimanus* in Senegalese waters and the broader eastern Atlantic is not known. Senegal has submitted annual reports to CITES for all years 2014-2022 except for 2017; a zero quota for all specimens of source W and X was published in 2024. Direct trade in *C. longimanus* from Senegal 2014-2022 was reported by importers only and totalled 420 kg of fins and 700 kg of dried fins, all wild-sourced traded for commercial purposes. The CITES MA of Senegal stated that any exports reported for Senegal were re-exports of specimens caught in ABNJ; as reported by Senegal, these re-exports included 2919 kg of fins and 1758 kg of dried fins for commercial purposes. These introductions from the sea were not reported as imports in Senegal's CITES annual reports. Permit analysis suggests that the direct trade reported by importers is associated with the shipments reported by Senegal to be re-exports. Senegal adopted an NPOA-Sharks in 2006. The country reported that a zero export quota has been established until an NDF can be undertaken, and noted that it has requested technical and financial support from CITES to undertake the work necessary for an NDF and to support improved monitoring and implementation of the Convention.
PROVISIONAL CATEGORY:	The basis for NDFs for export of *C. longimanus*, which has unknown status in Senegal, has not been provided. The impact of trade is not known but likely to be detrimental given the Critically Endangered status of the species. On the basis that no legal export of wild specimens is anticipated, and conditional upon the annual publication of a zero quota on the CITES website, categorised as **Less concern.** Any planned changes to the zero quota should be communicated to the Secretariat and Chair of the Animals Committee, along with a justification of how the change is based on estimates of sustainable offtake using best available scientific information, for their agreement. Any

	proposal for a resumption in trade should take into account restrictions on take that have been agreed by RFMOs and other international conventions.
YEMEN: Responded to the consultation relating to the RST	The status of *C. longimanus* in Yemeni waters is not known. The status in the wider Indian Ocean is also unknown, though severe declines of over 80% in three generations have been inferred. Yemen has submitted annual reports for all years 2014-2021; the report for 2022 has not yet been received. Direct trade in *C. longimanus* from Yemen 2014-2022 comprised wild-sourced fins (14 306 kg as reported by Yemen and 2899 kg as reported by importers) and dried fins (1526 kg reported in 2022 by importers only). Yemen did not report any imports of the species from ABNJ 2014-2022. Yemen reported that further exports of *C. longimanus* will not be permitted until an NDF has been undertaken, and is working with IFAW to secure funding to undertake this work. To date, Yemen has not developed an NPOA-Sharks.
PROVISIONAL CATEGORY:	The basis for NDFs for export of *C. longimanus,* which has unknown status in Yemen, has not been provided. The impact of trade is not known but likely to be detrimental given the Critically Endangered status of the species. On the basis that no legal export of wild specimens is anticipated, and conditional upon the annual publication of a zero quota on the CITES website, categorised as **Less concern.** Any planned changes to the zero quota should be communicated to the Secretariat and Chair of the Animals Committee, along with a justification of how the change is based on estimates of sustainable offtake using best available scientific information, for their agreement. Any proposal for a resumption in trade should take into account restrictions on take that have been agreed by RFMOs and other international conventions.

B. RST background

AC32 marked the first time that *Carcharhinus longimanus* has been selected for inclusion in Stage 2 of the RST.

C. Species characteristics

Biology: *C. longimanus* (oceanic whitetip shark) is a distinctive oceanic-epipelagic shark that occurs in tropical and warm-temperate waters (Compagno, 1984; Ebert *et al*., 2021). Most animals are below 300 cm in length (Young & Carlson, 2020) although the maximum total length (TL) may be up to 395 cm (Compagno 1984; Ebert *et al.* 2021). The species is usually found far offshore in the open sea (Compagno, 1984), although it has occasionally been found in coastal waters (Compagno, 1984; Ebert *et al*., 2021).

C. longimanus is mainly found in the oceanic mixed layer (Tolotti *et al*., 2017; Tolotti *et al*., 2015a), from the surface down to 200 m (Andrzejaczek *et al*., 2018; Howey-Jordan *et al*., 2013; Tolotti *et al*., 2017). The species appears to be thermally sensitive (Young & Carlson, 2020) and sea-surface temperature appears to influence vertical behaviour, with some individuals exploring colder, deeper waters during periods of higher sea surface temperature (Andrzejaczek *et al*., 2018; Tolotti *et al*., 2017).

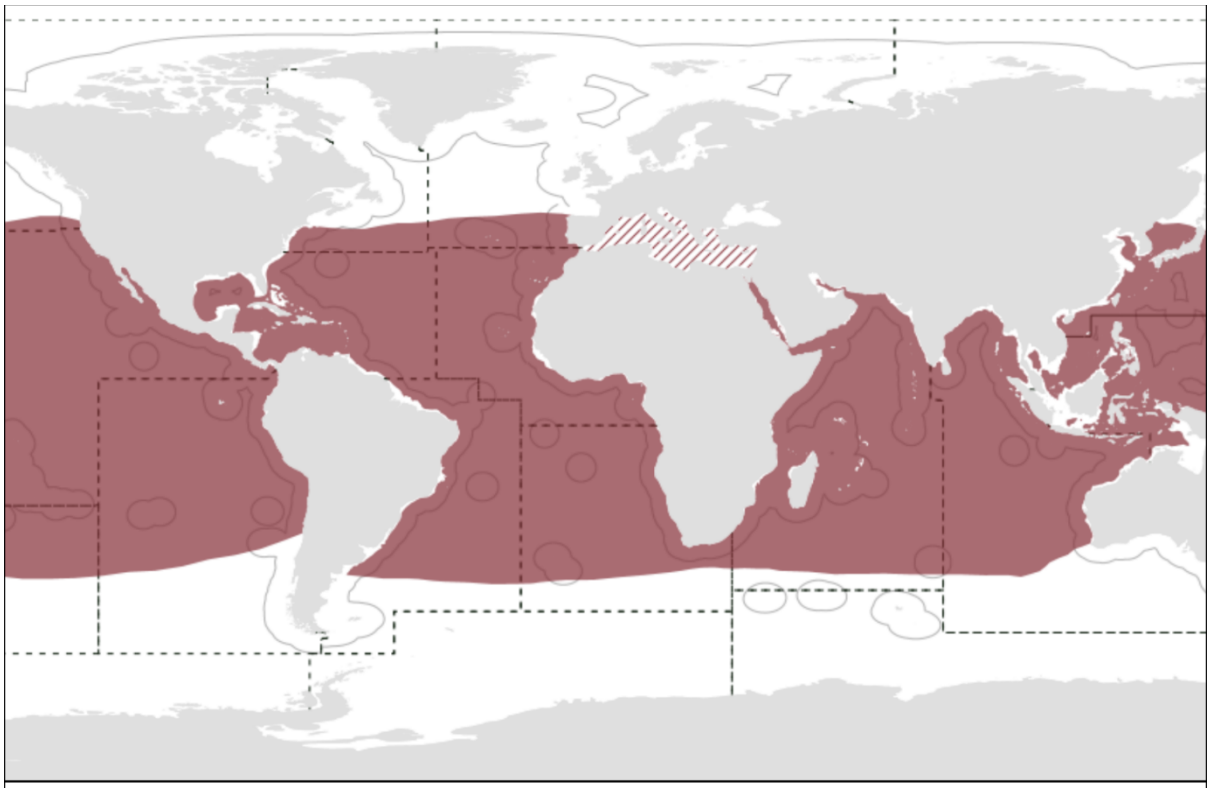
C. longimanus has been recorded travelling thousands of kilometres, and site fidelity has been reported in some studies (Filmater *et al*., 2012; Howey-Jordan *et al*., 2013; Miller *et al*., 2016; Young & Carlson,

2020). However, there is still a major knowledge gap on the relationship between the spatial distribution of the species and environmental conditions at large spatial oceanic scales (Lopetegui *et al*., 2021).

The diet of *C. longimanus* mainly comprises oceanic bony fishes and cephalopods, stingrays, sea birds, turtles, marine gastropods, crustaceans, and marine mammal carrion (Compagno, 1984; Ebert *et al*., 2021; Madigan *et al*., 2015). High prey availability may be an important factor that drives aggregation of the species (Madigan *et al*., 2015).

C. longimanus is viviparous (Compagno, 1984), with an estimated gestation period of 10-12 months (Coelho *et al*., 2009; Compagno, 1984). While reproduction is thought to be biennial (Tambourgi *et al*., 2013), Young & Carlson (2020) reported on unpublished data indicating the possibility of annual reproduction in some instances. Life history parameters for the species vary depending on the population sampled: estimates of size and age at maturity range from 160-220 cm total length and 4-16 years respectively, estimates of longevity range from 11-25 years, and litter size ranges from 1-20; more detail can be found in Table A.1 in Annex 1. Overall, *C. longimanus* is considered to be a long-lived, slow-growing, and late maturing species that has low-moderate productivity (Young *et al*., 2017). The growth rates reported for *C. longimanus* differ across studies, varying between 0.045 and 0.103, with most studies finding no significant differences in growth rates between sexes (Miller *et al*., 2016).

Distribution: *C. longimanus* occurs worldwide in waters that are 18°C to 28°C (preferring waters above 20°C) (Compagno, 1984; Figure 5.1). Historical fisheries data and observations indicate that the species was once ubiquitous in tropical waters around the world, however, more recent information from all three ocean basins suggest that it has experienced significant historical declines (Young *et al*., 2017).



Range Data: Food and Agriculture Organization of the United Nations 2024. *Carcharhinus longimanus. FAO Aquatic Species Distribution Map viewer.* https://www.fao.org/figis/geoserver/factsheets/species.html. Downloaded on 21 February 2024. Projection: WGS84.

Disclaimer: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Figure 5.1: Range of *C. longimanus*.

Population status and trends: *C. longimanus* was previously considered to be an abundant oceanic shark (Backus *et al.*, 1956; Compagno, 1984; FAO Species Identification Sheets for Fishery Purposes., 1981; Rigby *et al.*, 2019; Young & Carlson, 2020). Data on the current size of the global population are not available (Rigby *et al.*, 2019; Young & Carlson, 2020), however the best available information indicates that population declines of significant magnitude have occurred due to fisheries-related mortality throughout a large majority of the species' range (Fowler *et al.*, 2021; Hall & Roman, 2013; Lopetegui *et al.*, 2021; Pacoureau *et al.*, 2021; Rigby *et al.*, 2019; Tremblay-Boyer *et al.*, 2019; Young *et al.*, 2017; Young & Carlson, 2020), and it is now rare in some regions (Rigby *et al.*, 2019).

The species was categorised as Critically Endangered by the IUCN in a 2018 assessment[15], on the basis that the global population was estimated to have undergone a reduction of >98% with the highest probability of >80% decline over three generation lengths (61.2 years) (Rigby *et al.*, 2019). The species was also assessed as Critically Endangered in a 2017 regional assessment of its conservation status in the Arabian Sea and adjacent waters (the Arabian/Persian Gulf, Gulf of Aden, Red Sea and

[15] Previous IUCN assessments: Vulnerable (2015 and 2006), Lower Risk/near threatened in 2000 (Rigby et al., 2019).

Sea of Oman) (Jabado *et al*., 2017). A summary of available information on the trends in each ocean of relevance to this report (Indian and Atlantic Oceans) is provided below.

Indian Ocean

In the Indian Ocean, including the Arabian Seas region, historic population trend datasets show steep declines (Jabado *et al*., 2017). Ramos-Cartelle *et al*. (2012)'s analysis of the Spanish longline fishery in the Indian Ocean from 1998–2011 found that the standardized catch per unit effort (CPUE) for *C. longimanus* was highly variable and was impacted by the low prevalence of the species in some years, and so was neither a representative nor a plausible indicator of abundance. However, Rigby *et al.* (2019)'s analysis of these data estimated annual population reduction rates of 5.0% 1998–2011, consistent with an estimated median reduction of 92.9% over three generation lengths (61.2 years), with the highest probability of >80% reduction over this period. Data available from the Japanese longline fishery in the Indian Ocean were not analysed for the IUCN Red List assessment due to unrealistic CPUE in the early years of the time-series (Rigby *et al*., 2019), although from 2003–2011, these indicated a generally decreasing trend (Semba & Yokawa, 2011; Yokawa & Semba, 2012). In an analysis of interaction between *C. longimanus* and the purse seine fishery in the western Indian Ocean, the proportion of Fish Aggregating Devices (FAD) sets with oceanic whitetips present was around 20% in the mid-1980s and 1990s; this dropped to less than 10% from 2005 onwards (Tolotti *et al.*, 2015b).

The species has been discussed for many years by the Indian Ocean Tuna Commission (IOTC). While the IOTC has noted anecdotal reports suggesting that *C. longimanus* has experienced declines and become rare throughout much of the Indian Ocean during the past 20 years (IOTC, 2015), overall, the stock status, population dynamics, and stock structure of the species in the Indian Ocean are considered unknown (IOTC, 2017, 2023a). No quantitative stock assessment has taken place, and limited basic fishery indicators are currently available (IOTC, 2023a). The limited information available is not expected to improve in the short to medium term (IOTC, 2023a) and more robust research and data are needed (Young & Carlson, 2020).

Atlantic Ocean

Data on population trends of *C. longimanus* in the Atlantic provide a mixed picture.

> **Northwest Atlantic:** On the basis of data gathered during offshore cruises, *C. longimanus* was previously considered to be abundant and widely distributed in the warm waters of the western North Atlantic (Backus *et al*., 1956). Since then declines have been reported (Ebert *et al*., 2021) though there has been debate over the magnitude of those declines (Young *et al*., 2017; Young & Carlson, 2020).
>
> Using standardized observer CPUE data from the United States of America (hereafter US) pelagic longline fishery for 1992–2015, Rigby *et al.* (2019) calculated annual rates of reduction for *C. longimanus* of 4.3%, consistent with an estimated median reduction of 93.1% over three generation lengths (61.2 years), with the highest probability of >80% reduction over three generation lengths (Rigby *et al*., 2019). However, although there are a number of caveats, Young *et al*. (2017) suggested that the relative abundance of *C. longimanus* may have stabilized in the Northwest Atlantic since 2000 and in the Gulf of Mexico/Caribbean since the late 1990s, potentially as a result of management measures.

South Atlantic: Information on the abundance and population trends of *C. longimanus* in the South Atlantic is limited (Young *et al*., 2017; Young & Carlson, 2020). Tolotti *et al.* (2013) analysed catch and effort data from longline sets by foreign tuna longline vessels chartered by Brazil from 2004 to 2010. The nominal CPUE for *C. longimanus* exhibited a gradual increase over the whole time period, however the authors noted that changes in fishing effort and fishing strategy (depth of hooks, distribution of fishing) may have impacted the data (Tolotti *et al*., 2013). A trend analysis of the same data and time-series conducted as part of the IUCN Red List assessment revealed annual rates of increase of 13.9%, consistent with increasing abundance over three generation lengths (61.2 years) (Rigby *et al*., 2019). While these CPUE data are from a large area around Brazil, they may not be representative of the entire South Atlantic region (Rigby *et al*., 2019).

In contrast, Barreto *et al.* (2016)'s analysis of catch rates of *C. longimanus* on longlines revealed steep declines in the average CPUE in the South Atlantic from 1980–2011. However, concerns have been expressed about the methodology used in this study (Young *et al*., 2017) and these data were not analysed over three generations for the IUCN Red List assessment because they were not considered robust (Rigby *et al*., 2019).

Eastern Atlantic: Information on *C. longimanus* for the eastern Atlantic and west coast of Africa is largely unavailable, and the status of the species in this area is very uncertain (Young & Carlson, 2020). In the Gulf of Guinea, Domingo *et al.* (2007) recorded 0.098 *C. longimanus* per 1000 hooks and only 10 individuals caught in 3 years. This is in contrast to previous findings which reported 0.26 *C. longimanus* per 1000 hooks in this same area 10 years prior, with 63 individuals caught in four months (Castro & Mejuto, 1995). Work is ongoing in the International Commission for the Conservation of Atlantic Tunas (ICCAT) to improve knowledge on *C. longimanus* in this region (SCRS, 2023).

Population structure: There is evidence of differentiation between *C. longimanus* populations in the Western and Eastern Atlantic (Camargo *et al*., 2016; Ruck *et al*., 2024), and some preliminary evidence of differentiation between Western North and Central-South Atlantic sharks (Ruck *et al*., 2024).

Some studies have suggested that the Atlantic and Indo-Pacific populations of the species may be distinct (Camargo *et al*., 2016; Ruck, 2016), however Young & Carlson (2020) did not consider these studies to provide unequivocal evidence for marked separation. A more recent population genetic assessment found that *C. longimanus* populations in the Indo Pacific are distinct from those in the Western-Atlantic Ocean (IUCN SSC Shark Specialist Group *in litt.* to UNEP-WCMC, 2024; Ruck *et al*., 2024).

Additionally, there are indications of weak differences in a matrilineal gene between populations in the Indian and Pacific Oceans (Ruck *et al*., 2024).

Threats: *C. longimanus* is caught globally as bycatch and target catch in commercial and small-scale pelagic longline, purse seine, and gillnet fisheries (Rigby *et al*., 2019; Young & Carlson, 2020), and occasionally pelagic and bottom trawls (Fowler *et al*., 2021), although specific targeting of the species is thought to be rare (Young & Carlson, 2020). The fins of *C. longimanus* have a very high value in international trade and as such the species may be preferentially retained (CITES CoP16 Prop. 42).

C. longimanus has an inquisitive nature that increases its catchability (Ebert *et al*., 2021; Ebert *et al*., 2013), and has a tendency to remain in surface waters in areas where fishing pressure for tunas is

high (Young & Carlson, 2020); its depth range also overlaps directly with both purse seine and longline gears (Filmater *et al*., 2012). This, combined with a low reproductive capacity, makes it vulnerable to depletion (Ebert *et al*., 2021; IOTC, 2023a; Joung *et al*., 2016; Tambourgi *et al*., 2013).

Fisheries in which *C. longimanus* is caught incidentally include those in both the Atlantic and Indian Oceans (Clavareau *et al*., 2020; García-Cortés *et al*., 2012; Young & Carlson, 2020). Risk assessments have been undertaken by the IOTC and ICCAT to evaluate the resilience of *C. longimanus* to the impact of a given fishery by combining the biological productivity of the species and its susceptibility to each type of fishing gear; a summary of relevant assessments is provided in Table 5.1. The vulnerability ranking for the species is high or high-medium across most fishing gears.

Table 5.1: Environmental Risk Assessment vulnerability rankings of *C. longimanus* to various fishing gears; many of these assessments highlighted *C. longimanus'* low productivity.

Year	Location	Gear	Vulnerability ranking	Source
2012	Indian Ocean	Longline	High	IOTC (2015)
2018	Indian Ocean	Longline	Medium	Murua *et al*. (2018)
2012	Indian Ocean	Purse seine	High	IOTC (2015)
2018	Indian Ocean	Purse seine	Medium	Murua *et al*. (2018)
2012	Atlantic Ocean	Pelagic longline	High-medium	Cortés *et al*. (2015); Miller *et al*. (2016)

The species has been reported to have a relatively high vessel survivorship (CoP16 Prop.42; Musyl *et al*., 2011). However, Coelho (2016) reported that longline mortality at haul-back may be as high as 50% in the Indian Ocean, higher than the 34.2% mortality at haul-back estimated for the Atlantic Ocean by Coelho *et al*. (2012). In the European tropical tuna purse-seine fishery, Clavareau *et al*. (2020) reported a mortality rate in the eastern Atlantic of 68.2% and 25.3% in FADs and free-swimming sets respectively and, in the Indian Ocean, a mortality rate of 27.2% in FADs and 27.3% in free swimming sets. Post-release survival rates for *C. longimanus* are not known (Young & Carlson, 2020).

While retention of *C. longimanus* is now prohibited by all the tuna RFMOs, landings have continued to be reported (Table 5.4) and the species has also been found in trade (see general and country-specific *Trade* sections below).

Overview of trade: *C. longimanus* was listed in CITES Appendix II on 12 June 2013 with entry into effect delayed by 18 months (i.e. until 14 September 2014). As such, CITES trade data are only available for 2014 onwards.

CITES Trade Database: Global direct trade in *C. longimanus* 2014-2022 predominantly comprised wild-sourced fins reported by weight and traded for commercial purposes (33 604 kg[16] according to exporters and 13 704 kg according to importers); importers also reported 5888 kg of dried fins in 2022. Trade in wild-sourced fins for commercial purposes peaked in 2021 with 17 371 kg reported by exporters and 8734 kg reported by importers. According to exporter-reported data, Yemen (43%), Oman (39%), and Sri Lanka (8%) were the major exporters of wild-sourced fins reported by weight for commercial purposes over this period, while Hong Kong Special Administrative Region of China (hereafter Hong Kong SAR) was the principal importer of this trade (accounting for 90%).

[16] Approximately equivalent to 4942-8401 individuals, basing the calculation on estimates of average wet fin weight and dry fin weight respectively, and using the conversion factors outlined in Pavitt *et al.* (2021). Note that the calculation assumes that all primary fins (first dorsal fin, pectoral fins, and upper and lower caudal fins) are harvested.

The only trade in specimens originating from ABNJ was reported by Senegal and comprised re-exports of 2919 kg of fins and 1758 kg of dried fins. No introductions from the sea of *C. longimanus* were reported. A number of studies have highlighted that the volume of shark products recorded in the CITES Trade Database is lower than what may have been expected given the catch data reported elsewhere (Okes & Sant 2022; Pavitt *et al.* 2021).

Market data: *C. longimanus* has been found in many shark fin and meat markets including in mainland China (Cardeñosa *et al*., 2020), Hong Kong SAR, (Cardeñosa *et al*., 2020; Fields *et al*., 2018), Taiwan, Province of China (hereafter Taiwan POC), (Liu *et al*., 2013), United Arab Emirates (UAE) (Jabado *et al*., 2015) and Indonesia. Studies conducted in Hong Kong SAR and mainland China found the species accounted for 0.83% to 6.6% of the samples analysed (Cardeñosa *et al*., 2020; 2022; Clarke *et al.* 2006a; Fields *et al*., 2018).

Clarke *et al.* (2006b in CITES CoP16 Prop. 42) estimated that between 220 000 and 1 210 000 *C. longimanus* individuals were traded annually worldwide, on the assumption that *C. longimanus* accounted for 1.8% of trade in Hong Kong SAR, and that the markets of Hong Kong SAR represent 44-59% of the global shark fin trade (Clarke et al., 2006a). Fin trade volumes derived from the Hong Kong SAR import database have also been used to estimate global catches of the species 2012-2014 (5375 mt in total over the 3 year period) and 2015-2017 (5211 mt in total over the 3 year period) (CITES Doc. AC32 Inf. 3).

Overview of capture production: Nominal catch (i.e. the volume of landings covered to a live weight basis) of *C. longimanus*, as reported to the FAO 2013-2021, is summarised in Table 5.2. French Polynesia, Islamic Republic of Iran, Fiji, Federated States of Micronesia, the Solomon Islands and Sri Lanka accounted for most landings during this period. FAO landings data likely represent significant underestimates for a number of reasons, including (1) non-recording and under-reporting of shark landings, particularly of individuals taken as bycatch, (2) shark biomass being recorded in non-chondrichthyan-specific categories, and/or (3) shark finning and carcass disposal at sea (Clarke *et al*., 2006b; Oliver *et al*., 2015; Simpfendorfer & Rigby, 2016; CITES Doc. AC32 Inf. 3).

Table 5.2: Nominal catch (metric tonnes, live weight) of *C. longimanus* (code: OCS) reported to the FAO, 2013-2021, rounded to the nearest whole number. Atlantic Ocean includes adjacent seas.

	2013	2014	2015	2016	2017	2018	2019	2020	2021
Atlantic Ocean	7	6	1	1					
Indian Ocean	185	184	211	39	44	72	32	12	29
Pacific Ocean	215	64	121	328	441	562	321	232	513
Total	**407**	**255**	**332**	**368**	**486**	**634**	**353**	**243**	**542**

Source: FAO Global capture database. Available at: https://www.fao.org/fishery/statistics-query/en/capture/capture_quantity Accessed 06/01/2024

Overview of management: As a species with circumglobal distribution, the range of *C. longimanus* includes areas under the management of national, regional, and international treaties and legislation. Table 5.3 provides a summary of international and regional conventions and instruments that *C. longimanus* is subject to that are relevant to the Parties included in the RST process.

Table 5.3: Overview of key global and regional instruments for *C. longimanus* relevant to four Parties included in Stage 2 of the RST. CPC = Contracting Party.

Country	CITES	CMS	CMS Sharks MOU	IOTC	ICCAT	FAO IPOA Sharks
Kenya	Party	Party	MOU Signatory	CPC	-	Draft National Plan (2017) – unavailable
Oman	Party	Non-Party	Range State, non-Signatory	CPC	-	Draft National Plan (2017) – unavailable
Senegal	Party	Party	MOU Signatory	-	CPC	National Plan (2006)
Yemen	Party	Party	MOU Signatory	CPC	-	Not developed

Global instruments

United Nations Convention for the Law of the Sea (UNCLOS): The family Carcharhinidae is listed in Annex I, Highly Migratory Species, of UNCLOS. Under UNCLOS, coastal States and other States whose nationals fish in the region for species listed in Annex 1 should cooperate to ensure conservation and to promote the objective of optimum utilisation of such species throughout the region, both within and beyond the Exclusive Economic Zone (EEZ) (UNCLOS, 1982).

International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks) (FAO, 1999): IPOA-SHARKS was adopted in 1999 within the framework of the FAO Code of Conduct for Responsible Fisheries (Fischer *et al*., 2012). It is a voluntary agreement to ensure the conservation and management of sharks and their long-term sustainable use (FAO, 2023a), with particular emphasis on improving species-specific catch and landings data collection and the monitoring and management of shark fisheries (Fischer *et al*., 2012). The IPOA-Sharks recommends that States should adopt and implement a national plan of action for the conservation and management of shark stocks (NPOA-Sharks) if their vessels conduct directed fisheries for sharks or if their vessels regularly catch sharks in non-directed fisheries (FAO, 2023a), and suggests how these plans should be structured as well as what they should include.

Convention of Migratory Species (CMS): *C. longimanus* was listed in Appendix I of CMS in 2020. Parties that are a range State for these species are required to prohibit the taking of such species, with exceptions only if the taking is for scientific purposes; for the purpose of enhancing the propagation or survival of the species; to accommodate the needs of traditional subsistence users of the species; or in extraordinary circumstances (CMS, 1979). In accordance with Art. I 1 i of CMS, "taking" is defined as "taking, hunting, fishing, capturing, harassing, deliberate killing, or attempting to engage in any such conduct".

Parties that are a range State should also take measures to conserve Appendix I species and where appropriate restore their habitats; prevent, remove or mitigate obstacles to their migration; and control other factors that might endanger them, such as exotic species.

CMS Memorandum of Understanding (MOU) on the Conservation of Migratory Sharks (hereafter CMS Sharks MOU): *C. longimanus* is included in Annex I of the CMS Sharks MOU (2016) which lists species that have an unfavourable conservation status and which require international agreements for their conservation and management, or would significantly benefit from the international cooperation. The non-binding MOU contains a conservation plan that aims to achieve and maintain a favourable conservation status for migratory sharks.

Regional instruments

Regional Fisheries Management Organizations (RFMOs) that manage the tuna and billfish fisheries in the Atlantic, Indian and Pacific Oceans have adopted a wide range of measures to mitigate and reduce catch of vulnerable taxa including *C. longimanus*. These include a ban on retaining onboard, transhipping, landing and storing *C. longimanus* in both ICCAT (in any fishery) and IOTC (with the exception of artisanal fisheries operating exclusively in their respective EEZ for the purpose of local consumption and sample collection by scientific observers). Note that the IOTC (pers. comm., 2024) confirmed its retention ban is limited to the high seas.

Concerns have been raised about progress with the implementation of RFMO measures relevant to *C. longimanus* (Gilman *et al*., 2014; Juan-Jordá *et al*., 2018; Lopetegui *et al*., 2021). For example, IOTC (2023a) noted that, given that some Contracting Parties are still reporting *C. longimanus* as landed catch, there is a need to strengthen mechanisms to ensure Contracting Parties comply with Resolution 13/06, which prohibits retention of the species.

Kenya and Yemen are members of the Southwest Indian Ocean Fisheries Commission (SWIOFC), a regional fisheries advisory body established to promote the sustainable utilization of the living marine resources of the southwest Indian Ocean region.

Table 5.4: List of Contracting Parties and relevant RFMO Resolutions and Recommendations for the countries under review in this report.

RFMO	Relevant CPCs (year of accession)	Relevant Resolutions and Recommendations
ICCAT International Commission for the Conservation of Atlantic Tunas	Senegal (1971-1988; 2004)	• Recommendation 04-10 (2005): concerning the conservation of sharks caught in association with fisheries managed by ICCAT • Recommendation 10-07 (2010): on the conservation of the oceanic whitetip sharks (*Carcharhinus longimanus*) caught in association with fisheries managed by ICCAT, which prohibits retaining onboard, transhipping, landing, storing, selling or offering for sale any part or whole carcass of oceanic whitetip sharks in any fishery. Contracting Parties shall record through their observer programs the number of discards and releases of oceanic whitetip sharks with an indication of status (dead or alive) and report it to ICCAT. • Recommendation 11-10 (2012): on information collection and harmonization of data on bycatch and discards in ICCAT fisheries. • Recommendation 18-06 (2019): on the improvement of compliance review of conservation and management measures regarding sharks caught in association with ICCAT fisheries.
IOTC Indian Ocean Tuna Commission	Kenya (2004); Oman (2000); Yemen (2012)	• Resolution 13/06 (2013): on the scientific and management framework on the conservation of shark species caught in association with IOTC managed fisheries. It prohibits, as an interim pilot measure, the retention onboard, transhipment, landing or storing of any part or whole carcass of *C. longimanus*, with the exception of artisanal fisheries operating exclusively in their respective EEZ for the purpose of local consumption, and sample collection by scientific observers. The prohibition states that it applies to all fishing vessels flying the flag of CPCs that are on the IOTC Record of Authorised Vessels, as well as those authorised to fish for tuna or tuna-like species managed by the IOTC on the high seas; however, the IOTC confirmed that the measure is only applicable to the high seas. • Resolution 17/05 (2017): on the conservation of sharks caught in association with fisheries managed by IOTC, which includes minimum reporting requirements for sharks, calls for full utilisation of sharks, and includes a ratio of fin-to-body weight for frozen shark fins retained onboard a vessel and a prohibition on the removal of fins for sharks landed fresh. • Resolution 15/01 (2015): on the recording of catch and effort data by fishing vessels in the IOTC area of competence, sets out the minimum logbook requirements for purse seine, longline, gillnet, pole and line, handline and trolling fishing vessels >24 m in length, and those <24 m if they fish outside the EEZs. *C. longimanus* is named in the Resolution. • Resolution 15/02 (2015): Mandatory statistical reporting requirements for IOTC Contracting Parties and Cooperating Non-Contracting Parties (CPCs) including with respect to shark species listed in Resolution 15/01. • Resolution 11/04 (2011): on a Regional Observer Scheme, requires data on catch and bycatch to be recorded by observers and reported to the IOTC within 150 days.

D. Country reviews

Kenya

Distribution: In Kenya, *C. longimanus* mostly occurs far offshore but occasionally occurs in coastal waters (Anam & Mostarda, 2012). Kenya's 4th National CMS Sharks MOU report describes the species as extant (resident) in Kenya's national waters but does not provide more detailed information (Omar *et al*., 2023).

Sea surface temperature appears to be an important environmental driver of the occurrence of *C. longimanus* (Lopetegui *et al*., 2021) and predictive maps have suggested the area offshore of Kenya-Somalia to be an important hotspot, with higher probabilities of incidentally catching this species during the summer monsoon (June to September) (Lopetegui *et al*., 2021).

Population status and trends: In a baseline assessment report for Kenya's NPOA-Sharks, Oddenyo *et al*. (2019) reported that, to date, there had been no stock assessments for shark species in Kenya. The species is listed as "Vulnerable" under the Sixth Schedule of Kenya's 2013 Wildlife Conservation and Management Act (Act no. 47 of 2013) (Omar *et al*., 2023).

At the broader Indian Ocean level, the status of *C. longimanus* is considered unknown (IOTC, 2023a; see *Population status and trends overview*). However, Jabado *et al*. (2017) concluded that available historic population trend datasets within the Indian Ocean (including the Arabian Sea region) indicate steep declines equivalent to a population decline of 94-96% over the past three generations (c. 49 years); Rigby *et al*. (2019) estimated a median population reduction for the Indian Ocean of 92.9% over three generation lengths (61.2 years), with the highest probability of >80% reduction over three generation lengths.

Threats: Sharks were reported to have been harvested in Kenyan territorial waters since the late 1980s, as both targeted catch and bycatch (Ndegwa *et al*., 2023).

Kenya's coastal fishery mainly consists of small scale artisanal fishers, with some industrial fishing by prawn trawlers (Anam & Mostarda, 2012; Oddenyo *et al*., 2019). Substantial shark landings and shark bycatch have been reported in both fisheries (Oddenyo *et al*., 2019).

Kenya's offshore fishery consists mainly of locally flagged vessels and foreign licensed fishing vessels that target the tuna and tuna-like species that migrate through the Kenyan EEZ (Oddenyo *et al*., 2019). Only a small quantity of catch from the EEZ is landed in Kenya, primarily tuna for export (Anam & Mostarda, 2012). The foreign vessels are mainly purse seiners and long liners which operate under a fishing licensing scheme (Oddenyo *et al*., 2019). In addition, a fleet of 8-10 semi-industrial longline vessels is operated by small scale fishers. Substantial shark bycatch has been recorded in these industrial fisheries, through catch declarations and regional observer reports (Oddenyo *et al*., 2019).

Sharks caught by artisanal fishers in Kenya are sold in local markets (Oddenyo *et al*., 2019), however, the separation between the formal and informal market is not clear and shark products for sale or export from Kenya may in fact originate in Somalian waters (Rice, 2017).

C. longimanus specifically was among the species released/discarded by the Kenyan national fleet in the IOTC area of competence (Ndegwa *et al*., 2022), with the species reported to be caught in the longline and floating and bottom gillnet fisheries (Anam & Mostarda, 2012; Mohamed, 2017). Catch rates are not well studied (Kiilu, 2016), but in its 2022 national report to IOTC, Kenya estimated that *C. longimanus* accounted for 3.5% of bycatch recorded from the longline tuna fishery in 2020 (Ndegwa *et al*., 2022). *C. longimanus* was additionally the most frequently reported species of shark caught as bycatch in the 'line under FADs' fishery in a questionnaire-based study of southwest Indian Ocean artisanal fisheries (Mozambique, Tanzania, Kenya and Mauritius) (Kiszka, 2012).

Capture production:

FAO: No catches of *C. longimanus* in Kenya have been recorded in the FAO global capture production database 2013-2021 (Ndegwa *et al.*, 2023). However, Kenya has reported catches of 'Sharks, rays, skates, etc. nei' and 'Requiem sharks nei' from the Western Indian Ocean 2013-2021, as summarised in Table 5.5. It is unclear which species of shark have been included in this category.

Table 5.5: Nominal catch (metric tonnes, live weight) of 'Sharks, rays, skates, etc. nei' (code: SKH) and 'Requiem sharks nei' (code: RSK) from Kenya reported to the FAO, 2013-2021, rounded to the nearest whole number.

Reported as	2013	2014	2015	2016	2017	2018	2019	2020	2021
RSK					466	495	495	0	0
SKH	314	1032	343	343	466	525	520	519	519

Source: FAO Global capture database. Available at: https://www.fao.org/fishery/statistics-query/en/capture/capture_quantity Accessed 06/01/2024

IOTC: No capture of *C. longimanus* (code: OCS) was reported to the IOTC 2013-2022; however, Kenya reported catches of 'Sharks, rays, skates, etc. nei' (code SKH) as summarised in Table 5.6. The vast majority of this catch was taken by the artisanal fleet, with industrial catch reported only in 2018 and 2019.

Table 5.6: Nominal catch (metric tonnes) of 'Sharks, rays, skates, etc. nei' (code SKH) from Kenya reported to the IOTC 2013-2022, rounded to the nearest whole number.

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total	**314**	**1032**	**343**	**412**	**466**	**525**	**520**	**758**	**12**	**77**
Artisanal	314	1032	343	412	466	519	519	758	12	77
Industrial						6	1			

Source: IOTC Interactive Data Browser 2023. Nominal catches for all species, including bycatch ones. Available at: https://iotc.org/data/browser. Accessed 09/12/2023

Trade: Kenya has submitted all annual reports to CITES for the period 2014-2022, and has not published any export quotas for this species.

Direct trade in *C. longimanus* from Kenya 2014-2022 entirely comprised 315 kg of wild-sourced fins exported to China for commercial purposes in 2021, as reported by Kenya only. Kenya did not report any imports of the species from ABNJ 2014-2022.

Indirect trade in *C. longimanus* originating in Kenya 2014-2022 entirely comprised six wild-sourced fins re-exported by Kenya to the UAE for educational purposes in 2019.

Management:

International commitments and RFMOs: Kenya is a Party to CMS (in which *C. longimanus* is listed in Appendix I) and is a signatory of the CMS Sharks MOU.

Kenya is a Contracting Party to the IOTC and the Southwest Indian Ocean Fisheries Commission (SWIOFC). Kenya has signed, but not ratified, the Southern Indian Ocean Fisheries Agreement (SIOFA), the objectives of which are to ensure the long-term conservation and sustainable use of the fishery resources in the area.

Legislation: The Fisheries Management and Development Act No. 35 of 2016 lays out the provisions for management of Kenya's extractive fisheries (Oddenyo *et al*., 2019) including obligations under international law. *C. longimanus* is listed as "Vulnerable" under the Sixth Schedule of Kenya's 2013 Wildlife Conservation and Management Act (Act no. 47 of 2013) (Omar *et al*., 2023), which allows for the development and implementation of a recovery plan for the species; however, no such plan appears to have been developed.

> ***Prohibitions:*** The CITES MA of Kenya (*in litt.* to the CITES Secretariat, 2023) reported that international commercial trade in *C. longimanus* has been prohibited since June 2021, in line with the country's commitments under CITES, CMS and the IOTC (CITES MA of Kenya *in litt*. to CITES Secretariat, 2023); however, it is unclear whether there is legislation in place to implement this prohibition.
>
> ***Finning:*** Kenya has banned shark finning through Gazette Notice no. 3409 of 08 May 2020 (Ndegwa *et al*., 2023). The ban applies to all licensed industrial vessels fishing within Kenya's EEZ and to Kenya flagged vessels outside the EEZ. Moreover, the trade and sale of fins must be in appropriate proportion to the quantity of carcasses landed (5% of dressed carcass weight (Ndegwa *et al*., 2023)). The Gazette Notice requires "fishermen fully utilise their entire catches of sharks, with the exception of species prohibited by the IOTC". Although not named in the Gazette Notice, *C. longimanus* is one of those prohibited species.

Kenya's national legislation is included in Category 2 in the CITES National Legislation Project (legislation that is believed generally to meet one to three of the four requirements for effective implementation of CITES). The most recent legislative status table (updated November 2023) indicated that an update on national legislation was submitted on 3 November 2023; next steps include agreement between Kenya and the CITES Secretariat on a revised legislative analysis, including possible Category 1 status.

Non-detriment findings: The CITES MA of Kenya (*in litt.* to the CITES Secretariat, 2023) reported that plans are underway to complete a non-detriment finding (NDF) for *C. longimanus* and to conduct CITES law enforcement workshops.

Management plans and NPOA-Sharks: Kenya's State Department of Fisheries (SDF) initiated the process of drafting an NPOA-Sharks and Rays in 2014. A baseline assessment of Kenyan sharks was conducted in 2018 to inform the development of the plan, and this has been used in decision making when considering issuing permits for commercial trade in sharks in Kenya, including trade in *C. longimanus* (CITES MA of Kenya *in litt*. to CITES Secretariat, 2023). In the latest update that could be located (November 2023), Kenya was reported to be awaiting cabinet approval on a finalised NPOA-Sharks (IOTC, 2023d).

The CITES MA of Kenya (*in litt*. to CITES Secretariat, 2023) noted that limited awareness of fisheries policies and enforcement of CITES provisions by other relevant government institutions with a fisheries management role is one of the challenges in effectively regulating international trade in CITES-listed sharks.

Monitoring and observers: The Kenya Fisheries Service (KeFS) is the principal national agency responsible for management and development of fisheries in the country. In collaboration with other agencies, including the CITES authorities, it monitors the fishing activities of both national and foreign-flagged vessels licensed to fish in inshore waters and in the EEZ (CITES MA of Kenya *in litt*. to

CITES Secretariat, 2023). Catch Assessment surveys in the shark fishery are undertaken on a quarterly basis by the KeFS and the Kenya Marine and Fisheries Research Institute (Ndegwa *et al*., 2023). In addition, semi-industrial prawn trawl, deep water trawl, crabber, and longline data are monitored through vessel logbooks and a dedicated observer programme (Ndegwa *et al*., 2023). Kenya is additionally implementing sampling and monitoring of catch from industrial long line fisheries through land-based observers (Ndegwa *et al*., 2023).

The Fisheries Management and Development Act No. 35 of 2016 stipulates the need for fishing vessels to have a functional VMS at any time that fishing operations are ongoing, with measures in place to help detect potential illegal, unreported and unregulated (IUU) fishers (Ndegwa *et al*., 2023).

Protected areas and Important Shark and Ray Areas (ISRAs): Six Marine Protected Areas in Kenya, covering 941 km^2, are listed in the Nairobi Convention's dashboard for the Western Indian Ocean (Nairobi Convention Secretariat, 2023). These are: Kiunga Marine National Park, Watamu Marine National Park, Mombasa Marine National Park, Kisite Mpunguti Marine Park and Reserve, Malindi Marine Park and Diani-Chale Marine National Park and Reserve. In addition, a collaborative management approach has been used in Kenya to establish Locally Managed Marine Areas (LMMAs) mainly for fisheries and other marine resource management (Oddenyo *et al*., 2019). No information could be located regarding whether these protected areas are likely to specifically benefit *C. longimanus.*

Kenya has three accepted ISRAs in the Western Indian Ocean (Lamu Archipelago, Malindi-Ungwana Bay and Watamu) and an Area of Interest (Diani-Shimoni-Vanga) (IUCN SSC Shark Specialist Group, 2023). In addition, the East Africa Coastal Current ISRA is located offshore from southern Somalia, Kenya, Seychelles, and includes waters in ABNJ (IUCN SSC Shark Specialist Group, 2023). None of the above are ISRAs specific to *C. longimanus*.

Illegal trade: The TRAFFIC Wildlife Trade Portal contained details of a seizure in Hong Kong SAR in 2017 of 1280 kg of dried shark fins (including those of *C. longimanus*), from four countries including Kenya (TRAFFIC International, 2024).

Oman

Distribution: The occurrence of *C. longimanus* in Omani waters is indicated in the range maps of Ebert *et al*. (2021), Jabado and Ebert (2015), and Rigby *et al*. (2019), and it is noted as occurring in Oman by Al Jufaili *et al*. (2010) and Randall (1995). Jabado *et al*. (2017) noted that *C. longimanus* occurs throughout the Arabian Sea region with the exception of the Gulf but does not appear to be evenly distributed. A *C. longimanus* specimen obtained in a study by Henderson *et al*. (2016) represented the first confirmed record for the country. Predictive models of catch probabilities based on fisheries observer data suggest that *C. longimanus* is more likely to be incidentally caught off the coast of Oman during the winter monsoon period (December-March) (Lopetegui-Eguren *et al*., 2022).

Population status and trends: No specific information on the population status and trends of *C. longimanus* in Omani waters was identified. The IOTC consider the stock status of *C. longimanus* in the wider Indian Ocean to be unknown, with no quantitative stock assessment available (IOTC, 2023a; see *Population status and trends overview*). However, Rigby *et al*. (2019) estimated a median population reduction for the Indian Ocean of 92.9% over three generation lengths (61.2 years), with the highest probability of >80% reduction over three generation lengths, and Jabado *et al*. (2017) concluded that available historic population trend datasets within the Indian Ocean (including the Arabian Sea region)

indicate steep declines equivalent to a population decline of 94-96% over the past three generations (c. 49 years). On this basis, *C. longimanus* was categorised as Critically Endangered in the Arabian Sea and adjacent waters (including the Sea of Oman) in a 2017 regional assessment (Jabado *et al*., 2017).

Threats: The Omani national fishery fleet comprises artisanal, coastal and industrial fleets (AlMuatasm Al Habsi, 2023); artisanal fisheries operating along the coasts of Oman (and Yemen) in particular were noted to capture high numbers of sharks and rays (Henderson & Reeve, 2011). In a report to the IOTC, Oman reported that targeted shark fishing is limited to approximately 10% of the artisanal fleet while the remaining 90% of the artisanal fleet catches sharks only as bycatch of tuna fishing activities (Directorate General of Fisheries Resources Development, 2020).

While *C. longimanus* was not one of the 46 elasmobranch species recorded in commercial landings/observations in Oman by Henderson *et al*. (2007), nor one of the species observed in Omani waters by Henderson and Reeve (2011), the IUCN SSC Shark Specialist Group (*in litt.* to UNEP-WCMC, 2024) confirmed that the species is captured and landed in the country by vessels operating within Oman's EEZ, as well as by Omani flagged vessels operating in ABNJ.

The UAE appears to have been a major destination for sharks from Oman, including *C. longimanus* (Jabado *et al*., 2015); however, Okes and Sant (2022) reported that all export and re-export of shark fins from UAE was banned in 2019, which may have affected trade dynamics. Large-bodied sharks were noted to be rarely sold domestically in Oman, with many destined for export to destinations including Hong Kong SAR, mainland China, and Sri Lanka (Jabado, 2014).

Capture production:

FAO: No catches of. *longimanus* (code: OCS) in Oman have been recorded in the FAO global capture production database 2013-2021, however, Oman reported catches of 'Sharks, rays, skates, etc. nei' (code:SKH) over this period (Table 5.7). It is unclear which species of shark have been included in these data.

Table 5.7: Nominal catch (metric tonnes, live weight) of 'Sharks, rays, skates, etc. nei' (code:SKH) from Oman reported to the FAO 2013-2021, rounded to the nearest whole number.

Reported as	2013	2014	2015	2016	2017	2018	2019	2020	2021
SKH	7458	6579	6851	7603	5085	8416	5086	6068	5565

Source: FAO Global capture database. Available at: https://www.fao.org/fishery/statistics-query/en/capture/capture_quantity Accessed 06/01/2024

IOTC: No capture of *C. longimanus* (code: OCS) was reported to the IOTC 2013-2022, however, Oman has reported catches of 'Sharks, rays, skates, etc. nei' (code: SKH) as summarised in Table 5.8. It is unclear which species of shark have been included in these data.

Table 5.8: Nominal catch (metric tonnes) of 'Sharks, rays, skates, etc. nei (code: SKH) from Oman reported to the IOTC 2013-2022, rounded to the nearest whole number.

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Oman	**7458**	**1004**	**967**	**6**	**4969**	**11**	**14**	**830**	**744**	**5774**
Artisanal	7241	1004	968		4965			829	744	5774
Industrial	217.03			6	4	11	14	1.33		

Source: IOTC Interactive Data Browser 2023. Nominal catches for all species, including bycatch ones. Available at: https://iotc.org/data/browser. Accessed 09/12/2023

Trade: Oman has submitted all annual reports to CITES 2014-2022, and has not published any export quotas for this species.

Direct trade in *C. longimanus* from Oman 2014-2022 mainly comprised wild-sourced fins (13 082 kg and 500 fins as reported by Oman, and 6939 kg as reported by importers) traded to China and Hong Kong SAR for commercial purposes (Table 5.9). In addition, Hong Kong SAR reported imports of 3333 kg of dried fins in 2022; permit analysis suggests differences in the reported term code between trading partners and that 2393 kg were associated with trade reported as fins by Oman. Oman did not report any imports of the species from ABNJ 2014-2022.

Indirect trade in *C. longimanus* originating in Oman 2014-2022 comprised 30 wild-sourced fins traded for educational purposes, as reported by re-exporters and importers.

Table 5.9: Direct exports of *C. longimanus* from Oman, 2014-2022. Quantities have been rounded to the nearest whole number, where applicable.

Term	Unit	Purpose	Source	Reported by	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
fins (dried)	kg	T	W	Exporter										
				Importer									3333	3333
fins	kg	T	W	Exporter					200	1883	370	5220	5409	13082
				Importer						1738	600	4601		6939
	number of specimens	E	W	Exporter										
				Importer					6					6
		T	W	Exporter						500				500
				Importer										

Source: CITES Trade Database 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Management:

International commitments and RFMOs: Oman is not a Party to CMS nor a signatory of the CMS Sharks MOU, but is a Contracting Party to the IOTC.

Legislation: The law of fisheries and protection of living aquatic resources issued by Royal Decree No. 59/1993 (amending some provisions of Law No. 53/81 on fishing and the protection of living aquatic wealth) governs fisheries and aquatic activities in Oman (FAO, 2023b). In addition, Ministerial Resolution No.4/94 Implementing Regulation of the Law on Marine Fishing and Protection of Living Aquatic Resources contains various amendments to specific provisions e.g. licensing rules (FAO/FAOLEX, 2023).

Prohibitions: Oman has reported that the harvest of *C. longimanus* is banned by the "terms & conditions of authorisation to fish" (IOTC, 2023b). However, the IOTC has raised compliance

issues with respect to Oman's implementation of various Resolutions (IOTC, 2023b; Okes & Sant, 2022) and noted that no additional legal references (beyond the primary legislation mentioned above) have been provided with respect to the harvest ban (IOTC, 2023b). In its 2023 national report, Oman noted that a new proposed law will include measures to address the conservation of sharks caught in association with fisheries managed by IOTC (AlMuatasm Al Habsi, 2023).

Finning: According to Oman's 2021 report to the IOTC, discard of any part of sharks and cutting of fins is prohibited (AlMuatasam Al-Habsi, 2021). The export or sale of pieces of shark is not permitted without a permit from the authorities (AlMuatasam Al-Habsi, 2021).

Gear restrictions: Trawling in Oman was reported to have been banned since 2011 (Almojil, 2021).

Oman's national legislation is included in Category 3 of the CITES National Legislation Project (legislation that is believed generally not to meet any of the four requirements for effective implementation of CITES). A second formal warning was issued to Oman at SC71 (2019) and draft legislation was received in February 2020. Dialogue took place between Oman and the CITES Secretariat, however, insufficient new information was considered to have been provided (CITES Secretariat, 2023). A Standing Committee recommendation to suspend trade with Oman in all CITES-listed species for commercial purposes until further notice was thus issued on 10 January 2024 (CITES Notif. No. 2024/032).

Non-detriment findings: In August 2023, the CITES MA of Oman reported that the country would cease to issue permits to export Appendix II shark species for six months, and that NDF studies would be implemented (CITES MA of Oman *in litt*. to the CITES Secretariat, 2023). In a subsequent letter dated 19 October 2023, Oman explained that it had in fact continued to allow the trade of shark fins, and would do so until December 2023, to allow local companies involved in the trade to correct their situation; the six-month ban would then be implemented (CITES MA of Oman *in litt*. to the CITES Secretariat, 2023). It is therefore expected that the ban will expire in June 2024.

Management Plan and NPOA-Sharks: Oman has reported to the IOTC that it is in the process of developing an NPOA-Sharks (AlMuatasam Al-Habsi, 2021; AlMuatasm Al Habsi, 2023; Directorate General of Fisheries Resources Development, 2020). It is not clear when this will be finalised.

There are no current national research programmes on *C. longimanus* in the country (AlMuatasm Al Habsi, 2023).

Protected areas and Important Shark and Ray Areas (ISRAs): Oman has 13 marine protected areas covering a range of environments (Choudri *et al*., 2016; Royal Decree No 54/2022), but no information was located regarding whether these protected areas are likely to benefit *C. longimanus.*

Oman has five accepted ISRAs in the Western Indian Ocean (Daymaniyat Islands, Gulf of Masirah, Hallaniyat Islands, Musandam and Muscat) (IUCN SSC Shark Specialist Group, 2023). In addition the Strait of Hormuz Corridor is a transboundary ISRA whose range includes Bahrain, Iran, Oman, Qatar, Saudi Arabia and the UAE (IUCN SSC Shark Specialist Group, 2023). None of these ISRAs are specific to *C. longimanus*.

Illegal trade: According to Okes and Sant (2022), while there is documented evidence from FAO and RFMOs of fishing involving *C. longimanus* on the high seas by Oman, no imports from ABNJ have been reported in the CITES Trade Database.

No incidents of seizures were reported in the TRAFFIC Wildlife Trade Portal 2013-2023 (TRAFFIC International, 2024).

Senegal

Distribution: The occurrence of *C. longimanus* in Senegal is indicated in the range maps of Compagno (1984), Ebert *et al*. (2021), and Rigby *et al*. (2019), in regional and national checklists (Cadenat & Blache, 1981), and by Senegal in its report to the CMS Sharks MOU (Direction des Parcs Nationaux, 2023).

The species was reported to occur in the northern part of FAO fishing areas 34 and 47, an area of the Atlantic to the east of Africa (that includes Senegal), down to the Gulf of Guinea and northward to Portugal (FAO Species Identification Sheets for Fishery Purposes, 1981). It probably occurs through this Eastern Central Atlantic area, but records are sporadic (Compagno, 2016).

Population status and trends: *C. longimanus* was previously described as a relatively uncommon but widely distributed species in the eastern Atlantic (Cadenat & Blache, 1981). More recent studies have not been carried out to determine the current status of *C. longimanus* in Senegalese waters (CITES MA of Senegal, *in litt*. to the CITES Secretariat 2023; Vasconcellos *et al*., 2018) and no specific information on the current population status and trends of *C. longimanus* in Senegalese waters was identified.

At an ocean basin level, there is uncertainty over both the structure of the population in the Atlantic and the abundance and status of the population of the eastern Atlantic (see *Population status and trends overview*), including off the west Coast of Africa (Young & Carlson 2020).

Threats: Senegal has artisanal, semi-industrial and industrial fisheries (SRFC, 2023). Sharks are caught by small-scale artisanal and industrial fisheries, with the bulk of catches comprising incidental takes in small-scale fisheries (Diop & Dossa, 2011). In addition, Senegalese artisanal shark fishing takes place in Mauritanian waters (Diop & Dossa, 2011) with some vessels from Senegal operating under bilateral agreements between Senegal and Mauritania, and others illegally (Vasconcellos *et al*., 2018).

In their report to CMS, Senegal noted that *C. longimanus* is caught within the Senegalese area of national jurisdiction (Direction des Parcs Nationaux, 2023) and is landed in Senegal (Direction des Parcs Nationaux, 2016), although the CITES SA of Senegal (*in litt*. to UNEP-WCMC, 2023) reported that *C. longimanus* specifically is not targeted in the country and does not have economic importance for fish traders. Following consultation with stakeholders (including the Directorate of Water and Forests and Hunting, Directorate of Parks National, Directorate of Marine Protected Areas, Fisheries Service, scientists, National Fisheries Council, and fishmongers), however, the CITES MA of Senegal (*in litt*. to UNEP-WCMC, 2023) reported that the species is not fished in Senegalese waters and clarified that any exports reported from Senegal should in fact be re-exports of specimens caught in ABNJ.

The EU fishery has also targeted sharks off West Africa (Sall *et al*., 2021). The main areas of higher catches (expressed as CPUE) of sharks in the Atlantic Ocean in the European tropical tuna purse-seine fishery were off the coasts of Gabon, Angola, Senegal and Mauritania, mainly between July and

September corresponding to seasonal peaks in productivity in those areas (Clavareau *et al*., 2020). A high proportion of *C. longimanus* caught by the European fleet off west Africa were juveniles (76.7% of individuals caught in fisheries using FADs and 39.4% of individuals caught when targeting free swimming schools (Clavareau *et al*., 2020)).

Capture production:

FAO: No catches of *C. longimanus* in Senegal have been recorded in the FAO global capture production database 2013-2021; however, Senegal has reported catches of 'Sharks, rays, skates, etc. nei' (code: SKH) from the Eastern Central Atlantic, as summarised in Table 5.10. It is unclear which species of shark have been included in this category.

Table 5.10. Nominal catch (metric tonnes, live weight) of 'Sharks, rays, skates, etc. nei' (code: SKH), from Senegal reported to the FAO 2013-2021, rounded to the nearest whole number.

Reported as	2013	2014	2015	2016	2017	2018	2019	2020	2021
SKH	4135	135	0	0	643	0	0	652	12

Source: FAO Global capture database. Available at: https://www.fao.org/fishery/statistics-query/en/capture/capture_quantity Accessed 06/01/2024

ICCAT: Senegal has not reported capture of *C. longimanus* to ICCAT 2013-2021, but reported catches of 'Requiem sharks nei' (code: RSK) as summarised in Table 5.11. It is unclear which species of shark have been included in this category.

Table 5.11: Nominal catch (metric tonnes) of 'Requiem sharks nei' (code: RSK) from Senegal reported to ICCAT 2013-2022, rounded to the nearest whole number.

Reported as	2013	2014	2015	2016	2017	2018	2019	2020	2021
RSK		728	323	526	59	69	34	109	48

Source: ICCAT Statistical Bulletin vol. 48 (March 2023) Available at: https://www.iccat.int/sbull/SB48-2023/index.html

The CITES MA of Senegal (*in litt*. to CITES Secretariat, 2023; *in litt*. to UNEP-WCMC, 2023) also confirmed that there are no landings of *C. longimanus* registered in the statistical database of the Maritime Fisheries Department (DPM) responsible for exploitation, management and monitoring of catches of fishery resources.

Trade: Senegal has submitted all annual reports to CITES in 2014-2022 with the exception of 2017, which had not been received at the time of writing.

Senegal has not published any export quotas for this species except for a zero quota for all specimens of source W and X published in 2024; trade data for this year were not available at the time of writing.

According to the CITES Trade Database, direct trade in *C. longimanus* from Senegal 2014-2022 was only reported by Hong Kong SAR in 2019, 2021, and 2022, and totalled 420 kg of fins and 700 kg of dried fins for commercial purposes. The CITES MA of Senegal (*in litt*. to UNEP-WCMC, 2023) reported that any exports reported for Senegal should in fact be re-exports of specimens caught in ABNJ, and the CITES Trade Database was updated to reflect this for Senegal's annual reports. As such, Senegal reported re-exports originating from ABNJ over this period totalling 2919 kg of fins and 1758 kg of dried fins for commercial purposes, as well as 18 kg of specimens for scientific purposes and 1 kg of confiscated fins (source 'I'); these introductions from the sea were not reported in the imports section

of Senegal's CITES annual reports. Permit analysis suggests that the direct trade reported by the importer is associated with the shipments reported by Senegal to be re-exports.

No indirect trade in *C. longimanus* originating in Senegal was reported 2014-2022.

Management:

International commitments and RFMOs: Senegal is a Party to CMS (in which *C. longimanus* is listed in Appendix I), and is a signatory of the CMS Sharks MOU.

Senegal is a Party to the ICCAT which, through Recommendation 10-07, has prohibited the retention, transshipping, landing, storing, selling, or offering for sale any part or whole carcass of *C. longimanus* in any fishery. Senegal is a member of the Sub-Regional Fisheries Commission (SRFC) and collaborates through the Plan of Action for sharks, which involves joint research activities, capacity building, information dissemination and monitoring and surveillance (Vasconcellos *et al*., 2018).

Legislation: Law No 2015-18 of 13 July 2015 on the Code of Marine Fisheries and its implementing decrees set out the legal framework within which maritime fisheries operate in Senegal. This includes shark fisheries and covers fishing in Senegalese waters as well as vessels of Senegalese nationality fishing on the high seas. Decree No. 2016-1804 of 22 November 2016 implementing Law No. 2015-18 of 13 July 2015 on the maritime fishing code provides authorisations for chartered foreign fishing vessels, defines measures for the conservation of the fishery resource (e.g. gear, mesh size, minimum sizes etc) and has provisions for monitoring and surveillance.

> ***Prohibitions:*** In its report to ICCAT, Senegal did not provide information on legislation to implement ICCAT Resolution 10-07, stating that its industrial fishery does not target or catch *C. longimanus* (ICCAT, 2023). However, it was noted that data on discards and releases of *C. longimanus* are collected via observer reports and logbooks. An updated version of Law No. 2015-18 was reported to be in development to "take into account" all CITES and CMS listed species (Direction des Parcs Nationaux, 2023).

Senegal's national legislation is included in Category 1 in the CITES National Legislation Project (legislation that is believed generally to meet all four requirements for effective implementation of CITES).

Non-detriment findings: The CITES MA of Senegal (*in litt* to the CITES Secretariat, 2023) has requested technical and financial support from CITES to undertake the work necessary for an NDF and to support improved monitoring and implementation of the Convention. The MA (*in litt* to CITES Secretariat, 2023) noted that it had established a zero export quota for *C. longimanus* until an NDF can be undertaken. The MA (*in litt* to the CITES Secretariat, 2023) also stated it will improve the monitoring of import-re-export operations of species listed in CITES Appendix II.

In an assessment of its capacity to implement the CITES Appendix II listings of sharks, Senegal was found to have a sufficient management regime for NDFs, but insufficient supporting information, monitoring and compliance, especially in its artisanal fishing sector (Vasconcellos *et al.,* 2018). In addition, while Senegal's legislation was found to be sufficient to underpin Legal Acquisition Findings, its capacity for species identification and traceability were found to be insufficient for CITES implementation (Vasconcellos *et al.,* 2018).

Management plans and NPOA-Sharks: Senegal adopted an NPOA-Sharks (Ministere de l'Economice Maritime, 2005) in 2006. Actions to achieve the NPOA's objective of long-term sustainable use included strengthening the technical and management capabilities of stakeholders, improving consultation, improving knowledge, and the implementation of specific measures e.g. protected species, gear types, fishing zones etc. Implementation of the NPOA-Sharks was reviewed in 2007, resulting in several recommendations to improve capacity building, data collection and assessments, and regional cooperation (Fischer *et al*., 2012).

Fisheries agreements: Senegal signed a fishing agreement with the European Union in 1979 which has been regularly updated since then (SRFC, 2023). The 2019 Protocol on the implementation of the Agreement on a Sustainable Fisheries Partnership between the European Union and Senegal contains provisions governing fishing activities by EU vessels in Senegalese fishing zones, which include implementation of ICCAT Recommendations on *C. longimanus* (Protocol on the Implementation of the Agreement on a Sustainable Fisheries Partnership between the European Union and the Republic of Senegal, 2019).

Senegal has also signed a bilateral fishing agreement with Mauritania to allow approximately 300 Senegalese canoes to fish in Mauritanian waters, and has signed several bilateral access agreements with other countries in the sub-region, in particular with Guinea-Bissau, and a reciprocity agreement with Cabo Verde (SRFC, 2023).

Protected areas: Senegal currently has at least 11 Marine Protected Areas covering approximately 333 700 ha (Direction des Aires Marines Communautaires Protégées, 2023; UNEP-WCMC & IUCN, 2023), which for the most part constitute refuge areas for sharks and rays (Direction des Parcs Nationaux, 2016). Management Plans are available for at least nine of these MPAs (Direction des Aires Marines Communautaires Protégées, 2023). Though there have been challenges (e.g. around governance (Senghor *et al*., 2023)), Senegal has promoted a participatory approach in the establishment of protected areas and a Community Marine Protection Area Department was established in 2012 (Cormier-Salem & Mainguy, 2014).

Illegal trade: Seizures of *C. longimanus* from Senegal were reported in Hong Kong SAR in 2019 and 2021 (AC32 Inf. 3).

Yemen

Distribution: The occurrence of *C. longimanus* in Yemeni waters is indicated in the range maps of Compagno (1984); Ebert *et al*. (2021); Jabado & Ebert (2015); and Rigby *et al*. (2019) as well as by Bonfil & Abdallah (2003) in their list of sharks and rays for the Red Sea and Gulf of Aden region. *C. longimanus* has been reported from the Socotra Archipelago in the northwest Indian Ocean near the Gulf of Aden (Shaher 2007; Zajonz *et al*., 2010) and is listed in Yemen's report to the CMS Sharks MOU as a species that vessels catch within Yemen's area of national jurisdiction (Environment Protection Authority, 2023).

Population status and trends: No specific information on the population status and trends of *C. longimanus* in Yemeni waters was identified. The lack of species-specific landings data was reported to hinder the monitoring of trends in the abundance and status of sharks in the country (Vasconcellos *et al*., 2018).

Shaher (2007) noted that the highly migratory species, including shark species, present in the Gulf of Aden are likely part of the larger Indian Ocean stock. As noted in the *Population status and trends* overview section, the IOTC considers the status of *C. longimanus* in the Indian Ocean to be unknown (IOTC, 2023a). However, Rigby *et al*. (2019) estimated a median population reduction for the Indian Ocean of 92.9% over three generation lengths (61.2 years), with the highest probability of >80% reduction over three generation lengths, and Jabado *et al*. (2017) concluded that available historic population trend datasets within the Indian Ocean (including the Arabian Sea region) indicate steep declines equivalent to a population decline of 94-96% over the past three generations (c. 49 years). On this basis, *C. longimanus* was categorised as Critically Endangered in the Arabian Sea and adjacent waters (including the Sea of Oman) in a 2017 regional assessment (Jabado *et al*., 2017).

Threats: CITES-listed sharks are caught as both target species and as bycatch in Yemen's national waters, with animals destined both for the domestic market and for export (Vasconcellos *et al*., 2018). Fisheries in Yemen are mainly small-scale in nature and considered artisanal, however the country also has small industrial fisheries targeting demersal and pelagic species (Jabado *et al*., 2018; Morgan, 2004). While the artisanal fleet (mainly comprised of small-scale gillnet, longline and hook-and-line; Vasconcellos *et al*., 2018) targets sharks, this was not considered by the CITES Management Authority of Yemen (*in litt.* to UNEP-WCMC, 2023) to be a major threat; targeting of sharks by commercial companies however was thought to have possibly led to a depletion of shark stocks (CITES MA of Yemen *in litt*. to UNEP-WCMC, 2023). Vasconcellos *et al*. (2018) reported that sharks are also caught as bycatch in industrial bottom trawling fisheries in Yemen operated by vessels from China, the Republic of Korea, Egypt and Thailand.

C. longimanus specifically was reported to be caught by vessels operating within Yemen's EEZ as well as by Yemeni flagged vessels in ABNJ (Environment Protection Authority, 2023; IUCN SSC Shark Specialist Group *in litt.* to UNEP-WCMC, 2024). Volumes of catches are generally unknown (Vasconcellos *et al*., 2018). However, in the Socotra Archipelago, where sharks are targeted using longlines, gill nets, and hook and line techniques, Shaher (2007) found *C. longimanus* to represent 0.3% of the estimated annual shark catch.

Shark meat is consumed locally for subsistence in the eastern regions of Yemen (CITES MA of Yemen *in litt*. to UNEP-WCMC, 2023), and it has been estimated that local fishing communities consume from 50-72% of the total shark (and ray) production in the region (Jabado & Spaet, 2017; Vasconcellos *et al*., 2018). Yemen has been noted to be a major trade hub for shark products, exporting high volumes of fins (see *Trade* section), dried skin (45-50 metric tonnes between 2009 and 2011) and dried bones (26 metric tonnes between 2009 and 2011) (Jabado & Spaet, 2017). Vasconcellos *et al.* (2018) listed the main destination countries of shark products from Yemen as China, Hong Kong SAR, Sri Lanka and Singapore.

Capture production:

FAO: Yemen reports almost all landings of sharks to the FAO at class level (Elasmobranchii) (Vasconcellos *et al*., 2018). Landings of *C. longimanus* in Yemen have not been recorded in the FAO global capture production database 2013-2021; however, Yemen reported catches of 'Sharks, rays, skates, etc. nei' (code: SKH) as shown in Table 5.12. It is unclear which species of shark have been included in this category.

Table 5.12: Nominal catch (metric tonnes, live weight) of 'Sharks, rays, skates, etc. nei' (code: SKH) from Yemen reported to the FAO 2013-2021, rounded to the nearest whole number.

Reported as	2013	2014	2015	2016	2017	2018	2019	2020	2021
SKH	12000	10800	9100	7820	6647	6647	6647	6647	6647

Source: FAO Global capture database. Available at: https://www.fao.org/fishery/statistics-query/en/capture/capture_quantity Accessed 06/01/2024

IOTC: Landings of *C. longimanus* in Yemen have not been recorded in the IOTC database 2013-2021; however, Yemen reported catches of 'Sharks, rays, skates, etc. nei' (code: SKH) as shown in Table 5.13; all capture was from the artisanal fleet. It is unclear which species of shark have been included in this category.

Table 5.13: Nominal catch (metric tonnes) of 'Sharks, rays, skates, etc. nei (code: SKH) from Yemen reported to the IOTC 2013-2022, rounded to the nearest whole number.

Reported as	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
SKH	12000	10800	9100	7820	6647	6647	6647	6647	6647	6647

Source: IOTC Interactive Data Browser 2023. Nominal catches for all species, including bycatch ones. Available at: https://iotc.org/data/browser. Accessed 09/12/2023

Trade: Yemen has submitted annual reports to CITES for all years 2014-2021; the annual report for 2022 had not yet been received at the time of writing. Yemen has not published any export quotas for the species.

Direct trade in *C. longimanus* from Yemen 2014-2022 comprised 14 306 kg of wild-sourced fins as reported by Yemen, and wild-sourced fins (2899 kg) and dried fins (1526 kg) reported by Hong Kong SAR as the sole importer; all trade was reported for commercial purposes (Table 5.14). Yemen did not report any imports of the species from ABNJ 2014-2022.

Indirect trade in *C. longimanus* originating in Yemen 2014-2022 comprised 130 kg of wild-sourced dried fins reported in 2022 by importers only, and 54 kg of wild-sourced fins reported in 2022 by re-exporters only (both traded for commercial purposes). In addition, three wild-sourced fins traded for commercial purposes were reported in 2014 by the re-exporter, and three wild-sourced fins were reported by importers for educational purposes in 2015. All indirect trade was reported as re-exported by the UAE and Singapore.

Table 5.14: Direct exports of *C. longimanus* from Yemen, 2014-2022. Hyphens indicate years where exporter CITES annual reports have not yet been received. Quantities have been rounded to the nearest whole number, where applicable.

Term	Unit	Purpose	Source	Reported by	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
fins (dried)	kg	T	W	Exporter									-	
				Importer									1526	1526
fins	kg	T	W	Exporter					970		1500	11836	-	14306
				Importer								2899		2899

Source: CITES Trade Database 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Management:

International commitments and RFMOs: Yemen is a Party to CMS (in which *C. longimanus* is listed in Appendix I) and is a signatory of the CMS Sharks MOU.

Yemen is a Contracting Party to the IOTC. The country has been non-compliant with many of the reporting obligations of IOTC and has not submitted national reports to IOTC in recent years (IOTC, 2019, 2020, 2021, 2022, 2023c).

Yemen is a member of the Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden (PERSGA), which has a number of projects on marine biodiversity. These include the SFISH Project Development Objective, which aims to strengthen regional collaboration and management for sustainable development of fisheries in the RSGA region.

Yemen is also a member of the SWIOFC.

Legislation: Yemen's fisheries are regulated within the framework of Law No. 2 of 2006 for the Regulation, Conservation and Exploitation of Marine Organisms (Vasconcellos *et al*., 2018). This law aims, *inter alia*, to protect the marine environment and develop sustainable fisheries; encourage investment in the fishery and in aquaculture; organize artisanal and coastal fishing activities and manage foreign industrial fishing; and support research (FAO/FAOLEX, 2023). The law is implemented by the Resolution of Prime Minister No. 296 of 2006 regarding Executive Regulations for Law No. 2 of 2006 concerning Organization and Exploitation of Aquatic Organisms and their Protection 2006-12-25. Additional regulations were reported to set out the details concerning fishing activities and restrictions including "entry controls, technical measures and MCS [Monitoring, Control and Surveillance]" (Vasconcellos *et al*., 2018). Different licencing requirements and fishing area restrictions are in place depending on whether vessels are classified as artisanal, coastal and industrial (Ministry of Fish Wealth, 2012), however no further details were located.

> ***Prohibitions:*** In a 2021 compliance report regarding Resolution 13/06 on the prohibition of *C. longimanus*, the IOTC noted that Yemen had indicated that retention had been banned since 2006, but no legal reference was provided (IOTC, 2021).
>
> ***Finning:*** Jabado and Spaet (2017) reported that Decree 42 of 1991 prohibits the "dumping of damaged and undesirable fish back at sea after their catch", noting that this serves as a ban on finning. However, the authors highlighted that the practice of finning may be widespread in Yemeni waters.

Yemen's national legislation is included in Category 1 in the CITES National Legislation Project (legislation that is believed generally to meet all four requirements for effective implementation of CITES).

Non-detriment findings: In August 2023, the CITES MA of Yemen (*in litt*. to CITES Secretariat, 2023) reported that it had stopped the export of *C. longimanus* until an NDF is undertaken, and is working with the International Fund for Animal Welfare (IFAW) to develop this. Fundraising is ongoing and the work is hoped to commence in 2024 (C. Matthew, IFAW *in litt*. to UNEP-WCMC, 2024).

The capacity of Yemen to properly implement CITES requirements was considered by Vasconcellos *et al*. (2018) insufficient both in terms of NDFs and Legal Acquisition Findings. The CITES MA of Yemen (*in litt*. to CITES Secretariat, 2021; 2023) have requested technical and financial support to implement NDFs on several occasions, noting a lack of financial resources in the country to undertake the relevant studies.

Management plans and NPOA-Sharks: Yemen's National Fisheries Strategy (2012-2025) aims to enhance the contribution of the fisheries sector to national economic growth whilst ensuring

environmental and resource sustainability (Ministry of Fish Wealth, 2012). It includes a range of programmes to ensure effective institutional structures, efficient legal frameworks, and sustainable resource management with effective monitoring (Ministry of Fish Wealth, 2012). However, concerns have been raised about the current fisheries management regime, including weak enforcement, low compliance, and widespread IUU fishing (Alabsi & Komatsu, 2014; The Pragma Corporation, 2019). Fishery Management Plans addressing key species were reported to be lacking, due in part to limited knowledge about resources (Alabsi & Komatsu, 2014). The CITES MA of Yemen (*in litt*. to UNEP-WCMC, 2023) noted that violations of regulations in natural reserves and ineffective application of the regulations have arisen to due to the challenging situation in the country and the lack of international support to address these issues.

Yemen does not have an NPOA-Sharks under the framework of the FAO Code of Conduct for Responsible Fisheries. No information was received by the IOTC Secretariat on the development of a plan at the most recent IOTC Scientific Committee (IOTC, 2023d).

Monitoring and observers: Catch and effort data for small-scale fisheries are reported to be registered at all landing sites, but no other compliance or surveillance was reported to be in place for these fisheries (Vasconcellos *et al*., 2018). Trawlers and transportation vessels are covered by logbooks and are required to be registered and to record catches of demersal fishes, cuttlefish and deep sea lobster (Vasconcellos *et al*., 2018), but no obligations regarding the recording of shark species were identified. The CITES MA of Yemen (*in litt*. to UNEP-WCMC, 2023) reported challenges with monitoring and evaluation, specifically the poor availability of experienced field crews.

Protected areas and Important Shark and Ray Areas (ISRAs): Yemen has six formal protected areas (marine and terrestrial) which include Kamaran Island, a marine protected area located in the Red Sea, and the Socotra Archipelago Protected Area (Yemen Biodiversity National Clearing House Mechanism, 2023). The Socotra Archipelago includes a marine core area (1540 hectares) and a marine buffer area (151 400 hectares) and all component areas have legal protection (UNESCO World Heritage, 2023). However, according to UNESCO there is a need to strengthen the legislative framework and management of the protected area, as well as enforcement capacity to deal more effectively with current threats, including, *inter alia*, overharvesting of marine natural resources (UNESCO World Heritage, 2023).

Yemen has two Areas of Interest (AoIs) for sharks and rays (Al Mahra and the Socotra Archipelago) (IUCN SSC Shark Specialist Group, 2023). In addition, the Southern Red Sea ISRA is a transboundary area that includes waters under the jurisdiction of Eritrea, Saudi Arabia, Sudan and Yemen (IUCN SSC Shark Specialist Group, 2023). Neither the AoIs nor the ISRA are specific to *C. longimanus*.

Illegal trade: Illegal fishing within Yemen's EEZ, including by foreign vessels from neighbouring countries, has been reported to be common (Morgan, 2004; Jabado *et al*., 2018). The CITES MA of Yemen (*in litt*. to UNEP-WCMC, 2023) noted that efforts are being made to prevent the smuggling of sharks from neighbouring countries. No seizures have been recorded in the TRAFFIC Wildlife Trade Portal 2013-2023 (TRAFFIC International, 2024).

E. Problems identified that are not related to the implementation of Article IV, paras 2(a), 3 or 6(a).

International measures and their implications for Legal Acquisition Findings

C. longimanus has been subject to retention bans through the IOTC since 2013 and ICCAT since 2010 (with some exceptions, see *Overview of management* section), and has been included in CMS Appendix I since 2020. Given these restrictions, clarification is needed on whether exports and introduction from the sea of the species are in line with Kenya, Senegal or Yemen's international commitments. Guidance from the Standing Committee on whether such measures would mean that CITES Legal Acquisition Findings would not be possible could be helpful, for example in the context of Res Conf. 18.9 (Rev. CoP19).

Misreporting of trade in specimens caught in ABNJ

No trade was reported to CITES from ABNJ by Kenya, Oman, or Yemen, even though the species is thought to be caught by Omani and Yemeni flagged boats operating in ABNJ (see *Oman* and *Yemen* sections). Although Senegal reported re-exports of specimens caught in ABNJ, these introductions from the sea were not reported in the imports section of Senegal's CITES annual reports. Given that there are no reported imports of specimens of *C. longimanus* from ABNJ in the CITES Trade Database globally, wider capacity building on reporting of trade in shark specimens caught in ABNJ and updates to the *Guidelines for the preparation and submission of CITES annual reports* may be necessary.

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Sphyrna lewini: China, Indonesia, Kenya, Mexico, Nicaragua, Oman, Sri Lanka and Yemen

A. Summary

CRITERIA MET:	Criterion i) trade in an endangered species, criterion ii) sharp increase in global trade, criterion iii) sharp increase in trade from China, Indonesia, Kenya, Nicaragua, Sri Lanka and Yemen and criterion v) high volume of trade in a globally threatened species.
GLOBAL STATUS:	Globally Critically Endangered (2018 assessment), based on an estimated population reduction of 77-97% over the past three generations (72 years) as a result of overexploitation.
INTERNATIONAL MEASURES:	ICCAT Recommendation 10-08 prohibits the retention and sale of hammerhead sharks (except *S. tiburo*) with an exemption for developing coastal Contracting Parties for local consumption. The Recommendation further states that developing coastal Contracting Parties should endeavour not to increase their catches of Sphyrnidae and take measures to ensure these species (except *S. tiburo*) will not enter international trade. RFMO measures that do not relate to the implementation of Article IV, paragraphs 2 (a), 3 or 6 (a) are reflected on in section E of this review; the CITES Secretariat has reached out to the relevant secretariats to request clarification, as appropriate.
CHINA: Responded to the consultation relating to the RST	*S. lewini* is reported to be common in Chinese waters and to occur, *inter alia*, in the South China Sea, East China Sea, Yellow Sea and Bohai Sea. China did not consider there to have been a decline in its general shark resources to date, however there is some evidence of population declines of the species in the Northwest Pacific. The status of the species in the wider North Pacific is unknown. *S. lewini* was reported only to be caught as bycatch in China, with most individuals caught in the East China and South China Sea; however, one author noted the species was targeted by longline fishing fleet with the flag of Taiwan, Province of China. Catches were reported to comprise both adults and juveniles. China has submitted annual reports for all years 2013-2022 and has not published any export quotas for this species. Direct trade in *S. lewini* from China 2013-2022 predominantly comprised 199 670 kg of pre-Convention meat for commercial purposes reported by China (79% of direct exports by weight) between 2016-2018. The remaining trade almost entirely comprised wild-sourced trade for commercial purposes, which included 34 500 kg of bodies and 17 000 kg of fins reported by China. China did not report any imports of the species from Areas Beyond National Jurisdiction (ABNJ) 2013-2022. No fishing licences are reported to have been approved for fisheries to target sharks, either in Chinese waters or in ABNJ. There is a general closed season in the East China Sea. While China noted that the species has been scientifically evaluated by research institutions, a document outlining the scientific basis for

	the non-detriment finding (NDF) for current exports was not provided. A National Plan of Action for Sharks (NPOA-Sharks) has not yet been developed. China is a Contracting Party to the IATTC, ICCAT, IOTC and WCPFC.
PROVISIONAL CATEGORY:	While *S. lewini* is only reported to be caught as bycatch, given the Critically Endangered status of the species, the scarcity and conflicting nature of the species' status in relevant fisheries, and the unclear scientific basis for NDFs for current exports, categorised as **Action is needed.**
INDONESIA: Responded to the consultation relating to the RST	The distribution of *S. lewini* in Indonesia includes the Indian Ocean, Makassar Strait, Java Sea, South China Sea, and most waters around Sumatra, Kalimantan, Sulawesi, Maluku, Nusa Tenggara, and Papua. No national stock assessments for the species have been conducted, and there are no well-established systems to assess the scale of domestic trade. An assessment of a targeted fishery in West Nusa Tenggara Province indicated that the species is being over-exploited in that location. *S. lewini* in Indonesia is particularly threatened by bycatch, particularly of juveniles. Indonesia has submitted annual reports all years 2013-2022 and published exports quotas for 2020-2021 for number of fins. Additional quotas for individuals were also set, but not submitted to the CITES Secretariat. Direct trade in *S. lewini* from Indonesia 2013-2022 was reported in 2021 and 2022, and predominantly comprised wild-sourced trade for commercial purposes; in dried fins (7935 kg reported by Indonesia and 6077 kg reported by importers), fins (1897 kg reported by Indonesia and 4102 kg reported by importers) and bones (2983 kg reported by Indonesia only). It is difficult to assess whether trade was within quota for 2021 because the published quota used the unit of measure 'number of specimens' but trade was reported both by number and in kg. Indonesia did not report any imports of the species from ABNJ 2013-2022. A conditional positive NDF by the Scientific Authority of Indonesia concluded that the species did not face a severe threat if appropriately managed. However, the NDF recommended that the Management Authority should complete a number of actions before conducting international trade in *S. lewini;* these included improving catch recording, the implementation of a catch quota based on a population estimate, the establishment of a size limit for individuals landed and derivatives traded, and the protection of mating and nursery grounds. Indonesia developed an NPOA-sharks for the periods 2010-2014 and 2016-2020; the next phase of the plan for 2020-2024 was reported to be in progress. Indonesia is a Contracting Party to the CCSBT, IOTC and WCPFC, and is a cooperating non-member of the IATTC.
PROVISIONAL CATEGORY:	Indonesia is commended on making a first step in terms of formulating a conditional NDF. However, the status of implementation of the NDF's conditions is unclear, and it is not known if Indonesia intends to cease trading until the conditions are fulfilled. There does not appear to be a scientific basis for determining the export quota for recent levels of international trade (exports occurred in 2022, the last year for which data is available). Given the Critically Endangered status of the species, the absence of a national stock assessment to determine sustainable harvest, the indication that the population is being overexploited in at least one location, and a lack of monitoring of domestic catch, categorised as **Action is needed**.

KENYA: Responded to the consultation relating to the RST	*S. lewini* is thought to have a coast-wide distribution in Kenya, but the status of the species in Kenyan waters is not known. The wider status in the Indian Ocean is also unknown, though severe declines of over 80% in three generations have been inferred. Surveys of landings from Kenya's coastal fishery found *S. lewini* to be one of the five most commonly landed shark species along the Kenyan coast, with juveniles accounting for almost 90% of individuals caught. Artisanal elasmobranch landings in Kenya were reported to have decreased by c. 83% between 1983-2011, likely as a result of overfishing. This has led some authors to raise concerns about the long-term sustainability of the fishery and to call for the introduction of management measures such as a seasonal closure of inshore pupping grounds. Kenya has submitted annual reports for all years 2013-2022 and has not published any export quotas for this species. Direct trade in *S. lewini* from Kenya 2013-2022 comprised 60 kg of wild-sourced fins and 65 live wild-sourced individuals as reported by Kenya, all for commercial purposes (40 live wild-sourced individuals almost entirely for commercial purposes as reported by importers). Kenya did not report any imports of the species from ABNJ 2013-2022. Although an NDF has not yet been completed, Kenya explained that a rapid assessment of *S. lewini* conducted in 2018 "established sustainable levels of harvesting and maximum exportable quantities of live specimens of the species at 50" (no methodology was provided). While exports 2018-2022 appear to fall within this quota, data reported to the FAO/IOTC indicate that catches of *S. lewini* over this period were much higher. Kenya noted that plans were underway to undertake NDF studies for the species. A draft NPOA-Sharks is being finalised. Kenya is a Contracting Party to the IOTC.
PROVISIONAL CATEGORY:	Given the Critically Endangered status of the species; its unknown status in the wider Indian ocean; the absence of a national stock assessment in Kenyan waters; indications that the population is being overexploited; and the lack of a scientifically based NDF, categorised as **Action is needed**.
MEXICO: Responded to the consultation relating to the RST	*S. lewini* is found off Mexico's Pacific and Atlantic coastlines. The extinction risk of the three relevant distinct population segments (DPSs) for the country (Northwest Atlantic and Gulf of Mexico, Central and Southwest Atlantic, and Eastern Pacific) has been assessed as low, moderate, and high respectively, though data on the species status in the latter two DPSs are considered to be scarce. Data on the status of the Northwest Atlantic and Gulf of Mexico DPS are contradictory, but some analyses have found evidence of population recovery following the implementation of management measures. Overfishing, loss of habitat (particularly of nursery areas) and climate change are the principal threats in the country. *S. lewini* is caught as a target and non-target species by fisheries on both coasts, however the majority of catches are reported to come from targeted artisanal fisheries. Mexico has submitted annual reports for all years 2013-2022, and has not published any export quotas for this species. Direct trade in *S. lewini* from Mexico 2013-2022 predominantly comprised wild-sourced fins for commercial purposes

	(53 886 kg reported by Mexico and 26 801 kg reported by importers). Mexico did not report any imports of the species from ABNJ 2013-2022 but noted that it fishes in areas "adjacent to the EEZ". Closed seasons are in place, and there is a moratorium on the issuance of new shark fishing permits to ensure that current effort is not increased. Mexico currently sets yearly sustainable export volumes (SEVs) using a catch-MSY model, although the Management Authority noted its ambition to refine the production models used and eventually introduce a model structured by age class. The SEV for *S. lewini* for 2023 was estimated at 1958.6 tonnes for the Pacific, and 2062.32 tonnes for the Atlantic. Mexico published an NPOA-Sharks in 2004; an update to this plan was noted to be in preparation. Mexico is a Contracting Party to the ICCAT, IATTC and ISC.
PROVISIONAL CATEGORY:	Mexico should be commended for the implementation of a strong management framework for the species in order to comply with Article IV. However, given the mixed conservation status of the three principal DPSs in which Mexico is fishing, further information may be required to ensure that all populations are being harvested sustainably (particularly the Central and Southwest Atlantic and the Eastern Pacific DPSs, for which the least data are available). On this basis, categorised as **Unknown status**. Mexico could be invited to provide a progress report on the update of its NPOA-Sharks and the introduction of a more refined model to calculate sustainable export levels.
NICARAGUA: Responded to the consultation relating to the RST	*S. lewini* is found off the Pacific and Caribbean coasts of Nicaragua. The status of the species in Nicaraguan waters is not known. At the wider scale, the Eastern Pacific DPS of *S. lewini* has been classified as having a high risk of extinction, while the Central and Southwest Atlantic DPS (for which abundance and catch statistics are scarce) was classified as having a moderate risk of extinction. While no targeted shark fishing was reported to occur in the country, *S. lewini* are caught as bycatch by artisanal fleets. Most individuals caught are adult or sub-adult, although the small-scale artisanal fleet has been known to catch juveniles. While fins are exported, meat is consumed domestically. Nicaragua has submitted annual reports all years 2013-2022 and has not published any export quotas for the species. Direct trade in *S. lewini* from Nicaragua 2013-2022 almost entirely comprised wild-sourced fins for commercial purposes (4521 kg of fins reported by Nicaragua, 3611 kg of fins and 646 kg of dried fins reported by importers), with a peak of 1728 kg of fins reported by Nicaragua in 2021. Nicaragua did not report any imports of the species from ABNJ 2013-2022. Nicaragua adopted an NPOA-Sharks in 2010. The country is a Contracting Party to the IATTC and ICCAT, and is a cooperating non-member of the WCPFC. Noting that there is a lack of capacity to conduct NDFs for shark species, the CITES Authorities in Nicaragua have requested technical and economic support from the Secretariat to develop a specific format for this group.
PROVISIONAL CATEGORY:	While *S. lewini* is only reported to be caught as bycatch, given the Critically Endangered status of the species, the high extinction risk for the Eastern Pacific DPS, the unknown status of the species in Nicaraguan waters, and the lack of an NDF, categorised as **Action is needed**.

OMAN: Responded to the consultation relating to the RST	The status of *S. lewini* in Omani waters is not known, although it has been recorded as a commonly landed species. The status of *S. lewini* in the wider Indian Ocean is also considered unknown, though severe declines of over 80% in three generations have been inferred. In the Arabian Sea region, the species is estimated to have declined by >50% over the past three generations. Omani fishers interviewed in 2013 perceived a 75% decline in overall shark abundance since 2001. Oman has submitted annual reports for all years 2013-2022 and has not published any export quotas for the species. Direct trade in *S. lewini* from Oman 2013-2022 entirely comprised wild-sourced fins, predominantly for commercial purposes, of which the majority were reported by weight (7700 kg as reported by Oman; 8620 kg as reported by importers), as well as 1500 fins reported by number by Oman only. Oman did not report any imports of the species from ABNJ 2013-2022. Oman reported that it would cease issuing permits for Appendix II shark species for six months from December 2023 (i.e. until June 2024), to allow NDF studies to be undertaken. The country is in the process of developing an NPOA-Sharks, but it is unclear when this will be finalised. Oman is Contracting Party to the IOTC.
PROVISIONAL CATEGORY:	Given the Critically Endangered status of the species, wider declines reported in the Arabian Sea region, the unknown status of the species in Omani waters, the lack of an NDF, and that Oman has specified that permits will cease to be issued for a limited period only, categorised as **Action is needed**. However, Oman could be categorised as Less concern if the country agrees to publish an annual zero export quota, with any changes to the quota subject first to the agreement of the Secretariat and the Chair of the Animals Committee.
SRI LANKA: Responded to the consultation relating to the RST	The status of *S. lewini* in Sri Lankan waters is not known, however anecdotal information suggests there has been a decline in landings over the past decade, despite no change in fishing gears and an increase in fishing effort over the same period. The status of the species in the wider Indian Ocean is also considered unknown, though severe declines of over 80% in three generations have been inferred. Sri Lanka has submitted all annual reports for all years 2013-2022 and has not published any export quotas for the species. Direct trade in *S. lewini* from Sri Lanka 2013-2022 primarily comprised 19 518 kg of wild-sourced fins for commercial purposes as reported by Sri Lanka (3409 kg of fins and 1517 kg of dried fins reported by importers); trade peaked in 2022 with 10 281 kg of fins. Sri Lanka did not report any imports of the species from ABNJ 2013-2022. A positive conditional NDF, subject to improvement of fisheries management, compliance, monitoring, and research, was made for the species for 2017-2019; however no updates appear to have been published. This NDF noted that landings mainly comprise adults, however landings data show that juveniles account for a high proportion of individuals caught. Sri Lanka's NPOA-Sharks was reported to be in the process of being revised. The country is a Contracting Party to the IOTC.

PROVISIONAL CATEGORY:	Given the Critically Endangered status of the species, its unknown status in Sri Lankan waters and in the wider Indian Ocean, and the lack of a current scientifically based NDF, categorised as **Action is needed**.
YEMEN: Responded to the consultation relating to the RST	The status of *S. lewini* in Yemeni waters is not known. The status of *S. lewini* in the wider Indian Ocean is also considered unknown, though severe declines of over 80% in three generations have been inferred. In the Arabian Sea region, the species is estimated to have declined by >50% over the past three generations. Yemen has noted a lack of monitoring and evaluation of shark populations in the country. *S. lewini* is caught as both a target and bycatch species in Yemen's national waters and is considered one of the most important commercial shark species; the country has a large domestic market for shark meat but also exports shark derivatives. Fishers across the Arabian Sea and adjacent waters have been reported to target shark breeding aggregations and nursery areas, landing high volumes of juveniles and newborn sharks, however it was not possible to confirm whether this was the situation for *S. lewini*. Noting the current political instability in the country, Yemen reported that regulations have not been effectively applied and that there are violations of these regulations in protected areas. Yemen published a reservation for the species on 12 June 2013. Yemen has submitted annual reports for all years 2013-2022 and has not published any export quotas for the species. Direct trade in *S. lewini* from Yemen 2013-2022 entirely comprised wild-sourced fins for commercial purposes reported in 2018 and 2021-2022 (totalling 22 204 kg as reported by Yemen; 5675 kg of fins and 3769 kg of dried fins as reported by importers). Yemen did not report any imports of the species from ABNJ 2013-2022. In August 2023 Yemen reported that exports of *S. lewini* have been prohibited until an NDF has been undertaken. Yemen reported it was working with IFAW to secure funding to undertake this work and has requested technical and financial support from the CITES Secretariat. To date, Yemen has not developed an NPOA-Sharks. The country is a Contracting Party to the IOTC.
PROVISIONAL CATEGORY:	On the basis that no legal export of wild specimens is anticipated, and conditional upon the annual publication of a zero quota on the CITES website, categorised as **Less concern.** Any planned changes to the zero quota should be communicated to the Secretariat and Chair of the Animals Committee, along with a justification of how the change is based on estimates of sustainable offtake using best available scientific information, for their agreement.

B. RST background

AC32 marked the first time that *Sphyrna lewini* has been selected for inclusion in Stage 2 of the RST.

C. Species characteristics

Biology: *S. lewini* (scalloped hammerhead shark) is a large-bodied shark that occurs over continental and insular shelves and in adjacent deep waters, inshore and in enclosed bays and estuaries (Ebert *et al.*, 2021). It is found from surface waters to depths of at least 275 m (Compagno, 1984), but it has

been recorded at a depth of 1043 m (Moore & Gates, 2015) and may spend significant amounts of time in mesopelagic habitats (200-1000 m deep) (Spaet *et al*., 2017). *Sphyrna* species tend to move to the surface in cooler months and to colder waters below the thermocline in warmer months (Ebert *et al*., 2021). *S. lewini* is notable for forming large true schools, with some adult populations, primarily females, known to aggregate at seamounts and offshore islands by day, before dispersing individually or in small groups to feed at night (Ebert *et al*., 2021; Ebert & Stehmann, 2013).

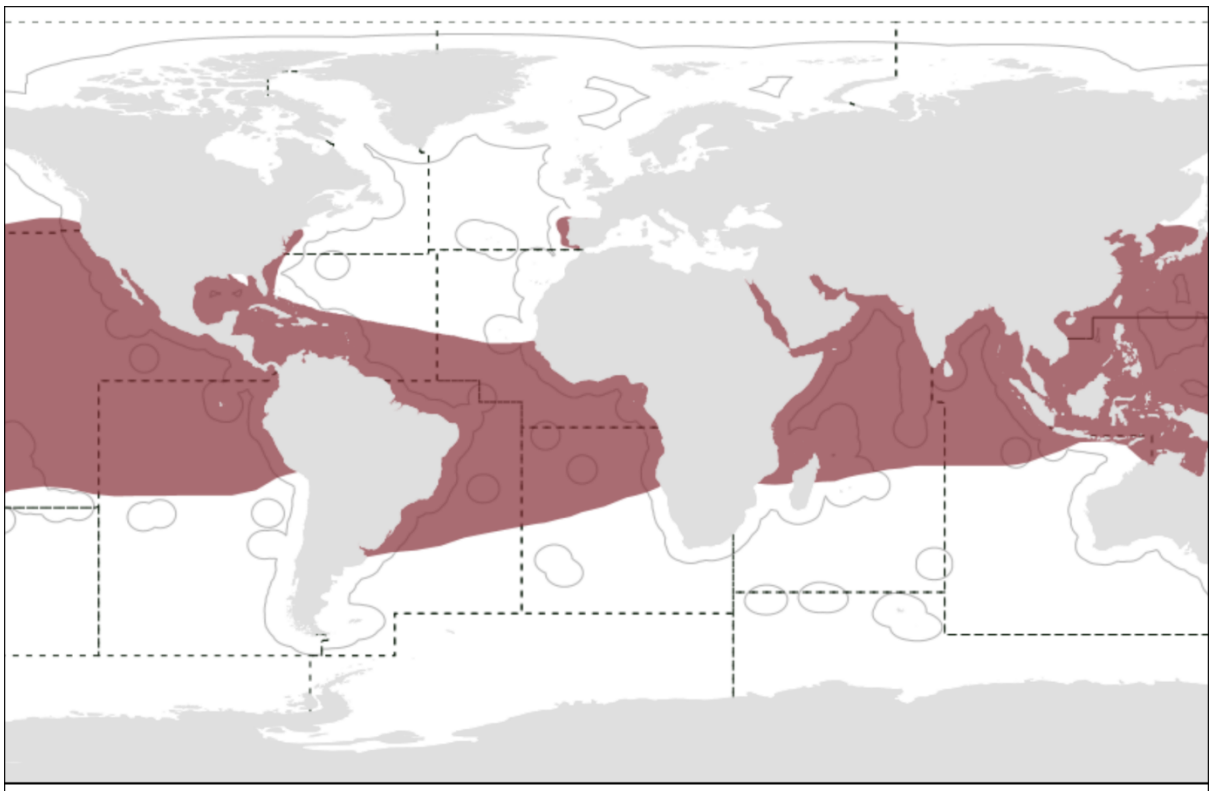
S. lewini is a highly mobile species (Compagno, 1984) that undertakes complex long distance migrations in some parts of its range (Nalesso *et al*., 2019). Globally, male *S. lewini* do not show any genetic population differences either between or within oceanic basins, and as such are thought to undertake long-distance dispersions and facilitate gene flow (Daly-Engel *et al*., 2012). The frequency of these movements, however, is unknown (Daly-Engel *et al*., 2012). In contrast, female *S. lewini* are thought to exhibit reproductive philopatry, showing site fidelity to single coastlines, archipelagos, or individual nursery areas (Daly-Engel *et al*., 2012; Elizondo-Sancho *et al*., 2022).

As well as these sex differences, *S. lewini* show different levels of mobility depending on whether they are juveniles or adults. Juvenile *S. lewini* are mainly found in shallow coastal habitats, where they remain resident for a number of years before moving offshore as they grow (Compagno, 1984; Hoyos-Padilla *et al*., 2014).

S. lewini is viviparous, with estimates of the length of gestation ranging from 8-12 months (Ebert *et al*., 2021). The reproductive periodicity of the species appears to vary by region, with both annual and biennial cycles reported (Cortés *et al*., 2015; Hazin *et al*., 2001; White *et al*., 2008). Other life history data for the species also vary depending upon the population sampled. Table A.2 in Annex 1 provides a summary of the life history parameters that have been estimated for the species: estimated growth rates range from 0.08-0.76 cm/yr, head to tail length at sexual maturity ranges from 140-250 cm, age at maturity ranges from 3.8 to 15.2 years (with females always achieving maturity later than males), estimates of longevity range from 10.6-35 years, and litter size ranges from 12-41 pups.

In general, *S. lewini* is a long-lived, relatively slow-growing, and slow-reproducing species (Piercy *et al*., 2007; White *et al*., 2008), parameters which make it intrinsically vulnerable to overexploitation (Maguire *et al*., 2006; White *et al*., 2008). The species has been placed within the FAO's low productivity category (CoP16 Prop. 43), with estimates of its intrinsic rate of population increase ranging from <0.096 to c. 0.24/yr (Cortés *et al*., 2015; Pardo *et al*., 2018).

Distribution: *S. lewini* is a coastal-pelagic species that has a circumglobal distribution in coastal warm temperate and tropical waters between 46°N and 36°S (Compagno, 1984; Figure 6.1).



Range Data: Food and Agriculture Organization of the United Nations 2024. *Sphyrna lewini. FAO Aquatic Species Distribution Map viewer.* https://www.fao.org/figis/geoserver/factsheets/species.html. Downloaded on 21 February 2024. Projection: WGS84.

Disclaimer: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Figure 6.1. Range of *S. lewini*.

The National Oceanic and Atmospheric Administration of the United States department of commerce (NOAA) recognised six distinct population segments (DPSs) for *S. lewini* in 2014 (Figure 6.2): Northwest Atlantic and Gulf of Mexico; Central and Southwest Atlantic; Indo-West Pacific; Central Pacific; and Eastern Pacific (Miller *et al*., 2014). The stock structure within the Indo-West Pacific was noted to be poorly understood (Rice, 2017), however Green *et al*. (2022) proposed four major genetic stocks across the Indian and Pacific Oceans; West Indian, Central Indo-Pacific, Central Pacific, and East Pacific. A study additionally suggests that an Arabian population is genetically distinct from other known stocks in the Indian Ocean (Spaet *et al*., 2015).

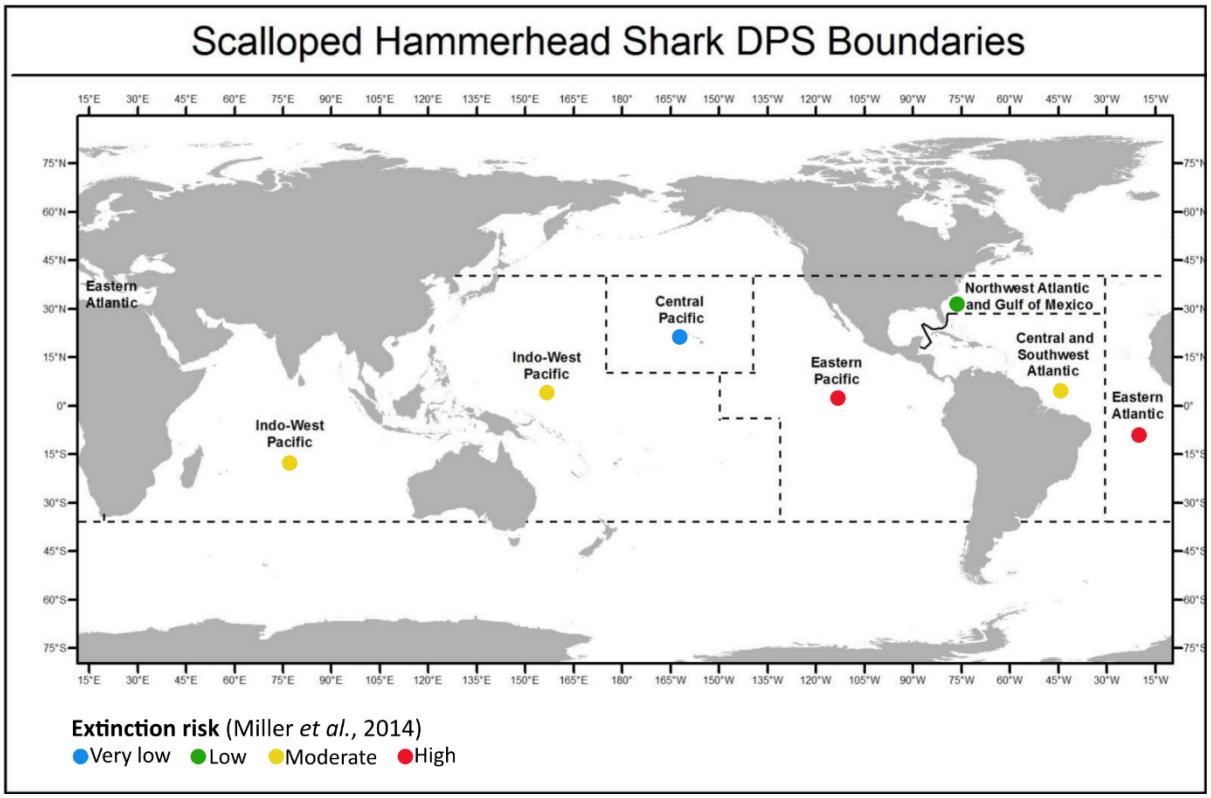


Figure 6.2. Map of the six *S. lewini* Distinct Population Segment (DPS) boundaries. Source: Modified from Miller, M. pers. comm. 2024.

Population status and trends: Population estimates for *S. lewini* are not available (Rigby *et al*. 2019a), however, it is thought to be the most abundant species of the Sphyrnidae family (Ebert & Stehmann, 2013).

S. lewini was categorised by the IUCN as Critically Endangered in a 2018 assessment, on the basis of a median population reduction of 76.9-97.3%, with the highest probability of an >80% reduction over three generation lengths (72.3 years; Rigby *et al*., 2019a). The overall assessment was based on four sets of data, from the North Atlantic and Gulf of Mexico, South Pacific and Indian Ocean, and the analysis was conducted using a Bayesian state-space modelling framework developed by Winker *et al*. (2018). The estimated population change and the likely status of the species for each region is outlined in Table 6.1. In summary, *S. lewini* is estimated to have undergone steep declines in all oceans, with signs of stabilization and possible recovery in response to management observed only in the Northwest Atlantic and Gulf of Mexico (Rigby *et al*., 2019a).

Table 6.1: Summary of median population change and likely status of *S. lewini* over three generation lengths per region. Table modified from Rigby *et al*. (2019b).

Region	Dataset	Timespan (years)	Median change (%)	Likely status
North Atlantic 1	Stock assessment (Jiao *et al*., 2011)	25	-99.6	CR
North Atlantic 2	Standardised CPUE from J. Carlson & W.B. Driggers unpubl. data	24	+555.4	LC
South Atlantic	No trend data			-
North Pacific	No trend data			-
South Pacific 1	Standardised CPUE from Simpfendorfer (2010)	41	-99.8	CR
South Pacific 2*	Standardised CPUE from Noriega *et al*., (2011)	11	+99.8	LC
Indian	Standardised CPUE from Dudley & Simpfendorfer (2006)	26	-93.4	CR
Global 1**			-97.3	CR
Global 2**			-76.9	CR

** Not used in global weighted trend.*

*** Global 1: based on the North Atlantic 1, South Pacific 1, and Indian ocean estimates; Global 2: based on the North Atlantic 2, South Pacific 1, and Indian ocean estimates.*

A summary of available information on the trends in each ocean is presented below, some of which were used in the population trend analysis in Table 6.1. Note that no species-specific stock assessment has been conducted under the Commission for the Conservation of Southern Bluefin Tuna (CCSBT), the Inter American Tropical Tuna Commission (IATTC), the International Commission for the Conservation of Atlantic Tunas (ICCAT), or the Western and Central Pacific Fisheries Commission (WCPFC).

Atlantic Ocean: Data from the Northwest Atlantic and Gulf of Mexico stock assessment set out in Jiao *et al*. (2011) indicated that *S. lewini* had been overfished[17] since the early 1980s, with overfishing[18] occurring periodically between 1983-2005; similar dramatic declines were found by Hayes *et al*. (2009). However, more recent standardised catch-per-unit effort (CPUE) data[19] from 1994-2017 (J. Carlson and W.B. Driggers unpubl. Data in Rigby *et al*., 2019a) has indicated that the Northwest Atlantic and Gulf of Mexico population has begun to increase following the implementation of management measures. Similar results to the CPUE time series were found by Pacoureau *et al.* (2023), who used a Before-After temporal comparison model to assess population trends of *S. lewini* using the same datasets outlined above (with the exception of those underpinning Hayes *et al*. (2009)). The authors concluded that *S. lewini* in Atlantic waters of the United States of America (hereafter US) was declining prior to the introduction by the US of 1993 Fisheries Management Plan for Sharks in the Atlantic Ocean,

[17] A stock is considered overfished when the biomass of the stock (B) is below the level that would produce the Maximum Sustainable Yield (MSY) (B_{MSY}).

[18] Overfishing is considered to be occurring when the fishing mortality rate (F) is greater than the fishing mortality rate that would produce MSY (F_{MSY}).

[19] These data consist of two separate CPUE time series derived from annual fisheries-independent bottom longline surveys conducted in the northern Gulf of Mexico and the Southeast Atlantic (NMFS-LL-SE) and a commercial shark bottom longline fishery active in the US Atlantic Ocean. According to Ingram *et al*. (2005), NMFS-LL-SE surveys were conducted annually in US waters, but the survey was expanded to Mexican waters in 1997. Data from these sources were also used to underpin the earlier Jiao *et al*. (2011) stock assessment.

but that there was strong evidence of population recovery in this area since the plan's implementation. Miller *et al*. (2014) considered this DPS to have a low extinction risk (Table 6.2).

In the South Atlantic, catch per unit effort (CPUE) of *Sphyrna* spp. for longline vessels between 1998 and 2007 declined by 61.7%, however low catch rates mean that this estimate is not considered robust (Barreto *et al*., 2016 in Rigby *et al*., 2019a). Miller *et al*. (2014) noted that good catch data are generally unavailable in this region, but concluded that the Central and Southwest Atlantic DPS of *S. lewini* was "approaching a level of abundance and productivity that places its current and future persistence in question", with the DPS considered to have a moderate risk of extinction (Table 6.2). Inadequate regulatory mechanisms, overexploitation by artisanal fisheries and IUU fishing along the coast of east Africa led Miller *et al*. (2014) to consider the Eastern Atlantic DPS of *S. lewini* to be at high risk of extinction (Table 6.2).

Indian Ocean: The data used in the IUCN assessment to estimate trends in the Indian Ocean originated from the Indian Ocean Natal Sharks Board bather protection netting program, off the coast of South Africa (Dudley & Simpfendorfer, 2006). Rigby *et al*. (2019a)'s analysis of this data found they were consistent with a 4% annual rate of decline and an estimated median reduction of 93.4% over three generation lengths (72.3 years), with the highest probability of >80% reduction over three generation lengths. Miller *et al*. (2014) noted the stock status of the *S. lewini* in the Indian Ocean to be highly uncertain, but considered the Indo-West Pacific DPS of the species to be at moderate risk of extinction (Table 6.2). A 2015 stock assessment for the species carried out by the Indian Ocean Tuna Commission (IOTC) considered its status to be unknown (IOTC, 2015).

Pacific Ocean: The IUCN assessment based its population trend estimates in the Pacific Ocean on CPUE data from the South Pacific Queensland Shark Control Program's bather protection program (from 1964–2004 (Simpfendorfer *et al*. 2010 in Rigby *et al*. 2019a); and from 1996-2006 (Noriega *et al*. 2011)). The data from Simpfendorfer *et al*. 2010 yielded estimates of an annual rate of decline of 8.4%, consistent with an estimated median reduction of 99.8% over three generation lengths (72.3 years), with the highest probability of >80% reduction over three generation lengths. The data from Noriega *et al.* (2011) showed a contradictory picture of population increase (see Table 6.1) which was postulated to be a result of a reduction in predator numbers, however the data were noted to only span one decade.

In addition, diver observations 1993-2013 from Cocos Island, Costa Rica found a 45% decline in relative abundance of *S. lewini* (White *et al*., 2015), and dive guides in the Galapagos Marine Reserve perceived a 50% decline in hammerhead shark abundance between the 1980s-2010s (Peñaherrera-Palma *et al.*, 2018).

Miller *et al*. (2014) considered the Central Pacific and Eastern Pacific DPSs of *S. lewini* to be at very low and high risk of extinction respectively (Table 6.2).

Threats: Fishing is considered the main threat for *S. lewini*, which is caught globally as a target species and as bycatch in coastal and pelagic fisheries at commercial and small-scales, within Exclusive Economic Zones (EEZs) and on the high seas (Rigby *et al*., 2019a).

In the Atlantic Ocean, *S. lewini* is predominantly caught by longline and gillnet fisheries (ICCAT, 2024)., but hammerhead sharks have also been noted to form a large proportion of bycatch in pelagic freezer-

trawler fisheries (Miller *et al*., 2014). In the Indian Ocean, *S. lewini* is primarily caught as bycatch in pelagic longline tuna and swordfish fisheries and gillnet fisheries, but it is also targeted by semi-industrial, artisanal and recreational fisheries (Miller *et al*., 2014). Data from the IOTC suggest that there has been an increase in catches from artisanal line fisheries, and relatively large volumes have occasionally been landed from purse seine fishing (IOTC, 2024). In the Pacific, there is a historical lack of shark reporting for most fleets, and if reported, the data is usually aggregated under the category of 'sharks' (Miller *et al*., 2014). However, *S. lewini* have been reported to be susceptible to bycatch in purse seine fisheries (Roman-Verdesoto & Orozco-Zoller, 2005), as well as in pelagic and bottom longlines, drift and set gill nets (Miller *et al*., 2014). It is likely that catches of *S. lewini* are generally under-reported, particularly where small-scale and/or artisanal vessels form a large part of national fleets (Dent & Clarke, 2015).

At-vessel mortality rates for *S. lewini* have been estimated at 54-91% in longline fisheries, 19% in bottom longline fisheries and 98% in trawl fisheries (Coelho *et al*., 2012; Ellis *et al*., 2017; Morgan & Burgess, 2007). The post-release mortality for the species was reported as 100% in purse seines (Eddy *et al*., 2016; Rigby *et al*., 2019a).

The susceptibility of individuals to different fisheries changes as they mature; as juveniles tend to aggregate inshore and in coastal waters, many are caught in coastal artisanal shark fisheries which tend to concentrate on nursery areas (Cuevas-Gómez *et al*., 2020; Dharmadi & Kasim, 2016; White *et al*., 2008), whereas sub-adults and adults are caught offshore in pelagic fisheries that operate around seamounts and oceanic islands (Clarke *et al*., 2018; Miller *et al*., 2014; White *et al*., 2008). Sex disequilibrium in catches has also been observed (e.g. Kiilu, 2016), probably as a result of the species' complex spatial dynamics (see *Biology* section). The species' schooling habit makes it vulnerable to capture in large numbers and can make *S. lewini* appear more abundant in landings data (Baum *et al*., 2009; Jabado *et al*., 2017).

S. lewini is generally retained for its fins and meat (Clarke *et al*., 2006a; Dent & Clarke, 2015; Fields *et al*., 2018), unless regulations prohibit this. The fins are valued for their large size and their high fin needle count (an indicator of quality in the shark fin market) (Ebert *et al*., 2021; Miller *et al*., 2014). They are principally exported to Asia, where they are traded and consumed as a luxury seafood (Shea & To, 2017; FAO, 2009). Other traded parts and derivatives of hammerheads include leather, bones and liver oil (Camhi *et al*., 2009; Grey *et al*., 2006).

Two analyses assigning the species an Ecological Risk Assessment vulnerability ranking for specific gears in specific locations were located: an IOTC ERA conducted in 2012 assigned *S. lewini* a low vulnerability ranking for longline gear and a lower level of vulnerability to purse seine gear in the Indian Ocean, however it was noted that there was a paucity of information available on the species and the post-release mortality in Indian Ocean pelagic fisheries was considered unknown (IOTC, 2015). In contrast, the species was considered to be extremely vulnerable to gillnet fisheries (IOTC, 2015). Cortés *et al*., (2015) classified *S. lewini* as having a low-medium vulnerability ranking for longline gear in the Atlantic Ocean, although again Gallagher & Klimley (2018) noted that the study did not take into account high at vessel and post-release mortality rates.

Other threats to the species include climate change (Chávez *et al*., 2023; Miller *et al*., 2014; NOAA, 2020), which could affect the species' distribution and migration routes (Osgood *et al*., 2021; Rodriguez-Burgos *et al*., 2022), and bioaccumulation of pollutants (Bergés-Tiznado *et al*., 2021; Mohammed & Mohammed, 2017), although it has been noted that the cumulative effects of the species' exposure to pollutants and contaminants was difficult to quantify (NOAA, 2020). Habitat loss

and degradation have also impacted *S. lewini* nursery areas and feeding grounds (e.g. Chávez *et al*., 2023).

The contribution of specific threats to the extinction risk for each of *S. lewini's* DPSs according to Miller *et al.* (2014) are summarised in Table 6.2.

Table 6.2: Analysis of the severity of threats to each of the six DPSs of *S. lewini.* Source: Miller *et al*. (2014). A follow-up review of *S. lewini* from four DPSs (Eastern Atlantic, Eastern Pacific, Central and Southwest Atlantic, and Indo-West Pacific), incorporating new data collected between 2014 and 2020, found no change to the status of the species (NOAA, 2020).

DPS	Extinction risk	Threat assessment										
		At-vessel fishing mortality	Overutilisation by fisheries			IUU fishing	Current regulatory mechanisms	Nursery habitat loss/degradation	Schooling behaviour	Competition	Disease	Predation
			Industrial/ commercial	Artisanal	Recreational							
Northwest Atlantic and Gulf of Mexico	Low	High	Moderate	Very low	Moderate	Moderate	Low	Low	Low	Very low	Very low	Very low
Central and Southwest Atlantic	Moderate	High	High	Moderate	Very low	Moderate	Moderate	Low	Moderate	Very low	Very low	Very low
Eastern Atlantic	High	High	High	Moderate	Very low	Moderate	Moderate	Very low	Moderate	Very low	Very low	Very low
Indo-West Pacific	Moderate	High	High	High	Low	High	Moderate	Moderate	Moderate	Very low	Very low	Very low
Central Pacific	Very low	High	Moderate	Very low	Low	Low	Low	Very low	Moderate	Very low	Very low	Very low
Eastern Pacific	High	High	High	High	Low	High	Moderate	Low	High	Very low	Very low	Very low

Overview of trade: *S. lewini* was listed in CITES Appendix III by Costa Rica on 25 September 2012. The species was subsequently transferred to Appendix II on 12 June 2013 with a delayed entry into effect of 18 months, i.e., until 14 September 2014. The species was included in the family listing for Sphyrnidae spp. on 23 February 2023.

CITES Trade Database: Global direct trade in *S. lewini* 2013-2022 predominantly consisted of wild-sourced fins for commercial purposes; 144 895 kg reported by exporters and 63 614 kg reported by importers. Direct export of wild-sourced *S. lewini* has fluctuated since 2014, with peaks in exporter-reported trade in 2022 and importer-reported trade in 2018 and 2022. Meat from pre-Convention specimens for commercial purposes has also been reported by exporters 2016-2018, comprising 199 670 kg. The Republic of Korea was the only reporter of introductions from the sea (i.e. from Areas Beyond National Jurisdiction (ABNJ)), which totalled 14 301 kg of bodies for commercial purposes in 2018. Re-exports of specimens originating from ABNJ consisted of 633 confiscated (source 'I') bones for commercial purposes re-exported by Taiwan, Province of China (hereafter Taiwan POC) as reported by the US.

Market data: *S. lewini* has been found in several shark fin and meat markets including in mainland China (Cardeñosa *et al*., 2020), Hong Kong Special Administrative Region of China (hereafter Hong Kong SAR) (Cardeñosa *et al*., 2020; Fields *et al*., 2018), Taiwan POC (Chuang *et al*., 2016; Liu *et al*., 2013), and the United Arab Emirates (hereafter UAE) (Jabado *et al*., 2015). Studies conducted in Hong Kong SAR, mainland China and Taiwan POC (Hong Kong SAR being one of the largest trade hubs for the global shark fin trade) found *S. lewini* accounted for 4-30% of the samples analysed (Cardeñosa *et al*., 2020, 2022; Chuang *et al*., 2016; Fields *et al*., 2018), making it one of the most commonly traded species. Clarke *et al.* (2006a) estimated that between 1.3 and 2.7 million *S. zygaena* and *S. lewini* individuals were present in the shark fin trade each year, based on Hong Kong SAR auction data from 1999-2001, on the assumption that that the markets of Hong Kong SAR represented 44-59% of the global shark fin trade.

Overview of capture production: Global capture production (i.e. the volume landings converted to a live weight basis) of *S. lewini*, as reported to the FAO 2013-2021, is summarised in Table 6.3. According to these data, Mauritania, Sri Lanka, Ecuador, and Kenya accounted for the most landings during this period. Peak capture production for the species was recorded in 2021 at 258 tonnes. The Atlantic Ocean (and adjacent seas) was the largest source ocean for the species with an average of 63 tonnes caught per year. For the Indian Ocean, a sharp increase and peak in capture production was recorded in 2021 (232 tonnes).

Global capture production for the combined categories 'Hammerhead sharks, nei' and 'Hammerhead sharks etc., nei' (nei = not elsewhere included) 2013-2021 comprised a total of 82 474 tonnes, distributed relatively evenly across oceans (Table 6.4). Mexico, Indonesia and Mozambique accounted for the most landings during this period.

Table 6.3: Global capture (metric tonnes, live weight) of *S. lewini* (code: SPL) reported to the FAO 2013-2021, rounded to the nearest whole number. Atlantic Ocean includes adjacent seas.

	2013	2014	2015	2016	2017	2018	2019	2020	2021
Atlantic Ocean	72	38	108	82	155	12	22	53	25
Indian Ocean						30	54	38	232
Pacific Ocean	160	12	11	7	3	3	3	12	1
Total	**232**	**50**	**119**	**89**	**158**	**45**	**79**	**103**	**258**

Source: FAO Global capture database. Available at: https://www.fao.org/fishery/statistics-query/en/capture/capture_quantity Accessed 06/02/2024

Table 6.4: Global capture (metric tonnes, live weight) of 'Hammerhead sharks nei' (code: SPN) and 'Hammerhead sharks, etc., nei' (code: SPY) 2013-2021, rounded to the nearest whole number. Atlantic Ocean includes adjacent seas.

	2013	2014	2015	2016	2017	2018	2019	2020	2021
Atlantic Ocean	1675	2998	3046	2364	1501	2696	1917	2136	1947
Indian Ocean	2060	1705	1706	2484	3709	1265	5213	5820	5405
Pacific Ocean	805	1333	2401	5532	3311	6518	2754	2949	2808
Total	**4540**	**6036**	**7153**	**10380**	**8521**	**10479**	**9884**	**10905**	**10160**

Source: FAO Global capture database. Available at: https://www.fao.org/fishery/statistics-query/en/capture/capture_quantity Accessed 06/02/2024

FAO landings data likely represent significant underestimates for a number of reasons, including: unrecorded and under-reporting of shark landings particularly of individuals taken as bycatch; shark biomass recorded in non-chondrichthyan-specific categories; and/or a high frequency of shark finning and carcass disposal at sea (Clarke *et al*., 2006b; Oliver *et al*., 2015; Simpfendorfer & Rigby, 2016). Furthermore, there are substantial discrepancies between FAO figures and shark fin trade data derived from markets. For example, Clarke *et al*.'s (2006b) study of the biomass of sharks caught worldwide for the shark fin trade (derived from market data) estimated that, between 1996 and 2000, 49 000-90 000 tonnes of hammerhead sharks were taken for the fin trade each year. This is over an order of magnitude higher than the average annual global catch for hammerheads over the same time period according to FAO data (3508t) (Simpfendorfer & Rigby, 2016).

Overview of management: As a species with a circumglobal distribution, the range of *S. lewini* includes areas under the management of national, regional, and international treaties and legislation. Table 6.5 provides a summary of the relevant international and regional conventions and instruments for each of the countries included in this review.

Table 6.5: Overview of key global and regional instruments relevant to *S. lewini*. CP = Contracting Party.

Country	CITES	CMS	CMS Sharks MOU	RFMOs					FAO IPOA-Sharks	
				CCSBT	IATTC	ICCAT	IOTC	WCPFC	NPOA	RPOA
China	Party	Non-Party	Range State, non-Signatory	-	CP	CP	CP	CP	Not developed	-
Indonesia	Party	Non-Party	Range State, non-Signatory	CP	Cooperating non-member	-	CP	CP	Adopted (2017)	Bay of Bengal Large Marine Ecosystem (BOBLME) In progress (2011)
Kenya	Party	Party	MOU Signatory	-	-	-	CP	-	Draft (2017)	-
Mexico	Party	Non-Party	Range State, non-Signatory	-	CP	CP	-	-	Adopted (2004)	Western Central Atlantic Fishery Commission (WECAFC) Draft (2018)
Nicaragua	Party	Non-Party	Range State, non-Signatory	-	CP	CP	-	Cooperating non-member	Adopted (2006)	Regional plan of action for the management and conservation of sharks in Central America (PAR-TIBURON 2) Draft (2021) Western Central Atlantic Fishery Commission (WECAFC) Draft (2018) Regional plan of action for the management and conservation of sharks in Central America (PAR-TIBURON) Adopted (2011)
Oman	Party	Non-Party	Range State, non-Signatory	-	-	-	CP	-	Draft (2017)	-
Sri Lanka	Party	Party	MOU Signatory	-	-	-	CP	-	Adopted (2013)	Bay of Bengal Large Marine Ecosystem (BOBLME) In progress (2011)
Yemen	Party	Party	MOU Signatory	-	-	-	CP	-	Not developed	-

Global instruments

United Nations Convention for the Law of the Sea (UNCLOS): The family Sphyrnidae is listed in Annex I, Highly Migratory Species, of UNCLOS (Fischer *et al.*, 2012). Under UNCLOS, coastal States and other States whose nationals fish in the region for species listed in Annex 1 should cooperate to ensure conservation and to promote optimum utilisation of such species throughout the region, both within and beyond the EEZ (United Nations General Assembly, 1982).

International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks) (FAO, 1999): IPOA-SHARKS was adopted in 1999 within the framework of the FAO Code of Conduct for Responsible Fisheries (Fischer *et al.*, 2012). It is a voluntary agreement to ensure the conservation and management of sharks and their long-term sustainable use (FAO, 2023a), with particular emphasis on improving species-specific catch and landings data collection and the monitoring and management of shark fisheries (Fischer *et al.*, 2012). The IPOA-Sharks recommends that States should adopt and implement a national plan of action for the conservation and management of shark stocks (NPOA-Sharks) if their vessels conduct directed fisheries for sharks or if their vessels regularly catch sharks in non-directed fisheries (FAO, 2023a), and suggests how these plans should be structured as well as what they should include. The status of Regional Plans for Action for the Conservation and Management of Sharks (RPOA-Sharks) and NPOA-Sharks for all countries in this review is outlined in Table 6.5.

Convention of Migratory Species (CMS): *S. lewini* was listed in Appendix II of CMS in 2014. This includes "migratory species that have an unfavourable conservation status and that require international agreements for their conservation and management, as well as those that have a conservation status which would significantly benefit from the international cooperation that could be achieved by an international agreement". Kenya, Sri Lanka and Yemen are Parties to CMS.

> **CMS Memorandum of Understanding (MOU) on the Conservation of Migratory Sharks (hereafter CMS Sharks MOU):** *S. lewini* is included in Annex I of the CMS Sharks MOU (2016) which lists species that have an unfavourable conservation status and which require international agreements for their conservation and management, or would significantly benefit from the international cooperation. This non-binding MOU contains a conservation plan that aims to achieve and maintain a favourable conservation status for migratory sharks. Of the countries under review, only Kenya and Yemen are signatories.

Regional instruments

Regional Fisheries Management Organizations (RFMOs): Table 6.6 lists the RFMOs to which a country reviewed in this report is either a contracting party or a cooperating non-contracting party (referred to as CPCs), and outlines relevant measures from each RFMO's Resolutions and Recommendations; only the five tuna RFMOs have been included in this summary to keep this review concise. In addition to the measures outlined in Table 6.6, there are provisions in place to address incidental catch, data collection and research that may be of relevance to *S. lewini.*

Table 6.6: List of relevant RFMO Resolutions and Recommendations alongside their relevant Contracting Parties (CPs). Note this list is non-exhaustive; there may be provisions in place to address incidental catch, data collection and research not outlined here that are of relevance to *S. lewini.*

RFMO	Relevant CPCs (year of accession)	Stock status	Relevant Resolutions and Recommendations
CCSBT Commission for the Conservation of Southern Bluefin Tuna	Indonesia (2008)	-	• Resolution (2021) to align CCSBT's Ecologically Related species measures with those of other tuna RFMOs
IATTC Inter-American Tropical Tuna Commission	China (2009); Mexico (2005); Nicaragua (2006); Indonesia (cooperating non-member, 2013)	-	• Resolution C-23-07 (2023): Conservation measures for the protection and sustainable management of sharks: ○ prohibits shark finning; Contracting Parties shall ensure that sharks are landed with all fins naturally attached to the body. ○ *S. lewini* is identified as a key shark species for status assessment. Previous relevant Resolutions, consolidated and replaced by C-23-07, include: • Resolution C-05-03 (2005): on the conservation of sharks caught in association with fisheries in the eastern Pacific Ocean • Resolution C-16-04 (2016): amendment to Resolution C-05-03 • Resolution C-16-05 (2016): on the management of shark species
ICCAT International Commission for the Conservation of Atlantic Tunas	China (1996); Mexico (2002); Nicaragua (2004)	-	• Recommendation 10-08 (2010): on hammerhead sharks (family Sphyrnidae) caught in association with fisheries managed by ICCAT, which prohibits retaining onboard, transhipping, landing, storing, selling or offering for sale any part or whole carcass of hammerhead sharks (except *Sphyrna tiburo*), except those caught by developing coastal CPs for local consumption[20]. Developing coastal CPs should endeavour not to increase their catches of the family Sphyrnidae and take measures to ensure hammerhead species (except *S. tiburo*) will not enter international trade. The Recommendation applies to all waters of the Atlantic and adjacent areas, including both the high seas and EEZs (ICCAT pers. comm. 2024). • Recommendation 04-10 (2005): concerning the conservation of sharks caught in association with fisheries managed by ICCAT • Recommendation 18-06 (2019): on the improvement of compliance review of conservation and management measures regarding sharks caught in association with ICCAT fisheries

[20] Provided they report annual data according to reporting procedures.

IOTC Indian Ocean Tuna Commission	China (1998); Indonesia (2007); Kenya (2004); Oman (2000); Sri Lanka (1994); Yemen (2012)	Uncertain	• Resolution 13/06 (2013): on the scientific and management framework on the conservation of shark species caught in association with IOTC managed fisheries • Resolution 17/05 (2017): on the conservation of sharks caught in association with fisheries managed by IOTC, which includes minimum reporting requirements for sharks, calls for full utilisation of sharks and includes a ratio of fin-to-body weight for frozen shark fins retained onboard a vessel and a prohibition on the removal of fins for sharks landed fresh. • Resolution 15/01 (2015): on the recording of catch and effort data by fishing vessels in the IOTC area of competence, which sets out the minimum logbook requirements for purse seine, longline, gillnet, pole and line, handline and trolling fishing vessels >24 m in length, and those <24 metres if they fish outside the EEZs. *Sphyrna* spp. is named in the Resolution.
WCPFC Western and Central Pacific Fisheries Commission	China (2004); Indonesia (2013); Nicaragua (cooperating non-member, 2019)	-	• Key Shark Species (2010): which includes the species in the WCPFC's Shark Research Plan • Conservation and Management Measure 2022-04 (2022) for sharks calls for the full utilisation of sharks and the prohibition of finning.

D. Country reviews

China

Distribution: The CITES MA of China (*in litt.* to UNEP-WCMC, 2024) reported *S. lewini* to be common in Chinese waters and to occur, *inter alia,* in the South China Sea, East China Sea, Yellow Sea and Bohai Sea. Landings of the species were reported to have been recorded in Yantai (Shandong province); Dasha (Jiangsu province); Shanghai; Shengshan (Zhejiang province); Dong'ao, Fuding, Pingtan, Dongshan, and Xiamen (Fujian province); Shanwei, Zhapo, and Guangzhou (Guangdong province); Qisha Port and Beihai (Guangxi province); Xincun county, Sanya, the Xisha Islands and the Nansha Islands (Hainan province); and the offshore waters of Taiwan POC (CITES MA of China *in litt.* to UNEP-WCMC, 2024). Juveniles were reported to be commonly encountered along the coast of China during the spring (CITES MA of China *in litt.* to UNEP-WCMC, 2024).

Population status and trends: The MA of China (*in litt.* to UNEP-WCMC, 2024) noted that a survey conducted by the East China Sea Fisheries Resource Dynamic Monitoring Network in the provinces of Jiangsu, Zhejiang, and Fujian did not find any significant fluctuations in bycatch levels, and considered that there has been no decline in general shark resources to date (note that the East China Sea is one of the principal areas in which hammerheads are commonly caught). However, demographic analyses by Huynh & Tsai (2023) found evidence of population declines of *S. lewini* in the Northwest Pacific.

The population status of the species at a broader level of the North Pacific is not known, with no trend data available for analysis for the species' IUCN assessment (Rigby *et al*., 2019b). In the South Pacific, the IUCN assessment for *S. lewini* estimated an annual rate of population decline of 8.4%, consistent with an estimated median reduction of 99.8% over three generation lengths (72.3 years), with the highest probability of >80% reduction over three generation lengths. Miller *et al.* (2014) classified the Indo-West Pacific DPS of *S. lewini* as having a moderate risk of extinction, with the principal concerns relating to "the level of overutilization and limited regulatory mechanisms" in the region.

Threats: *S. lewini* was not reported to be a targeted species in China and to be caught only as bycatch (CITES MA of China *in litt.* to UNEP-WCMC, 2024); however, Liu *et al*. (2022) reported that it was one of the species targeted by the Taiwanese small-scale tuna longline fishing fleet operating in the coastal and offshore waters of Taiwan POC, in the western North Pacific.

S. lewini has been recorded in surveys of species caught by hook and line vessels operating off islands and reefs in the South China Sea, and bottom trawlers operating in the East and Yellow Seas as well as the Northern South China Sea; the East China and South China Seas were reported to be the principal areas in which both adult and juvenile *S. lewini* are caught (CITES MA of China *in litt.* to UNEP-WCMC, 2024).

Annual shark bycatch between 1997-2012 in China's "offshore areas" was reported to be 10 000 – 15 000 tonnes, with *S. lewini* reported to be the most commonly caught big shark species (CITES MA of China *in litt.* to UNEP-WCMC, 2024), but no species-specific data were provided.

China's distant-water fishing fleet was reported to be the largest in the world, to fish the largest area of the global high seas, to have the highest estimated catch in these waters (Crona *et al*., 2020; Gutierrez *et al*., 2020; Sala *et al*., 2018), and to be rapidly growing (Gutierrez *et al*., 2020; Song *et al*., 2023). Despite this, China noted in its national report to the IOTC and IATTC that it does not approve

of distant water fishery projects that target sharks and requested all distant water fishery companies and fishing vessels to take effective measures to avoid or reduce shark bycatch as much as possible (Bureau of Fisheries, Ministry of Agriculture and Rural Affairs, 2023; Li *et al*., 2023).

Mainland China and Hong Kong SAR are also known to be one of the largest trade hubs for shark products due to the demand for shark fins in Chinese markets (see *Species characteristics: threats* section). *S. lewini* appears to be one of the most commonly traded species in these markets, with the fins originating from several source countries and regions (Clarke *et al*., 2006a; Fields *et al*., 2018).

Capture production:

FAO: No global capture production data from the FAO for *S. lewini* (code: SPL), 'Hammerhead sharks nei' (code: SPN) or 'Hammerhead sharks etc. nei' (code: SPY) was available for China[21] 2013-2021 (FAO, 2024b).

IATTC: IATTC catch data for sharks are only available at the aggregated level of 'Various sharks, nei' (code: SKH); Table 6.7 shows data reported by China for this category 2013-2021; catch data for 2022 were not available at the time of writing.

Table 6.7: Aggregated catch (metric tonnes) of 'Various sharks, nei' (code: SKH) from China reported to the IATTC 2013-2022. Quantities have been rounded to the nearest whole number.

Reported as	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
SKH	1043	539	759	530	2411	2966	1454	1305	633	

Source: IATTC, 2023. Public domain data for download. EPO total estimated catch by year, flag, gear, species. Available at: https://www.iattc.org/en-US/Data/Public-domain. Accessed 01/02/2024.

IOTC: China has not reported any catches of *S. lewini* (code: SPL), 'Hammerhead sharks nei' (code: SPN), or 'Hammerhead sharks etc. nei' (code: SPY) in their catches 2013-2022.

ICCAT: Fleets with the flag 'Chinese Taipei', as classified by ICCAT, caught *S. lewini* (code: SPL) 2013-2022 using longline fishing gear (Table 6.8); no catches were reported for 'Hammerhead sharks, nei' (code: SPN) or 'Hammerhead sharks, etc. nei' (code: SPY).

Table 6.8: Nominal catch (metric tonnes) of *S. lewini* (code: SPL) from 'Chinese Taipei' reported to ICCAT 2013-2022.

Reported as	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
SPL			0.04		0.05	0.08	0.30	0.07		0.08

Source: ICCAT 2024. Dashboard of nominal catches of Atlantic tunas and tuna-like fishes by gear, region and flag. Available at: https://www.iccat.int/en/accesingdb.html. Accessed 01/02/2024.

WCPFC: No information on catches was located.

Trade: China published a reservation for the Appendix III listing of the species on 26 February 2013, which was withdrawn on 14 September 2014 when the transfer of the species to Appendix II entered into effect. China has submitted all annual reports to CITES for the period 2013-2022, and has not published any export quotas for this species.

[21] Note that these data do not include Hong Kong SAR, Macao SAR and Taiwan POC (FAO, 2024b).

Direct trade in *S. lewini* from China 2013-2022 predominantly comprised 199 670 kg of pre-Convention meat reported by China for commercial purposes (accounting for 79% of direct exports reported by weight) between 2016-2018 (Table 6.9). The remaining trade almost entirely comprised wild-sourced trade for commercial purposes: 34 500 kg of bodies and 17 000 kg of fins as reported by China, and 22 000 kg of bodies and 17 000 kg of meat reported by Republic of Korea as the sole importer of commercial trade[22] (Table 6.9). China did not report any imports of the species from ABNJ 2013-2022. Direct exports were also reported from Hong Kong SAR and Taiwan POC by importers only. This trade totalled six captive-bred specimens for scientific purposes in 2013 from Hong Kong SAR and eight confiscated (source 'I') bones reported for commercial purposes in 2019 from Taiwan POC, as reported by the US.

No indirect trade in *S. lewini* originating from China was reported 2013-2022.

[22] China and the Republic of Korea noted at AC32 that the trade quantities reported in 2018 (22 000 kg) and 2021 (17 000 kg) with different trade terms (Table 6.9) represented the same shipments; the Republic of Korea confirmed on 20 June 2024 that the imports consisted of 22 000 kg of pre-Convention meat in 2018 and 17 000 kg of bodies in 2021. Table 6.9 has not been updated following report submission, however the CITES Trade Database has been corrected.

Table 6.9: Direct exports of *S. lewini* from China 2013-2022. Quantities have been rounded up to the nearest whole number where applicable.

Term	Unit	Purpose	Source	Reported by	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
bodies	kg	T	W	Exporter										34500	34500
				Importer						22000					22000
fins	kg	T	W	Exporter									17000		17000
				Importer											
meat	kg	T	O	Exporter				94970	82700	22000					199670
				Importer											
			W	Exporter											
				Importer									17000		17000
specimens	number of specimens	E	W	Exporter						3					3
				Importer											

Source: CITES Trade Database 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Management:

International commitments and RFMOs: China is a Contracting Party (CP) to IATTC, ICCAT, IOTC, and WCPFC[23], whose relevant Resolutions and Recommendations for shark fishing have been outlined above (see *Overview of management*). China is therefore subject Recommendation 10-08, which prohibits the retention, landing, and trade of hammerhead sharks except *S. tiburo* (with an exemption for sharks caught by developing CPs (including China) for local consumption, provided that CPs provide relevant data). The Recommendation also states that developing coastal CPs should endeavour not to increase their catches of the family Sphyrnidae and take measures to ensure these species (except *S. tiburo*) will not enter international trade.

China is also a member of the North Pacific Fisheries Commission, the South Pacific Regional Fisheries Management Organisation, and the South Indian Ocean Fisheries Agreement.

The 2023 IOTC compliance report for China noted that the country has only partially complied with several IOTC Resolutions, including not providing size frequency data on sharks as required by IOTC Resolution 17/05 (IOTC, 2023b).

Legislation: Domestic fishing of *S. lewini* is managed in accordance with the Fisheries Law of the People's Republic of China and its Implementation Rules, as well as the Regulations on the Management of Fishing Permits (CITES MA of China *in litt.* to UNEP-WCMC, 2024). *S. lewini* is not included in China's list of key species with special protection under its revised Wildlife Protection Law 2023 (CITES MA of China *in litt.* to UNEP-WCMC, 2024; Friends of Nature, 2023).

> ***Permits:*** The CITES MA of China (*in litt.* to UNEP-WCMC, 2024) explained that a licence was required to fish, and that no permits had been approved for fisheries to target *S. lewini*; similarly, the *Notice of the General Office of the Ministry of Agriculture and Rural Affairs on Good Practice in International Compliance with Tuna Fisheries Nongbanyu (2022) No.1* (hereafter *Notice No. 1*) was reported to prohibit the approval of "deep-sea" (presumed to refer to distant water fisheries) projects mainly targeting sharks.
>
> Numerous policies were reported to have been implemented to control the total number and power of fishing vessels in China (CITES MA of China *in litt.* to UNEP-WCMC, 2024); further details of these are outlined in AC33 Doc. 14.3 Annex 1.
>
> ***Prohibitions:*** According to the CITES MA of China (*in litt.* to UNEP-WCMC, 2024), *Notice No.1* outlines requirements for fisheries to comply with the measures required by RFMOs, including non-retention of the family Sphyrnidae.
>
> A general closed season was reported to be imposed annually in the East China Sea (one of the main areas where *S. lewini* is caught), usually lasting four and a half months (CITES MA of China *in litt.* to UNEP-WCMC, 2024).
>
> ***Finning:*** Finning was reported to be prohibited according to *Notice No.1* (Li *et al*., 2023).
>
> ***Gear restrictions:*** Longliners operating in the Indian Ocean are prohibited from using shark lines (IOTC, 2023i).

[23] In addition, 'Chinese Taipei' have been granted the status of Cooperators by ICCAT.

China's national legislation is included in Category 1 in the CITES National Legislation Project (legislation that is believed generally to meet all four requirements for effective implementation of CITES).

Non-detriment findings: In response to a question relating to how non-detriment findings (NDFs) are made, the MA of China (*in litt* to UNEP-WCMC, 2024) noted that the species has been scientifically evaluated by research institutions, and experts had exchanged ideas with other exporting countries on methods to evaluate the status of *S. lewini*. The MA additionally noted that an expert discussion meeting held in 2021 to update its National Key Protected Wildlife List had concluded that the population had not undergone a significant decline. However, a document outlining the scientific basis for NDFs for current exports was not provided.

NPOA-Sharks: China noted in a report to the IOTC that it actively implements the FAO IPOA-Sharks, but that an NPOA-Sharks has yet to be developed (Li *et al*., 2023).

Protected areas: By the end of 2019, 271 marine protected areas (MPAs) were established in China, comprising 4.1% of China's total sea area (Zhao, 2018 in: Zeng *et al*., 2022). However, it was found that only 27% of China's MPAs met three of the five criteria (no take, well enforced, in place for >10 years, >100 sq km, and isolated) which have been observed to characterise highly effective MPAs (Hu *et al*., 2020; Zeng *et al*., 2022), and almost no MPAs were identified around shark diversity hotspots in the China seas (Du *et al*., 2022). It is thus unclear whether *S. lewini* occurs within protected areas in Chinese waters.

Illegal trade: Between 2013-2022, the TRAFFIC Wildlife Trade Portal recorded two seizures involving *S. lewini* in China: 600 kg *S. lewini* meat seized in Hainan Province in 2016, and 600 kg fins belonging to four species, including *S. lewini,* seized in Guangzhu, Guangdong Province in 2021 (TRAFFIC International, 2024). The CITES MA of China (*in litt.* to UNEP-WCMC, 2024) noted that at the time of writing there was no indication of illegal fishing activities targeting *S. lewini.*

Indonesia

Distribution: The distribution of *S. lewini* in Indonesia includes the Indian Ocean, Makassar Strait, Sunda Strait, Java Sea, South China Sea, and most waters around Sumatra, Kalimantan, Sulawesi, Maluku, Nusa Tenggara, and Papua (Fahmi & Dharmadi, 2013; Oktaviyani *et al*., 2023). Two nursery areas for juvenile *S. lewini* have been identified off Sumbawa Island and the west coast of Aceh (Oktaviyani *et al*., 2023).

Hadi *et al*. (2020) found genetic evidence that *S. lewini* populations in Indonesia differ significantly from Western Indian Ocean populations, and that individuals recorded at Lombok and Balikpapan belonged to a single stock that was distinct from the stock found in Aceh and West Papua. The results of an assessment of connectivity between *S. lewini* populations across northern Australia, Indonesia and Papua New Guinea were inconclusive (Chin *et al*. 2017).

Population status and trends: *S. lewini* has been described as one of the most common shark species in Indonesian waters (Fahmi & Dharmadi, 2013; Simeon *et al*., 2021). A national stock assessment for the species in Indonesia has not been conducted due to a lack of landing and monitoring data

(Oktaviyani *et al*., 2023). However, a stock assessment calculating the exploitation rate[24] for *S. lewini* from a targeted shark fishery in the West Nusa Tenggara Province has been conducted by Simeon *et al.* (unpublished data in Oktaviyani *et al.* 2023). The exploitation rate for all years 2014-2021 with the exception of 2015 was found to be above 0.5 (range 0.51-0.70), with the population thus considered over-exploited; however, it was noted that the fluctuating mean length at first capture may have biased the exploitation rate estimate (Oktaviyani *et al*., 2023).

CPUE data provide a mixed picture. CPUE data for hammerhead sharks from a fishery management area (FMA) off the coast of Java (FMA 573; see Figure 6.3), containing both target and non-target fisheries, showed an increasing CPUE trend 2016-2021 (MMAF Fishing Port Information Center, 2021 in Oktaviyani *et al*., 2023). However, unpublished data from Simeon *et al.* (in Oktaviyani *et al*., 2023) found CPUE for *S. lewini* from the targeted fishery in Tanjung Luar (also located within FMA 573) to be declining 2016-2021 (Oktaviyani *et al*., 2023). A similarly mixed picture emerged from an interview study conducted in three coastal communities in eastern Indonesia; while c. 75% of 247 fishers interviewed perceived there had been a decline in hammerhead sharks (*S. lewini* and *S. mokarran*) 2003-2013, c. 25% did not consider there to have been any change (Jaiteh *et al*., 2017b). Some of the respondents mentioned that the size of the hammerheads they caught had decreased (Jaiteh *et al*., 2017a).

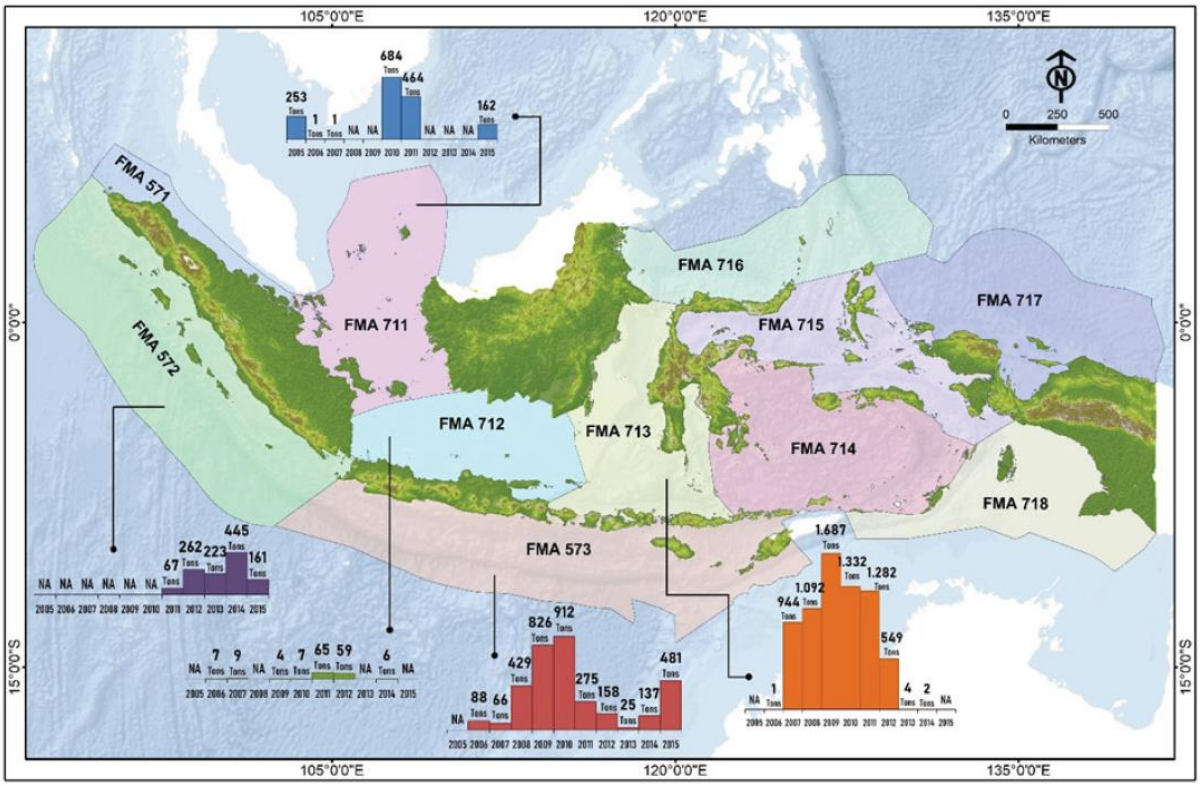


Figure 6.3: Fisheries Management Areas (FMAs) of Indonesia; bar graphs show hammerhead production 2005-2015. Reproduced from Oktaviyani *et al*., (2023).

[24] Exploitation rate (E) is defined as the "proportion of biomass removed by fishing" (FAO, 1997), calculated as E = F/Z, where F is fishing mortality, and Z is total mortality, calculated as F + M (M = natural mortality) (Froese *et al*., 2005). Gulland (1971 in Froese *et al.,* 2005)) suggested that for an optimally exploited stock, fishing mortality is equal to natural mortality; in this situation E would be 0.5.

Threats: Indonesia has been reported to be the world's largest shark fishing nation (Oktaviyani *et al*., 2023). *Sphyrna* spp. fishing grounds occur in almost all Indonesian waters (CITES MA of Indonesia *in litt*. to UNEP-WCMC, 2023), but principally in the following FMAs: the Indian Ocean (FMA 572 and FMA 573), from the Malacca Strait to the Karimata Strait (FMA 711), the Java Sea (FMA 712), and from the Makassar Strait to the Flores Sea (FMA 713) (MMAF, 2016 in Oktaviyani *et al*., 2023 and Simeon *et al*., 2021). The highest landings of hammerheads were reported to occur in waters from the Makassar Strait to the Flores Sea (FMA 713) (Simeon *et al*., 2021).

Shark fishing has grown from a small-scale to a commercial fishery in the past few decades, shifting from incidental catches to targeted catches (Simeon *et al*., 2021). *S. lewini* is currently caught as a target species and as bycatch by both industrial and artisanal fleets in Indonesian waters, with a variety of gear such as longlines, gillnets, purse seines and seine nets (Oktaviyani *et al*., 2023; Simeon *et al*., 2021; CITES MA of Indonesia *in litt*. to UNEP-WCMC, 2023; Table 6.10). Longline fishing gear was the main capture method for *S. lewini* across multiple FMAs (Simeon *et al*., 2021).

The species is caught in the country for its fins, meat, skin, and cartilage (Oktaviyani *et al*., 2023). The CITES MA of Indonesia (*in litt*. to UNEP-WCMC, 2023) noted that it is most commonly caught for its meat for domestic consumption, and was a main source of income for certain communities (Simeon *et al*., 2021). However, Jaiteh *et al*. (2017b) highlighted the importance of the international fin trade for livelihoods in communities fishing in the Halmahera, Arafura and Timor Seas. The 2023 NDF for the species prepared by the Indonesian Scientific Authority (SA) (Oktaviyani *et al*., 2023) reported that there were no well-established systems to assess the scale of domestic trade (Muttaqin *et al*., 2018 in Oktaviyani *et al*., 2023) and considered that Indonesia's domestic trade in shark products was smaller than its export trade.

Table 6.10: Gear use, catch type and the scale of fisheries where *S. lewini* is caught in Indonesia.

Gear type	Catch type	Notes	Source
Longlines	Target; bycatch		Oktaviyani *et al*. (2023)
Bottom longline	Target		Oktaviyani *et al*. (2023); Simeon *et al*. (2021)
Drift/surface longline	Target	Often mature adults	Oktaviyani *et al*. (2023); Simeon *et al*. (2021); CITES MA of Indonesia (*in litt*. to UNEP-WCMC, 2023)
Tuna longlines	Bycatch	Occasionally mature adults	Simeon *et al*. (2021)
Handline and troll lines	Target		CITES MA of Indonesia (*in litt*. to UNEP-WCMC, 2023)
Gillnets	Target and bycatch		CITES MA of Indonesia (*in litt*. to UNEP-WCMC, 2023)
Drift gillnets	Bycatch	Industrial fisheries	Oktaviyani *et al*. (2023)
Set gillnets	Bycatch	Artisanal and semi-industrial fisheries; Juveniles	
Purse seines	Bycatch	Adults	Oktaviyani *et al*. (2023); CITES MA of Indonesia (*in litt*. to UNEP-WCMC, 2023)
Seine nets	Bycatch	Juveniles/sub-adults	Oktaviyani *et al*. (2023)
Trammel nets	Bycatch		CITES MA of Indonesia (*in litt*. to UNEP-WCMC, 2023)
Trawl nets	Bycatch		

The CITES MA of Indonesia (*in litt*. to UNEP-WCMC, 2023) considered the main "potential" threat to the species to be the uncontrolled bycatch of juveniles in non-target fisheries; high proportions of juvenile catches of *S. lewini* in the country as a whole (32%) have been noted by Simeon *et al*. (2021), and reported specifically in the Java Sea (Yuneni, 2014 in Dharmadi & Kasim, 2016), in Banda Aceh (a known nursery area) and Sibolga-North in Sumatra (Dharmadi & Kasim, 2016), as well as from the Halmahera-Seram, Arufura and Timor Seas (Jaiteh *et al*., 2017a) (this is unlikely to be an exhaustive list). Although the capture of juveniles appears to have been prohibited (see *Management* section), juveniles and subadult hammerheads were reported to be caught and landed at many landing sites in the country (Oktaviyani *et al*., 2023), indicating low compliance.

Capture production:

FAO: Nominal catch of 'Hammerhead sharks etc. nei' (code: SPY) reported by Indonesia to the FAO global capture production database 2013-2021 is summarised in Table 6.11. No catches were reported for *S. lewini* (code: SPL), or 'Hammerhead sharks, nei' (code: SPN).

Table 6.11: Nominal catch (metric tonnes, live weight) of 'Hammerhead sharks etc. nei' (code: SPY) from Indonesia reported to the FAO 2013-2021.

Reported as	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
SPY	2054	1655	1777	1538	2753	1460	1428	2342	1645	16652

Source: FAO Global capture database. Available at: https://www.fao.org/fishery/statistics-query/en/capture/capture_quantity Accessed 06/02/2024

IOTC: Nominal catch of 'Hammerhead sharks, nei' (code: SPN) and 'Hammerhead sharks, etc. nei' (code: SPY) reported by Indonesia to the IOTC 2013-2022 is shown in Table 6.12. No catches were reported for *S. lewini* (code: SPL). SPN catches were almost entirely caught by artisanal fisheries using coastal longline fishing gear while SPY catches were caught by industrial longline fisheries (IOTC, 2024).

Table 6.12: Nominal catch (metric tonnes, live weight) of 'Hammerhead sharks nei' (code: SPN) and 'Hammerhead sharks, nei' (code: SPN) from Indonesia reported to the IOTC 2013-2022.

Reported as	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
SPN	1855.2	1634.3	1606.2	1526.6	1903.9	1209	1409.4	2061	1644.6	1695.3	16545.5
Artisanal	1855	1634.2	1606.1	1526.3	1903.5	1209	1409.4	2061	1644.6	1695.3	16544.6
Industrial		0.1	0.1	0.3	0.3						0.9
SPY			0.9		0.04						0.94

Source: IOTC Interactive Data Browser 2024. Nominal catches for all species, including bycatch ones. Available at: https://iotc.org/data/browser. Accessed 01/2/2024

No catch data for *S. lewini* from Indonesia was available for **CCSBT, IATTC**, or **WCPFC** 2013-2022.

Production data from the Ministry of Marine Affairs and Fisheries (MMAF): Production data for hammerhead sharks for Indonesia from the Ministry of Marine Affairs and Fisheries (MMAF) is shown in Figure 6.4; note that most catches of hammerheads have not been recorded at the species level and have instead been reported at the family level (Sphyrnidae or hammerhead shark) (Oktaviyani *et al*., 2023). According to figures from MMAF, hammerhead sharks contributed to 1.5% of Indonesia's total national production 2005-2015 (Oktaviyani *et al*., 2023), with most catches reported from western Indonesian waters (most likely due to the larger number of fish landing ports in the region) (Oktaviyani

et al., 2023). The CITES MA of Indonesia (*in litt*. to UNEP-WCMC, 2023) additionally reported species-specific catches of *S. lewini* for 2018 (800 tons), 2019 (6.5 tons) and 2020 (362 tons).

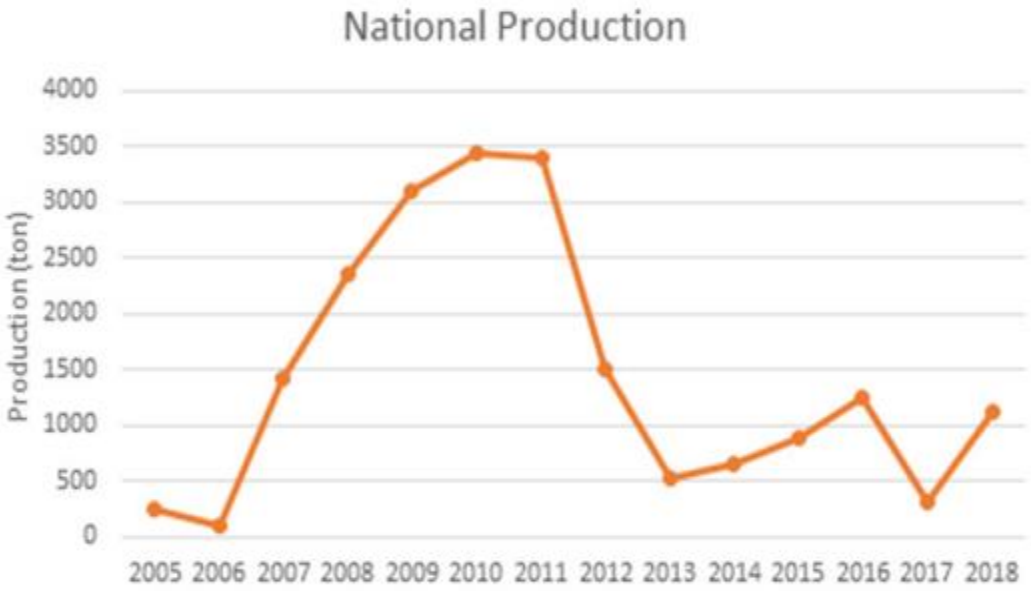


Figure 6.4: National production for *Sphyrna* spp. 2005-2018 (source: MMAF, 2019 in Oktaviyani *et al*., 2023). The decrease in production in 2017 was due to a change in reporting where all shark catches were aggregated into one group, as per the MMAF's one data policy (Oktaviyani *et al*., 2023).

Trade: Indonesia has submitted annual reports to CITES for all years 2013-2022. Indonesia published export quotas for 725 wild-sourced fins in 2020 and 1194 'fin (including meat and other body organs)' in 2021. The CITES MA of Indonesia (*in litt.* to UNEP-WCMC, 2023) clarified that the unit of measure for the quotas was 'number of specimens' (rather than trade reported by weight), and that the 2021 quota corresponded to the CITES trade terms dried fins, skin, and meat. Direct exports did not exceed the 2020 quota, as no trade was reported. However, it is difficult to assess whether trade was within quota for 2021 as Indonesia reported wild-sourced exports of 312 fins and 1897 kg of fins. The CITES MA of Indonesia (*in litt.* to the CITES Secretariat, 2023) also explained that these published quotas only partially reflect the total export quota issued by Indonesia, which for 2020 was 8810 individuals, and for 2021 was 7200 individuals. No quotas have been published from 2022 onwards.

According to the CITES Trade Database, direct trade in *S. lewini* from Indonesia 2013-2022 was only reported in 2021 and 2022, and predominantly comprised wild-sourced trade for commercial purposes. As reported by Indonesia, this trade mainly consisted of 7935 kg of dried fins (6077 kg reported by importers), 1897 kg of fins (4102 kg reported by importers) and 2983 kg of bones. Other notable trade included pre-Convention fins for commercial purposes (1378 kg and 3351 fins reported by Indonesia and 2110 kg reported by importers) (Table 6.13). As reported by Indonesia, exports of fins were almost entirely imported by Hong Kong SAR, whereas New Zealand was the only importer of bones. Indonesia did not report any imports of the species from ABNJ 2013-2022.

No indirect trade in *S. lewini* originating from Indonesia was reported 2013-2022.

Table 6.13: Direct exports of *S. lewini* from Indonesia, 2013-2022. Quantities greater than one have been rounded to the nearest whole number where applicable.

Term	Unit	Purpose	Source	Reported by	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
bones	kg	T	W	Exporter										2983	2983
				Importer											
fin (dried)	kg	T	W	Exporter										7935	7935
				Importer										6077	6077
fins	kg	S	W	Exporter									0.02		0.02
				Importer											
		T	O	Exporter									1378		1378
				Importer									2110		2110
			W	Exporter									1897		1897
				Importer									4102		4102
	number of specimens	T	O	Exporter									3551		3551
				Importer											
			W	Exporter									312		312
				Importer									102		102
meat	kg	S	W	Exporter									0.2	0.2	0.4
				Importer											
skins	kg	T	W	Exporter										829	829
				Importer									380	239	619
	number of specimens	T	O	Exporter									206		206
				Importer											

Source: CITES Trade Database 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Management:

International commitments and RFMOs: Indonesia is a Contracting Party to CCSBT, IOTC and WCPFC, and is a cooperating non-member of IATTC, whose relevant Resolutions and Recommendations for shark fishing have been outlined above (see *Overview of management: Regional management*). According to Indonesia's 2023 IOTC compliance report, the country has only partially complied with several IOTC Resolutions, including the requirement to provide catch and effort data on sharks outlined in IOTC Resolution 17/05 (IOTC, 2023c).

Legislation: *S. lewini* is not included in Indonesia's list of protected species which cannot be traded or hunted, which was last updated in 2018 (Government Regulation No. 7 of 1999 on preserving flora and fauna species).

> ***Prohibitions:*** *Sphyrna lewini, S. mokarran* and *S. zygaena* and their products were prohibited from being exported from Indonesia between 2014-2018 under the MMAF Regulations No. 59/PERMEN-KP/2014 and No. 5/PERMEN-KP/2018. Domestic utilisation however was not prohibited, and Oktaviyani *et al.* (2023) noted that fishers continued to catch *S. lewini* during this time.
>
> The CITES MA of Indonesia (*in litt.* to UNEP-WCMC, 2023) also referred to an export ban issued by the Indonesian government for the period 2017-2019 in an effort comply with the governance of utilising CITES Appendix II commodities, set out in Regulation of the Minister of MAF 48/2016 and 5/2018, and Decree of the DG for Natural Resource and Ecosystem Conservation 441/2018. As with the previous export ban, domestic utilisation of the species continued to be allowed (CITES MA of Indonesia *in litt.* to UNEP-WCMC, 2023).
>
> The MA (*in litt.* to UNEP-WCMC, 2023) also reported that the catch of juveniles was prohibited, and that the SA recommended a harvest size restriction of a minimum of 2 m TL to avoid catching juveniles; however the legislation in which this is laid out could not be located. The MA (*in litt.* to UNEP-WCMC, 2023) also noted that "if juveniles were caught, the individuals must be locally utilised and not transported to other provinces", so it is unclear if there are any exemptions to the prohibition. Indonesia's 2023 NDF for the species (Oktaviyani *et al*., 2023) recommended that only adults >2.5 m TL be allowed to be traded.
>
> ***Finning:*** No information could be found to confirm that finning has been prohibited in the country. Indonesia's 2023 NDF (Oktaviyani *et al*., 2023) noted that "so far, there is no regulation for whole body landing", and there are relatively recent reports of finning in Indonesian artisanal fisheries (Jaiteh *et al*., 2017a).

Some local restrictions have also reported to be in place; for example, Governor Decree No. 55/2020 was reported to contain restrictions to limit fishing effort (number of shark fishing vessels, number of hooks on shark longlines and number of days fishing) at Tanjung Luar, east Lombok, which is the largest landing site for targeted shark fisheries in Indonesia (Simeon *et al*., 2021).

Indonesia's national legislation is included in Category 1 in the CITES National Legislation Project (legislation that is believed generally to meet all four requirements for effective implementation of CITES).

Harvest and export quotas: The CITES MA of Indonesia (*in litt*. to UNEP-WCMC, 2023) explained that it issues annual harvest, export and domestic trade quotas for the species; however, only the export

quotas for 2020 (8810 individuals) and 2021 (7200 individuals) were provided. Note that these differ from the export quotas published on the CITES website for these years, which were for 725 wild-sourced fins of *S. lewini* in 2020, and 1194 'Fin (including meat and other body organs)' in 2021. The CITES MA of Indonesia (*in litt*. to UNEP-WCMC, 2023) reported that the discrepancy was due to the transfer of the MA for fish from the Ministry of Environment and Forestry (MoEF) to MMAF during these years. Each agency had issued separate quotas which were summed together to give a total, but only the ones issued by MoEF were published on the CITES website.

The quotas were reported to be set on the basis of available information on the species' population, distribution, and quota utilisation of the previous year (CITES MA of Indonesia *in litt*. to UNEP-WCMC, 2023). There is conflicting information on the basis that was used to set the first quota for the species; the CITES MA of Indonesia (*in litt*. to UNEP-WCMC, 2023) reported that the SA established the first harvest quota recommendation for *Sphyrna* spp. using a precautionary approach of taking less than 20% of the average annual catch data of *Sphyrna* spp. 2005-2016, whereas the 2023 NDF for the species (Oktaviyani *et al*., 2023) noted that "determining the catch quota for the hammerhead shark is based on reducing the total catch from previous annual catch data to 90%". The NDF (Oktaviyani *et al*., 2023) notes that control of quota usage is based on data from export permits alone; the total catch of *S. lewini* (including individuals caught for domestic use) was noted to be unknown and to potentially exceed the catch quota limit.

Non-detriment findings: A positive conditional NDF for hammerhead sharks (Sphyrnidae) was reported to have been developed by the SA for Indonesia in 2017 following the methodology of Mundy-Taylor *et al*. (2014); a revised version, with the same conclusion, was submitted to the Secretariat in 2023 (CITES MA of Indonesia *in litt*. to UNEP-WCMC, 2023; see Oktaviyani *et al*., 2023). The NDF outlines conditions that should be completed by the MA of Indonesia before international trade in hammerhead products occurs, as summarised below:

(1) **Improved catch recording**, including the creation of a national catch database of CITES-listed species, and the designation of official sites at which to land CITES-listed species. Fisheries statistics should provide catch data based on the catch origin area or the FMA, rather than the landing area.
(2) **Improvements to the permitting mechanism and traceability:** the registration system currently in place should be expanded to middlemen and domestic traders, and the labelling system in place should be expanded to include all *S. lewini* derivatives, with the ability to trace each product to catch locality, size, and fishing gear. Identification materials for all shark products should be improved and regular training given.
(3) **Implementation of a catch quota based on a population estimate,** and the implementation of a system that can monitor total catch and trade, and not just products destined for export.
(4) **Implementation of a size limit for sharks:** only adults >2.5 m should be allowed to be traded, and improvements should be made in fishing gear selectivity.
(5) **Implementation of a size limit for domestic and international trade in derivatives such as fins.**
(6) **Modification of the existing HS code for shark and ray products to include species-specific information for CITES-listed products.**
(7) **Protection of mating and nursery grounds.**
(8) **Improved enforcement of existing regulations relating to management of *S. lewini* catches.**

It is unclear if any progress has been made on these specific recommendations, or if the CITES Authorities have a planned timetable for their implementation.

In addition, a Method Evaluation and Risk Assessment analysis carried out by Simeon *et al.* (2021) indicated that the implementation of a total allowable effort (TAE) and spatial management could significantly improve the stock status of *S. lewini* in the eastern Indian Ocean in 20-40 years. Indonesia appears to have implemented some restrictions on fishing effort at a local level (see above), and some protected areas have been designated specifically to protect hammerheads (see below), but these measures do not yet appear to have been implemented at a national scale.

Monitoring and observers: Regulation No. PER.18/MEN/2010 requires every vessel with a fishing licence to fill out a logbook (Simeon *et al*. 2021).

Management plans and NPOA-Sharks: Indonesia developed an NPOA-Sharks for the periods 2010-2014 and 2016-2020 (FAO, 2024a). The latter plan had nine main strategies to be implemented, including the development and implementation of national regulations to support sustainable shark and ray management, review of the status of shark fisheries and filling data gaps, and strengthening management and conservation efforts for sharks and rays (Sadili *et al*., 2017).

Indonesia's NDF notes that significant progress has been made towards meeting the objectives of its NPOA-Sharks (Oktaviyani *et al*., 2023). However, some measures, such as the review of the status of shark fisheries and strengthening management measures related to law enforcement and compliance with fishing regulations, were not fully implemented (Oktaviyani *et al*., 2023). The finalisation of the next phase of the NPOA-Sharks 2020-2024 was reported to be in progress (Oktaviyani *et al*., 2023).

Protected areas: The total area of MPAs in Indonesia is 28.9 million hectares (CITES MA of Indonesia *in litt*. to UNEP-WCMC, 2023). Three MPAs: Aceh Jaya MPA (Aceh Province), Damer MPA (Maluku Province), and Romang Islands MPA (Maluku province), were reported to have been established to benefit hammerheads in particular (CITES MA of Indonesia *in litt*. to UNEP-WCMC, 2023).

Illegal trade: The CITES MA of Indonesia (*in litt*. to UNEP-WCMC, 2023) noted that there has been no indication of international illegal trade in *S. lewini* 2017-2021; however the MA highlighted that there were several domestic illegal trade cases where permits had not been acquired or the quantity of specimens was misdeclared.

No seizures of *S. lewini* involving Indonesia were reported in the TRAFFIC Wildlife Trade Portal 2013–2023. However, two seizures including Sphyrnidae were included: 66 000 kg of hammerhead sharks and *C. longimanus* seized in East Java Province in 2014 with no origin or destination reported, and 20.8 kg of hammerhead shark fins seized in East Java Province in 2016 destined for Hong Kong SAR and Viet Nam (TRAFFIC International, 2024).

Mexico

Distribution: *S. lewini* occurs off Mexico's Pacific and Atlantic coastlines (Reyes Bonilla *et al.,* 2021; Figure 6.5). Mexico's Pacific population belongs to the tropical East Pacific sub-population as defined in Green *et al.* (2022) and was reported by the CITES MA of Mexico (*in litt.* to the CITES Secretariat, 2023) to be genetically distinct. Mexico's Atlantic population belongs to two DPSs according to the delineations marked out by NOAA (Miller pers. comm. 2024); the population of the Gulf of Mexico belongs to the Northwest Atlantic and Gulf of Mexico DPS, whereas the population in the Caribbean Sea belongs to the Central and Southwest Atlantic DPS. Nursery areas have been noted to be present in inland coastal waters of both the Pacific and Atlantic coasts (Cuevas-Gómez *et al*., 2020; Rodriguez-Arana Favela *et al*., 2022).

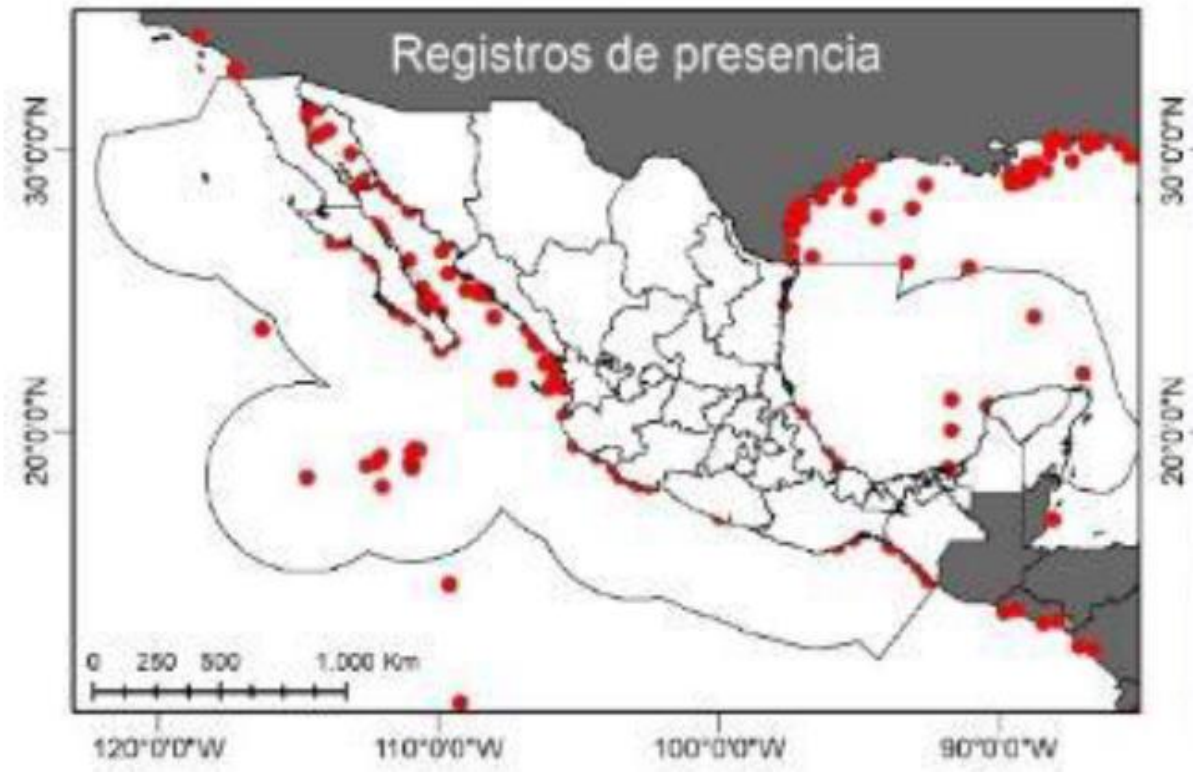


Figure 6.5: Occurrence records of *S. lewini* in Mexico; the list of sources from which data were compiled is available in Reyes Bonilla *et al.* (2021). Figure reproduced from CITES MA of Mexico (*in litt.* to the CITES Secretariat, 2023).

Population status and trends:

Atlantic (Gulf of Mexico and the Caribbean): As noted in the *Overview: Population status and trends* section, while some datasets are indicative of population declines in the Northwest Atlantic and Gulf of Mexico, there are some indications that the *S. lewini* population in this area has begun to increase following the implementation of management measures in the early 1990s. Miller *et al.* (2014) classified this DPS as having a low risk of extinction in 2014. In contrast, while abundance data and catch statistics for the Central and Southwest Atlantic DPS were noted to be scarce, the DPS as a whole was considered to be at moderate risk of extinction, with the risk assessors highlighting that it was exhibiting a trajectory where its future persistence may be in question.

The status of the species in the Gulf of Mexico and the Caribbean as a whole has been assessed by Mexico's National Institute of Fisheries and Aquaculture (INAPESCA) using catch data. Figure 6.6 shows reconstructed historic catch data, B_t/B_{MSY} (the ratio of estimated biomass and the biomass at Maximum Sustainable Yield (MSY)) and the MSY for *S. lewini* in this area. Mexico's national fisheries handbook and management plan for the Gulf of Mexico and Caribbean (Secretary of Agriculture and Rural Development, 2022b) note that biomass for the species is below that which would generate the MSY, but is not considered to be below a level where stocks would be considered depleted.

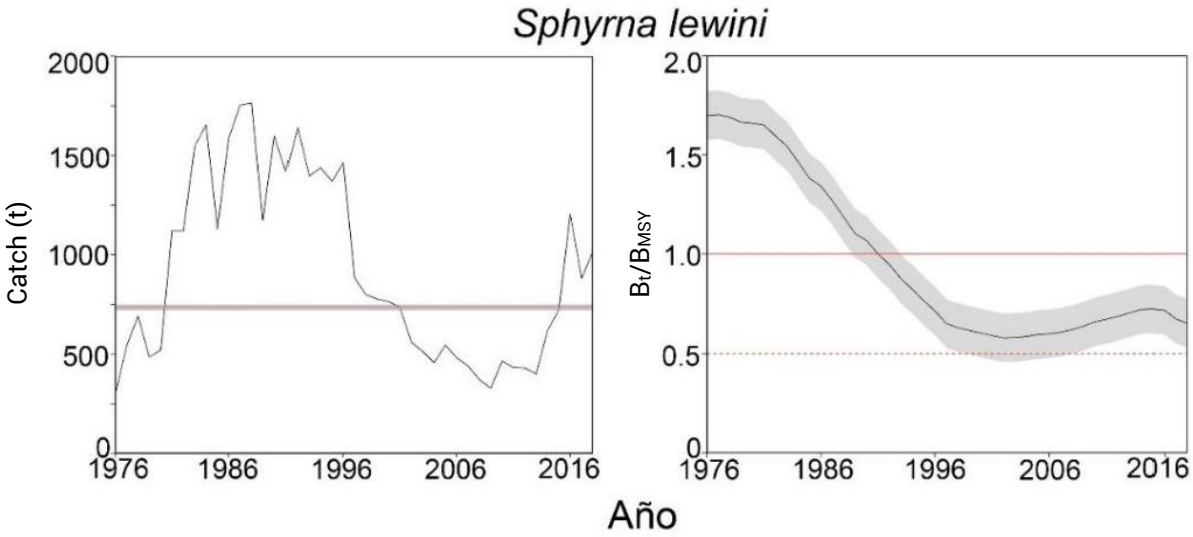


Figure 6.6: Catch and B_t/B_{MSY} for *S. lewini* in the Gulf of Mexico and Caribbean as calculated by INAPESCA; the MSY is shown as a pink line. Figure reproduced from Secretary of Agriculture and Rural Development (2022a).

Species-specific CPUE data for the principal shark-targeting fisheries in the Gulf of Mexico and Caribbean are also available from a monitoring study conducted by INAPESCA in 2016-2017; this averaged 0.789 *S. lewini* individuals/1000 hooks in longline fisheries (data from Veracruz, Tabasco and Quitana Roo) and 2.579 *S. lewini* individuals/fishing day in net fisheries (data from Veracruz, Campeche, and Yucatán). It is unclear whether further monitoring studies are planned to provide a timeseries for these data.

Pacific: The population status of *S. lewini* in the North Pacific was not assessed in the most recent IUCN assessment for the species because of a lack of trend data (see *Overview: Population status and trends* section). The Eastern Pacific DPS of *S. lewini* as a whole was classified in Miller *et al.* (2014) as having a high risk of extinction "because it is at or near the level of abundance and productivity that places its current and future persistence in question throughout its entire range". Overutilisation was identified as the most series threat, though abundance data in this area were noted to be lacking (Miller *et al.* 2014).

In Mexico, *S. lewini* was previously considered to be potentially overexploited in fishing areas off the coast of Jalisco to the end of the Guerrero coastline, as the few available data and anecdotal information from fishermen implied decreasing trends in captures (Benitez *et al*., 2015). Information available from INAPESCA's research program in Puerto Chiapas from 1996-2010 also indicated declines in *S. lewini* captures off the coast of Oaxaca and Chiapas (Benitez *et al*., 2015).

Mexico's National Fishing Handbook for the Pacific coast (Secretary of Agriculture and Rural Development, 2023a) notes that the shark fishery in general is being harvested at MSY, but no information specific to S. *lewini* was located.

Threats: The CITES MA of Mexico (*in litt.* to the CITES Secretariat, 2023) identified fishing, loss of habitat (particularly in nursery areas), and climate change (see Reyes-Bonilla *et al.* 2021 and Rodriguez-Burgos *et al.* 2022) as the three major threats to the species in Mexico.

Targeted artisanal fisheries (whose catches consist predominately of juveniles (Pérez-Jiménez *et al.*, 2005; Bizzarro *et al.*, 2009; Miller *et al.*, 2014)) were reported to account for the majority of catches of *S. lewini*, with gill net fisheries accounting for most non-target catch (CITES MA of Mexico *in litt.* to the CITES Secretariat, 2023). A description of the Mexican fisheries relevant to *S. lewini* can be found below:

Atlantic coast (Gulf of Mexico and Caribbean Sea): This is an artisanal multi-species fishery, comprised of small and medium scale coastal fishing (Secretary of Agriculture and Rural Development, 2022a). All fishing was reported to be carried out in marine waters under Federal Jurisdiction, and the principal gears employed are longlines and gillnets (Secretary of Agriculture and Rural Development, 2022a). *S. lewini* is a target species, but is also a non-target species in the Gulf of Mexico's marine catfish, flakefish, snapper, grouper, tuna and shrimp fisheries (Secretary of Agriculture and Rural Development, 2022a, 2022b, 2023a). Figure 6.7 shows the areas where targeted shark fishing takes place; maps where sharks are caught as non-target species are available in Secretary of Agriculture and Rural Development (2022b). The majority of catches (based on 2001-2018 data from Mexico's Fisheries Statistical Yearbooks) occur off the coasts of Tamaulipas and Veracruz (Secretary of Agriculture and Rural Development, 2022b).

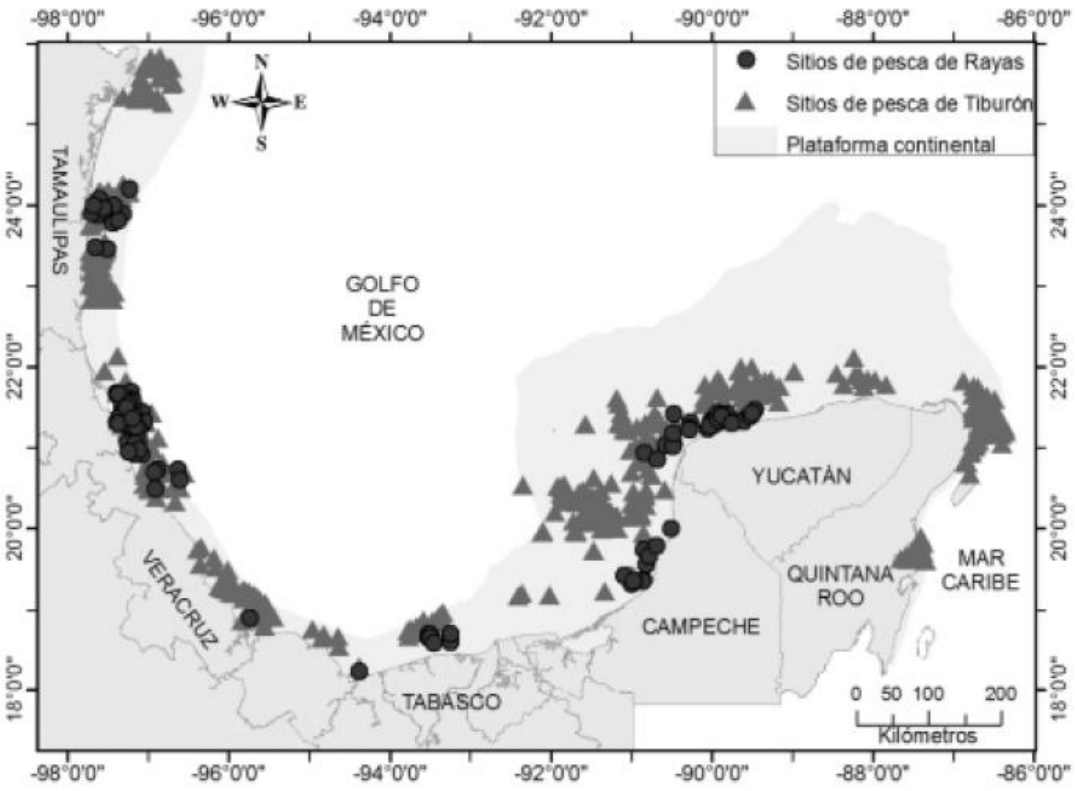


Figure 6.7: Areas of targeted shark fishing (triangles) and targeted ray fishing (circles) in Caribbean and Gulf of Mexico fisheries. Plataforma continental = continental shelf. Reproduced from Secretary of Agriculture and Rural Development (2022b).

The shark fishery in this region reached its peak in 1984; a decline in catches was observed in the 1990s, following stabilisation in the 2000s and an apparent recovery from 2016 (Secretary of Agriculture and Rural Development, 2022a; Figure 6.8). Average landings of

sharks 2005-2017 were 5487 tonnes per year (Secretary of Agriculture and Rural Development, 2022a). Monitoring data held by INAPESCA 2016-2017 found that *S. lewini* accounted for 8.1% of targeted shark catches in the region, with the vast majority captured in gillnets (Secretary of Agriculture and Rural Development, 2022b).

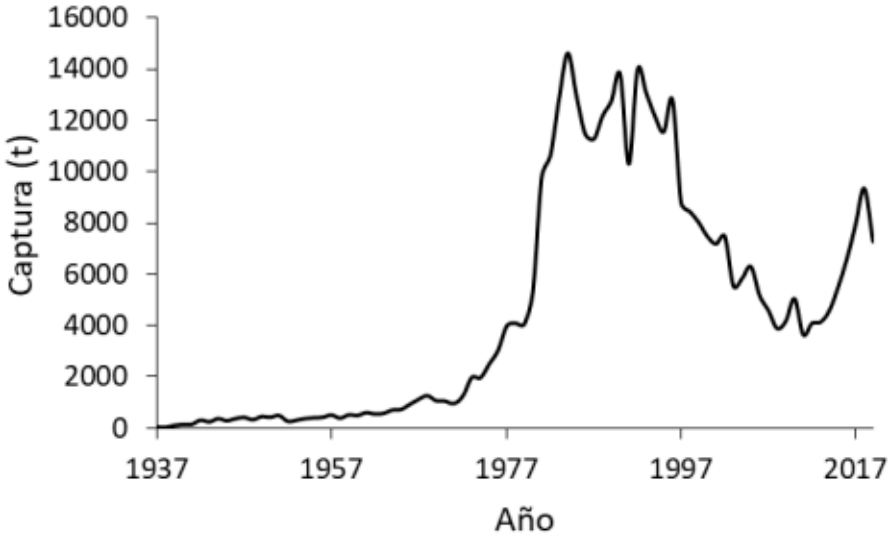


Figure 6.8: Combined reported catches of shark (tiburón) and dogfish (cazón) in Mexico's Caribbean Sea and Gulf of Mexico fisheries, 1937-2019. Figures sourced from Mexico's Fisheries Statistical Yearbooks. Reproduced from Secretary of Agriculture and Rural Development (2022a).

Pacific coast: There are three fisheries operating off Mexico's Pacific coastline: ocean-going vessels, medium vessels and small vessels (Secretary of Agriculture and Rural Development, 2023a). *S. lewini* was only reported to be a target species in the ocean-going and small vessel fisheries (Secretary of Agriculture and Rural Development, 2023a), but *Sphyrna* spp. were reported to be in the top ten most commercially important species caught in the region (CITES MA of Mexico *in litt.* to the CITES Secretariat, 2023). Fishing was reported to mainly take place in Mexico's EEZ, and "sometimes in areas adjacent to the EEZ" (Secretary of Agriculture and Rural Development, 2023a). The Pacific shark fishery reached its peak in 2018 with a reported catch of 45 000 tonnes, with Nayarit state, Chiapas state and Sinaloa state registering the highest catches (Figure 6.9).

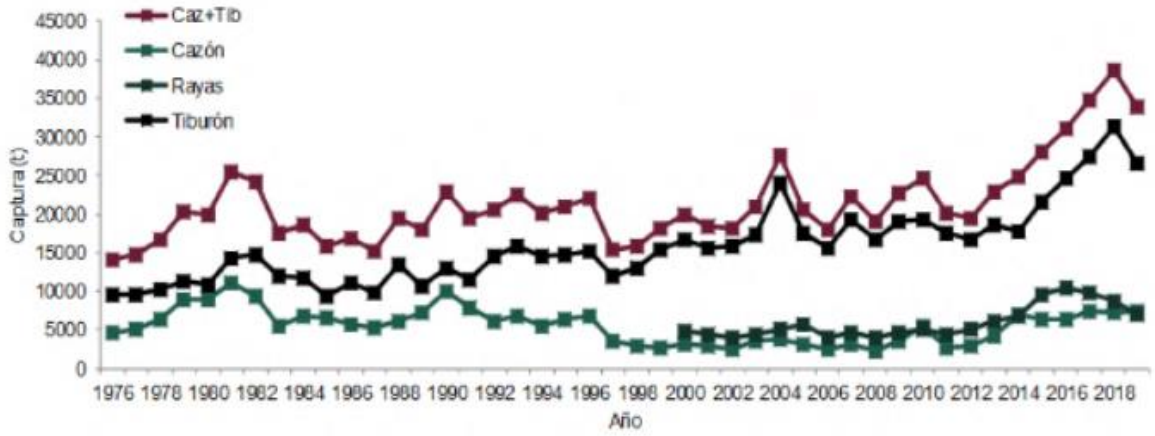


Figure 6.9: Reported catches of shark (tiburón), dogfish (cazón) and rays (rayas) in Mexico's Pacific fisheries, 1976-2019. Combined catches of sharks and dogfish are shown in red. Source: CONAPESCA, figure reproduced from Secretary of Agriculture and Rural Development (2023a).

Capture production:

FAO: Nominal catch of 'Hammerhead sharks, etc. nei' (code: SPY) reported by Mexico to the FAO global capture production database 2013-2021 is summarised in Table 6.14. No catches were reported for *S. lewini* (code: SPL) or 'Hammerhead sharks, nei' (code: SPN).

Table 6.14: Nominal catch (metric tonnes, live weight) of 'Hammerhead sharks, etc. nei' (code: SPY). from Mexico reported to the FAO 2013-2021.

Reported as	2013	2014	2015	2016	2017	2018	2019	2020	2021
SPY	457	1251	2110	5524	2342	6187	2587	2468	2665

Source: FAO Global capture database. Available at: https://www.fao.org/fishery/statistics-query/en/capture/capture_quantity Accessed 06/02/2024

IATTC: Mexico reported on hammerhead shark catches within the IATTC's area of competence in the Pacific Ocean 2017-2022, in compliance with Resolution C-05-03 (see *Management: Regional instruments* section) (Table 6.15). Aggregated catch data for 'Various sharks, nei' (code: SKH) according to IATTC's public domain database is shown in Table 6.16.

Table 6.15: Hammerhead shark catch in the Pacific Ocean, reported by Mexico to the IATTC 2017-2022. Quantities have been rounded to the nearest whole number.

Reported as	2017	2018	2019	2020	2021	2022	Total
Hammerhead shark	83	54		1021		222	1380

Source: Secretary of Agriculture and Rural Development, 2023b. Available at: https://www.iattc.org/GetAttachment/0df5140a-ee50-4a31-95a2-10287d93849e/MEX-C-05-03-C-16-04_Tiburones.pdf Accessed 09/04/2024.

Table 6.16: Aggregated catch (metric tonnes) of 'Various sharks nei' (code: SKH) from Mexico reported to the IATTC 2013-2022.

Reported as	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
SKH	16660	16260	25625	22046	26639	22669		27386		

Source: IATTC, 2023. Public domain data for download. EPO total estimated catch by year, flag, gear, species. Available at: https://www.iattc.org/en-US/Data/Public-domain. Accessed 01/02/2024.

ICCAT: Nominal catch for 'Hammerhead sharks nei' (code: SPN) 2013-2022 reported by Mexico to ICCAT is outlined in Table 6.17; no catches were reported for *S. lewini* (code: SPL) or 'Hammerhead sharks, etc. nei' (code: SPY).

Table 6.17: Nominal catch (metric tonnes) of 'Hammerhead sharks nei' (code: SPN) from Mexico reported to ICCAT 2013-2022.

Reported as	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
SPN	1.5	0.21	0.71	0.5	1.24	0.07	0.93	0.1	0.07	0.1

Source: ICCAT 2024. Dashboard of nominal catches of Atlantic tunas and tuna-like fishes by gear, region and flag. Available at: https://www.iccat.int/en/accesingdb.html. Accessed 01/02/2024.

Trade: Mexico has submitted all annual reports to CITES for the period 2013-2022, and has not published any export quotas for this species.

According to the CITES Trade Database, direct trade in *S. lewini* from Mexico 2013-2022 predominantly comprised wild-sourced fins for commercial purposes (53 886 kg reported by Mexico and 26 801 kg reported by importers) (Table 6.18). As reported by Mexico, trade in wild-sourced fins peaked in 2017 at 11 760 kg[25] and the primary importers over the decade were China (76% of wild-sourced fins reported by weight) and Hong Kong SAR (24%). Mexico did not report any imports of the species from ABNJ 2013-2022.

No indirect trade in *S. lewini* originating from Mexico was reported 2013-2022.

[25] The CITES MA of Mexico stated (*in litt.* to UNEP-WCMC, 2024) that export permits were issued in 2017 for 16 303 kg of wild-sourced *S. lewini* fins, from which exports totalling 8545 kg of fins remained valid after taking into consideration cancelled permits. UNEP-WCMC has contacted the CITES MA of Mexico to clarify details of any additional cancelled permits that need to be removed from the CITES Trade Database; this information had not yet been received at the time of writing.

Table 6.18: Direct exports of *S. lewini* from Mexico 2013-2022. Quantities have been rounded to the nearest whole number where applicable.

Term	Unit	Purpose	Source	Reported by	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
bodies	number of specimens	T	I	Exporter											
				Importer							1				1
fins (dried)	kg	T	W	Exporter											
				Importer										7262	7262
fins	kg	T	W	Exporter		4244	5303	6401	11760	1352	3846	4917	6783	9279	53886
				Importer			6507	6403	3502	833	3431	4181	1945		26801
	number of specimens	T	I	Exporter											
				Importer						45					45
medicine	number of specimens	P	I	Exporter											
				Importer								180			180
		T	I	Exporter											
				Importer									7440		7440
skulls	number of specimens	P	I	Exporter											
				Importer			3							6	9
specimens	number of specimens	S	W	Exporter								150		100	250
				Importer											

Source: CITES Trade Database 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Management: The agency responsible for the management, monitoring and enforcement of Mexico's fisheries in the Comisión Nacional de Acuacultura y Pesca (National Commission of Aquaculture and Fisheries, CONAPESCA), which acts on technical advice provided by INAPESCA (CITES MA of Mexico *in litt.* to the CITES Secretariat, 2023).

International commitments and RFMOs: Mexico is a member of the Central American Fisheries and Aquaculture Organization (OSPESCA), whose area of competence extends to the national and inland waters and EEZs of its Member States. Mexico is also a Contracting Party (CP) to IATTC and ICCAT, whose relevant Resolutions and Recommendations for shark fishing have been outlined above (see *Overview of management*). For ICCAT, these include Recommendation 10-08, which prohibits the retention, landing, and trade of hammerhead sharks except *S. tiburo* (with an exemption for sharks caught by developing CPs (including Mexico) for local consumption, provided that CPs provide relevant data). The Recommendation also states that developing coastal CPs should endeavour not to increase their catches of the family Sphyrnidae and take measures to ensure these species (except *S. tiburo*) will not enter international trade.

The CITES MA of Mexico (*in litt*. to the CITES Secretariat, 2023) noted that it complies with the recommendations and resolutions of the FAO Code of Conduct for Responsible Fisheries, the IPOA-Sharks, ICCAT, IATTC, and the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (ISC).

Legislation:

Permits: The General Law of Sustainable Fisheries and Aquaculture regulates fishing permits, with are issued by CONAPESCA. In 1993, Mexico introduced a moratorium on permits for shark fishing in order to prevent fishing effort from increasing; no new permits are issued for shark catches, except to replace vessels that are no longer fishing, or to renew permits (CITES MA of Mexico *in litt.* to the CITES Secretariat, 2023).

Prohibitions: Regulation NOM-029-PESC-2006 stipulates that the Secretariat of Agriculture, Livestock, Rural Development, Fishing and Food will establish area-based closed seasons for taking sharks and rays during the principal periods of reproduction, birth and growth of these species. The process for setting closed seasons was originally outlined in Regulation NOM-029-PESC-1993, which has since been amended multiple times to modify spatial closures for shark fisheries off both the Pacific and Atlantic coast.

In order to reduce capture of gravid females and neonates, shark fishing is prohibited for the following areas and seasons (Table 6.19):

Table 6.19: Area-based closed seasons for shark fishing in Mexican waters.

Area	Period	Source
Pacific Ocean	1 May – 31 July	Secretary of Agriculture and Rural Development (2023a)
Tamaulipas, Veracruz and Quintana Roo Gulf of Mexico and Caribbean Sea	1 March– 30 June	Secretary of Agriculture and Rural Development (2022a)
Tabasco, Campeche and Yucatán Gulf of Mexico	15 May – 15 June; 1 August – 29 August	Secretary of Agriculture and Rural Development (2022a).

Regulation NOM-029-PESC-2006 additionally includes more general spatial restrictions on targeted shark fishing, including restrictions on fishing around coral reefs, river mouths and lagoons.

Finning: Regulation NOM-029-PESC-2006 prohibits the exclusive use of fins and the landing of fins without bodies on board.

Gear restrictions: The use of gillnets, purse seines and longlines is prohibited all year round within a 5 km radius in the Gorda and Espiritu Santo shallows in Baja California Sur, which are a known nursery area for sharks (CITES MA of Mexico *in litt.* to UNEP-WCMC, 2024).

Mexico's national legislation is included in Category 1 in the CITES National Legislation Project (legislation that is believed generally to meet all four requirements for effective implementation of CITES).

Non-detriment findings: The CITES Scientific Authority of Mexico issues NDFs using a standardised protocol; these are species and coast-specific (CITES MA of Mexico *in litt.* to the CITES Secretariat, 2023). The principal tool used to regulate harvest is the setting of an annual sustainable export volume (SEV), which is calculated using the methodology described below. The reference for this section is CITES MA of Mexico *in litt.* to the CITES Secretariat, 2023, unless otherwise indicated.

The SEV is set using MSY calculations developed by Martell and Froese (2013) with a simple production model (Schaefer 1954). This methodology calculates an MSY using a catch data time series, as well as estimates of a starting biomass, carrying capacity (K) and intrinsic population growth rate (r), among other inputs.

The current model uses catch data for the Pacific and Atlantic coastlines from Mexico's Statistical Yearbooks on Aquaculture and Fisheries 1937-2014. Noting that these data were not species-specific, catches were reconstructed following the methodology outlined in Saldaña-Ruiz (2017); *S. lewini* was estimated to account for an estimated 0.12-0.14% of shark catches in the Pacific 1939-2014, and 0.20-0.42% catches in the Atlantic 1937-2014.

The lower and upper limits to the initial relative biomass were set at 0.8 and 0.9, under the assumption that the stock level was between 80% and 90% of the carrying capacity at the beginning of the time series. The minimum and maximum values for the carrying capacity (K) were set at the weight value of the highest annual catch, and 50 times the value of the highest annual catch, respectively, assuming that catch never exceeded 0.5% of the carrying capacity. The intrinsic population growth rate (r) applied to the MSY calculations was 0.05 (min) – 0.24 (max) based on Cortés (2002) and Anislado-Tolentino *et al*. (2008). Note that Mexico's management plan for sharks and rays of the Gulf of Mexico and Caribbean Sea (Secretary of Agriculture and Rural Development, 2022b) gives a different range of r used for the species, of 0.082-0.24, and notes that it was assumed that catches never exceeded 5% of the carrying capacity (however, the maximum value of K was still set at 50 times the value of the highest annual catch).

Estimated biomass at MSY for *S. lewini* for both coastlines was 4020.92 whole-body tonnes. The SEV for *S. lewini* for 2023 was estimated at 1958.6 tonnes for the Pacific, and 2062.32 tonnes for the Atlantic.

The SEV applies to catches within Mexico's EEZ as well as the high seas (CITES MA of Mexico *in litt.* to UNEP-WCMC, 2024). Usage of the SEV for the species is regularly updated and can be accessed at

https://www.biodiversidad.gob.mx/planeta/cites/tiburones. Once 100% of the SEV has been reached, negative NDFs are issued and the Management Authority suspends the issuance of export permits. Catch volumes landed are subtracted from the total SEV available regardless of the outcome of the NDF or the issuance of a CITES permit. If permits are requested for fins, species-specific conversion factors are used to estimate total weight landed; this latter weight is what is subtracted from the SEV total.

The methodology for establishing SEVs took as its basis the results from a capacity building workshop held in 2019, and was agreed jointly by INAPESCA and CONABIO (the CITES Scientific Authority). As with all models used to calculate MSY, catch-MSY models such as the one described above are subject to assumptions, limitations and biases; these are more fully discussed in Ovando *et al*., (2021); Pons *et al*., (2020); and Smith *et al*., (2021). One of the key considerations is that the models do not perform well if catches are low (Martell & Froese, 2013; Smith *et al*., 2021), and that the accuracy of the model will be heavily influenced by the accuracy of the population parameters including the carrying capacity (K) and the intrinsic population growth rate (r). It should also be noted that catch-only models are less likely to work well in highly managed fisheries, because these measures may interfere with the assumption that changes in catch reflect changes in abundance (Ovando *et al*., 2021).

The CITES MA of Mexico noted that an intersectoral working group (comprised of academic experts, civil society, INAPESCA and CONABIO) works with CONABIO to refine the catch reconstructions used by the model, with an aim to use catch-based surplus production models (such as those described in Froese *et al*., (2016, 2017)), and eventually introduce a model structured by age class.

Monitoring and observers: Regulation NOM-PESC-029-2006 requires all vessels to report catch and effort data to INAPESCA. An action plan for sustainable trade in sharks published in 2017 (CEC, 2017) noted that landings of *Sphyrna* were not reported at species level. However, it is unclear if the situation has since changed, with the CITES MA of Mexico (*in litt.* to the CITES Secretariat) noting that multiple identification resources have been developed and disseminated alongside a number of capacity building courses. Requirements for vessel monitoring systems (VMS) are outlined in Regulation NOM-062-SAG/PESC-2014.

Management plans and NPOA-Sharks: INAPESCA published a management plan for sharks and rays of the Gulf of Mexico and the Caribbean in June 2022 (Secretary of Agriculture and Rural Development, 2022b); a similar plan for the Mexican Pacific coast is in review (CITES MA of Mexico *in litt.* to UNEP-WCMC, 2023). Mexico's National Fishing Handbooks additionally contain an overview of the status of Mexico's key fisheries as well as the current management measures in place (CITES MA of Mexico *in litt.* to UNEP-WCMC, 2023).

Mexico published its NPOA-Sharks in 2004 (CONAPESCA-INP, 2004); an update to this plan was noted to be in preparation (CITES MA of Mexico *in litt.* to UNEP-WCMC, 2023). The objectives of the plan are to:

(1) Ensure that catches of sharks and rays are sustainable;

(2) Identify threats to elasmobranch populations;

(3) Identify and protect critical habitats, as well as species which are particularly vulnerable or threatened;

(4) Identify and develop effective frameworks for research, management and education among all stakeholders;

(5) Minimize the bycatch of sharks, rays and tuna-like species in other fisheries, as well as capture waste and discards;

(6) Promote full utilization;

(7) Contribute to the protection of biological diversity and the structure and function of the ecosystem;

(8) Improve the biological information on shark species, as well as species-specific information on catches, effort, landings and trade; and

(9) Establish an information system

Additionally, in 2017, the Commission for Environmental Cooperation (in partnership with the governments of the US, Canada, and Mexico and their respective CITES Authorities), published a plan of action for the sustainable trade of sharks listed on Appendix II of CITES (CEC, 2017). The plan outlined 17 actions that need to be prioritised in order to ensure that trade in shark species is sustainable in Central America. These include, *inter alia*:

(1) Capacity building in the Mexican fisheries sector, with the aim of improving species identification and species-specific reporting;

(2) Improving systems for fisheries data compilation;

(3) Carrying out trade-chain analyses;

(4) Supporting the development of species-specific Harmonised Commodity Description codes;

(5) Updating Mexico's NPOA-Sharks (published in 2004) to include relevant measures from IATTC and ICCAT;

(6) Evaluating the effectiveness of closed seasons that are currently in place, and, if necessary, modify them. Additionally evaluate the potential of other management measures, such as total allowable catches and size limits, as well as closures of areas that are essential habitats.

An evaluation of Mexico's NPOA-Sharks conducted by Pacoureau *et al.* (2023), which assigned a score out of 20 based on (1) whether the plan included one of the 10 aims originally set out by the IPOA-Sharks, and (2) whether there were any concrete actions, plans, or further elaboration of the aim, specifically with reference to time, budget and/or manpower, gave it a total score of 11.5. Concrete actions or plans were not considered to have been outlined for seven of the IPOA-Sharks aims (1,3, 5, 6, 7, 8, and 10)[26].

[26] Aim 1: Ensure shark catches from directed and non-directed fisheries are sustainable
Aim 3: Identify and provide special attention, in particular, to vulnerable or threatened shark stocks
Aim 5: Minimise unutilised incidental catches of sharks
Aim 6: Contribute to the protection of biodiversity and ecosystem structure and function
Aim 7: Minimise waste and discards from shark catches in accordance with article 7.2.2.(g) of the Code of Conduct for Responsible Fisheries (for example, requiring the retention of sharks from which fins are removed)
Aim 8: Encourage full use of dead sharks
Aim 10: Facilitate the identification and reporting of species-specific biological and trade data

Protected areas: *S. lewini* has been recorded in the Marismas Nacionales (Sinaloa, Nayarit), Alto Golfo de California y Delta del Río Colorado (Baja California, Sonora), El Vizcaíno (Baja California Sur), La Encrucijada (Chiapas), Archipiélago de Revillagigedo (Colima), Islas Marías (Nayarit) and Isla San Pedro Mártir (Sonora) Biosphere Reserves, as well as the Bahía de Loreto (Baja California Sur), Huatulco (Oaxaca), Islas Marietas (Nayarit), and Archipiélago de San Lorenzo (Baja California) National Parks (CITES MA of Mexico *in litt.* to UNEP-WCMC, 2024). The species has additionally been reported to occur in the Lobos-Tuxpan Reef System Fauna Protection Area in Veracruz (CITES MA of Mexico *in litt.* to UNEP-WCMC, 2024).

Sphyrna spp. have been recorded in Isla de Guadalupe Biosphere Reserve (Baja California), and the Cozumel Reefs National Park (CITES MA of Mexico *in litt.* to UNEP-WCMC, 2024).

In addition, Mexico has designated the following reproductive/nursery areas for sharks and rays as refuges (CITES MA of Mexico *in litt.* to UNEP-WCMC, 2024):

- The coastal zone off Playa Bagdad, Tamaulipas, in a 30 km wide marine strip, from the mouth of the Rio Bravo to Barra de Conchillal.
- Laguna de Términos, Campeche.
- Usumacinta and Grijalva Rivers, Tabasco.
- Yalahau Lagoon, Quintana Roo.
- Espiritu Santo, Ascension and Chetumal Bays, Quintana Roo.
- Bahía Magdalena-Bahía Almejas Lagoon Complex, Baja California Sur.
- Bahía Santa María-Bahía Altata Lagoon Complex, Sinaloa.
- The coastal zone adjacent to Teacapán, Sinaloa.
- The coastal strip from Río Boca de Campos to Playón de Mexiquillo, Michoacán.

Illegal trade: The Federal Attorney for Environmental Protection (PROFEPA), who verify exports at ports, airports and borders, have no records of instances of illegal trade in *S. lewini* in the past five years (CITES MA of Mexico *in litt.* to UNEP-WCMC, 2023). A total of 1.2 tonnes of shark fins (species not specified) from Mexico were reported to have been seized in Hong Kong SAR in February 2023 (CITES MA of Mexico *in litt.* to UNEP-WCMC, 2023), and the TRAFFIC Wildlife Trade Portal held one record of illegal trade involving Mexico 2012–2023; 405 kg fins from *Carcharhinus falciformis, S. lewini* and *S. zygaena* originating in Mexico were seized in Germany in 2018, destined for China (TRAFFIC International, 2024).

Kenya

Distribution: Kenya's 4th National report to the CMS Sharks MOU described *S. lewini* as extant (resident) in Kenya's national waters (Omar *et al*., 2023). Kiilu *et al.* (2019) found the species to have a coast-wide distribution, with landings (mainly of juveniles) most abundant in the central to northern coast.

Population status and trends: In a baseline assessment report for Kenya's NPOA-Sharks, Oddenyo *et al*. (2019) reported that, to date, there had been no stock assessment for shark species in Kenya. However, Kiilu (2016) noted that artisanal elasmobranch landings in Kenya had decreased by c. 83% between 1983-2011, likely as a result of overfishing.

Kiilu (2016)'s analysis of *S. lewini* landings at six sites along the coast of Kenya between June 2012 and May 2013, as well as observer data from a semi-commercial prawn trawler (collected in July-

August and October 2012) found the exploitation rate for the species (E=0.6) to be over the optimal level of 0.5 (see footnote 24 in the *Indonesia* review), indicating that stocks were being overexploited.

At the broader Indian Ocean level, the status of the species is considered unknown (IOTC, 2015), although Rigby *et al*. (2019b) inferred a median population reduction of 93.4% over three generation lengths (72.3 years).

Threats: Kenya's coastal fishery mainly comprises small scale artisanal fishers, with some industrial fishing by prawn trawlers off the north coast (Anam & Mostarda, 2012; Oddenyo *et al*., 2019). Substantial shark landings have occurred in both fisheries (Kiilu & Ndegwa, 2013; Oddenyo *et al*., 2019), with Ndegwa *et al*. (2023) noting that sharks are both targeted and caught as bycatch.

Kenya's offshore fishery consists mainly of locally flagged vessels and foreign licensed fishing vessels that target the tuna and tuna-like species which migrate through the Kenyan EEZ (Kiilu & Ndegwa 2018; Oddenyo *et al*., 2019). Only a small quantity of catch from the EEZ is landed in Kenya, primarily tuna for export (Anam & Mostarda, 2012). The foreign vessels are mainly purse seiners and longliners which operate under a fishing licensing scheme (Oddenyo *et al*., 2019). In addition, a fleet of 8-10 semi-industrial longline vessels is operated by small scale fishers (Kiilu & Ndegwa, 2018). Substantial shark bycatch has been recorded in these industrial fisheries, through catch declarations and regional observer reports (Oddenyo *et al*., 2019).

Sharks caught by artisanal fishers in Kenya are sold in the local markets (Oddenyo *et al*., 2019), however, the separation between the formal and informal market is not clear and shark products for sale or export from Kenya may in fact originate in Somalian waters (Rice, 2017).

Surveys of artisanal and prawn trawl shark bycatch 2012-2013 found that *S. lewini* was the most commonly caught species, accounting for 42-61% and 31% of shark catches respectively (Kiilu *et al*., 2019). With over 90% of *S. lewini* specimens landed in the study recorded to be juveniles, the authors raised concerns regarding the long-term sustainability of the artisanal fishery in particular, and called for the introduction of management measures such as seasonal closures to protect inshore pupping grounds (Kiilu *et al*., 2019). The species also appears to comprise a large proportion of shark bycatch in offshore fisheries; for example, in 2016, *S. lewini* comprised 46% of sharks caught by a longline vessel operating in Kenya's EEZ (Kiilu & Ndegwa, 2018).

Despite this, a productivity and susceptibility analysis (PSA) for the species in Kenyan waters (Kiilu *et al*., 2022) categorised *S. lewini* as low risk in artisanal fisheries using gillnets, handlines and ringnets, the industrial prawn trawl fishery, and the industrial longline fishery.

Capture production:

FAO: Nominal catch of *S. lewini* (code: SPL) and 'Scalloped hammerhead, etc. nei' (code: SPY) reported by Kenya to the FAO global capture production database 2013-2021 is summarised in Table 6.20. No catches were reported for 'Hammerhead sharks, nei' (code: SPN).

Table 6.20: Nominal catch (metric tonnes, live weight) of *S. lewini* (code: SPL) and 'Hammerhead sharks etc. nei' (code: SPY) from Kenya reported to the FAO 2013-2021. Quantities have been rounded to the nearest whole number.

Reported as	2013	2014	2015	2016	2017	2018	2019	2020	2021
SPL						27	26	26	26
SPY					20	20	20		

Source: FAO Global capture database. Available at: https://www.fao.org/fishery/statistics-query/en/capture/capture_quantity Accessed 06/02/2024

IOTC: Nominal catches of *S. lewini* (code: SPL) and 'Hammerhead sharks, nei' (code: SPN) in Kenya reported to the IOTC 2016-2022 are summarised in Table 6.21; all were caught by artisanal fisheries using both longlines and gillnets. No catches were reported for 'Hammerhead sharks, etc. nei' (code: SPY).

Table 6.21: Nominal catch (metric tonnes, live weight) of *S. lewini* (code: SPL) and 'Hammerhead sharks, nei' (code: SPN) from Kenya reported to the IOTC 2013-2022.

Reported as	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
SPL						27	26			615
SPN				31				487	722	

Source: IOTC Interactive Data Browser 2024. Nominal catches for all species, including bycatch ones. Available at: https://iotc.org/data/browser. Accessed 01/2/2024

Trade: Kenya has submitted all annual reports to CITES for the period 2013-2022, and has not published any export quotas for this species.

According to the CITES Trade Database, direct trade in *S. lewini* from Kenya 2013-2022 comprised 60 kg of wild-sourced fins and 65 live wild-sourced individuals as reported by Kenya, all for commercial purposes; importers reported 40 live wild-sourced individuals (95% for commercial purposes) (Table 6.22). Trade was predominantly exported to China (all fins, and 25% of live individuals as reported by Kenya) and the UAE (57% of live individuals as reported by Kenya).

The MA of Kenya (*in litt*. to the CITES Secretariat, 2023) provided details of exports of eight additional live individuals to the UAE in 2022 and 20 live individuals to China in 2023, however the source or purpose was not mentioned. Kenya did not report any imports of the species from ABNJ 2013-2022.

Indirect trade in *S. lewini* originating from Kenya 2013-2022 comprised three wild-sourced fins for educational purposes, re-exported by Kenya to the UAE in 2019.

Table 6.22: Direct exports of *S. lewini* from Kenya 2013-2022.

Term	Unit	Purpose	Source	Reported by	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
fins	kg	T	W	Exporter									60		60
				Importer											
live	number of specimens	E	W	Exporter											
				Importer					2						2
		T	W	Exporter					10	6	12	15		22	65
				Importer					2	11		15		10	38

Source: CITES Trade Database 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Management:

International commitments and RFMOs: Kenya is a Party to CMS (in which *S. lewini* is listed in Appendix II) and is a signatory of the CMS Sharks MOU.

Kenya is a Contracting Party to the IOTC, whose relevant Resolutions for shark fishing have been outlined above (see *Overview of management*). According to the 2023 IOTC compliance report for Kenya, the country has not complied or only partially complied with several IOTC Resolutions, including the requirements to provide nominal catch data, and catch and effort data on sharks as outlined in IOTC Resolution 17/05 (IOTC, 2023d).

Kenya is also member of the Southwest Indian Ocean Fisheries Commission (SWIOFC). Kenya has signed, but not ratified, the Southern Indian Ocean Fisheries Agreement (SIOFA), the objectives of which are to ensure the long-term conservation and sustainable use of the fishery resources in the area.

Legislation: The Fisheries Management and Development Act No. 35 of 2016 lays out the provisions for management of Kenya's extractive fisheries (Oddenyo *et al*., 2019).

> ***Prohibitions:*** Kiilu (2016) noted there is a closed season in place for prawn trawl fishing (November to April), but no further information was located regarding closed seasons for other fisheries, or the likelihood that these may benefit *S. lewini.*
>
> ***Finning:*** Kenya banned shark finning through Gazette Notice no. 3409 of 08 May 2020, which requires that "fishermen fully utilise their entire catches of sharks, with the exception of species prohibited by the IOTC". The ban applies to all licensed industrial vessels fishing within or outside of Kenya's EEZ. The trade and sale of fins must be in appropriate proportion to the quantity of carcasses landed (5% of dressed carcass weight is usually recommended in the Western Indian Ocean region).

Kenya's national legislation is included in Category 2 in the CITES National Legislation Project (legislation that is believed generally to meet one to three of the four requirements for effective implementation of CITES). The most recent legislative status table (updated November 2023) indicated that an update on national legislation was submitted on 3 November 2023; next steps include agreement between Kenya and the CITES Secretariat on a revised legislative analysis, including possible Category 1 status.

Non-detriment findings: Although an NDF has not yet been completed, the CITES MA of Kenya (*in litt.* to the CITES Secretariat, 2023) explained that a rapid assessment of *S. lewini* conducted in 2018 "established sustainable levels of harvesting and maximum exportable quantities of live specimens of the species at 50". No further detail was provided regarding the methodology used to conduct this assessment, but the MA noted that exports in all years 2018-2023 had fallen below this number. However, data reported by Kenya to the FAO and IOTC 2018-2022 indicates that landings over this period would have exceeded 50 individuals (assuming one shark weighs 84 kg (see Pavitt *et al*. (2021)), capture of *S. lewini* according to data reported to FAO would have represented c. 300 individuals per annum 2018-2021).

The MA (*in litt*. to the CITES Secretariat, 2023) reported that plans were underway to complete an NDF for *S. lewini* and to conduct CITES law enforcement workshops. It has been noted that NDFs are difficult to implement because of undocumented local trade between Kenya and Somalia (Rice, 2017).

Management plans and NPOA-Sharks: Kenya's State Department of Fisheries (SDF) initiated the process of drafting an NPOA-Sharks and Rays in 2014 (Oddenyo *et al*., 2019). A baseline assessment of Kenyan sharks was conducted in 2018 to inform the development of the plan (CITES MA of Kenya *in litt*. to CITES Secretariat, 2023); in the latest update that could be located (November 2023), Kenya was reported to be awaiting cabinet approval on a finalised NPOA-Sharks (IOTC, 2023h).

Monitoring and observers: The Kenya Fisheries Service (KeFS) is the principal national agency responsible for management and development of fisheries in the country. In collaboration with other agencies, including the CITES authorities, it monitors the fishing activities of both national and foreign-flagged vessels licensed to fish in inshore waters and in the EEZ (CITES MA of Kenya *in litt*. to CITES Secretariat, 2023). Catch Assessment surveys in the shark fishery are undertaken on a quarterly basis by the KeFS and the Kenya Marine and Fisheries Research Institute (Ndegwa *et al*., 2023). In addition, semi-industrial prawn trawl, deep water trawl, crabber, and longline data are monitored through vessel logbooks and a dedicated observer programme (Ndegwa *et al*., 2023). Kenya is additionally implementing sampling and monitoring of catch from industrial long line fisheries through land-based observers (Ndegwa *et al*., 2023).

The Fisheries Management and Development Act No. 35 of 2016 stipulates the need for fishing vessels to have a functional VMS at any time that fishing operations are ongoing, with measures in place to help detect potential illegal, unreported and unregulated (IUU) fishers (Ndegwa *et al*., 2023).

Protected areas and Important Shark and Ray Areas (ISRAs): Six Marine Protected Areas in Kenya, covering 941 km^2, are listed in the Nairobi Convention's dashboard for the Western Indian Ocean (Nairobi Convention Secretariat, 2023). These are: Kiunga Marine National Park, Watamu Marine National Park, Mombasa Marine National Park, Kisite Mpunguti Marine Park and Reserve, Malindi Marine Park and Diani-Chale Marine National Park and reserve. In addition, a collaborative management approach has been used in Kenya to establish Locally Managed Marine Areas (LMMAs) mainly for fisheries and other marine resource management (Oddenyo *et al*., 2019). No information could be located regarding whether these protected areas are likely to specifically benefit *S. lewini.*

Kenya has three accepted ISRAs in the Western Indian Ocean (Lamu Archipelago, Malindi-Ungwana Bay and Watamu) and an Area of Interest (Diani-Shimoni-Vanga) (Jabado *et al*., 2023). In addition, the East Africa Coastal Current ISRA is located offshore from southern Somalia, Kenya, Seychelles, and includes waters in ABNJ (IUCN SSC Shark Specialist Group, 2023). None of these are specific to *S. lewini* except for the Malindi-Ungwana Bay, which is a reproductive area for the species (Jabado *et al*., 2023).

Illegal trade: No seizures of *S. lewini* involving Kenya were reported in the TRAFFIC Wildlife Trade Portal 2013–2023. However, 1280 kg of dried fins, including those of Sphyrnidae species, were seized at Hong Kong SAR in 2017, with Kenya identified as one of the origin countries (TRAFFIC International, 2024).

Nicaragua

Distribution: *S. lewini* is found off the Pacific and Caribbean coasts of Nicaragua; individuals in the former were reported to belong to the Eastern Pacific DPS, and individuals in the latter were reported to belong to the Central and Southwest Atlantic DPS (CITES MA of Nicaragua *in litt*. to UNEP-WCMC, 2023).

Population status and trends: The CITES MA of Nicaragua (*in litt.* to UNEP-WCMC, 2023) noted that the country does not have a shark monitoring programme, hence the population status of *S. lewini* in Nicaraguan waters is unknown; despite this, the MA reported that there is no information that indicates that *S. lewini* is threatened in the country. In 2015, the MA noted that efforts were being made to record species-specific landings data, but did not consider there to be sufficient biological and fisheries data (composition of catches by species, sex, size, weight, maturity, etc.) to enable stock assessments to take place (AC28 Inf. 12).

The Eastern Pacific DPS of *S. lewini* as a whole was classified in Miller *et al*. (2014) as having a high risk of extinction "because it is at or near the level of abundance and productivity that places its current and future persistence in question throughout its entire range". Overutilisation was identified as the most series threat, though abundance data in this area were noted to be lacking (Miller *et al.* 2014). While abundance data and catch statistics for the Central and Southwest Atlantic DPS were also noted to be scarce, the DPS as a whole was considered to be at moderate risk of extinction in Miller *et al*. (2014).

Threats: Nicaragua's national fishing fleet is classified into artisanal (<=15 m in length) and industrial (>15 m in length) fleets (CITES MA of Nicaragua *in litt*. to UNEP-WCMC, 2023). The artisanal fleet includes approximately 350 small-scale vessels that operate in coastal areas while the industrial fleet includes four longline vessels, one in the Pacific Ocean and three in the Caribbean Sea, which operate within the EEZ (CITES MA of Nicaragua *in litt*. to UNEP-WCMC, 2023).

While no targeted fishing of sharks was reported to occur in Nicaragua, *S. lewini* is caught as bycatch within Nicaragua's EEZ off the eastern Pacific coast and in the Caribbean Sea, with catches off the Pacific coast thought to be larger (CITES MA of Nicaragua *in litt*. to the CITES Secretariat, 2023). The species is mainly caught by artisanal fisheries using pelagic longlines and circle hooks (CITES MA of Nicaragua *in litt*. to UNEP-WCMC, 2023; to CITES Secretariat, 2023). Most incidentally caught individuals caught are adults or sub-adults, however the small-scale artisanal fleet have also been known to catch juveniles (CITES MA of Nicaragua *in litt*. to UNEP-WCMC, 2023). All *Sphyrna* spp. fins were reported to be destined for export, while the meat is consumed domestically (CITES MA of Nicaragua *in litt*. to UNEP-WCMC, 2023).

Capture production:

FAO: No nominal catch data for *S. lewini* (code: SPL), 'Hammerhead sharks nei' (code: SPN) or 'Hammerhead sharks etc. nei' (code: SPY) for Nicaragua were available in the FAO global capture production database 2013-2021 (FAO, 2024b).

IATTC: IATTC catch data for sharks are only available at the aggregated level of 'Various sharks, nei' (code: SKH); Table 6.23 shows data reported by Nicaragua for this category 2013-2022.

Table 6.23: Aggregated catch (metric tonnes) of 'Various sharks nei' (code: SKH) from Nicaragua reported to the IATTC 2013-2022.

Reported as	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
SKH	15	25	33	44	23	27				

Source: IATTC, 2023. Public domain data for download. EPO total estimated catch by year, flag, gear, species. Available at: https://www.iattc.org/en-US/Data/Public-domain. Accessed 01/02/2024.

ICCAT: Nicaragua has not reported any catches of *S. lewini* (code: SPL), 'Hammerhead sharks nei' (code: SPN) or 'Hammerhead sharks etc. nei' (code: SPY) to ICCAT 2013-2022.

Nicaragua's Fishery and Aquaculture Statistical Yearbooks: Catches of hammerhead sharks reported in Nicaragua's Fishery and Aquaculture Statistical Yearbooks are summarised in Table 6.24. Note that landings of hammerhead shark were only reported for the artisanal fleet operating in the Nicaraguan Caribbean Sea, and it is unclear if these data provide a complete overview of catches in the country as a whole.

Table 6.24: Harvest of hammerhead sharks from the artisanal fleet operating in the Nicaraguan Caribbean Sea, 2013-2022. Data were reported in lb, conversion to kg is shown in brackets (quantities for trade in kg have been rounded to the nearest whole number).

Reported as	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
Hammerhead shark		350 (159)		35 (16)	1300 (590)	649 (294)	481 (218)	845 (383)	2350 (1066)	615 (279)	6625 (3005)

Source: INPESCA, 2022. Statistical yearbooks. Available at: http://www.inpesca.gob.ni/index.php/en/direcciones/division-de-planificacion/anuarios-pesqueros. Accessed 24/03/2024.

Trade: Nicaragua has submitted all annual reports to CITES for the period 2013-2022, and has not published any export quotas for this species.

According to the CITES Trade Database, direct trade in *S. lewini* from Nicaragua 2013-2022 entirely comprised wild-sourced fins and dried fins exported for commercial purposes (Table 6.25). This trade was predominantly reported by weight, which totalled 4521 kg of fins reported by Nicaragua (3611 kg according to importers) and 646 kg of dried fins reported by importers only. Direct exports peaked in 2021 with 1728 kg of fins as reported by Nicaragua. Hong Kong SAR was the primary importer, accounting for 93% of fins reported by weight as reported by Nicaragua and importers, and all trade in dried fins (reported by Hong Kong SAR only). Nicaragua did not report any imports of the species from ABNJ 2013-2022.

Indirect trade in *S. lewini* originating from Nicaragua 2013-2022 comprised 120 wild-sourced fins for commercial purposes re-exported by the US to Hong Kong SAR in 2021, as reported by the importer only.

Table 6.25: Direct exports of *S. lewini* from Nicaragua 2013-2022. Quantities have been rounded to the nearest whole number where applicable.

Term	Unit	Purpose	Source	Reported by	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
fin (dried)	kg	T	W	Exporter											
				Importer										646	646
fins	kg	T	W	Exporter			217	953		5	130	751	1728	736	4521
				Importer			294	387		5	995	751	1178		3611
	number of specimens	T	W	Exporter				50							50
				Importer											

Source: CITES Trade Database 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Management: Nicaragua's shark fisheries are managed by the Nicaraguan Institute of Fisheries and Agriculture (INPESCA), who authorise the commercialisation of shark fins for export, and assess exports for compliance with fisheries regulations (CITES MA of Nicaragua *in litt*. to the CITES Secretariat, 2023).

International commitments and RFMOs: Nicaragua is a member of the Central American Fisheries and Aquaculture Organization (OSPESCA), whose area of competence extends to the national and inland waters and EEZs of its Member States. Nicaragua is also Contracting Party (CP) to IATTC and ICCAT, and a cooperating non-member of WCPFC, whose relevant Resolutions and Recommendations for shark fishing have been outlined above (see *Overview of management*). For ICCAT, these include Recommendation 10-08, which prohibits the retention, landing, and trade of hammerhead sharks except *S. tiburo* (with an exemption for sharks caught by developing CPs (including Nicaragua) for local consumption, provided that CPs provide relevant data). The Recommendation also states that developing coastal CPs should endeavour not to increase their catches of the family Sphyrnidae and take measures to ensure these species (except *S. tiburo*) will not enter international trade.

The CITES MA of Nicaragua (*in litt.* to the CITES Secretariat, 2023) noted that in order to export fins, exporters must demonstrate that they have sold all available meat.

Legislation: Nicaragua's Fisheries and Aquaculture Law No. 489 governs fisheries and aquatic activity in the country. The CITES MA of Nicaragua (*in litt*. to UNEP-WCMC, 2023) noted that capture of *S. lewini* is not illegal in Nicaragua, nor is its consumption, as long as landing is carried out in compliance with current regulations.

> ***Finning:*** The capture of sharks in continental and marine waters for the sole purpose of finning is prohibited by the Fisheries and Aquaculture Law No. 489.

Nicaragua's national legislation is included in Category 1 in the CITES National Legislation Project (legislation that is believed generally to meet all four requirements for effective implementation of CITES).

Non-detriment findings: The CITES MA of Nicaragua (*in litt*. to UNEP-WCMC, 2023) reported that the country does not have an "official instrument" for conducting NDFs for shark species (assumed to mean that there is no established process and a lack of capacity to undertake these), and further noted that they did not have conversion factors for estimating fin:live weight ratios of species. The MA thus asked the Secretariat for technical and economic support to develop a specific format to conduct an NDF for the harvest of shark and ray species, and to estimate fin:live weight conversion factors for the different species of elasmobranchs landed in Nicaragua.

Monitoring: INPESCA has been noted to regularly collect data from the country's principal shark landing sites using the Central American standardised forms for landings inspections (AC28 Inf. 12); however, the CITES MA of Nicaragua (*in litt.* to the CITES Secretariat, 2023) highlighted that there are no historical species-specific data. Nicaragua's fishery and aquaculture statistical yearbooks only display aggregated data for hammerhead sharks (see *Capture production* section), indicating that non-species-specific reporting of landings may continue to be an issue.

Management plans and NPOA-Sharks: An NPOA-Sharks for Nicaragua was adopted in 2010 (FAO, 2024a). It sets out 10 objectives, including objectives on ensuring sustainable catch of sharks, minimising bycatch, assessing shark populations, and facilitating the improvement of species-specific data collection of shark fishing and landings (FAO, 2006).

An evaluation of Nicaragua's NPOA-Sharks conducted by Pacoureau *et al.* (2023), which assigned a score out of 20 based on (1) whether the plan included one of the 10 aims originally set out by the IPOA-Sharks, and (2) whether there were any concrete actions, plans, or further elaboration of the aim, specifically with reference to time, budget and/or manpower, gave it a total score of 14.5. Concrete actions or plans were not considered to have been outlined for three of the IPOA-Sharks aims (1,4, and 10)[27].

Protected areas and Important Shark and Ray Areas (ISRAs): Hammerhead sharks were reported to be present in the Corn Island Archipelago Marine Protected Area in the Caribbean Sea (WCS, 2021). The country has an additional eight coastal marine protected areas (CBD, 2024), but it is unclear whether any of these benefit *S. lewini*.

Nicaragua has an ISRA in its national waters (Las Peñitas-Poneloya) and is a relevant country for transnational ISRAs (the Eastern Tropical Pacific Marine Corridor, Gulf of Fonseca, and Costa Rica Thermal Zone) in the eastern Pacific Ocean (IUCN SSC Shark Specialist Group, 2023a). All except the Costa Rica Thermal Zone are reproductive areas for *S. lewini* (IUCN SSC Shark Specialist Group, 2023a).

Illegal trade: The CITES MA of Nicaragua (*in litt*. to UNEP-WCMC, 2023) found no information on fishing or illegal trade of *S. lewini*. No seizures of *S. lewini, Sphyrna* spp., or Sphyrnidae involving Nicaragua were reported in the TRAFFIC Wildlife Trade Portal 2013–2023 (TRAFFIC International, 2024).

Oman

Distribution: *S. lewini* has been recorded in two checklists of fish/elasmobranch species found in Oman (Al-Jufaili *et al*., 2010; Henderson & Reeve, 2011) and has been found at landing sites all along the Omani coast (Spaet *et al*., 2015). Genetic evidence from the Gulf (UAE), northern Arabian Sea (Oman) and the Red Sea (Saudi Arabia) has suggested that the Arabian Sea population of *S. lewini* is distinct from other known stocks in the Indian Ocean (Spaet *et al*., 2015).

Population status and trends: No specific information on the population status and trends of *S. lewini* in Oman could be located; Miller *et al*. (2014) noted that the status of shark populations off the coast of Oman was unknown. Fishers in Oman interviewed by Almojil (2021) perceived a 75% decline in shark abundance, with declines beginning in 2001, however estimate this is not specific to *S. lewini*.

The status of *S. lewini* in the wider Indian Ocean is considered unknown (IOTC, 2015). However, Jabado *et al*. (2017) estimated that the species has declined by at least 50% over the past three generations (72 years) in the Arabian Sea region with likely ongoing declines, based on reported declines in landings, the high value of the species' fins, and increasing fishing pressure in the region.

Threats: The Omani national fishery fleet contains artisanal, coastal and industrial vessels (AlMuatasm Al Habsi, 2023). The capture of elasmobranchs was reported to be primarily carried out by artisanal fisheries, both as target species and as bycatch, using longlines, gillnets and driftnets (Almojil, 2021; Henderson *et al*., 2007; Henderson & Reeve, 2011). In a report to the IOTC, Oman reported that targeted shark fishing is limited to approximately 10% of the artisanal fleet while the

[27] Aim 1: Ensure shark catches from directed and non-directed fisheries are sustainable
Aim 4: Improve and develop frameworks for establishing and co-ordinating effective consultation involving all stakeholders in research, management and educational initiatives within and between States
Aim 10: Facilitate the identification and reporting of species-specific biological and trade data

remaining 90% catch sharks only as bycatch of tuna fishing activities (Directorate General of Fisheries Resources Development, 2020).

S. lewini was one of the most common species landed in Oman's shark fisheries in surveys carried out between 2002 and 2004, with landings predominantly consisting of juveniles; large females observed in landings were also observed to contain full-term embryos (Henderson *et al*., 2007, 2009). This is likely due to the majority of fishing taking place in shallow coastal waters, to depths of 100 m and within a few kilometres of the shore (Henderson *et al*., 2007; Spaet *et al*., 2015).

The UAE appears to have been a major destination hub for sharks from Oman; Jabado *et al*. (2015) found that the majority of sharks and fins sold in a fish market in Dubai originated from Oman, with *S. lewini* accounting for 5.42% of individuals surveyed (Jabado *et al*., 2015). However, Okes and Sant (2022) reported that all export and re-export of shark fins from UAE was banned in 2019, which may have affected trade dynamics. Dried shark fins have also been exported directly from Oman to Asian countries (Henderson *et al*., 2009; *Trade* section) and skins were reported to be exported to China (Jabado *et al*., 2015). Prior to the growth of the export market for fins, almost all elasmobranch landings were reported to be used for domestic consumption (Henderson *et al*., 2007).

Fishers in Oman perceived the major drivers of decline in shark abundance to be non-local fishers, corruption and trawling (Almojil, 2021).

Capture production:

FAO: No nominal catch data for *S. lewini* (code: SPL), 'Hammerhead sharks nei' (code: SPN) or 'Hammerhead sharks etc. nei' (code: SPY) for Oman were available in the FAO global capture production database 2013-2021 (FAO, 2024b).

IOTC: Nominal catch for 'Hammerhead sharks nei (SPN)' and 'Hammerhead sharks, etc. nei (SPY) 2013-2022 reported by Oman to the IOTC is outlined in Table 6.26; no catches were reported for *S. lewini* (code: SPL). All catches were landed by artisanal fisheries using either gillnet or line gear (IOTC, 2024).

Table 6.26: Nominal catch (metric tonnes, live weight) of 'Hammerhead sharks, nei' (code: SPN), 'Hammerhead sharks etc. nei' (code: SPY) from Oman reported to the IOTC 2013-2022. Quantities have been rounded to the nearest whole number.

Reported as	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
SPN		97							348	
SPY				1394						

Source: IOTC Interactive Data Browser 2024. Nominal catches for all species, including bycatch ones. Available at: https://iotc.org/data/browser. Accessed 01/2/2024

Trade: Oman has submitted all annual reports to CITES for the period 2013-2022, and has not published any export quotas for this species.

According to the CITES Trade Database, direct trade in *S. lewini* from Oman 2013-2022 entirely comprised wild-sourced fins reported for the years 2018-2021, totalling 7700 kg and 1500 fins according to Oman, and 8620 kg and 3 fins as reported by importers; trade was predominantly for commercial purposes (Table 6.27). Hong Kong SAR was the sole importer of all commercial trade. Oman did not report any imports of the species from ABNJ 2013-2022.

Indirect trade in *S. lewini* originating from Oman 2013-2022 entirely comprised 15 wild-sourced fins for educational purposes, as reported by re-exporters and importers.

Table 6.27: Direct exports of *S. lewini* from Oman 2013-2022. Quantities have been rounded to the nearest whole number where applicable.

Term	Unit	Purpose	Source	Reported by	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
fins	kg	T	W	Exporter							1300	4800	1600		7700
				Importer							1140	5900	1580		8620
	number of specimens	E	W	Exporter											
				Importer						3					3
		T	W	Exporter							1500				1500
				Importer											

Source: CITES Trade Database 2023. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Management:

International commitments and RFMOs: Oman is a Contracting Party of the IOTC, whose relevant Resolutions for shark fishing have been outlined above (see *Overview of management: Regional management*). The 2023 IOTC compliance report for Oman noted a lack of compliance with several IOTC measures and lack of response from Oman for several years; Oman had not presented any of the compulsory reports pertaining to IOTC Resolutions (IOTC, 2023e).

Legislation: The law of fisheries and protection of living aquatic resources issued by Royal Decree No. 59/1993 (amending some provisions of Law No. 53/81 on fishing and the protection of living aquatic wealth) governs fisheries in Oman (FAO, 2023). In addition, Ministerial Resolution No.4/94 Implementing Regulation of the Law on Marine Fishing and Protection of Living Aquatic Resources contains various amendments to specific provisions, e.g. licensing rules (FAO/FAOLEX, 2023).

> ***Finning:*** According to Oman's 2021 report to IOTC, discard of any part of sharks and cutting fins is prohibited (AlMuatasam Al-Habsi, 2021). The export or sale of pieces of shark is not permitted without a permit from the authorities (AlMuatasam Al-Habsi, 2021).
>
> ***Gear restrictions:*** Trawling in Oman was reported to have been banned since 2011 (Almojil, 2021).

Oman's national legislation is included in Category 3 of the CITES National Legislation Project (legislation that is believed generally not to meet any of the four requirements for effective implementation of CITES). A second formal warning was issued to Oman at SC71 (2019) and draft legislation was received in February 2020. Dialogue took place between Oman and the CITES Secretariat, however, insufficient new information was considered to have been provided (CITES Secretariat, 2023). A Standing Committee recommendation to suspend trade with Oman in all CITES-listed species for commercial purposes until further notice was thus issued on 10 January 2024 (CITES Notif. No. 2024/032).

Non-detriment findings: In August 2023, the CITES MA of Oman reported that the country would cease to issue permits of Appendix II shark species for six months and that NDF studies would be implemented (CITES MA of Oman *in litt*. to CITES Secretariat, 2023). In a subsequent letter dated 19 October 2023 Oman explained that an extension for the trade of shark fins until December 2023 would

take place to allow local companies involved in the trade to correct their situation, and the six-month ban would then be implemented (CITES MA of Oman *in litt*. to CITES Secretariat, 2023). It is therefore expected that the ban will expire in June 2024.

Management plans and NPOA-Sharks: Oman reported to the IOTC that it had begun drafting an NPOA-Sharks in 2017 (IOTC, 2023h), however no further updates could be located.

Protected areas and Important Shark and Ray Areas (ISRAs): Oman has 13 marine protected areas covering a range of environments (Choudri *et al*., 2016; Royal Decree No 54/2022), but no information could be located regarding whether these protected areas are likely to benefit *S. lewini.*

Oman has five accepted ISRAs in the Western Indian Ocean (Daymaniyat Islands, Gulf of Masirah, Hallaniyat Islands, Musandam and Muscat) (Jabado *et al*., 2023). In addition, the Strait of Hormuz Corridor is a transboundary ISRA that includes waters in Bahrain, Iran, Oman, Qatar, Saudi Arabia, and UAE (Jabado *et al*., 2023). None of these are specific to *S. lewini*.

Illegal trade: No seizures of *S. lewini, Sphyrna* spp., or Sphyrnidae involving Oman were reported in the TRAFFIC Wildlife Trade Portal 2013–2023 (TRAFFIC International, 2024).

Sri Lanka

Distribution: *S. lewini* has been reported at landing sites throughout the coast of Sri Lanka (Figure 6.10), but no specific information on its distribution in Sri Lankan waters could be located.

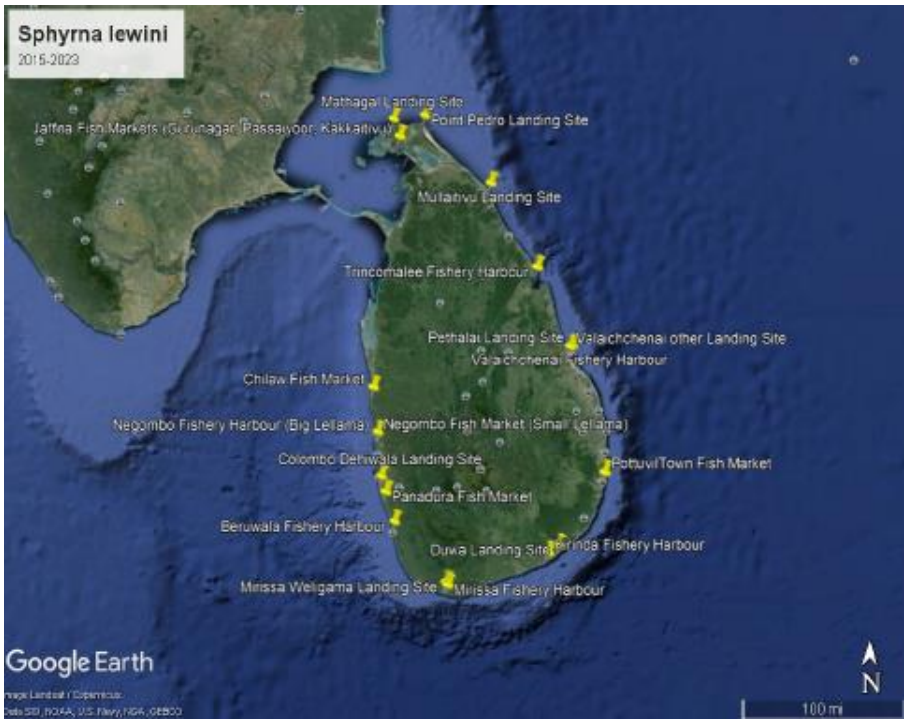


Figure 6.10: Landing sites in Sri Lanka where *S. lewini* has been documented. Source: Blue Resources Trust *in litt.* to UNEP-WCMC via IUCN SSC Shark Specialist Group, 2024.

Population status and trends: No information was reported to be available on the population status and trends of *S. lewini* within Sri Lanka's EEZ (Government of Sri Lanka, 2017). However, anecdotal information suggests that there has been a decline in fisheries landings over the past decade, despite

no change in fishing gears and an increase in fishing effort over the same period (IUCN SSC Shark Specialist Group *in litt.* to UNEP-WCMC, 2024). According to the Blue Resources Trust (BRT), landings of *S. lewini* were reportedly common in Sri Lanka just over a decade ago, whereas now landings are considered to be infrequent (IUCN SSC Shark Specialist Group *in litt.* to UNEP-WCMC, 2024).

At the broader Indian Ocean level, the status of the species is considered unknown (IOTC, 2015), although Rigby *et al.* (2019b) inferred a median population reduction of 93.4% over three generation lengths (72.3 years).

Threats: Shark species are caught in large quantities in Sri Lanka (Government of Sri Lanka, 2017), with *S. lewini* noted to be one of the top six species caught (Jayathilaka *et al*., 2016). Hammerheads are primarily caught as bycatch in artisanal fisheries using gillnets and in semi-industrial fisheries using longlines and gillnets (National Aquatic Resources Research and Development Agency in Government of Sri Lanka, 2017). They are primarily traded for their fins, however they are also traded for their meat, skin, teeth and jaws (Government of Sri Lanka, 2017).

According to the BRT database, which contains data from 2871 surveys conducted across multiple landing sites in Sri Lanka, there have been 92 records of *S. lewini* since 2017; these individuals were captured by coastal-artisanal and offshore fisheries, including some likely to be operating outside of the EEZ (IUCN SSC Shark Specialist Group *in litt.* to UNEP-WCMC, 2024). Sri Lanka's 2017-2019 NDF for the species (Government of Sri Lanka, 2017) notes that landings of hammerhead sharks in the country predominantly comprise adults; however, of the 74 landing records of *S. lewini* in the BRT database that have length measurements, a high proportion of the individuals caught had not attained a mature size (IUCN SSC Shark Specialist Group *in litt.* to UNEP-WCMC, 2024).

Capture production:

FAO: Nominal catch of *S. lewini* (code: SPL) and 'Scalloped hammerhead, etc. nei' (code: SPY) reported by Sri Lanka to the FAO global capture production database 2013-2021 is summarised in Table 6.28. No catches were reported for 'Hammerhead sharks, nei' (code: SPN).

Table 6.28: Nominal catch (metric tonnes, live weight) of *S. lewini* (code: SPL) and 'Hammerhead sharks etc. nei' (code: SPY) from Sri Lanka reported to the FAO 2013-2021.

Reported as	2013	2014	2015	2016	2017	2018	2019	2020	2021
SPL							25	11	206
SPY	188	43	87	90	129	18	7	3	

Source: FAO Global capture database. Available at: https://www.fao.org/fishery/statistics-query/en/capture/capture_quantity Accessed 06/02/2024

IOTC: Nominal catch of *S. lewini* reported by Sri Lanka to the IOTC 2013-2022 is shown in Table 6.29; the species was predominantly caught by artisanal fisheries (83%) using longlines, gillnets, and purse seines (IOTC, 2024). No catches were reported for 'Hammerhead sharks, nei' (code: SPN) or 'Hammerhead sharks, etc. nei' (code: SPY).

Table 6.29: Nominal catch (metric tonnes, live weight) of *S. lewini* (code: SPL) from Sri Lanka reported to the IOTC 2013-2022. Quantities have been rounded to the nearest whole number.

Reported as	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
SPL	119	24	44	77	118	16	25	11	206	

Source: IOTC Interactive Data Browser 2024. Nominal catches for all species, including bycatch ones. Available at: https://iotc.org/data/browser. Accessed 01/2/2024

Trade: Sri Lanka has submitted all annual reports to CITES for the period 2013-2022, and has not published any export quotas for this species.

According to the CITES Trade Database, direct trade in *S. lewini* from Sri Lanka 2013-2022 primarily comprised 19 518 kg of wild-sourced fins for commercial purposes reported by Sri Lanka (3409 kg of fins and 1517 kg of dried fins as reported by importers) (Table 6.30). Trade peaked in 2022 with 10 281 kg of fins reported by Sri Lanka. Trade was predominantly exported to Hong Kong SAR (76% of fins as reported by Sri Lanka) and Singapore (24%). Sri Lanka did not report any imports of the species from ABNJ 2013-2022.

Indirect trade in *S. lewini* originating from Sri Lanka 2013-2022 consisted of 413 kg of wild-sourced fins for commercial purposes, as reported by the re-exporter (Singapore) only.

Table 6.30: Direct exports of *S. lewini* from Sri Lanka 2013-2022. Quantities have been rounded to the nearest whole number where applicable.

Term	Unit	Purpose	Source	Reported by	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
fin (dried)	kg	T	W	Exporter											
				Importer										1517	1517
fins	kg	T	W	Exporter		160				950	60	2502	5565	10281	19518
				Importer		160						401	1645	1204	3409
specimens	number of specimens	S	W	Exporter							25				25
				Importer							25				25

Source: CITES Trade Database 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Management:

International commitments and RFMOs: Sri Lanka is a Party to CMS, in which *S. lewini* is listed in Appendix II, and is a signatory of the CMS Sharks MOU.

Sri Lanka is a Contracting Party to the IOTC, whose relevant Resolutions for shark fishing have been outlined above (see *Overview of management: Regional management*). According to the 2023 IOTC compliance report for Sri Lanka, the country has not complied or only partially complied with several IOTC Resolutions (IOTC, 2023f).

Sri Lanka is also a member of the Asia-Pacific Fishery Commission (APFIC) and the Bay of Bengal Programme Inter-Governmental Organisation (BOBP-IGO).

Legislation: *S. lewini* is not included in Sri Lanka's list of fish species that are protected from hunting, collection and sale (Schedule IV of Sri Lanka's Fauna and Flora Protection Ordinance) and is also not included in the schedule of the Shark Fisheries Management Regulations (2015) which prohibits fishing of listed shark species in Sri Lanka's waters. The Ordinance does, however, prohibit the hunting or collection of all wild animals within nature reserves, national parks, jungle corridors, refuges, marine reserves or buffer zones. As well as marine reserves that can be established under the Fauna and Flora Protection Ordinance (1993), under the Fisheries and Aquatic Resources Act (1996), Fisheries Management Areas (FMAs) can be established which can regulate fishing gear types and harvest of specific species, as well as implement closed seasons and temporal restrictions on fishing. No information could be located regarding whether there are any FMAs that have restrictions that could benefit *S. lewini.*

> ***Finning:*** The Shark Fisheries Management Regulations (2015) regulations prohibit the removal of shark fins and the discard of shark carcasses from which fins have been removed, as well as the retention, transhipment or landing of any shark unless the fins are naturally attached to the body.

Sri Lanka's national legislation is included in Category 3 in the CITES National Legislation Project (legislation that is believed generally not to meet any of the four requirements for effective implementation of CITES). The most recent legislative status table (updated November 2023) noted that a draft regulation was submitted to the Secretariat in November 2023, with next steps including the finalisation of implementing regulations and agreement between Sri Lanka and the Secretariat on a revised legislative analysis, including a possible Category 1 status.

Non-detriment findings: An NDF for *Sphyrna* spp. for 2017-2019 based on the guidance developed by Mundy-Taylor *et al*. (2014) concluded that a conditional positive NDF could be made for the species, subject to improvement in fisheries management, compliance, monitoring, and research (Government of Sri Lanka, 2017). The conditions included, *inter alia,* assessing potential options for the introduction of export quotas, and the submission of a report for CoP18 detailing progress achieved towards the recommendations (Government of Sri Lanka, 2017). The NDF was to be re-evaluated after two years and updated for 2019-2021 (Government of Sri Lanka, 2017), however neither an updated version of the NDF, nor the report detailing progress reported towards the recommendations, could be located.

Management plans and NPOA-Sharks: An NPOA-Sharks was first finalised in 2013 and revised in 2018, valid until 2022 (IOTC, 2023i). Information on the IOTC website (IOTC, 2023i) indicates that the NPOA is in the process of being reviewed, however no further information could be located. The National

Aquatic Resources Research and Development Agency (NARA) of Sri Lanka were reported to have started collecting fisheries and biological data on *S. lewini* (IOTC, 2023i).

Protected areas: According to the World Database on Protected Areas, 399 km^2 of Sri Lanka's marine and coastal area are designated as protected areas, but no information could be located regarding whether they are likely to benefit *S. lewini.*

Illegal trade: The TRAFFIC Wildlife Trade Portal recorded one seizure involving *S. lewini* in Sri Lanka: 2 kg of dried *S. lewini* fins destined for Hong Kong SAR in 2021(TRAFFIC International, 2024).

Yemen

Distribution: The CITES MA of Yemen (*in litt*. to UNEP-WCMC, 2023) highlighted that no recent studies had been conducted on the presence of *S. lewini* in Yemeni waters, but noted that local experts confirmed the presence of "sharks" in various locations across the country, including in waters of the Socotra Archipelago (it is unclear whether the MA was referring to *S. lewini* in particular). Shaher (2007) identified *S. lewini* as one of the shark species caught in the Gulf of Aden and Socotra Archipelago and landed in Yemen.

Population status and trends: The CITES MA of Yemen *(in litt.* to UNEP-WCMC, 2023) noted that there was a lack of monitoring and evaluation of shark populations in the country, including within protected areas*;* Miller *et al*. (2014) noted that the status of shark populations off the coast of Yemen was unknown. However the species was described as "fairly common" throughout the Red Sea and Gulf of Aden between 1999-2001 (Bonfil, 2003).

The status of *S. lewini* in the wider Indian Ocean is considered unknown (IOTC, 2015). However, Jabado *et al*. (2017) estimated that the species has declined by at least 50% over the past three generations (72 years) in the Arabian Sea region with likely ongoing declines, based on reported declines in landings, the high value of the species' fins, and increasing fishing pressure in the region.

Threats: CITES-listed sharks are caught as both target species and as bycatch in Yemen's national waters, with animals destined both for the domestic market and for export (Vasconcellos *et al*., 2018). Fisheries in Yemen are mainly small-scale in nature and considered artisanal, however the country also has small industrial fisheries targeting demersal and pelagic species (Jabado *et al*., 2018; Morgan, 2004). While the artisanal fleet (mainly comprised of small-scale gillnet, longline and hook-and-line; Vasconcellos *et al*., 2018) targets sharks, this was not considered by the CITES Management Authority of Yemen (*in litt.* to UNEP-WCMC, 2023) to be a major threat; targeting of sharks by commercial companies however was thought to have possibly led to a depletion of shark stocks (CITES MA of Yemen *in litt*. to UNEP-WCMC, 2023). Vasconcellos *et al*. (2018) reported that sharks are also caught as bycatch in industrial bottom trawling fisheries in Yemen operated by vessels from China, the Republic of Korea, Egypt and Thailand.

Fishing effort in Yemen was reported to have significantly increased since the 1990s (Jabado *et al*., 2018), with Bonfil (2003) identifying Yemeni fisheries as the most important for shark exploitation in the region; *S. lewini* was considered to be one of the principal species commercially targeted (Shaher, 2007). Fishers across the Arabian Sea and adjacent waters have been reported to target shark breeding aggregations and nursery areas, landing high volumes of juveniles and newborn sharks, including *S. lewini*; this has led multiple authors to raise sustainability concerns (Bonfil, 2003; Jabado

et al., 2018). Concerns have also been raised regarding unreliable estimates of shark catches in Yemen, with some catches not weighed and estimated by eye (Bonfil, 2003; Jabado *et al*., 2018).

Shark meat is consumed locally for subsistence in the eastern regions of Yemen (CITES MA of Yemen *in litt*. to UNEP-WCMC, 2023), and it has been estimated that local fishing communities consume from 50%-72% of the total shark (and ray) production in the region (Jabado & Spaet, 2017; Vasconcellos *et al*., 2018). Yemen has been noted to be a major trade hub for shark products, exporting high volumes of fins (see *Trade* section), dried skin (45-50 metric tonnes between 2009 and 2011) and dried bones (26 metric tonnes between 2009 and 2011) (Jabado & Spaet, 2017). Vasconcellos *et al.* (2018) listed the main destination countries of shark products from Yemen as China, Hong Kong SAR, Sri Lanka and Singapore.

Capture production:

FAO: Yemen reports almost all landings of sharks to the FAO at class level (Elasmobranchii) (Vasconcellos *et al*., 2018); as such, no nominal catch data for *S. lewini* (code: SPL), 'Hammerhead sharks nei' (code: SPN) or 'Hammerhead sharks etc. nei' (code: SPY) were available for Yemen in FAO's global capture production database 2013-2021 (FAO, 2024b).

IOTC: All landings reported by Yemen to the IOTC were reported under the category 'Various sharks (SKH)' and were caught by artisanal fisheries using gillnets (IOTC, 2024) (Table 6.31). No catches were reported for *S. lewini* (code: SPL), 'Hammerhead sharks, nei' (code: SPN) or 'Hammerhead sharks, etc. nei' (code: SPY).

Table 6.31: Nominal catch (metric tonnes, live weight) of 'Various sharks nei' (code: SKH) from Yemen reported to the IOTC 2013-2022.

Reported as	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
SKH	12000	10800	9100	7820	6647	6647	6647	6647	6647	6647

Source: IOTC Interactive Data Browser 2024. Nominal catches for all species, including bycatch ones. Available at: https://iotc.org/data/browser. Accessed 01/2/2024

Trade: Yemen published a reservation for the Appendix II listing of *S. lewini* on 12 June 2013. Yemen has submitted all annual reports to CITES for the period 2013-2021; a report for 2022 had not been received at the time of writing. Yemen has not published any export quotas for this species.

According to the CITES Trade Database, direct trade in *S. lewini* from Yemen 2013-2022 entirely comprised wild-sourced fins and dried fins for commercial purposes (Table 6.32). All trade was reported in 2018 and 2021-2022, totalling 22 204 kg of fins reported by Yemen (5675 kg of fins and 3769 kg of dried fins reported by Hong Kong SAR as the sole importer). Yemen did not report any imports of the species from ABNJ 2013-2022.

Indirect trade in *S. lewini* originating from Yemen 2013-2022 comprised 115 kg wild-sourced dried fins for commercial purposes in 2022, as reported by the importer, Hong Kong SAR.

Table 6.32: Direct exports of *S. lewini* from Yemen 2013-2022. Hyphens indicate years where exporter annual reports have not yet been received. Quantities have been rounded to the nearest whole number where applicable.

Term	Unit	Purpose	Source	Reported by	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
fin (dried)	kg	T	W	Exporter										-	
				Importer										3769	3769
fins	kg	T	W	Exporter						1550			20654	-	22204
				Importer									5675		5675

Source: CITES Trade Database 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Management:

International commitments and RFMOs: Yemen is a Party to CMS, in which *S. lewini* is listed in Appendix II, and is a signatory of the CMS Sharks MOU.

Yemen is a Contracting Party to the IOTC, whose relevant Resolutions for shark fishing have been outlined above (see *Overview of management: Regional management*). The 2023 IOTC compliance report for Yemen noted a lack of compliance with several IOTC measures and that the country has not presented any of the compulsory reports pertaining to IOTC Resolutions (IOTC, 2023g).

Yemen is also a member of the Regional Organization for the Conservation of the Environment of the Red Sea and Gulf of Aden (PERSGA) and the Southwest Indian Ocean Fisheries Commission (SWIOFC). The former has a number of projects on marine biodiversity, including one that aims to strengthen regional collaboration and management for sustainable development of fisheries in the Red Sea and Gulf of Aden region.

Legislation: Yemen's fisheries are regulated within the framework of Law No. 2 of 2006 for the Regulation, Conservation and Exploitation of the Marine Organisms (Vasconcellos *et al*., 2018). This law aims, *inter alia*, to protect the marine environment and develop sustainable fisheries; encourage investment in fisheries and aquaculture; organize artisanal and coastal fishing activities and manage foreign industrial fishing; and support research (FAO/FAOLEX, 2023). The law is implemented by the Resolution of Prime Minister No. 296 of 2006 regarding Executive Regulations for Law No. 2 of 2006 concerning Organization and Exploitation of Aquatic Organisms and their Protection 2006-12-25. Additional regulations were reported to set out the details concerning fishing activities and restrictions including "entry controls, technical measures and MCS [Monitoring, Control and Surveillance]" (Vasconcellos *et al*., 2018). Different licencing requirements and fishing area restrictions are in place depending on whether vessels are classified as artisanal, coastal and industrial (Ministry of Fish Wealth, 2012), however no further details were located.

Noting the current political instability in Yemen, the CITES MA (*in litt*. to UNEP-WCMC, 2023) reported that regulations have not been effectively applied and that there are violations of these regulations in protected areas.

> ***Finning:*** Jabado and Spaet (2017) reported that Decree 42 of 1991 prohibits the "dumping of damaged and undesirable fish back at sea after their catch", noting that this serves as a ban on finning. However, the authors highlighted that the practice of finning may be widespread in Yemeni waters.

Yemen's national legislation is included in Category 1 in the CITES National Legislation Project (legislation that is believed generally to meet all four requirements for effective implementation of CITES).

Non-detriment findings: In August 2023, the CITES MA of Yemen (*in litt*. to CITES Secretariat, 2023a) reported that it has stopped the export of *S. lewini* until an NDF is undertaken. The MA (*in litt*. to the CITES Secretariat, 2023) have requested the technical and financial support of the CITES Secretariat and the International Fund for Animal Welfare (IFAW) to conduct an NDF for the species, noting a lack of financial resources in the country to undertake the relevant studies. Fundraising is ongoing and the work is hoped to commence in 2024 (C. Matthew, IFAW *in litt*. to UNEP-WCMC, 2024).

Management plans and NPOA-Sharks: Fishery Management Plans addressing key species were reported by Alabsi & Komatsu (2014) to be lacking, due in part to limited knowledge about resources.

Yemen does not have an NPOA-Sharks under the framework of the FAO Code of Conduct for Responsible Fisheries. No information was received by the IOTC Secretariat on the development of a plan at the most recent IOTC Scientific Committee (IOTC, 2023h).

Monitoring and observers: Catch and effort data for small-scale fisheries are reported to be registered at all landing sites, but no other compliance or surveillance was reported to be in place for these fisheries (Vasconcellos *et al*., 2018). Trawlers and transportation vessels are covered by logbooks and are required to be registered and to record catches of demersal fishes, cuttlefish and deep-sea lobster (Vasconcellos *et al*., 2018), but no obligations regarding the recording of shark species were identified. The CITES MA of Yemen (*in litt*. to UNEP-WCMC, 2023b) reported challenges with monitoring and evaluation, specifically the poor availability of experienced field crews.

Protected areas and Important Shark and Ray Areas (ISRAs): The species appears to have been observed in waters close to the Socotra Archipelago (CITES MA of Yemen *in litt*. to UNEP-WCMC, 2023), which includes a marine core area (1,540 ha) and a marine buffer area (151,400 ha) (UNESCO World Heritage, 2023). All component areas have legal protection, however, UNESCO (2023) have highlighted a need to strengthen the legislative framework and management as well as the enforcement capacity at the site, to deal more effectively with the threat posed by overharvest.

Yemen has two Areas of Interest (AoIs) for sharks and rays (Al Mahra and Socotra Archipelago) (IUCN SSC Shark Specialist Group, 2023b). In addition, the Southern Red Sea ISRA is a transboundary area that includes waters under the jurisdiction of Eritrea, Saudi Arabia, Sudan and Yemen (IUCN SSC Shark Specialist Group, 2023b). Neither the AoIs nor the ISRA are specific to *S. lewini*.

Illegal trade: Illegal fishing within Yemen's EEZ, including by foreign vessels from neighbouring countries, has been reported to be common (Morgan, 2004; Jabado *et al*., 2018). Yemen noted that action was being taken to prevent the smuggling of sharks from neighbouring countries (CITES MA of Yemen *in litt*. to UNEP-WCMC, 2023).

No seizures of *S. lewini, Sphyrna* spp., or Sphyrnidae involving Yemen were reported in the TRAFFIC Wildlife Trade Portal 2013–2023 (TRAFFIC International, 2024).

E. Problems identified that are not related to the implementation of Article IV, paras 2(a), 3 or 6(a).

International measures and their implications for Legal Acquisition Findings

China, Mexico and Nicaragua are Contracting Parties to ICCAT and considered by the Convention to be developing States (ICCAT pers. comm. 2024). ICCAT Recommendation 10-08, on hammerhead sharks (family Sphyrnidae) caught in association with fisheries managed by ICCAT, entered into force in June 2011. The Recommendation prohibits retaining onboard, transhipping, landing, storing, selling or offering for sale any part or whole carcass of hammerhead sharks (except *Sphyrna tiburo*), however there is an exemption for sharks caught by developing CPs for local consumption (provided that CPs provide relevant data). The Recommendation also states that developing coastal CPs should endeavour not to increase their catches of the family Sphyrnidae and take measures to ensure these species (except *S. tiburo*) will not enter international trade.

Further clarity is required regarding the implications of this Recommendation on the completion of CITES Legal Acquisition Findings; as such, the Standing Committee could be requested to liaise with ICCAT and relevant Parties to clarify the situation and provide guidance. In particular, it is unclear whether the export of derivatives (such as fins) of specimens captured in the ICCAT Convention area whose other derivatives (such as meat) were used domestically would be in compliance with the Recommendation.

Requests for financial and technical support

The CITES Authorities of Nicaragua (*in litt*. to the CITES Secretariat, 2023) and Yemen (*in litt*. to CITES Secretariat 2023) have requested support from CITES to undertake the required work for an NDF.

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Sphyrna mokarran: Mexico

A. Summary

CRITERIA MET:	Criterion i) trade in an endangered species, criterion ii) sharp increase in global trade
GLOBAL STATUS:	Globally Critically Endangered (2018 assessment). The global population size is unknown but is estimated to have declined by 50.9%-62.4% over the past three generations (71-74 years) as a result of overexploitation.
INTERNATIONAL MEASURES:	ICCAT Recommendation 10-08 prohibits the retention of hammerhead sharks (except *S. tiburo*) with an exemption for developing coastal Contracting Parties for local consumption. The Recommendation further states that developing coastal Contracting Parties should endeavour not to increase their catches of Sphyrnidae and take measures to ensure these species (except *S. tiburo*) will not enter international trade. RFMO measures that do not relate to the implementation of Article IV, paragraphs 2 (a), 3 or 6 (a) are reflected on in section E of this review; the CITES Secretariat has reached out to the relevant secretariats to request clarification, as appropriate.
MEXICO: Responded to the consultation relating to the RST	*S. mokarran* is found off Mexico's Pacific and Atlantic coastlines. Data on the status of the species in the Northwest Atlantic and Gulf of Mexico are contradictory, but some analyses have found evidence of population recovery following the implementation of management measures. No information on population trends for *S. mokarran* in the Pacific Ocean could be located, although possible extirpations have been reported in the Gulf of California. Overfishing, loss of habitat (particularly of nursery areas) and climate change are the principal threats to the species in Mexico. *S. mokarran* is caught as a target and non-target species by fisheries on both coasts. Mexico has submitted annual reports for all years 2013-2022, and has not published any export quotas for this species. Direct trade in *S. mokarran* from Mexico 2013-2022 almost entirely comprised wild-sourced fins for commercial purposes (14 117 kg of fins reported by Mexico, and 6128 kg of fins and 1639 kg of dried fins reported by importers). Trade in wild-sourced fins peaked in 2015 according to Mexico and importers. China was the primary importer of wild-sourced fins as reported by Mexico, accounting for >99% of exports. Mexico did not report any imports of the species from ABNJ 2013-2022 but noted that it fishes in areas "adjacent to the EEZ". Closed seasons are in place, and there is a moratorium on the issuance of new shark fishing permits to ensure that current effort is not increased. Mexico currently sets yearly sustainable export volumes (SEVs) using a catch-MSY model, although the Management Authority noted its ambition to refine the production models used and eventually introduce a model structured by age class. The SEV for *S. mokarran* for 2023 was estimated at 29.11 tonnes for the Pacific, and 370.99 tonnes for the Atlantic.

	Mexico published an NPOA-Sharks in 2004; an update to this plan was noted to be in preparation. Mexico is a Contracting Party to the ICCAT, IATTC and ISC.
PROVISIONAL CATEGORY:	Mexico should be commended for the implementation of a strong management framework for the species in order to comply with Article IV. However, given the scarcity of data on the species' status in the Pacific Ocean, further information may be required to ensure that all populations are being harvested sustainably. On this basis, categorised as **Unknown status**. Mexico could be invited to provide a progress report on the update of its NPOA-Sharks and the introduction of a more refined model to calculate sustainable export levels.

B. RST background

AC32 marked the first time that *Sphyrna mokarran* has been selected for inclusion in Stage 2 of the RST.

C. Species characteristics

Biology: *S. mokarran* (great hammerhead) is the largest of the hammerhead sharks (Last & Stevens, 2009 in Simpfendorfer, 2014); mature adults have been reported to reach a maximum size of 5.5-6.1 m, with most adults attaining a size of c 3.5 m (Compagno, 1984). It is a coastal-pelagic species that favours continental and insular coral reefs (Compagno, 1984; Ebert & Stehmann, 2013), but tracking studies have shown that individuals will rarely enter estuaries and the open ocean (Hammerschlag *et al*., 2011; Simpfendorfer, 2014). The typical depth range for *S. mokarran* was reported by Ebert and Stehmann (2013) to be c. 1-80 m, but studies in the western North Atlantic found the species to predominantly be found at shallow depths <30 m (Guttridge *et al*., 2022).

S. mokarran is thought to be more solitary than *S. lewini* and *S. zygaena* (Abercrombie *et al.*, 2005). It is a migratory species, with some populations following warm water currents to move poleward in the summer (Ebert & Stehmann, 2013; Hammerschlag *et al*., 2011), and there is evidence that individuals return to the same locations year after year (Guttridge *et al*., 2017). Differences in population structure of *S. mokarran* from analyses of mitochondrial and nuclear DNA have been suggested to be evidence of male-mediated dispersal (Testerman, 2014). Genetic analyses have found the populations of *S. mokarran* in Australia (Indo-Pacific) and the western Atlantic to be distinct, but samples from the eastern Atlantic, central Pacific and eastern Pacific were not included in the study (Testerman, 2014). The National Oceanic and Atmospheric Administration of the United States department of commerce (NOAA) did not recognise any distinct population segments for *S. mokarran*, evaluating the global population as a whole (Miller *et al*., 2014).

S. mokarran is viviparous (Ebert & Stehmann, 2013) and breeds once every two years, with a gestation period of 10-11 months (Stevens & Lyle, 1989). Available data indicate that the species has a faster growth rate and matures at an earlier age than some other large *Sphyrna* species (Ebert & Stehmann, 2013). Estimated litter size ranges from 6-42 pups, estimates of the age and size at which individuals reach maturity range from 5-8.9 years and 210-300 cm TL respectively, and estimates of longevity range from 32-44 years; the values of these estimates vary upon the population sampled (see Annex 1 Table A.2. for further detail). Growth rates in the Gulf of Mexico and the north-west Atlantic have been estimated at 0.11 cm/year for females and 0.16 cm/year for males, assuming annual band deposition (Piercy *et al*., 2010).

Overall, *S. mokarran* exhibits life-history traits that are intermediary among other shark species (Miller *et al*., 2014), but remains slow-growing, slow-reproducing, and long-lived, which make it vulnerable to overexploitation. Estimates of the intrinsic rate of population growth (r_{max}) for *S. mokarran* populations range from 0.08 to 0.186 per year (Cortés, 2022), and are comparable to other slow-growing shark species (Cortés, 2016).

Both male and female sex-disequilibrium in catches has been reported (Harry *et al*., 2011; Pinheiro *et al*., 2023).

D. Country reviews

Mexico

Distribution: *S. mokarran* is a coastal-pelagic and semi-oceanic species with a circumtropical distribution (Compagno, 1984) between 40°N and 35°S (Last & Stevens, 1994 in Denham *et al*., 2007; Figure 7.1). It occurs off Mexico's Pacific and Atlantic coastlines (Reyes Bonilla *et al*., 2021; Rigby *et al*., 2019a) (Figure 7.2), and has been recorded above Mexico's continental shelf (Grace & Henwood, 1997; Castillo-Géniz *et al*., 1998; Castillo-Géniz 2001) as well in inland coastal waters in the Gulf of Mexico, which often act as nursery areas (Cuevas-Gómez *et al*., 2020).

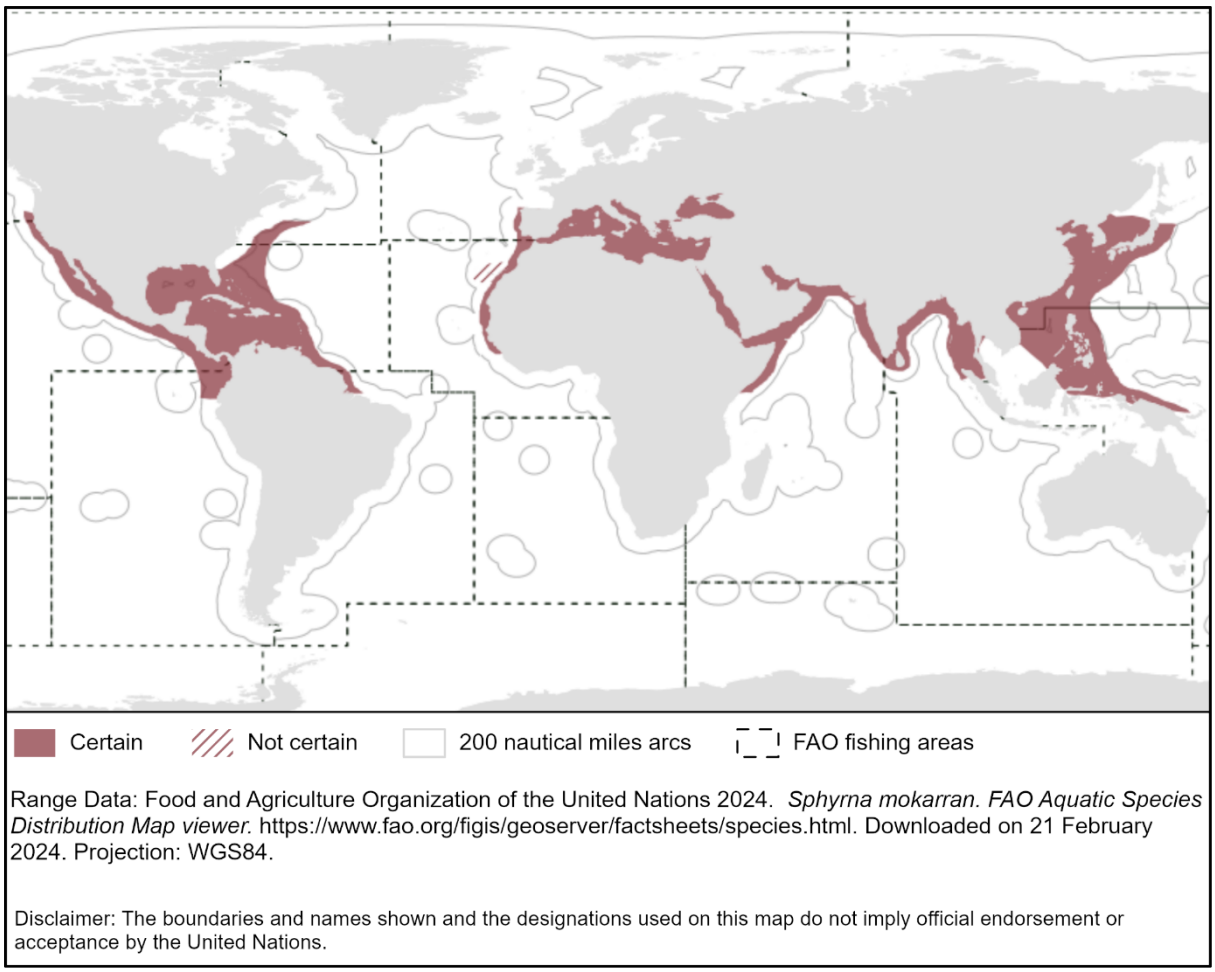

Figure 7.1: Range of *S. mokarran*.

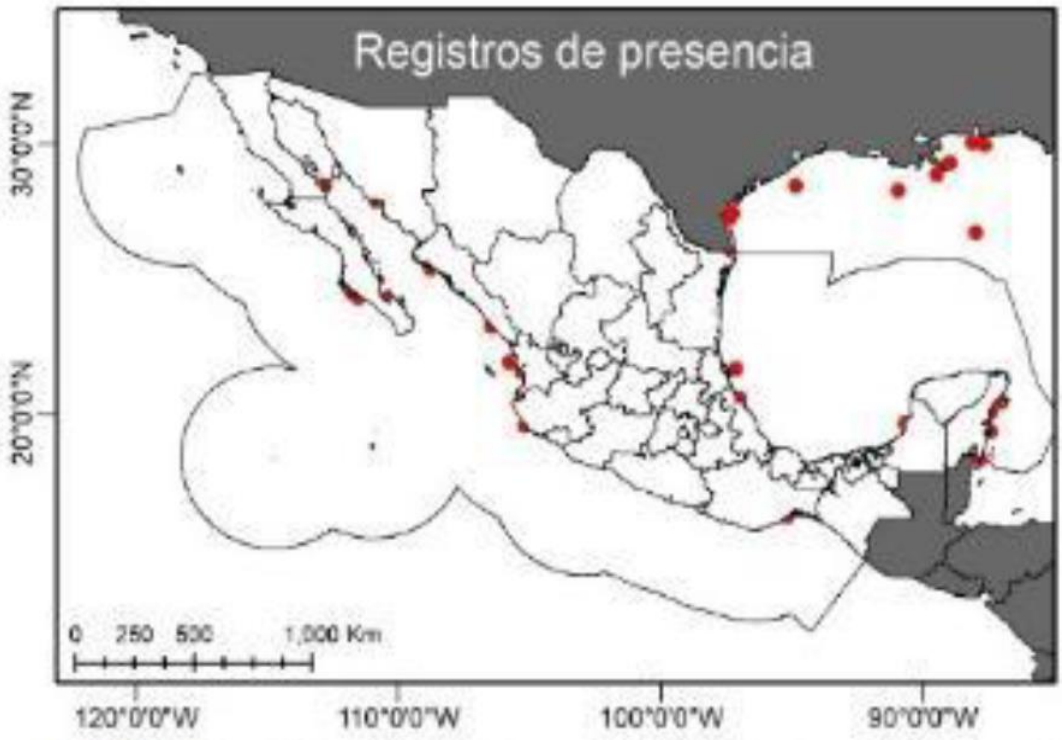

Figure 7.2: Occurrence records of *S. mokarran* in Mexico; the list of sources from which data were compiled is available in Reyes Bonilla *et al.* (2021). Figure reproduced from CITES MA of Mexico *in litt.* to the CITES Secretariat, 2023).

Population status and trends: *S. mokarran* was categorised by the IUCN as Critically Endangered in a 2018 assessment, on the basis of an inferred median global decline of 50.9%-62.4%, with the highest probability of an >80% reduction over three generation lengths (71.1-74.4 years) (Rigby *et al*., 2019a). The overall assessment was based on three sets of data; two from the North Atlantic, and one from the Indian Ocean (Table 7.1), and the analysis was conducted using a Bayesian state-space modelling framework (Rigby *et al*., 2019a) developed by Winker *et al*. (2018). The final estimate of decline was weighted according to the contribution of these regions to the species' global range; no trend data were available for other oceans (Rigby *et al*., 2019a).

Table 7.1: Summary of the estimated median population change and likely status of *S. mokarran* over three generation lengths (71.1-74.4 years) per region (modified from Rigby *et al*., 2019b). The Global 1 estimate is based on the North Atlantic 1 and Indian Ocean estimates; the Global 2 estimate is based on the North Atlantic 2 and Indian Ocean estimates.

Region	Dataset	Timespan (years)	Median change (%)	Likely status
North Atlantic 1	Stock assessment (Jiao *et al*., 2011)	25	-29.1	Vulnerable
North Atlantic 2	Standardised CPUE from J. Carlson & W.B. Driggers unpubl. data	24	+366	Least Concern
South Atlantic	No trend data			-
North Pacific	No trend data			-
South Pacific	No trend data			-
Indian Ocean	Standardised CPUE from Dudley & Simpfendorfer (2006)	26	-99.3	Critically Endangered
Global 1			-62.4	Critically Endangered
Global 2			-50.9	Critically Endangered

A summary of the available information on changes in population abundance for the two most relevant oceans for Mexico is presented below, some of which underpins the population trend estimates provided in Table 7.2.

North Atlantic Ocean (including Gulf of Mexico): Two sources of data for the North Atlantic were considered in the 2018 IUCN Red List assessment for *S. mokarran*: time series data (1981-2005) used to underpin a stock assessment for *S. mokarran* in the Northwest Atlantic and the Gulf of Mexico (Jiao *et al*., 2011) and standardised catch-per-unit effort (CPUE) data[28] (1994-2017) relevant to the Western North Atlantic and Gulf of Mexico (J. Carlson unpubl. Data in Rigby *et al*., 2019b). Whereas data from the Jiao *et al*. (2011) stock assessment support a median decline of 29.1% over three generation lengths, the CPUE data were found to exhibit an "increasing but variable trend" (Rigby *et al*., 2019b). Similar results to the CPUE time series were found by Pacoureau *et al*. (2023), who used a Before-After temporal comparison model to assess population trends of *S. mokarran* using the same datasets outlined above. The authors concluded that *S. mokarran* in Atlantic waters of the United States of America (hereafter US) was declining prior to the introduction by the US of 1993 Fisheries

[28] These data consist of two separate CPUE time series derived from annual fisheries-independent bottom longline surveys conducted in the northern Gulf of Mexico and the Southeast Atlantic (NMFS-LL-SE) and a commercial shark bottom longline fishery active in the US Atlantic Ocean. According to Ingram *et al.* (2005), NMFS-LL-SE surveys were conducted annually in US waters, but the survey was expanded to Mexican waters in 1997. Data from these sources were also used to underpin the earlier Jiao *et al.* (2011) stock assessment.

Management Plan for Sharks in the Atlantic Ocean, but that there was strong evidence of population recovery in this area since the plan's implementation.

Historic data from the US pelagic fishery logbook estimated a decline of *S. mokarran* of over 90% between 1992 and 2000; however, this dataset has been criticised for inaccurate data reporting (Beerkircher *et al*., 2002; Denham *et al*., 2007).

Species-specific CPUE data for the principal shark-targeting fisheries in the **Gulf of Mexico** and **Caribbean** are available from a monitoring study conducted by INAPESCA in 2016-2017; this averaged 1.001 *S. mokarran* individuals/1000 hooks in longline fisheries (data from Veracruz, Tabasco and Quitana Roo) and 0.152 *S. mokarran* individuals/fishing day in net fisheries (data from Veracruz, Campeche, and Yucatán) (CITES MA of Mexico *in litt.* to the CITES Secretariat, 2023). It is unclear whether further monitoring studies are planned to provide a timeseries for these data.

Pacific Ocean: Data on the status of the *S. mokerran* in the Pacific are scarce. Perez-Jimenez (2014) considered that the species may have been extirpated from the Gulf of California based on comparisons of fishery and non-fishery dependent surveys and records from ichthyological collections. No trend data for the North or South Pacific were available for inclusion in the analysis conducted for the IUCN Red List assessment of the species (Rigby *et al*., 2019b).

Mexico's National Fishing Handbook for the Pacific coast (Secretary of Agriculture and Rural Development, 2023a) notes that the shark fishery in general is being harvested at Maximum Sustainable Yield (MSY), but no information specific to S*. mokarran* was located.

Threats: Globally, *S. mokarran* is caught as a target species and as bycatch in commercial and small-scale pelagic longline, purse seine and gillnet fisheries (Rigby *et al*., 2019a). As the largest of the hammerhead sharks, *S. mokarran* fins have a high market value (Booth *et al*., 2021; Dent & Clarke, 2015), and the species is often retained unless this is prohibited by fisheries regulations (Chi Chan *et al*., 2021; Fields *et al*., 2018). The CITES MA of Mexico (*in litt.* to the CITES Secretariat, 2023) identified fishing, loss of habitat (particularly in nursery areas), and climate change (see Reyes-Bonilla *et al.* 2021 and Rodriguez-Burgos *et al.* 2022) as the three major threats to *S. mokarran* in Mexico.

A description of the Mexican fisheries relevant to *S. mokarran* can be found below:

Gulf of Mexico and Caribbean Sea: this is an artisanal multi-species fishery, comprised of small- and medium-scale coastal fishing (Secretary of Agriculture and Rural Development, 2022a). All fishing was reported to be carried out in marine waters under Federal Jurisdiction, and the principal gears employed are longlines and gillnets (Secretary of Agriculture and Rural Development, 2022a). *S. mokarran* is not considered to be a major target species (Secretary of Agriculture and Rural Development, 2022a, 2023a), and was estimated to account for only 0.65% of targeted shark catches in the region 2016-2017 (Secretary of Agriculture and Rural Development, 2022b). However, some studies have highlighted a high degree of overlap between suitable habitat for *S. mokarran* and fishing effort from small-scale fisheries, for example off the coast of Yucatán (Chi Chan *et al*., 2021), and others have noted that most individuals caught in the particular fisheries investigated were juveniles due to the presence of nearby nursery areas (Pérez-Jiménez *et al*., 2020).

Pacific Ocean: There are three Mexican fisheries operating in the Pacific: ocean-going vessels, medium vessels and small vessels (Secretary of Agriculture and Rural Development, 2023a). *S. mokarran* was only reported to be a target species in the ocean-going and small vessel fisheries (Secretary of Agriculture and Rural Development, 2023a), but *Sphyrna* spp. were reported to be in the top ten most commercially important species caught in the region (CITES MA of Mexico *in litt.* to the CITES Secretariat, 2023). Fishing was reported to mainly take place in Mexico's Exclusive Economic Zone (EEZ), and "sometimes in areas adjacent to the EEZ" (Secretary of Agriculture and Rural Development, 2023a). The Pacific shark fishery reached its peak in 2018 with a reported catch of 45 000 tonnes, with Nayarit state, Chiapas state and Sinaloa state registering the highest catches.

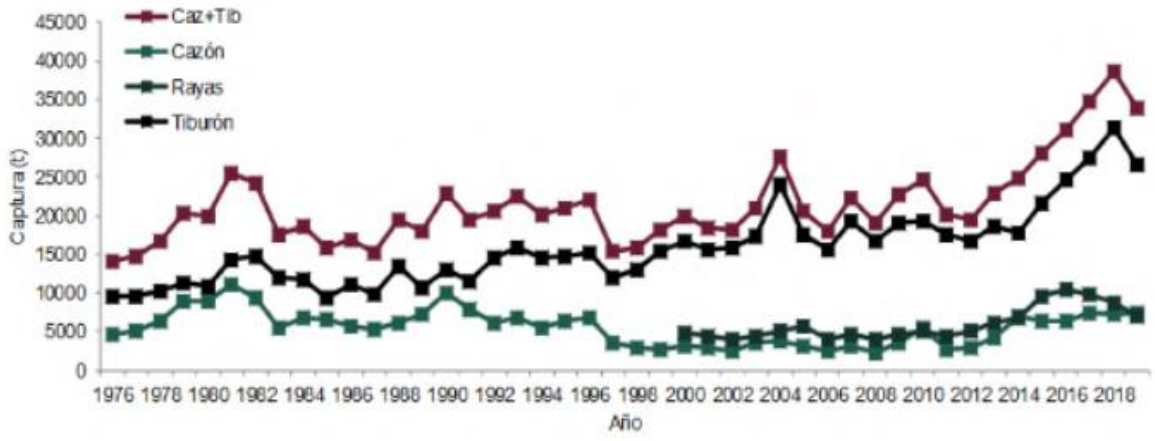

Figure 7.3: Reported catches of shark (tiburón), dogfish (cazón) and rays (rayas) in Mexico's Pacific fisheries, 1976-2019. Combined catches of sharks and dogfish are shown in red. Source: CONAPESCA, figure reproduced from Secretary of Agriculture and Rural Development (2023a).

It should be noted that *S. mokarran* has one of the highest at-vessel mortality rates of any shark species (over 90% according to US bottom longline fishery data (Morgan & Burgess, 2007), 56% according to Gulak *et al.* (2015)'s study of bottom longlines in the same region, and 100% in a study of Australian commercial longline fisheries (Butcher *et al.*, 2015)). Post-release mortality rates for *S. mokarran* are also particularly high and have been estimated to be close to 50%, based on the survival of tagged individuals caught off the coast of Florida during the four weeks after release (Gallagher *et al.*, 2014).

Capture production:

FAO: No nominal catch of *S. mokarran* (code: SPK) or 'Hammerhead sharks, nei' (code: SPN) from Mexico was recorded in the FAO global capture production database 2013-2021. Catches of 'Hammerhead sharks, etc. nei' (code: SPY) 2013-2021 from Mexico are summarised in Table 7.2.

Table 7.2: Nominal catch (metric tonnes, live weight) of 'Hammerhead sharks etc. nei' (code: SPY) from Mexico reported to the FAO 2013-2021.

Reported as	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
SPY	457	1251	2110	5524	2342	6187	2587	2468	2665	25591

Source: FAO Global capture database. Available at: https://www.fao.org/fishery/statistics-query/en/capture/capture_quantity Accessed 06/02/2024

FAO landings data in general are thought to represent significant underestimates for a number of reasons; these are discussed more fully in the review for *S. lewini.*

Regional fisheries management organisations (RFMO): Mexico is a Contracting Party to the Inter-American Tropical Tuna Commission (IATTC), the International Commission for the Conservation of Atlantic Tunas (ICCAT), and the International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean (ISC).

IATTC: Mexico reported hammerhead shark catches within the IATTC's area of competence in the Pacific Ocean 2017-2022, in compliance with Resolution C-05-03 (see *Management: Regional instruments* section) (Table 7.3). Aggregated catch data for 'Various sharks, nei' (code: SKH) according to IATTC's public domain database are shown in Table 7.4.

Table 7.3: Hammerhead shark production in the Pacific Ocean, reported by Mexico to the IATTC 2017-2022. Rounded to the nearest whole number.

Reported as	2017	2018	2019	2020	2021	2022	Total
Hammerhead shark	83	54		1021		222	1380

Source: Secretary of Agriculture and Rural Development, 2023b. Available at: https://www.iattc.org/GetAttachment/0df5140a-ee50-4a31-95a2-10287d93849e/MEX-C-05-03-C-16-04_Tiburones.pdf. Accessed 09/04/2024.

Table 7.4: Aggregated catch (metric tonnes) of 'Various sharks nei' (code: SKH) from Mexico reported to the IATTC 2013-2022.

Reported as	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
SKH	16660	16260	25625	22046	26639	22669		27386			157285

Source: IATTC, 2023. Public domain data for download. EPO total estimated catch by year, flag, gear, species. Available at: https://www.iattc.org/en-US/Data/Public-domain. Accessed 01/02/2024.

ICCAT: Nominal catch of 'Hammerhead sharks nei' (code: SPN) 2013-2022 reported by Mexico to ICCAT is outlined in Table 7.5; no catches were reported for *S. mokarran* (code: SPK) or 'Hammerhead sharks, etc. nei' (code: SPY).

Table 7.5: Nominal catch (metric tonnes) of 'Hammerhead sharks nei' (code: SPN) from Mexico reported to ICCAT 2013-2022.

Reported as	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
SPN	1.5	0.21	0.71	0.5	1.24	0.07	0.93	0.1	0.07	0.1	5.43

Source: ICCAT 2024. Dashboard of nominal catches of Atlantic tunas and tuna-like fishes by gear, region and flag. Available at: https://www.iccat.int/en/accesingdb.html. Accessed 01/02/2024.

ISC: Mexico did not report any catch data for hammerhead sharks to the ISC 2013-2022 (ISC, 2023a).

Trade: *S. mokarran* was listed in CITES Appendix II on 12 June 2013 with a delayed entry into effect of 18 months, i.e., until 14 September 2014; as such, CITES trade data are only available for 2014 onward. The species was included in the family listing for Sphyrnidae spp. on 23 February 2023.

Mexico has submitted annual reports to CITES for all years 2013-2022 and has not published any export quotas for *S. mokarran*.

According to the CITES Trade Database, direct trade in S. *mokarran* from Mexico 2014-2022 predominantly consisted of wild-sourced fins for commercial purposes; 14 117 kg of fins reported by Mexico, and 6128 kg of fins and 1639 kg of dried fins reported by importers (Table 7.6). Direct exports of wild-sourced *S. mokarran* fluctuated over this period, with a peak in trade reported by both Mexico (8898 kg) and importers (3261 kg) in 2015. China was the main importer of wild-sourced fins, accounting for >99% of all exports reported by Mexico. Mexico did not report any imports of the species from ABNJ 2013-2022.

No indirect trade in *S. mokarran* originating from Mexico was reported 2013-2022.

Table 7.6: Direct exports of *S. mokarran* from Mexico 2013-2022. Quantities have been rounded to the nearest whole number where applicable.

Term	Unit	Purpose	Source	Reported by	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
fins (dried)	kg	T	W	Exporter											
				Importer										1639	1639
fins	kg	T	I	Exporter											
				Importer						122					122
			W	Exporter		250	8898		141	207	1367	890	699	1665	14117
				Importer			3261				1354	782	732		6128
	number of specimens	T	I	Exporter											
				Importer						1					1

Source: CITES Trade Database 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Management: As a species with circumglobal distribution, the range of *S. mokarran* includes areas under the management of national, regional, and international treaties and legislation. The following two sections provide an overview of relevant legislation and treaties that operate at a global and regional level, with a focus on the Pacific and Atlantic as the two oceans most relevant to the country under review (Mexico).

Global instruments

The United Nations Convention for the Law of the Sea (UNCLOS) and the International Plan of Action for the Conservation and Management of Sharks (IPOA-Sharks) are two global instruments that are relevant to the management of *S. mokarran*; further details of these instruments are given in the review for *S. lewini*.

S. mokarran was listed in Appendix II of the Convention of Migratory Species (CMS) in 2014, and in Annex I of the CMS Memorandum of Understanding (MOU) on the Conservation of Migratory Sharks in 2016. Both instruments aim to promote the development of international agreements that improve the conservation status and management of species; however, Mexico is not a Party to CMS.

Regional instruments

Regional Fisheries Management Organizations (RFMOs): Mexico is a Contracting Party to the IATTC, ICCAT, and ISC. Table 7.7 outlines relevant measures from each RFMO's Resolutions and Recommendations; however this list is non-exhaustive, and it should be noted that there are provisions in place to address incidental catch, data collection and research not outlined here that may be of relevance to *S. mokarran.*

Table 7.7: List of relevant Resolutions and Recommendations for RFMOs to which Mexico is a Contracting Party (CP). Note this list is non-exhaustive; there may be provisions in place to address incidental catch, data collection and research not outlined here that are of relevance to *S. mokarran.*

RFMO	Year of accession	Relevant Resolutions and Recommendations

IATTC
Inter-American Tropical Tuna Commission
	2005	• Resolution C-23-07 (2023): Conservation measures for the protection and sustainable management of sharks:
		  ○ prohibits shark finning; Contracting Parties shall ensure that sharks are landed with all fins naturally attached to the body.
		  ○ *S. mokarran* is identified as a key shark species for status assessment.
		
		Previous relevant Resolutions, consolidated and replaced by C-23-07, include:
		• Resolution C-05-03 (2005): on the conservation of sharks caught in association with fisheries in the eastern Pacific Ocean
		• Resolution C-16-04 (2016): amendment to Resolution C-05-03
		• Resolution C-16-05 (2016): on the management of shark species

ICCAT International Commission for the Conservation of Atlantic Tunas	2002	• Recommendation 10-08 (2010): on hammerhead sharks (family Sphyrnidae) caught in association with fisheries managed by ICCAT, which prohibits retaining onboard, transhipping, landing, storing, selling or offering for sale any part or whole carcass of hammerhead sharks (except *Sphyrna tiburo*), except those caught by developing coastal CPs (including Mexico) for local consumption[29]. Developing coastal CPs should endeavour not to increase their catches of the family Sphyrnidae and take measures to ensure hammerhead species (except *S. tiburo*) will not enter international trade. The Recommendation applies to all waters of the Atlantic and adjacent areas, including both the high seas and EEZs (ICCAT pers. comm. 2024). • Recommendation 04-10 (2005): concerning the conservation of sharks caught in association with fisheries managed by ICCAT. • Recommendation 18-06 (2019): on the improvement of compliance review of conservation and management measures regarding sharks caught in association with ICCAT fisheries.
ISC International Scientific Committee for Tuna and Tuna-like Species in the North Pacific Ocean	Not specified	• The ISC Shark Working Group (SHARKWG) regularly assess and analyse fishery data, population trends, and developments in fisheries; determine the status of key shark species captured in the north Pacific; and develop scientific advice concerning conservation needs (ISC, 2023b). Hammerhead sharks are considered shark species of interest to the ISC (ISC, 2023b).

[29] Provided they report annual data according to reporting procedures.

National instruments

The agency responsible for the management, monitoring and enforcement of Mexico's fisheries is the Comisión Nacional de Acuacultura y Pesca (National Commission of Aquaculture and Fisheries, CONAPESCA), which acts on technical advice provided by the National Institute of Aquaculture and Fisheries (INAPESCA) (CITES MA of Mexico *in litt.* to UNEP-WCMC, 2023).

Legislation: See corresponding section in the *S. lewini*/Mexico review.

Non-detriment findings: The CITES Scientific Authority of Mexico issues non-detriment findings (NDFs) using a standardised protocol; these are species and coast-specific (CITES MA of Mexico *in litt.* to UNEP-WCMC, 2023). The principal tool used to regulate harvest is the setting of an annual sustainable export volume (SEV), which is calculated using the methodology described below. The reference for this section is CITES MA of Mexico *in litt.* to the CITES Secretariat, 2023, unless otherwise indicated.

The SEV is set MSY calculations developed by Martell and Froese (2013) with a simple production model (Schaefer 1954) (CITES MA of Mexico *in litt.* to UNEP-WCMC, 2023). This methodology calculates an MSY using a catch data time series, as well as estimates of a starting biomass, carrying capacity and intrinsic growth rate, among other inputs; further details of the methods used to reconstruct historical catches are given in the corresponding section of the *S. lewini*/Mexico review. *S. mokarran* was estimated to account for an estimated 0.001-0.002% of shark catches in the Pacific 1939-2014, and 0.03-0.07% catches in the Atlantic 1937-2014.

The lower and upper limits to the initial relative biomass for the model for *S. mokarran* were set at 0.8 and 0.9, under the assumption that the stock level was between 80% and 90% of the carrying capacity at the beginning of the time series. The minimum and maximum values for the carrying capacity (K) were set at the weight value of the highest annual catch, and 50 times the value of the highest annual catch, respectively, assuming that catch never exceeded 0.5% of the carrying capacity. The intrinsic population growth rate (r) applied to the MSY calculations was 0.055 (min) – 0.1059 (max), based on Carrier *et al*., (2010).

Estimated biomass at MSY for *S. mokarran* for both coastlines was 400 whole-body tonnes; the SEV for *S. mokarran* for 2023 was estimated at 29.11 tonnes for the Pacific, and 370.99 tonnes for the Atlantic.

The SEV applies to catches within Mexico's EEZ as well as the high seas (CITES MA of Mexico *in litt.* to UNEP-WCMC, 2024). Usage of the SEV for the species is regularly updated and can be accessed at https://www.biodiversidad.gob.mx/planeta/cites/tiburones. Once 100% of the SEV has been reached, negative NDFs are issued and the Management Authority suspends the issuance of export permits. Catch volumes landed are subtracted from the total SEV available regardless of the outcome of the NDF or the issuance of a CITES permit. If permits are requested for fins, species-specific conversion factors are used to estimate total weight landed; this latter weight is what is subtracted from the SEV total.

The methodology for establishing SEVs took as its basis the results from a capacity building workshop held in 2019, and was agreed jointly by INAPESCA and CONABIO (the CITES Scientific Authority). As with all models used to calculate MSY, catch-MSY models such as the one described above are subject to assumptions, limitations and biases; these are more fully discussed in Ovando *et al*., 2021; Pons *et al*., 2020; and Smith *et al*., 2021. One of the key considerations is that the models

do not perform well catches are low (Smith *et al*., 2021), and that the accuracy of the model will be heavily influenced by the accuracy of the population parameters including the carrying capacity (K) and the intrinsic population growth rate (r). It should also be noted that catch-only models are less likely to work well in highly managed fisheries, because these measures may interfere with the assumption that changes in catch reflect changes in abundance (Ovando *et al*., 2021).

The CITES MA of Mexico noted that an intersectoral working group (comprised of academic experts, civil society, INAPESCA and CONABIO) works with CONABIO to refine the catch reconstructions used by the model, with an aim to use catch-based surplus production models (such as those described in Froese *et al*., (2016, 2017)), and eventually introduce a model structured by age class.

Monitoring and observers: See corresponding section in the *S. lewini*/Mexico review.

Management plans and NPOA-Sharks: See corresponding section in the *S. lewini*/Mexico review.

Protected areas: *S. mokarran* has been recorded in the Alto Golfo de California y Delta del Río Colorado (Baja California and Sonora), Islas Marías (Nayarit), Arrecifes de Sian Ki'an (Quintana Roo), and Sian Ki'an (Quintana Roo) Biosphere Reserves, as well as the San Lorenzo Archipelago National Park (Baja California) (CITES MA of Mexico *in litt.* to UNEP-WCMC, 2024). *Sphyrna* spp. have additionally been recorded in Isla de Guadalupe Biosphere Reserve (Baja California), and the Cozumel Reefs National Park (CITES MA of Mexico *in litt.* to UNEP-WCMC, 2024). In addition, Mexico has designated the following reproductive/nursery areas for sharks and rays as refuges, as outlined in the *S. lewini*/Mexico review.

Illegal trade: The Federal Attorney for Environmental Protection (PROFEPA), who verify exports at ports, airports and borders, have no records of instances of illegal trade in *S. mokarran* in the past five years (CITES MA of Mexico *in litt.* to UNEP-WCMC, 2023). However, 1.2 tonnes of shark fins (species not specified) originating from Mexico were seized in Hong Kong SAR in February 2023 (CITES MA of Mexico *in litt.* to the CITES Secretariat, 2023).

No seizures of *S. mokarran* involving Mexico were reported in the TRAFFIC Wildlife Trade Portal 2013-2023 (TRAFFIC International, 2024).

E. Problems identified that are not related to the implementation of Article IV, paras 2(a), 3 or 6(a).

Mexico is a Contracting Party to ICCAT, which adopted Recommendation 10-08 on hammerhead sharks (family Sphyrnidae) caught in association with fisheries managed by ICCAT; the Recommendation entered into force in June 2011. This prohibits retaining onboard, transhipping, landing, storing, selling or offering for sale any part or whole carcass of hammerhead sharks (except *Sphyrna tiburo*), with an exemption for sharks caught by developing CPs (including Mexico) for local consumption (provided that CPs provide relevant data). The Recommendation states that developing coastal CPs should endeavour not to increase their catches of the family Sphyrnidae and take measures to ensure these species (except *S. tiburo*) will not enter international trade.

Further clarity is required regarding the implications of this Recommendation on the completion of CITES Legal Acquisition Findings; as such, the Standing Committee could be requested to liaise with ICCAT and relevant Parties to clarify the situation and provide guidance.

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Mobula spp.: Sri Lanka

A. Summary

CRITERIA MET:	***M. birostris, M. hypostoma* and *M. thurstoni:*** Criterion i) trade in an endangered species ***M. japanica* and *M. tarapacana***: Criterion i) trade in an endangered species and criterion v) high volume of trade in a globally threatened species ***M. mobular***: Criterion i) trade in an endangered species, criterion ii) sharp increase in global trade, criterion iii) sharp increase in trade from Sri Lanka and criterion v) high volume of trade in a globally threatened species ***Mobula* spp.**: Criterion ii) sharp increase in global trade and criterion iii) sharp increase in trade from Sri Lanka and Yemen.
GLOBAL STATUS:	Seven *Mobula* species occur in Sri Lanka; all are globally Endangered with a decreasing population trend (estimated 50-79% decline over past three generations) with a further reduction suspected over next three generations.
INTERNATIONAL MEASURES:	All *Mobula* spp. considered in this review were listed in CMS Appendix I in 2014, which requires CMS Parties to prohibit take with limited exceptions. Retention of *Mobula* spp. was prohibited by the IOTC in 2019 (with an exemption for subsistence fisheries). RFMO measures that do not relate to the implementation of Article IV, paragraphs 2 (a), 3 or 6 (a) are reflected on in section E of this review; the CITES Secretariat has reached out to the relevant secretariats to request clarification, as appropriate.
SRI LANKA: Responded to the consultation relating to the RST	Fishing mortality, both incidental and targeted, is the main driver of declines for *Mobula* spp. globally. Sri Lanka has one the world's largest mobulid fisheries, and while current catch rates are unknown, one modelling study estimated that over 100 000 mobulids were landed annually in Sri Lanka in the early 2010s. The same study noted declining catch rates despite increases in fishing effort, as well as evidence of an overexploited population due to declining disc widths and the high proportions of juveniles fished. According to the CITES Trade Database, direct trade in *Mobula* spp. from Sri Lanka 2014-2022 predominantly comprised 80 118 kg wild-sourced gill plates for commercial purposes as reported by Sri Lanka; Hong Kong SAR accounted for 99% of imports of this trade and reported 15 348 kg gill plates over the same period. According to Sri Lanka, exports in 2022 represented the highest level of direct trade over the nine-year period (37 124 kg gill plates), almost tripling compared to the previous year. Most trade reported at the species level was in *M. japanica* and *M. tarapacana*. While there are anecdotal reports that the issuance of export permits ceased "in recent years", it is unclear if this was a temporary measure or if exports remain restricted. Sri Lanka reported that it has banned the retention of mobulids since 2020 in compliance with IOTC Resolution 19/03; however, the piece(s) of legislation that implement this ban could not be located, and high levels of trade in *Mobula* spp. have been reported in 2021 and 2022.

PROVISIONAL CATEGORY:	The basis for non-detriment findings for export of wild-sourced specimens has not been provided, and it is likely that international trade is having a detrimental impact on the population; therefore categorised as **Action is needed**.

B. RST background

AC32 marked the first time that *Mobula* spp. has been selected for inclusion in Stage 2 of the RST.

C. Species characteristics

Taxonomic note: Ten *Mobula* species are currently recognised under CITES standard nomenclature (Res. Conf. 12.11 Rev. CoP19): *Mobula alfredi*, *Mobula birostris*, *Mobula eregoodootenkee*, *Mobula hypostoma*, *Mobula japanica*, *Mobula kuhlii*, *Mobula mobular*, *Mobula munkiana*, *Mobula tarapacana*, and *Mobula thurstoni*. These include two species previously assigned to the genus *Manta* (*M. alfredi* and *M. birostris*).

White *et al*. (2018) proposed a revised taxonomy for mobulids that no longer recognised *M. mobular* and *M. japanica* as distinct species. Consequently, the IUCN assessment for *M. mobular* considers *M. japanica* as a synonym of *M. mobular* (Marshall *et al*., 2022c). There is also uncertainty regarding the status of *M. eregoodootenkee and M. kuhlii*. Combined morphological and molecular data led Last *et al*. (2016) and White *et al*. (2018) to conclude that *M. eregoodootenkee* is a junior synonym of *M. kuhlii*. However, Hosegood *et al*. (2019) suggested these were separate species. This was supported by Notarbartolo di Sciara *et al*. (2020a), who also clarified that *M. eregoodootenkee* should be referred to as *M. eregoodoo* given that the latter name predates the former. Fricke *et al*. 2023 consider *M. eregoodoo* to be a valid name, as does the IUCN Red List.

Notarbartolo Di Sciara *et al*. (2020b) reported long-standing taxonomic confusion for mobulids, and the misidentification of species in the genus was reported to persist in the scientific literature (Couturier *et al*., 2012).

Biology: *Mobula* spp., referred to collectively in this report as 'mobulids', are large filter-feeding elasmobranchs found in tropical and sub-tropical waters in the pelagic or epipelagic zone, in both coastal and offshore waters (Couturier *et al*., 2012; Stewart *et al*., 2018). Mobulids are migratory and have the ability to move long distances (Couturier *et al*., 2012); for example, seasonal movements of several hundred kilometers have been recorded for *M. alfredi* (Couturier *et al*., 2011).

Reproductive characteristics were reported to be generally consistent across mobulid species (Rambahiniarison *et al*., 2018). These include slow maturation and low annual fecundity (Croll *et al*., 2016), resulting in intrinsic rates of population growth that are believed to be among the lowest of studied chondrichthyans (Dulvy *et al*., 2014). These life history characteristics were considered to make mobulids inherently vulnerable to overexploitation (Couturier *et al*., 2012; Dulvy *et al*., 2014; Rambahiniarison *et al*., 2018), and to be a limiting factor for population recovery from stock depletion (Rambahiniarison *et al*., 2018). Martin (2020) considered that mobulids cannot support sustainable targeted fisheries of any type.

Species-specific information on the reproductive characteristics of *Mobula* spp. is lacking and most available data were reported to be based on studies of *M. alfredi* (Stewart *et al*., 2018). In general, mobulids are aplacental viviparous (Couturier *et al*., 2012) and are believed to produce one pup per

litter (or two on rare occasions) (Couturier *et al*., 2012; Dulvy *et al*., 2014; Pardo *et al*., 2016). Gestation length for mobulids has been estimated at approximately one year (Broadhurst *et al*., 2019; Marshall and Bennett, 2010; Notarbartolo-Di-Sciara, 1988), but several authors reported that intervals between pregnancies could range from 2-5 years (Croll *et al*., 2016; Marshall and Bennett, 2010; Notarbartolo-Di-Sciara, 1988; Rambahiniarison *et al*., 2018).

A summary of known species-specific habitat preferences and life history traits for the seven *Mobula* species known to occur in Sri Lanka is provided in Table 8.1.

Table 8.1: Summary of habitat and life history traits of the seven *Mobula* spp. that occur in Sri Lanka.

Species Common name	Habitat	Longevity	Age at maturity	Max disc width (cm)	Disc width at maturity (cm)	Intrinsic rate of population increase (r_{max})
Mobula birostris Oceanic manta ray	Offshore pelagic (Armstrong *et al*., 2020); common along productive coastlines, seamounts and ridges (Marshall *et al*., 2009)	Up to 45 years, inferred from the lifespan of *M. alfredi* (Marshall *et al*., 2022b). Believed to be among longest-lived rays (Marshall *et al*., 2022b).	**Philippines:** 8.6 years (Rambahiniarison *et al*., 2018)	**Sri Lanka:** ♂ 478 cm ♀ 449 cm (Fernando & Stewart, 2021) **Philippines:** ♂ 471 cm ♀ 554 cm (Rambahiniarison *et al*., 2018) Maximum recorded disc width of 700 cm (Compagno, 1999 in Stewart *et al*., 2018)	**Sri Lanka:** ♂ 386 cm (Fernando & Stewart, 2021) **Indonesia:** ♂ 375 cm (White *et al*., 2006) ♀ > 413 cm (White *et al*., 2006) **Philippines:** ♂ 382 cm ♀ 448 cm (Rambahiniarison *et al*., 2018)	0.042 (Ward-Paige *et al*., 2013) 0.068 (*Manta* spp.) (Pardo *et al*., 2016) 0.0001 (Rambahiniarison *et al*., 2018)[30]
Mobula eregoodootenkee Pygmy devil ray	Inshore and offshore pelagic (Rigby *et al*., 2022a)	Unknown, but may be similar to that of *M. mobular* (Rigby *et al*., 2022b)	Unknown, but may be similar to that of *M. mobular* (Rigby *et al*., 2022b)	**Australia:** ♂ 130 cm ♀ 123 cm (Broadhurst *et al*., 2018)[31]	**Australia:** Based on the size of adult specimens, Broadhurst *et al*., (2018) suggested that sexes mature at smaller sizes than those proposed by White *et al*. (2006) (see *M. kuhlii*)	Unknown (Stewart *et al*., 2018)

[30] Intrinsic population growth estimates from Rambahiniarison *et al.* (2018) took into account the delay between age at maturity and timing of first reproduction, with the aim of producing more realistic population growth rate scenarios.

[31] Broadhurst *et al*. (2018) referred to the species complex *M. kuhlii* cf. *eregoodootenkee.*

Species Common name	Habitat	Longevity	Age at maturity	Max disc width (cm)	Disc width at maturity (cm)	Intrinsic rate of population increase (r_{max})
Mobula mobular Giant devil ray ***Mobula japanica*** Spinetail devil ray	Pelagic, coastal and continental shelf waters (Marshall *et al*., 2022c)	Maximum lifespan of 15-20 years; median estimate for average lifespan of 11.5 years (Pardo *et al*., 2016)	General estimate of 5-6 years (Pardo *et al*., 2016). **Philippines:** 7.4-9.1 years (Rambahiniarison *et al*., 2018)	**Sri Lanka:** ♂ 252 cm ♀ 242 cm (Fernando & Stewart, 2021) **Philippines:** ♂ 235 cm ♀ 239 cm (Rambahiniarison *et al*., 2018)	**Sri Lanka:** ♂ 203 cm (Fernando & Stewart, 2021) **Indonesia:** ♂ 2016 mm (Indonesia) (White *et al*., 2006) **Philippines:** ♂ 206 cm ♀ 218 cm (Rambahiniarison *et al*., 2018)	0.077 (Pardo *et al*., 2016) 0.012-0.021 (Rambahiniarison *et al*., 2018)[30]
Mobula kuhlii Shortfin devil ray	Coastal shelf species (Fernando, 2018; Rigby *et al*., 2022b)	Unknown, but may be similar to that of *M. mobular* (Rigby *et al*., 2022b)	Unknown, but may be similar to that of *M. mobular* (Rigby *et al*., 2022b)	**Sri Lanka:** ♂ 124 cm ♀ 138 cm (Fernando & Stewart, 2021) **Australia:** ♂ 130 cm ♀ 123 cm (Broadhurst *et al*., 2018)[31]	**Sri Lanka:** ♂ 103 cm (Fernando & Stewart, 2021) **Indonesia:** ♂ 115-119 cm (White *et al*., 2006) **Australia:** Based on the size of adult specimens, Broadhurst *et al*., (2018)[32] suggested that sexes mature at smaller sizes than those proposed by White *et al*. (2006)	Unknown (Stewart *et al*., 2018)

Species Common name	Habitat	Longevity	Age at maturity	Max disc width (cm)	Disc width at maturity (cm)	Intrinsic rate of population increase (r_{max})
Mobula tarapacana Sicklefin devil ray	Mostly oceanic but also found in coastal waters (Marshall *et al*., 2022a)	Unknown, but may be similar to that of *M. mobular* (Rigby *et al*., 2022b)	Unknown, but may be similar to that of *M. mobular* (Rigby *et al*., 2022b)	**Sri Lanka:** ♂ 326 cm ♀ 314 cm (Fernando & Stewart, 2021) **Philippines:** ♂ 317 cm ♀ 295 cm (Rambahiniarison *et al*., 2018) **Indonesia:** ♀ 328 cm (White *et al*., 2006)	**Sri Lanka:** ♂ 2340 cm (Fernando & Stewart, 2021) **Indonesia:** ♂ 2486 mm (White *et al*., 2006) **Philippines:** ♂ 252 cm ♀ 265 cm (Rambahiniarison *et al*., 2018)	Unknown (Stewart *et al*., 2018)
Mobula thurstoni Smoothtail devil ray	Neritic and oceanic waters (Marshall *et al*., 2018) but may also be found at productive coastal and shelf sites (Gadig *et al*., 2003)	Unknown, but may be similar to that of *M. mobular* (Rigby *et al*., 2022b)	♀ 6.1-12.7 years (Rambahiniarison *et al*., 2018)	**Sri Lanka:** ♂ 168 cm ♀ 160 cm (Fernando & Stewart, 2021) **Philippines:** ♂ 182 cm ♀ 197 cm (Rambahiniarison *et al*., 2018) **Indonesia:** 179 cm (sex not specified) (White *et al*., 2006)	**Sri Lanka:** ♂ 143 cm (Fernando & Stewart, 2021) **Philippines:** ♂ 158 cm ♀ 164 cm (Rambahiniarison *et al*., 2018)	0.028-0.044 (Rambahiniarison *et al*., 2018)[30]

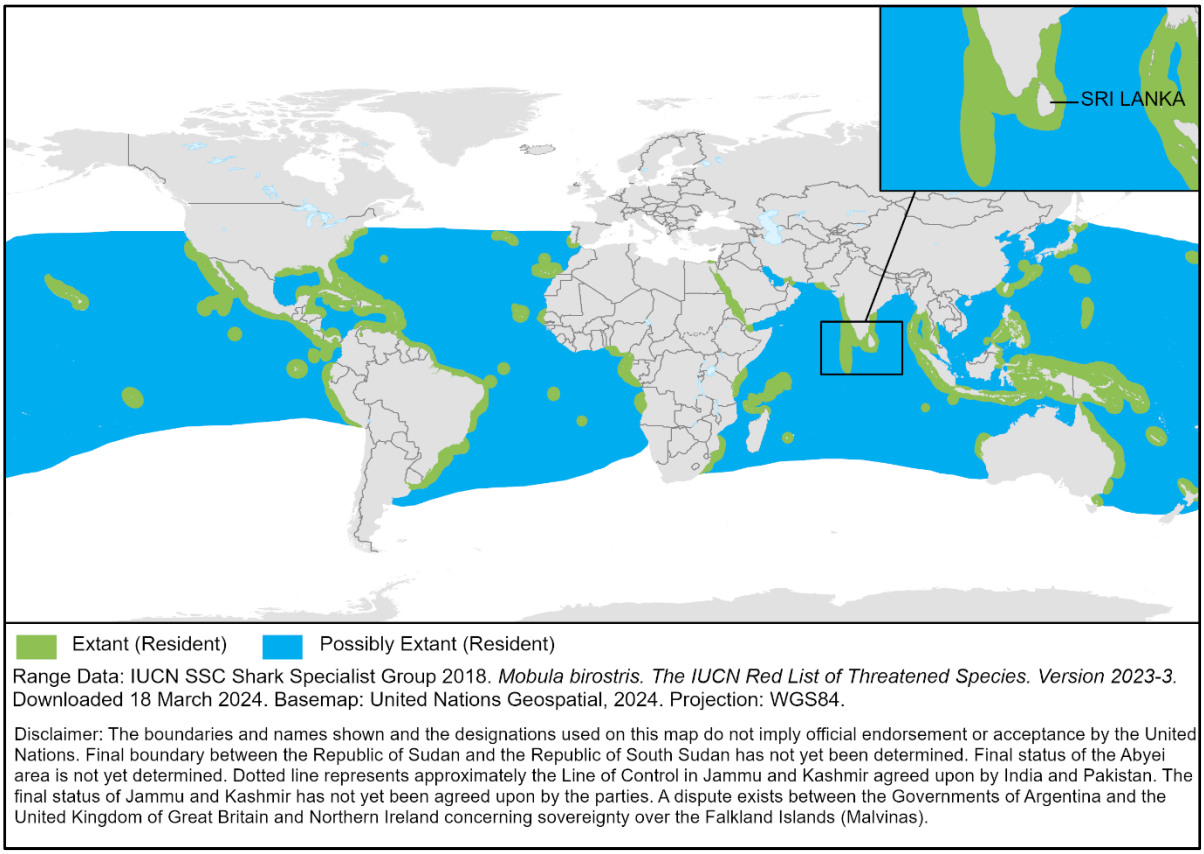


Figure 8.1: Range of *M. birostris*

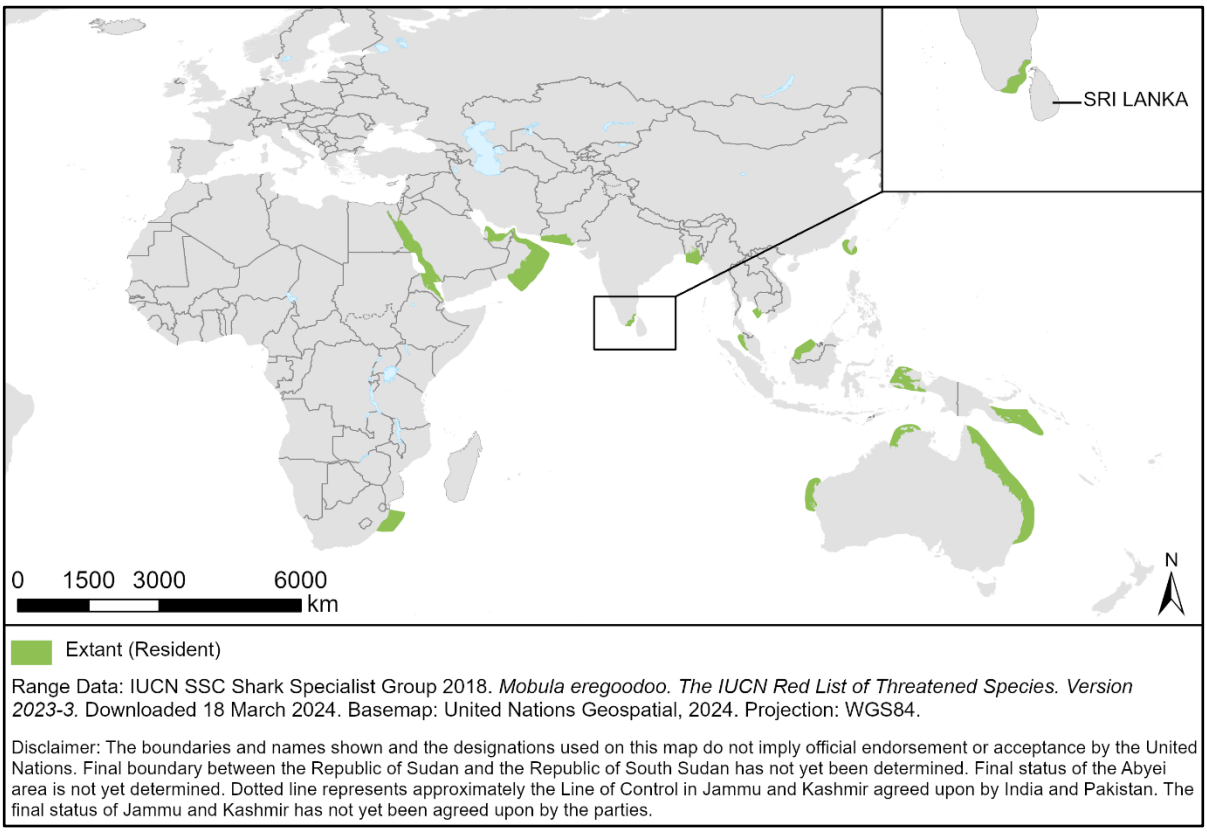
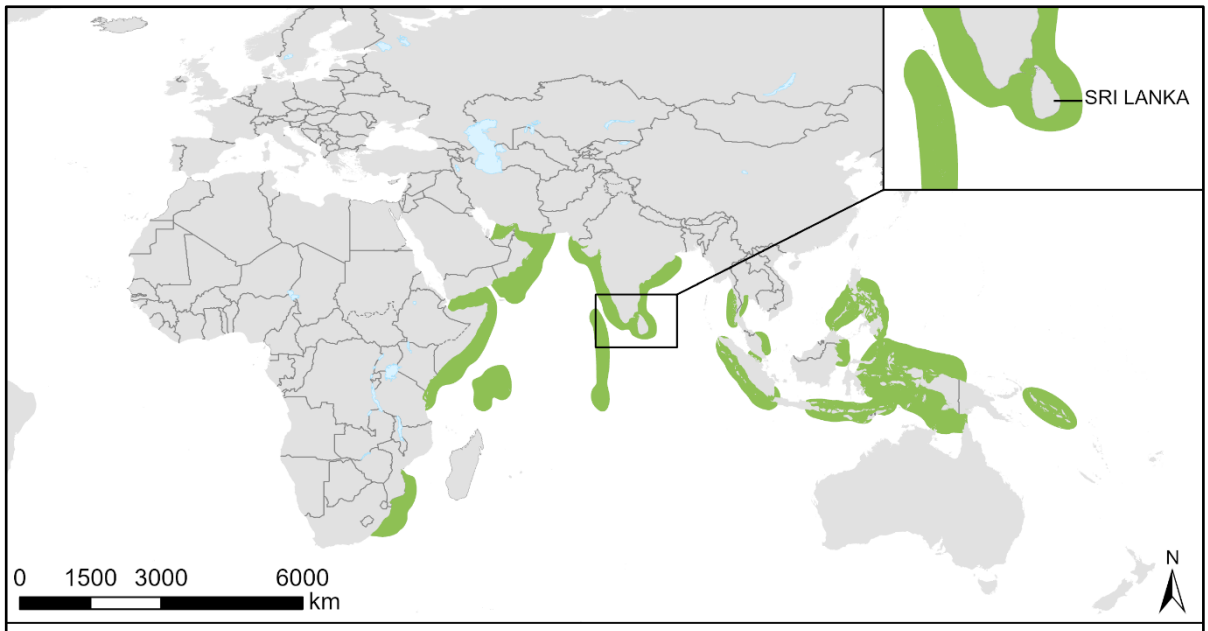


Figure 8.2: Range of *M. eregoodootenkee* (as *M. eregoodoo*). *M. eregoodootenkee* is categorised by IUCN as 'marine neritic', therefore it appears that map polygons have been restricted to coastal waters (see Mapping Standards and Data Quality for IUCN Red List Spatial Data v. 1.19, May 2021).

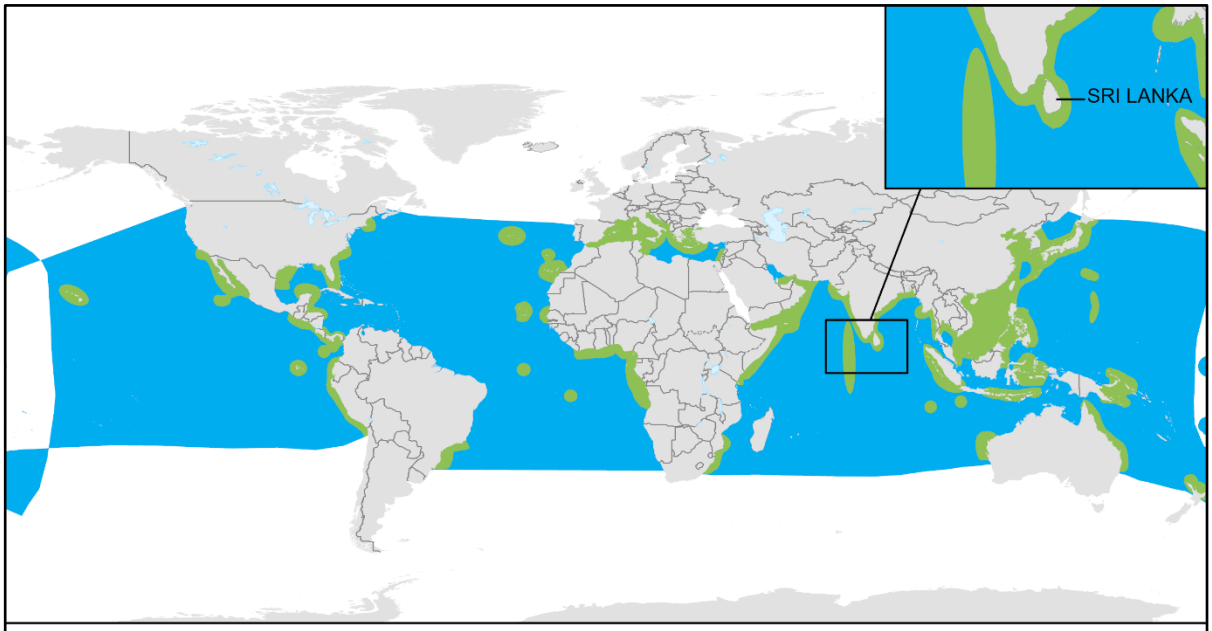


Extant (Resident)

Range Data: IUCN SSC Shark Specialist Group 2018. *Mobula kuhlii. The IUCN Red List of Threatened Species. Version 2023-3.* Downloaded 18 March 2024. Basemap: United Nations Geospatial, 2024. Projection: WGS84.

Disclaimer: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined. Final status of the Abyei area is not yet determined. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.

Figure 8.3: Range of *M. kuhlii. M. kuhlii* is categorised by IUCN as 'marine neritic', therefore it appears that map polygons have been restricted to coastal waters (see Mapping Standards and Data Quality for IUCN Red List Spatial Data v. 1.19, May 2021).

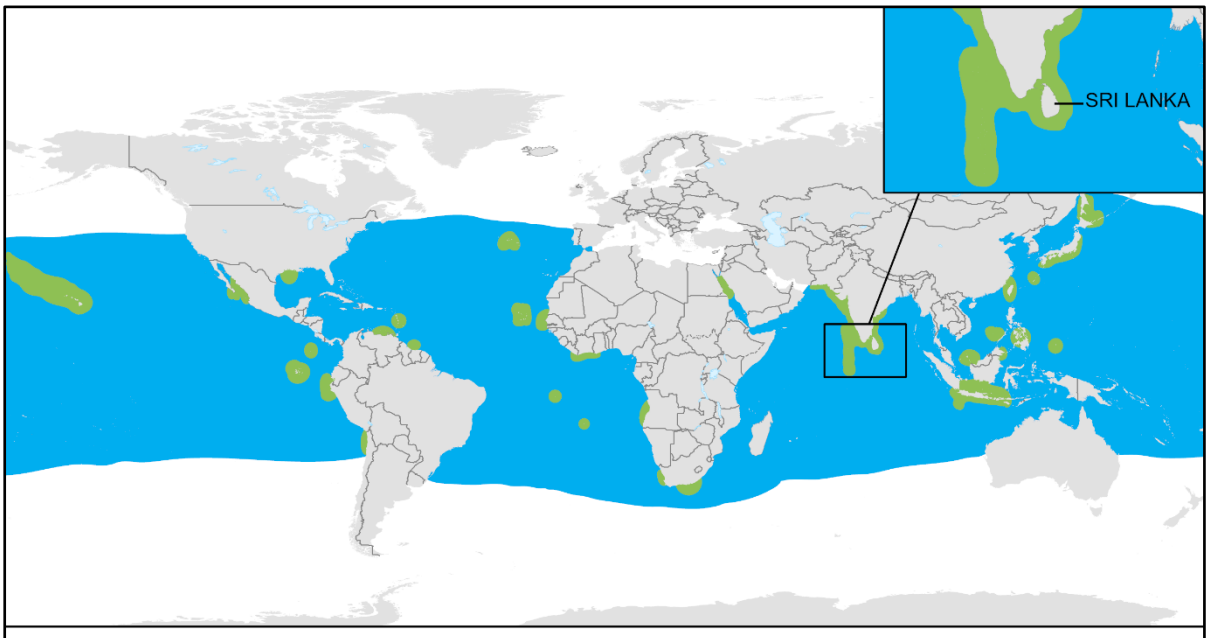


Extant (Resident) Possibly Extant (Resident)

Range Data: IUCN SSC Shark Specialist Group 2018. *Mobula mobular. The IUCN Red List of Threatened Species. Version 2023-3.* Downloaded 18 March 2024. Basemap: United Nations Geospatial, 2024. Projection: WGS84.

Disclaimer: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined. Final status of the Abyei area is not yet determined. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

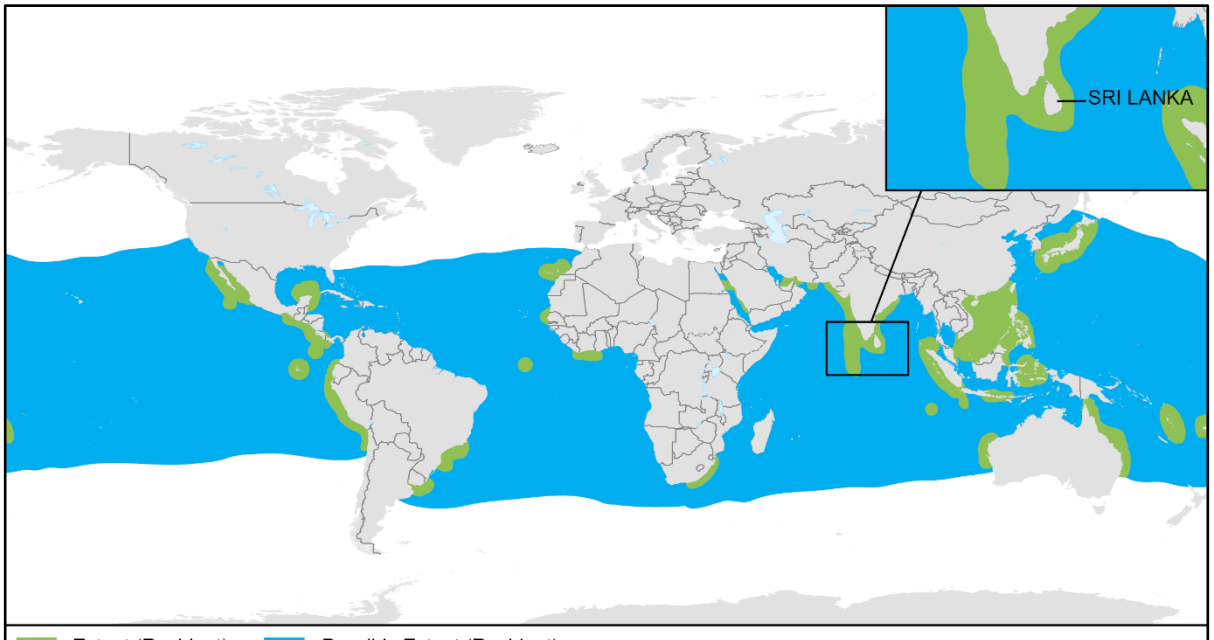
Figure 8.4: Range of *M. mobular*



Range Data: IUCN SSC Shark Specialist Group 2018. *Mobula tarapacana. The IUCN Red List of Threatened Species. Version 2023-3.* Downloaded 18 March 2024. Basemap: United Nations Geospatial, 2024. Projection: WGS84.

Disclaimer: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined. Final status of the Abyei area is not yet determined. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

Figure 8.5: Range of *M. tarapacana*



Range Data: IUCN SSC Shark Specialist Group 2018. *Mobula thurstoni. The IUCN Red List of Threatened Species. Version 2023-3.* Downloaded 18 March 2024. Basemap: United Nations Geospatial, 2024. Projection: WGS84.

Disclaimer: The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations. Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined. Final status of the Abyei area is not yet determined. Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties. A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

Figure 8.6: Range of *M. thurstoni*

D. Country reviews

Sri Lanka

Distribution: All species of *Mobula* occur in Sri Lanka except *M. alfredi*[32], *M. hypostoma* and *M. munkiana* (Last *et al*., 2016); however, detailed information on the distribution of these species within the country could not be located. Global distribution maps are provided in Figures 8.1-8.6.

One small-scale study reported that *M. kuhlii* had only be encountered on the west coast of Sri Lanka, but it was noted that this may be a result of higher fishing effort at these sites (Fernando, 2018).

Population status and trends: The global population status and trend of the seven mobulid species that occur in Sri Lanka is summarised in Table 8.2. According to the IUCN Red List, all seven species are experiencing population declines globally, and recorded catches and landings are decreasing despite stable or increasing effort (Marshall *et al*., 2022c, 2022a, 2022b, 2018; Marshall *et al*., 2022; Rigby *et al*., 2022a, 2022b). These assessments stated that "the lack of species-specific catch, fishing effort, and population data necessitates the use of genus-wide inferences to assess population reductions" (Marshall *et al*., 2022c, 2022a, 2022b, 2018; Marshall *et al*., 2022; Rigby *et al*., 2022a, 2022b).

Fernando and Stewart (2021) inferred population declines of several *Mobula* spp. species in Sri Lanka by modelling catch rates for the years 2011-2019; the results of these catch reconstructions are detailed in Table 8.2. Catch volumes for *M. mobular*, *M. tarapacana* and *M. thurstoni* were estimated to have declined "by an order of magnitude" over the study period. Furthermore, using number of vessels as a proxy for fishing effort, Fernando and Stewart (2021) reported that annual catch volumes had decreased despite an increase in the number of registered offshore fishing vessels and the number of coastal vessels remaining stable. While the authors emphasized the caveats associated with these estimations[33], they noted that the 38 sites sampled represented 10 out of 21 of Sri Lanka's national fishery harbours, and that the catch reconstructions "likely approach the correct order of magnitude of total mobulid landings throughout the country".

In the same study, average disc widths of landed mobulid rays were reported to have declined by ~1-2% per year for *M. mobular*, *M. tarapacana* and *M. thurstoni*; Fernando and Stewart (2021) considered this decline to be consistent with studies of the size and weight trends of heavily exploited pelagic sharks in the Pacific Ocean and the Gulf of Mexico.

Fernando and Stewart (2021) additionally referred to anecdotal reports from fishers that mobulid catches in gill nets had decreased over the past two decades, and from gill plate buyers that mobulid landings had decreased in recent years.

[32] While *M. alfredi* is categorized as 'possibly extant' in Sri Lanka in its IUCN Red List assessment (Marshall *et al*., 2022), D. Fernando (pers. comm., 2024) confirmed that the species does not occur in Sri Lankan waters and has not been encountered in over a decade of monitoring. However, given its current range, it was considered possible that the species had occurred in Sri Lanka in the past (D. Fernando pers. comm., 2024).

[33] 1) most sites were only sampled from 2017, meaning that catch rates for 2011-2016 were estimated without data for most markets; as such it was assumed that all markets followed the overall country-wide trend; 2) some markets were targeted for sampling as they were known to have some of the highest mobulid catch rates; 3) an additional 800+ smaller fish landing sites were not included in the study. Further details are provided in Fernando and Stewart (2021).

Table 8.2: Summary of the global IUCN Red List status and population trend for the seven mobulid species that occur in Sri Lanka, as well annual catch reconstructions for Sri Lanka from Fernando and Stewart (2021).

Species	IUCN Red List status (Year)	Global IUCN population trend and estimated population reduction	Annual catch reconstructions from 38 mobulid landing sites in Sri Lanka, 2011-2019 (Fernando & Stewart, 2021). Figures represent the number of individuals estimated to be landed across all sampled sites.		
Mobula birostris	EN (2019) (Marshall *et al.*, 2022b)	Decreasing: 50-79% over past three generations (87 years); further reduction suspected over next three generations (2018-2105).	**2011**: 4461 **2012**: 3691 **2013**: 4317	**2014**: 7961 **2015**: 2691 **2016:** 1831	**2017:** 1025 **2018:** 1217 **2019**: 2785
Mobula eregoodootenkee[34]	EN (2020) (Rigby *et al.*, 2022a)	Decreasing: 50-79% over past three generations (38 years); further reduction suspected over next three generations (2020-2058).	No catch reconstructions modelled for *M. eregoodotenkee*		
Mobula kuhlii	EN (2020) (Rigby *et al.*, 2022b)	Decreasing: 50-79% over past three generations (38 years); further reduction suspected over next three generations (2020-2058).	No catch reconstructions modelled for *M. kuhlii*		
Mobula mobular ***Mobula japanica***[35]	EN (2018) (Marshall *et al.*, 2022c)	Decreasing: 50-79% over past three generations (38 years); further reduction suspected over next three generations (2018-2056).	**2011:** 98 059 **2012:** 79 794 **2013:** 59 238	**2014:** 39 520 **2015:** 18 076 **2016:** 14 584	**2017:** 11 258 **2018:** 11 284 **2019:** 12 075
Mobula tarapacana	EN (2018) (Marshall *et al.*, 2022a)	Decreasing: 50-79% over past three generations (38 years); further reduction suspected over next three generations (2018-2056).	**2011:** 13 023 **2012:** 13 729 **2013:** 13 966	**2014:** 12 866 **2015:** 8192 **2016:** 7304	**2017:** 5966 **2018:** 5293 **2019:** 4867
Mobula thurstoni	EN (2018) (Marshall *et al.*, 2018)	Decreasing: 50-79% over past three generations (38 years); further reduction suspected over next three generations (2018-2056).	**2011:** 2915 **2012:** 2283 **2013:** 1603	**2014:** 1059 **2015:** 825 **2016:** 665	**2017:** 533 **2018:** 495 **2019:** 559

[34] Assessed in its IUCN assessment as *M. eregoodoo* (Rigby *et al.*, 2022a)
[35] The IUCN Red List and Fernando and Stewart (2021) consider *M. mobular* and *M. japanica* to be synonymous.

Threats: Targeted and incidental catch is considered to be the key threat to mobulids globally (Couturier *et al*., 2012; Fernando & Stewart, 2021; Marshall *et al*., 2022b; Marshall *et al*., 2022; Stewart *et al*., 2018). The group is mainly retained for their gill plates, which have been the subject of increasing demand in recent decades (Couturier *et al*., 2012; Fernando & Stewart, 2021; Marshall *et al*., 2022b; Marshall *et al*., 2022; Stewart *et al*., 2018), and which are sold for medicinal uses to Chinese markets (trade name *pengyusai*) (O'Malley *et al*., 2017). Larger gill plates are reported to be more valuable; the estimated sale prices for dried gill plates intended for export from Sri Lanka was USD 127-191/kg for *M. birostris* and USD 96/kg for larger gill plates of *M. tarapacana*, whereas for other species these ranged from USD 12-64/kg (Fernando, 2018).

In Sri Lanka, mobulids were generally not targeted prior to 2010, and were often released if caught as bycatch (Fernando & Stewart, 2021). However, the rising value of their gill plates has led to an increase in the retention of mobulids by Sri Lankan fishers over the past decade (Croll *et al*., 2016; Fernando, 2018), and several sources now consider Sri Lanka to have one of the world's largest mobulid fisheries (Fernando, 2018; Fernando & Stewart, 2021; Heinrichs *et al*., 2011) and to be one of the two principal suppliers of gill plates at major market hubs (O'Malley *et al*., 2017). Despite this, mobulids were reported to remain predominantly non-target catch (Buchholzer *et al*., 2024 *in litt*. to UNEP-WCMC, 2024), with most mobulids entering the gill plate trade originating from incidental catch by artisanal tuna fisheries using gillnets (Buchholzer *et al*., 2024; Fernando & Stewart, 2021). Individuals were noted to be caught by Sri Lankan vessels operating "throughout the EEZ" as well as in Areas Beyond National Jurisdiction (ABNJ) (Fernando & Stewart, 2021). The majority of mobulids were noted to be caught by pelagic fisheries (D. Fernando pers. comm. 2024).

Based on reconstructions of annual catches 2011-2019 (see Table 8.2), in the early 2010s, over 100 000 individuals of *Mobula* spp. were estimated to have been landed in Sri Lanka each year (Fernando & Stewart, 2021). *M. mobular*[36] accounted for the highest number of landings at the studied sites (over 75% of the total number of individuals), followed by *M. tarapacana*, *M. birostris*, *M. thurstoni* and *M. kuhlii* (Fernando & Stewart, 2021). These annual catches were considered "exceptionally high" and were thought to exceed annual mobulid catches across the global tuna purse seine fleet (Fernando & Stewart 2021), which were estimated at 13 085 individuals/year on average (Croll *et al*., 2016). Other trends in landed mobulids reported by Fernando and Stewart (2021) were considered to reflect an overexploited population: a high proportion of immature individuals; decreasing disc widths; and total mortality rate estimates for *M. mobular* that exceeded the upper r^{max} estimate for the species (Fernando & Stewart 2021).

Global capture of *Mobula* spp. by Sri Lanka recorded in the FAO global capture production database 2013-2021 is summarised in Table 8.3. It should be noted that Ward-Paige *et al.* (2013) considered that these reported landings likely represented "a fraction" of total fishing-related mortality.

[36] Fernando and Stewart (2021) recognise *M. japanica* as a synonym of *M. mobular*.

Table 8.3: Capture (metric tonnes, live weight) of 'Mantas, devil rays nei' (nei = not elsewhere included) (code: MAN) from Sri Lanka reported to the FAO 2013-2021, rounded to the nearest whole number.

Reported as	2013	2014	2015	2016	2017	2018	2019	2020	2021	Total
MAN	669	608	682	767	1269	991	797	531	86	6400

Source: FAO Global capture database. Available at: https://www.fao.org/fishery/statistics-query/en/capture/capture_quantity Accessed 14/02/2024

At-vessel mortality estimates for mobulids could only be found for pelagic longline fisheries, where rates were reported to range from 1.4-5.2% (Coelho *et al*., 2012 and Mas *et al*., 2015 in Ellis *et al*., 2017). Similarly, post-release mortality rate estimates could only be located for purse seine tuna fisheries, with Francis and Jones (2019) estimating a post-release mortality rate of 36% for tagged mobulids captured in purse seine tuna fisheries in New Zealand 2013-2018 (n = 16). The lack of information on at-vessel and post-release mortality rates for mobulids captured in gillnets is a particular concern, given that gillnets represented the primary gear type involved in mobulid landings in Sri Lanka 2011-2019 (Fernando & Stewart, 2021). Stewart *et al*. (2018) believed mobulids caught in gillnets could have "considerably higher" post-release mortality rates compared to longlines or purse seines.

Additional secondary threats reported for mobulids include entanglement (e.g. with abandoned fishing gear; Parton *et al*., 2019), habitat degradation, such as from aquaculture and coastal runoff, and climate change, which was anticipated to disrupt mobulid prey availability and reproductivity (Stewart *et al*., 2018).

Trade: The genus *Manta* was listed in CITES Appendix II on 12 June 2013 with a delayed entry into effect of 18 months, i.e., until 14 September 2014 (*Manta alfredi* and *Manta birostris*) and the genus *Mobula* was listed in Appendix II on 4 April 2017 (*Mobula eregoodootenkee*, *Mobula hypostoma, Mobula japanica*, *Mobula kuhlii, Mobula mobular, Mobula munkiana, Mobula rochebrunei, Mobula tarapacana*, *Mobula thurstoni*). Following taxonomic changes adopted at CoP19, *Manta* was lumped into *Mobula,* and *M. rochebrunei* became a synonym of *M. hypostoma,* in 2023.

Sri Lanka has submitted all annual reports to CITES for the period 2014-2022; as the initial listing for *Mobula* (*Manta*) spp. entered into effect in 2014, trade data are not available prior to 2014. Sri Lanka has not published any export quotas for any *Mobula* species.

According to the CITES Trade Database, direct trade in *Mobula* spp. from Sri Lanka 2014-2022 predominantly comprised wild-sourced gill plates for commercial purposes; including trade reported at the genus level and species-specific trade, this amounted to 80 118 kg of gill plates reported by Sri Lanka (as well as 950 gill plates reported by number) and 15 348 kg gill plates reported by importers (Table 8.4). Sri Lanka did not report any imports of any *Mobula* species from ABNJ 2014-2022.

The majority of commercial trade in wild-sourced gill plates reported by Sri Lanka 2014-2022 was from *M. japanica* (27 377 kg and 650 by number) and *M. tarapacana* (26 271 kg and 300 by number), followed by trade reported at the genus level as *Mobula* spp. (19 296 kg), *M. mobular* (5124 kg)[37], and *M. birostris* (2050 kg). Direct trade in gill plates reported by weight by Sri Lanka almost tripled between 2021 and 2022, with 2022 representing the highest level of trade in gill plates during the nine-year period (37 124 kg). According to data reported by Sri Lanka, Hong Kong Special Administrative Region of

[37] While the current CITES standard reference considers *M. mobular* and *M. japanica* as distinct species, recent molecular evidence has supported the recognition of these taxa as a single species under *M. mobular* (see *Taxonomy* section). If the reported exports for *M. mobular* and *M. japanica* are combined under *M. mobular*, this would be the top exported mobulid species from Sri Lanka according to exporter-reported data, with 32 501 kg and 650 gill plates exported 2014-2022.

China (hereafter Hong Kong SAR) was the sole importer of gill plates reported by weight over this period, with the exception of 500 kg imported by Singapore in 2022. Other notable trade over the same period included the export of 1000 kg of derivatives reported at the genus level in 2015 and 880 kg of fins (72% from *M. japanica* with the remainder from *M. tarapacana*) for commercial purposes, as reported by Sri Lanka only.

Indirect trade in *Mobula* spp. originating in Sri Lanka consisted of eight wild-sourced *M. birostris* gill plates re-exported in 2016 by Maldives (50%) and South Africa (50%) for educational purposes, as well as smaller quantities of *M. birostris* specimens for scientific (0.022 kg) and educational (four specimens) purposes re-exported by the United States of America and South Africa, respectively.

While *M. kuhlii* and *M. thurstoni* have been reported at landing sites in Sri Lanka (Fernando & Stewart, 2021), commercial trade in these species is not reflected in the CITES Trade Database (though trade in scientific specimens was reported by Sri Lanka and importers 2018-2019). D. Fernando (pers. comm., 2024) considered it likely that these species were being traded as *M. mobular*/*M. japanica* on the basis that identifying their gill plates to the species level was challenging. D. Fernando (pers. comm., 2024) noted that work was underway to identify wet-dry gill plate conversion ratios, which would allow the evaluation of whether mobulid gill plate exports correspond with landed volumes.

Table 8.4: Direct exports of *Mobula spp.* from Sri Lanka, 2014-2022. Scientific specimens have been excluded (trade in *M. kuhlii and M. thurstoni* consisted exclusively of scientific specimens). Quantities have been rounded to the nearest whole number, where applicable.

Taxon	Term	Unit	Purpose	Source	Reported by	2014	2015	2016	2017	2018	2019	2020	2021	2022	Total
Mobula birostris	derivatives	number of specimens	E	W	Exporter		2								2
					Importer										
	gill plates	kg	T	W	Exporter						750	1025	276		2050
					Importer						250	640	276		1166
		number of specimens	E	W	Exporter			8							8
					Importer										
Mobula japanica	fins	kg	T	W	Exporter						630				630
					Importer										
	gill plates	kg	T	W	Exporter					775	5620	7192	2674	11116	27377
					Importer						721	1198	376	1730	4025
		number of specimens	T	W	Exporter					550		100			650
					Importer										
Mobula mobular	gill plates	kg	T	W	Exporter							1076	2105	1943	5124
					Importer								845	543	1388
***Mobula* spp.**	derivatives	kg	T	W	Exporter		1000								1000
					Importer										
	gill plates	kg	T	C	Exporter										
					Importer									108	108
				W	Exporter						1050	300	5237	12709	19296
					Importer						608	289	1234	1637	3768
	skins	kg	T	W	Exporter										
					Importer									118	118
Mobula tarapacana	fins	kg	T	W	Exporter						250				250
					Importer										
	gill plates	kg	T	W	Exporter					650	7785	3184	3296	11356	26271
					Importer						1437	112	810	2643	5001
		number of specimens	T	W	Exporter					300					300
					Importer										

Source: CITES Trade Database 2024. Compiled by UNEP-WCMC for the CITES Secretariat. Available at: trade.cites.org. Accessed 11/04/2024.

Management:

International commitments and Regional Fisheries Management Organisations:

Convention of Migratory Species (CMS): Sri Lanka is a Party to CMS. *Mobula* spp. was listed in Appendix I and II of CMS in 2014. Parties that are range States of Appendix I species are required to prohibit the taking of these species with limited exceptions; in accordance with Art. I 1 i of CMS, "taking" is defined as "taking, hunting, fishing, capturing, harassing, deliberate killing, or attempting to engage in any such conduct".

Appendix II of the Convention includes "migratory species that have an unfavourable conservation status and that require international agreements for their conservation and management, as well as those that have a conservation status which would significantly benefit from the international cooperation that could be achieved by an international agreement".

Indian Ocean Tuna Commission (IOTC): Sri Lanka is a Contracting Party to the IOTC. In October 2019 the IOTC adopted Resolution 19/03 *On the conservation of mobulid rays caught in association with fisheries in the IOTC area of competence*, which prohibits the targeted fishing and retention of mobulid rays and requires that captured mobulid rays are released unharmed. There is an exception for subsistence fisheries, but the Recommendation notes that "anyhow, [these fisheries] shall not be selling or offering for sale any part of whole carcass of mobulid rays"). While artisanal fisheries were initially permitted to retain mobulid rays caught unintentionally for local consumption, this derogation expired on 1 January 2022. The same Resolution includes an obligation for Contracting Parties to implement proper handling and release techniques in accordance with handling guidelines detailed in Annex 1 of Resolution 19/03.

The IOTC also adopted Resolution 17/07 *On the Prohibition to Use Large-Scale Driftnets In The IOTC Area*, which prohibits the use of gillnets more than 2.5 km in length on the high seas in the IOTC area of competence, with entry into force on 1 January 2022.

Legislation: No mobulid species are included in Sri Lanka's list of fish species that are protected from hunting, collection and sale (Schedule IV of Sri Lanka's Fauna and Flora Protection Ordinance 1993). The Ordinance does, however, prohibit the hunting or collection of all wild animals within nature reserves, national parks, jungle corridors, refuges, marine reserves or buffer zones. As well as marine reserves that can be established under the Fauna and Flora Protection Ordinance (1993), Fisheries Management Areas (FMAs) can also be established under the Fisheries and Aquatic Resources Act (1996). These FMAs can regulate fishing gear types and harvest of specific species, as well as implement closed seasons and temporal restrictions on fishing. No information could be located regarding whether there are any FMAs that have restrictions that could benefit *Mobula* spp.

In its compliance reports to the IOTC (IOTC, 2023, 2022), Sri Lanka reported there was no intentional catch of mobulid rays and that it had banned (through its terms and conditions for authorisation to fish), the retention, transhipment, landing and storage of mobulids since 2020 in compliance with IOTC Resolution 19/03. However, the piece(s) of legislation that incorporate this ban could not be located and the reported exports of mobulids by Sri Lanka in both 2021 and 2022 suggests that these bans are either no longer in place or have not been enforced. Restrictions on the high seas were reported by Sri Lanka to be outlined in the High Seas Fishing Operations Regulations (IOTC, 2022), but mobulids do not appear to be mentioned in the most recent version of these regulations that could be located

(High Seas Fishing Operations Regulations No.1 of 2014 amended by Gazette No. 1945/6 of 14th December 2015).

Sri Lanka's national legislation is included in Category 3 in the CITES National Legislation Project (legislation that is believed generally not to meet any of the four requirements for effective implementation of CITES). However, according to the most recent legislative status table (updated November 2023), a draft regulation was submitted to the Secretariat in November 2023, with next steps including the finalisation of implementing regulations and agreement between Sri Lanka and the Secretariat on a revised legislative analysis, including possible Category 1 status.

Non-detriment findings: The CITES MA of Sri Lanka (*in litt*. to the CITES Secretariat, 2023) indicated it was initiating assessments to develop non-detriment findings (NDFs) (indicating an intention to export mobulids in future), but at the moment no NDFs for any *Mobula* spp. appear to have been conducted. D. Fernando (pers. comm., 2024) reported that Sri Lanka had stopped issuing CITES export permits for mobulids "in recent years", however the exact timing of this measure, and whether this was temporary or ongoing, is unknown. High volumes of trade in *Mobula* spp. from Sri Lanka have been reported in the CITES Trade Database 2021-2022, the most recent years for which data is available (see *Trade* section).

Monitoring and observers: Sri Lanka noted that the release of incidental catches of mobulid rays is monitored as part of its scientific observer programme (IOTC, 2023), but no further details (such as the percentage of boats that have an observer) were located.

Protected areas and Important Shark and Ray Areas (ISRAs): According to the World Database on Protected Areas, 399 km^2 of Sri Lanka's marine and coastal area is designated as a protected area. Sri Lanka has not yet been assessed for areas that could be considered ISRAs (IUCN SSC Shark Specialist Group, 2024).

D. Fernando (pers. comm., 2024) considered that the existing MPAs and FMAs in Sri Lanka provided insufficient protection for *Mobula* spp., on the basis that the majority of MPAs were focused on the protection of coral reef ecosystems, while the majority of mobulids were threatened by pelagic fisheries.

Illegal trade: Four seizures of mobulid products originating from Sri Lanka have been documented in the TRAFFIC Wildlife Trade Portal, occurring 2020-2021; three of these seizures involved gill plates destined for Hong Kong SAR that were seized by Sri Lankan customs authorities. An additional incident involved the seizure of *Mobula* spp. meat; the destination was not specified (TRAFFIC International, 2024). In October 2020, 330 kg of dried mobulid gill plates originating from Sri Lanka were reportedly seized upon arrival at Hong Kong International Airport (Manta Trust, 2020).

E. Problems identified that are not related to the implementation of Article IV, paras 2(a), 3 or 6(a).

International measures and their implications for Legal Acquisition Findings

Sri Lanka is a Party to CMS, and all seven *Mobula* species that occur in Sri Lanka were listed in CMS Appendix I in 2014. Under CMS, Parties that are range States of Appendix I species are required to prohibit the taking of these species as defined above, with exceptions only if the taking is for scientific

purposes; for the purpose of enhancing the propagation or survival of the species; to accommodate the needs of traditional subsistence users of the species; or extraordinary circumstances so require.

Sri Lanka is also Contracting Party to the IOTC. The IOTC adopted Resolution 19/03 *On the conservation of mobulid rays caught in association with fisheries in the IOTC area of competence* in October 2019, which prohibits the targeted fishing and retention of mobulid rays and requires that captured mobulid rays are released unharmed. There is an exception for subsistence fisheries, however, the Recommendation notes "that, anyhow [these fisheries] shall not be selling or offering for sale any part or whole carcass of mobulid rays". While artisanal fisheries were initially permitted to retain mobulid rays caught unintentionally for local consumption, this derogation expired on 1 January 2022.

Given these restrictions, it is unclear whether exports of *Mobula* spp. occurred in concordance with Sri Lanka's international commitments. Guidance from the Standing Committee on whether such measures would mean that CITES Legal Acquisition Findings would not be possible could be helpful, for example in the context of Res Conf. 18.9 (Rev. CoP19).

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Annex 1: Life history characteristics of *C. longimanus*, *S. lewini*, and *S. mokarran*

Table A.1: Summary of life history parameters for *C. longimanus*. TL = total length, ♂= male, ♀= female.

Life history parameter	Value	Location	Source
Adult size (TL in cm)	♂ 245+ ♀ 270+ Possibly to 350-395	Global	Compagno (1984)
	♂,♀ possibly to 350-395	Global	Ebert *et al.* (2021)
	♂ up to 268 ♀ up to 246	Western North Pacific Ocean	Joung *et al.* (2016)
	♂ up to 251 ♀ up to 266	South-west Pacific	Stevens (1984)
	♂ up to 225 ♀ up to 310	Oman	Jabado (2014)
	♂ up to 320 ♀ up to 311	Equatorial and tropical Western Atlantic	Tolotti *et al.* (2013)
	♂ up to 227 ♀ up to 265	Atlantic near northern Cuba	Ruiz-Abierno *et al.* (2021)
	♂ up to 242 ♀ up to 227	Equatorial and southwest Atlantic	Tambourgi *et al.* (2013)
	♂,♀ up to 250	Northeast Brazil	Lessa *et al.* (1999)
Size at maturity (TL in cm)	♂175-198 ♀180-200	Global	Compagno (1984)
	♂ 175-189 ♀ 175-189	Northwest Pacific	Seki *et al.* (1998)
	♂ 172 ♀ 190	West North Pacific Ocean	Joung *et al.* (2016)
	♂ 193 ♀ 224	Papua New Guinea	D'Alberto *et al.* (2016)
	♂ 220	Oman	Jabado (2014)
	♂160-196 ♀ 181-203	Equatorial and southwest Atlantic	Coelho *et al.* (2009)
	♂170-190 ♀ 170	Equatorial and southwest Atlantic	Tambourgi *et al.* (2013)
	♂ ♀180-190	Northeast Brazil	Lessa *et al.* (1999)
Age at maturity (years)	4-9	Global	Ebert *et al.* (2021)
	♂ 10 ♀ 15.8	Papua New Guinea	D'Alberto *et al.* (2016)
	♂ 6.8 ♀ 8.5	West North Pacific	Joung *et al.* (2016)
	♂, ♀ 6-7	Northeastern Brazil	Lessa *et al.* (1999)
	♂, ♀ 4-5	Northwest Pacific	Seki *et al.* (1998)
Longevity (years)	11-25	Global	Ebert *et al.* (2021)
	17	Northeastern Brazil	Lessa *et al.* (1999)
	19	South Atlantic	Rodrigues *et al.* (2015)
	♂ 18 ♀ 17	Papua New Guinea	D'Alberto *et al.* (2016)
Litter size	1-15	Global	Compagno (1984)
	1-14 mean 9.6	Southwest equatorial Atlantic Ocean	Coelho *et al.* (2009)
	1-14	Northwest Pacific	Seki *et al.* (1998)

Life history parameter	Value	Location	Source
Litter size (cont.)	mean 6.2		
	2-9 mean 6	Northwest Atlantic	Backus *et al.* (1956)
	4-8 mean 6.8	Southwest Pacific	Stevens (1984)
	10-11	West North Pacific	Joung *et al.* (2016)
	2-20 mean 8.9	Indian Ocean	García-Cortés *et al.* (2012)

Table A.2: Summary of life history parameters for *S. lewini* from published literature relevant to countries in this review. TL = total length, ♀ = female, ♂ = male. For growth rates, brackets indicate if the value is based on biannual or annual band deposition[38], where specified.

Life history parameter	Value	Location	Source
Growth rate (von Bertalanffy k, cm/year)	♂ 0.22 ♀ 0.25 (Biannual)	Northeastern Taiwan, Province of China	Chen *et al.* (1990)
	♂ ♀ 0.09 (Annual)	Indonesia	Drew *et al.* (2015)
	♂ 0.08-0.13 ♀ 0.05-0.15	Lombok, Lesser Sunda Islands Indonesia	Simeon *et al.* (2021)
	♂ ♀ 0.76	Kenya	Kiilu (2016)
	♂ 0.13 ♀ 0.16 (Biannual)	Michoacán, Mexico	Anislado-Tolentino and Robinson-Mendoza (2001)
	♂ 0.12 ♀ 0.10 (Biannual)	Southern coast of Sinaloa, Mexico	Anislado-Tolentino *et al.* (2008)
	♂ 0.13 ♀ 0.09 (Annual)	Western North Atlantic and Gulf of Mexico	Piercy *et al.* (2007)
Size at maturity (TL in cm)	♂ 140-165 ♀ 212	Global	Compagno (1984)
	♂ 198 ♀ 210	Northeastern Taiwan Province of China	Chen *et al.* (1988 in Hazin *et al.*, 2001)
	♂ 175.6 ♀ 228.5	Indonesia	White *et al.* (2008)
	♂ 170 ♀ 223	Michoacán, Mexico	Anislado-Tolentino and Robinson-Mendoza (2001)
	♂ 180 ♀ 220	Gulf of Tehuantepec, Southwest Mexico	Bejarano-Alvarez *et al.*, (2011)
	♂ 180 ♀ 250	Northwestern Gulf of Mexico	Branstetter (1987)
Age at maturity (years)	♂ 3.8 ♀ 13.2 (Biannual)	Taiwan, PoC	Chen *et al.*, (1990)
	♂ 8.9 ♀ 13.2 (Annual)	Indonesia	Drew *et al.* (2015)

[38] The most commonly used method to calculate a shark's age is to look at band pairs in an individual's vertebrae. While some studies assume that *S. lewini* puts down two band pairs per year (e.g. Chen *et al.*, 1990), the majority of studies calculate growth rates on the assumption that one band is put down per year (Harry, 2011; Drew *et al.*, 2015). Assuming annual ring growth rather than biannual ring growth results in (a) slower growth estimates and (b) higher estimates for the species' age at maturity.

Life history parameter	Value	Location	Source
Age at maturity (cont.)	♂ 9 ♀ 12.8 (Annual)	Indonesia	White *et al.* (2008)
	♂ 8.8 ♀ 15.2	Gulf of Tehuantepec, Southwest Mexico	Bejarano-Alvarez *et al.* (2011)
Longevity (years)	♂ 10.6 ♀ 14 (Biannual)	Northeastern Taiwan, Province of China	Chen *et al.* (1990)
	♂ 21 ♀ N/A (Annual)	Eastern Australia	Harry *et al.* (2011)
	♂ 19 ♀ 35 (Annual)	Indonesia	Drew *et al.* (2015)
Litter size	15-31	Global	Compagno (1984)
	12-38	Northeastern Taiwan, Province of China	Chen *et al.* (1988 *in* Hazin *et al.*, 2001)
	14-41 (mean = 25)	Indonesia	White *et al.* (2008)
	13-23	Northern Australia	Stevens and Lyle (1989)
	14-40	Gulf of Tehuantepec, Southwest Mexico	Bejarano-Álvarez *et al.* (2011)

Table A.3: Summary of life history parameters for *S. mokarran*. TL = total length, FL = fork length, ♂ = male, ♀ = female. All longevity estimates assume annual growth band deposition.

Life history parameter	Value	Location	Source
Size at maturity (cm)	♂ 234-269 TL ♀ 250-300 TL	Global	Compagno (1984)
	♂ 187 FL ♀ 224 FL	Northwest Atlantic and Gulf of Mexico	Nguyen & Piercy (unpublished data in Piercy *et al.*, 2010)
	♂ 200.56 FL ♀ 206.83 FL	Atlantic and Gulf of Mexico	Moncrief-Cox *et al.* (2021)
	♂ 225 TL ♀ 210 TL	Northern Australia	Stevens and Lyle (1989)
	♂ ♀ 227.9 TL	Eastern Australia	Harry *et al.* (2011)
Age at maturity (years)	♂ ♀ 5-6	Northwest Atlantic and Gulf of Mexico	Piercy *et al.* (2010)
	♂ ♀ 8.3	Eastern Australia	(Harry *et al.* (2011)
	♂ ♀ 8.9	Not specified	Piercy and Carlson (unpublished data in Miller *et al.*, 2014)
	♂ ♀ 7.9	Atlantic and Gulf of Mexico	Moncrief-Cox *et al.* (2021)
Longevity (years)	♂ 31.7 ♀ 39.1	Eastern Australia	Harry *et al.* (2011)
	♂ ♀ 42	United States of America Southern Atlantic	Passerotti *et al.* (2010)
	♂ 42 ♀ 44	Northwest Atlantic and Gulf of Mexico	Piercy *et al.* (2010)
Litter size	13-42	Global	Compagno (1984)
	6-33	Northern Australia	Stevens and Lyle (1989)

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GUIDANCE ON THE FORMULATION OF RECOMMENDATIONS FOR THE REVIEW OF SIGNIFICANT TRADE

Introduction

This document provides general guidance on development of recommendations for the Review of Significant Trade process. It provides guidance for structure of recommendations and a list of standard recommendations for range States for use by the Review of Significant Trade working group that is established at meetings of the Animals and Plants Committees.

The standard recommendations are provided to facilitate the work of the Review of Significant Trade working group that is established at meetings of the Animals and Plants Committees and to help ensure consistency of recommendations over time, between Committees and for different species and range States.

The recommendation

The recommendation should include a number of key components:

- the recommended action that was chosen to address problems related to the implementation of Article IV 2(a), 3 or 6(a), as identified through the review process;
- the time frame for implementation of the recommended action with a clear end-date;
- as appropriate, a final recommendation that allows the selected range State to provide feedback on how the recommended actions have improved the basis for making an NDF and how any future long-term monitoring will take place;
- a justification for the choice of recommended action with reference to the consultant's report as applicable; and
- a clear indication of to whom the recommendation is directed (e.g., range State, Standing Committee)

Recommendations for actions to be taken to improve the basis for making Non-Detriment Findings (NDFs)

Recommendations can include short-term actions that are considered to be relatively rapid to implement (e.g., interim quotas or size restrictions for export), or longer-term actions that are recognized to be more complex, resource-intensive, and time-consuming to implement. The intent of short-term actions is to provide relatively rapid means to address issues of immediate concern; however, longer-term actions may promote the development of longer-lasting solutions towards implementation of Article IV. Depending on the situation, one or both types may be appropriate. The end-point for the interim export quota or other short-term recommendations should normally be no later than the date of fulfillment of the longer-term recommendations.

All recommended actions should be developed into complete recommendations that include all key components described in part B of this annex, and should adhere to the basic principles of being time-bound, feasible, measureable and proportionate (consistent with the nature and severity of the risk), transparent and promote capacity building where appropriate.

Tables 1 - 4 provide different types of recommended actions:

- Tables 1 and 2 present suggested standard short-term and long-term recommended actions for range States, which may require refinement for the specific case (e.g., species/country combination). There may be cases where alternative recommended actions are more appropriate;
- Table 3 provides sample text for a "final recommended action" that could be considered for inclusion in the suite of recommendations for each species/country combination; and

- Table 4 provides sample text for recommended actions that are directed to the Standing Committee to address problems identified that are not related to the implementation of Article IV paragraph 2(a), 3 or 6(a).

- Table 5 provides a sample template for developing recommendations that contain all key components.

Table 1. Examples of short-term recommended actions

Problem/ Concern	**Short-term Goal**	**Recommended Action**
Export levels are unsustainable and immediate action is needed before longer term actions can be implemented	Reduce export levels	Establish, in consultation with the Secretariat and the Chair of the relevant Committee, an interim conservative export quota within xx days for the species/specimens/products and communicate the quota to the Secretariat. No exports should occur until the quota has been published on the Secretariat's website. The export quota (which could include zero allowable exports) should be justified as conservative based on estimates of sustainable off-take that make use of available scientific information. Before making any increases to this interim quota (including increases from a zero export quota), the planned changes should be communicated by the range State to the Secretariat and Chair of the relevant Committee along with a justification of how the change is conservative, based on estimates of sustainable off-take that make use of available scientific information, for their agreement.
Some aspects of harvest are of immediate concern	Reduce harvest associated with the aspect of concern to help ensure that international export is not detrimental to the survival of the species	Initiate appropriate harvest measures to ensure sustainability [*for example*]: -size-selective harvest/ -open/closed seasons/ -harvest seasons/ -harvest maximums/ -restrictions to harvest frequency, sites or time of day/ -control of number of harvesters/ -types and methods of harvest
Permit information inaccurate/variable and could be fixed immediately	Standardize permit information	Initiate measures to ensure the descriptions on all CITES permits are standardized so that export is only permitted at the species level and that it complies with Annex 1 of Res. Conf. 12.3 (Rev. CoP16); Trade ceases to be reported or permitted at higher taxon levels. -Clarify and standardize the terms and units used in reporting trade. Ensure that appropriate terms and units are recorded on permits for trade. Standardized terms and appropriate units are found in the most recent version of the *Guidelines for the preparation and submission of CITES annual reports, which is* referenced in Res. Conf. 11.17 (Rev. CoP16), and distributed by the Secretariat by Notification. -Ensure that permits issued for the species clearly and accurately indicate the source of the specimens

Table 2. Suggested longer-term recommended actions

The longer-term recommendations are organized by the four main areas of concern associated with implementation of Article IV, and may need to be refined for specific cases or for the species or range State concerned.

		Recommended action proportionate to perceived risk to the species		
Problem/ concern	**Goal**	**In order of increasing risk** →		
Lack of knowledge of population status nationally of the species (population size, trends, threats, distribution etc.)	Improving species knowledge available for making an NDF	-Undertake science-based studies on status of the species (e.g. population size/density, trends, distribution) including an evaluation of the threats to the species for use as the basis for NDFs	-Develop/Implement an ongoing science-based population monitoring program that is used in conjunction with an adaptive management program for the species (see harvest management measures and trade controls, below), for use in making NDFs	
Lack of or insufficient harvest management measures	Implement harvest management measures to mitigate impacts of export on the species	-Undertake qualitative monitoring of the scale and trends of all harvest (increasing, stable or decreasing) for use in making NDFs -Develop and implement harvest guidelines (or "best practices") describing accepted practices	-Develop and implement local management with clearly defined harvest management measures (e.g., harvest seasons, harvest maximums, restrictions to harvest frequency, sites or time of day, control of number of harvesters, types and methods of harvest)	-Develop and implement coordinated national and/or local management plans (that include harvest management considerations) with clear monitoring requirements; management is adaptive (regular review of harvest records, of impact of harvesting, adjustment of harvest instructions as necessary), harvest restrictions based on monitoring results
Lack of or insufficient export controls	Implement export controls to mitigate impacts of export on the species	-Undertake qualitative monitoring of the scale and trends of all export (increasing, stable or decreasing) for use in making NDFs	-Undertake monitoring of export; any established export limits are precautionary	-Undertake regular quantitative surveys of scale and trend of all export; establish/modify export limits according to quantitative data that is reviewed regularly, for example through an adaptive management program for the species

<table>
<tr><td></td><td></td><td colspan="3">Recommended action proportionate to perceived risk to the species</td></tr>
<tr><td>Problem/ concern</td><td>Goal</td><td colspan="3">In order of increasing risk
→</td></tr>
<tr><td rowspan="2"></td><td rowspan="2"></td><td>-initiate measures to ensure that permit information is standardized (e.g., export only at a species level, source of specimens is indicated, consistency of conversion factors, standardized units)</td><td></td><td></td></tr>
<tr><td colspan="3">-Implement/ improve a system to ensure individuals in captive / ranched / artificially propagated production systems are distinguished from wild if both wild specimens and non-wild specimens are in trade</td></tr>
<tr><td>Inadequate range State capacity</td><td>Actions to build range State capacity</td><td colspan="3">- clearly designate CITES authorities

-provide training for CITES authorities (e.g., CITES Virtual College, NDF workshops in a country or region)

-develop identification methods and materials

-share information/collaboration with other range States (exchange of NDF information, development and implementation of regional management measures)

-provide training of conservation staff in the range State

-provide information and guidance to persons and organizations involved in the production and export of specimens of the species concerned;

-facilitate information exchange among range States

-provide technical equipment and support</td></tr>
</table>

Table 3. Final Recommendation

Sample text for a “final recommended action” that could be considered for inclusion in the suite of recommendations for each species/country combination.

Final Recommended action	Goal	Recommended Action
	To assist in the evaluation of whether basis for the NDF has improved as a result of the Review of Significant Trade process	-Upon completion of other recommendations, on xx date, the range State should provide the scientific basis by which it has established that exports from their country are not detrimental to the survival of the species and are compliant with Article IV, paragraphs 2(a),3 and 6(a) of the Convention. Particular focus should be given to how the actions the range State has taken or will take address the concerns/problems identified in the Review of Significant Trade process.

Table 4. Other Recommendations

Problem/ concern	**Goal**	**Recommended Action**
Problems identified that are not related to the implementation of Article IV paragraph 2(a), 3 or 6(a)	Actions that are not directly related to the making of non-detriment findings.	Recommendations directed to Standing Committee to consider tasking the range State to [for example]: -develop and implement adequate control measures and inspection procedures to detect and intercept illegal shipments of specimens, -enact or improve legislation/regulation -rigorously enforce export bans -ensure adequate guidance and controls for captive breeding, ranching or artificially propagated operations

Table 5. Template for drafting recommendations

Complete one table for each species/country combination. Part A provides a template for recommendations directed to range States, and Part B provides a template for recommendations for consideration by the Standing Committee.

A. [*Insert name of the species/country combination*] shall report to the Secretariat on implementation of the following:

Recommended Action	**Time-frame for implementation**	**Justification for choice of recommended action**

B. The Standing Committee shall consider tasking [*insert name of the range State*] with the following:

Recommended Action	**Time-frame for implementation**	**Justification for choice of recommended action**