

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

RESPONSE OF MEXICO TO THE SECRETARIAT'S CONSULTATION ON RST
FOR *SPHYRNA LEWINI* AND *SPHYRNA MOKARRAN*

This document has been submitted by Mexico in relation to agenda item 14.3.*

* *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.*

**Response of Mexico to the CITES Secretariat's consultation
DR/TC/RST/20223/MX on the Review of Significant Trade in specimens of
Appendix II species [Resolution Conf. 12.8 (Rev. CoP87)] for *Sphyrna lewini* and
*Sphyrna mokarran***

1. Decision-making process for making non-detriment findings (NDF or NDF)

a) Explanation of how the Scientific Authority formulates an NDF

At the request of the Management Authority (Dirección General de Vida Silvestre de la Secretaría de Medio Ambiente y Recursos Naturales, DGVS-SEMARNAT), the Scientific Authority (National Commission for the Knowledge and Use of Biodiversity, CONABIO) issues non-detriment findings (NDF) for each request to export CITES-listed Mexican shark specimens.

NDFs are issued at the species level and by coastline, following standardized protocols and based on the best available scientific information on their biology and populations, vulnerability assessments, fishery management risk, catch reconstruction and maximum sustainable yield models based on national catches that provide the basis for Sustainable Export Volumes (VES).

Sustainable Export Volumes (VES)

Based on the results of the "[Workshop on Strengthening technical and administrative capacities in the issuance of export permits for Mexican sharks listed in CITES](#)" (CDMX, 2019), CONABIO and the National Institute of Fisheries and Aquaculture (INAPESCA) held working meetings and jointly agreed on methodologies and criteria to establish reference values for Sustainable Export Volumes (VES) for each shark species and coastline:

- a) The concept of Maximum Sustainable Yield (MSY) from catches developed by Martell and Froese (2013) with a simple surplus production model of Schaefer (1954) was used as a reference point (see details of the methodology in section 2d on population estimation).
- b) Reconstruction of catches by species was performed from:
 - I. Data from the Statistical Yearbooks of Aquaculture and Fisheries published by the National Commission of Fisheries and Aquaculture ([CONAPESCA](#)), with proportions obtained from INAPESCA's Onboard Observer Program, information collected by the Shark Program Research Projects of the Regional Centers for Aquaculture and Fisheries Research (CRIAP) and with the support of experts from the Center for Scientific Research and Higher Education of Ensenada (CICESE).
 - II. The information was complemented with thesis publications, scientific articles and gray literature (see "Catch reconstruction" section in the References section).

- c) In 2020 the VES were tested as pilot reference values.
- d) Subsequently, CONABIO and INAPESCA, in collaboration with academic experts from CICESE, refined the methodology to establish the VES that were presented to the DGVS-SEMARNAT and CONAPESCA and agreed to start using them.
- e) The values of the VES used by CONABIO are public in the web page bit.ly/mitiburon, for the monitoring of available balances for each species and coastline and are constantly updated (Table 1).
- f) When a species/coastline reaches 100% of the sustainable volume, the Scientific Authority issues negative NDFs and the issuance of export permits by the Management Authority is suspended.

Additionally, CONABIO collaborates with a cross-sectoral working group¹(composed of academic experts from 9 institutions including: universities and research centers, civil society, INAPESCA and CONABIO) to refine the analysis and reconstruction of shark catches and strengthen the VES in order to use catch-based surplus production models (Froese *et al.*, 2016, 2017) and more subsequently integrate additional information (e.g. lengths) to develop an age-class structured model.

Table 1. Estimated Sustainable Export Volumes (VES) for each coastline for Mexican shark species listed in CITES prior to CoP19.

Species	Litoral	VES 2023** (ton)
<i>Carcharhinus falciformis</i>	Pacific	2,298.58
	Atlantic	373.3
<i>Carcharhinus longimanus</i>	Pacific	229.1
	Atlantic	3.84
<i>Sphyrna lewini</i>	Pacific	1,958.60
	Atlantic	2,062.32
<i>Sphyrna mokarran</i>	Pacific	29.11
	Atlantic	370.99
<i>Sphyrna zygaena</i>	Pacific	265.02
	Atlantic	*
<i>Alopias pelagicus</i>	Pacific	395.69
	Atlantic	*
<i>Alopias superciliosus</i>	Pacific	131.9
	Atlantic	3.84
<i>Alopias vulpinus</i>	Pacific	203.09
	Atlantic	*
<i>Isurus oxyrinchus**</i>	Pacific	890.8
	Atlantic	0

*The capture of these species on these coasts is infrequent.

** *Isurus paucus*: considering its marginal records, it is included within the VES of *I. oxyrinchus*. NA: the conditions in which the wild population is found do not allow its sustainable capture/export.

It should be noted that the total landed weight reported in the arrival notices is deducted from the VES, regardless of the result of the NDF (positive, partial positive or negative) or whether the CITES export permit was granted, since the specimens were taken from the wild.

¹ CICESE, UNAM, INAPESCA, CONABIO, CICIMAR, ECOSUR, Universidad de Quintana Roo, SOMEPEC A.C. and independent researchers.

Integration and validation of information for issuing NDFs

The Scientific Authority analyzes the information received in the requests, mainly the arrival notices (official document where the fishermen register the catches by species), to:

1. From the weight of the dry fin requested for export, the landed full body weight is calculated using species-specific conversion factors compiled by CONABIO (Annex 1) to estimate the correspondence with the landed weight.
2. Evaluate whether the landed weight of whole shark is within the Sustainable Export Volumes (VES).
3. Check that the catch has been made within the authorized seasons respecting the established closures to protect the species in its most vulnerable stages (Annex 2).
4. Review that the catch is sustainable in line with the recommendations of the Regional Fisheries Management Organizations (RFMOs) to which Mexico is a party (IATTC, ICCAT), taking into account measures such as catch restrictions and retention percentages for certain species:
 - a. IATTC: Resolution C-16-06 limits silky shark bycatch to 20% (larger vessels).
 - b. ICCAT: Recommendation 09-07 prohibits the retention and commercialization of any part of bigeye thresher shark (*Alopias superciliosus*) except for small-scale Mexican coastal fisheries with a catch of less than 110 specimens. Recommendations 10-07 and 10-08 prohibit the retention and commercialization of any part of the oceanic whitetip shark and those of the genus *Sphyrna* (except *S. tiburo*). Recommendation 11-08 prohibits the retention and commercialization of any part of silky sharks except for coastal fisheries that use the resource for local consumption.

Based on the above, a positive, partial positive or negative opinion is issued on the quantity of specimens to be exported.

In the years prior to the implementation of the VES (2014-2019), in addition to the analyses described in points 1, 3 and 4 (above):

- a) It was taken into account that, based on the assessments of shark fisheries in both coasts, INAPESCA determined that they were exploited to the maximum sustainable level according to the [National Fishing Charter](#).
- b) The level of vulnerability of the species by coastline was considered (Annex 1) estimated with the methodology of Patrick and collaborators (2010) adapted in a collegiate manner among academic experts, CONAPESCA, INAPESCA, Civil Associations and fishermen (Benítez et al., 2015); and the risk by management (MRisk, adapted from Lack et al., 2014). These values were differentiated by species, coastline, fishing zone and type of vessel (artisanal or offshore) to determine the type of opinion (positive, partial positive or negative).

It is worth mentioning that this and other complementary information has been previously provided to CITES through responses to Notifications to the Parties and

presented in working documents in different Animals Committees and Conference of the Parties (Annex 3).

b) Details and role of institutions, expert(s) or stakeholder(s) involved in making non-detriment findings, other than your designated Scientific Authority

As part of the process to generate, integrate and analyze technical and scientific information to make NDF of Mexican sharks, CONABIO collaborates with key national and international stakeholders, including the governmental fisheries sector (CONAPESCA and INAPESCA), academia, producers and NGOs. Additionally, it actively participates in international forums to increase the available information networks (Figure 1).

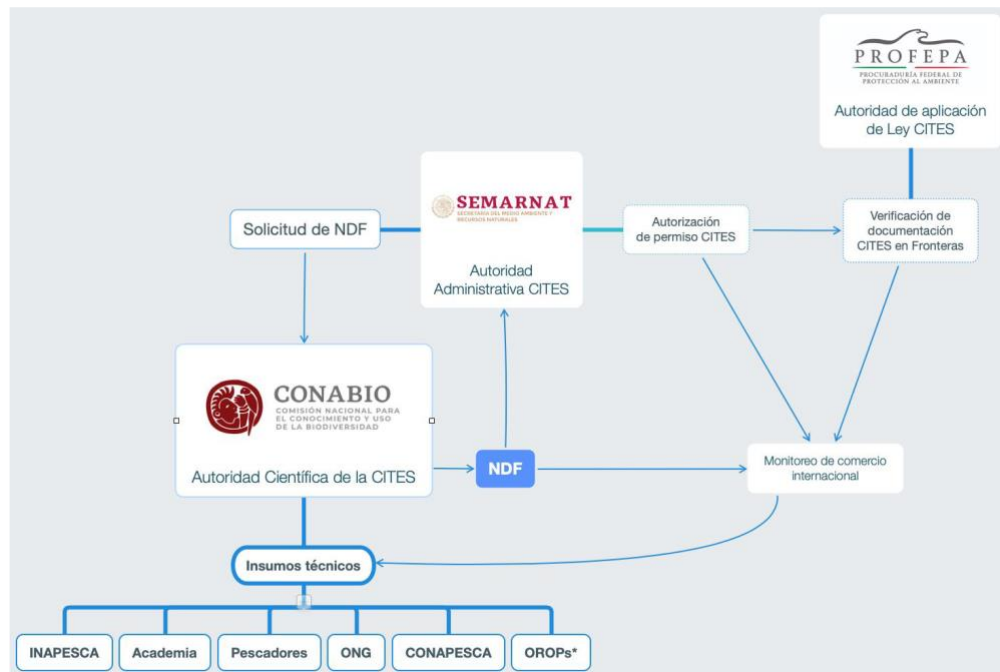


Figure 1. Outline of the main actors that provide information to CONABIO for the elaboration of NDF. *Currently collaborating with the Government of Germany on an initiative to strengthen the work of CITES Parties with RFMOs.

Government

The National Commission of Aquaculture and Fisheries in Mexico (CONAPESCA) is responsible for the management, promotion of quality fisheries and aquaculture with transparency and the development of coordination mechanisms with different agencies to implement policies, programs and regulations that lead and facilitate the competitive and sustainable development of the country's fisheries and aquaculture sector, to increase the welfare of Mexicans.

CONAPESCA collaborates with the Scientific Authority by sharing information on fishing catches, which has made it possible to have robust data for calculating the VES.

The National Institute of Fisheries and Aquaculture (INAPESCA) is responsible for directing, coordinating and guiding scientific and technological research in fisheries and aquaculture, as well as the development, innovation and technology transfer required by the fisheries and aquaculture sector. INAPESCA has 14 Regional Centers for Aquaculture and Fisheries Research (CRIAP) and 3 biological fishing stations, each located in strategic coastal areas for the regional study of marine species. Important collaborations have been generated with these centers and the most relevant for shark species are: Ensenada, Mazatlán, Bahía de Banderas, Manzanillo, Salina Cruz, Veracruz and Ciudad del Carmen. Their specialists carry out research on the productive and sustainable development of the fishing and aquaculture sector for shark species and are among the most important collaborators, together with academia, that have participated in the establishment of the criteria and analysis of information for the estimation of the VES as a basis for formulating the NDF.

Academy

More than 35 experts from 12 academic institutions have collaborated with the Scientific Authority in the processes of analysis and exchange of information on the populations and basic biology of the species and have actively participated in the workshops and meetings where the PSA, MRisk and VES assessments that form the basis for the NDFs were produced.

These institutions are: 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 and Universidad Veracruzana.

NGO's

Non-governmental organizations have been key in the exchange of unpublished information that is also considered for the development of the NDFs and the link with experts, the dissemination of analyses carried out by the Scientific Authority and the contact with fishermen for the development of capacities in the filling out of the arrival notices (basis for obtaining information on shark catches).

The main NGOs that have collaborated with the Scientific Authority are: WWF-Mexico, SOMEPEC A.C., IEMANYA Oceánica A.C., ECOSIMATI, Pelagios Kakinjá, A.C., Causa Natura and COBI A.C.

RMFO's

Currently, through the initiative of the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) and the Agency for Nature Conservation (BfN), the project "Improving synergies between Regional Fishery Bodies (RFBs) and Regional Fisheries Management" is being implemented, which will assist with the implementation of priority measures for CITES through workshops to identify information generated by RFMOs for strengthening NDFs. The project is based on the recognition that RFMOs and CITES share common objectives in the recovery of depleted stocks, as well as legal and sustainable elasmobranch fisheries and trade. The project, in which CONABIO and

INAPESCA have participated in its forums, brings together experts, including government officials, representatives of fisheries and conservation agencies, scientists and other interested parties to identify strategies to more effectively coordinate and deliver the protection and conservation of elasmobranchs and build bridges between CITES and fishing communities.

In the following link you can consult a map with the key actors that supports the activities of information generation for decision making in the elaboration of the NDF: <https://www.google.com/maps/d/u/0/edit?mid=1XDZtDcX45wmDwhxNBEwDlSkZsw4b6-o&usp=sharing>

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

The Scientific Authority collaborates with the Management Authority and the Law Enforcement Authority to ensure that CITES export permits that are issued have a positive opinion and that the quantity actually exported (verified at ports, airports and borders) is within what is authorized in the permits.

To this end, CITES Authorities share information on NDFs, CITES permits and Verification Registers issued for these species and correlations are analyzed (see details in section 4 on trade).

2. Population

d) Details of the conservation status of the species in your country, (provide published references and other data sources as appropriate), such as:

- **geographic distribution / extent of presence**

Populations of these hammerhead shark species (*Sphyrna lewini* and *Sphyrna mokarran*) inhabit the waters of the Gulf of Mexico and Caribbean Sea, according to the National Fisheries Charter (DOF, 26/07/2022). This agrees with the distribution of both species reported by the IUCN (Rigby *et al.*, 2019ab) and the species distribution maps according to FAO (FAO, 2020a,b).

Recent genetic studies using microsatellites indicate that *S. lewini* populations can be divided into 4 subpopulations (West Indian, Indo-Central Pacific, Central Pacific, Central Pacific and Tropical East Pacific (Green, *et al.*, 2022). Despite being a migratory species, *S. lewini* populations in the Mexican Pacific are found within the tropical East Pacific subpopulation and are genetically separated from other populations of the species. Even in Mexico, differences have been found in sites sampled in the north Pacific, central and Gulf of California (Castillo-Olguin *et al.*, 2012; Elizondo-Sancho, *et al.*, 2022).

Using microsatellite markers, Testerman (2014) found that *S. mokarran* populations from the Mexican Atlantic are closely related to the interior of the Gulf of Mexico and have very little interaction with Atlantic and Indian Ocean populations. A similar pattern was reported for *S. lewini*, where there is a distinct genetic structure within the Gulf of Mexico and distinct from the rest of the Atlantic (Duncan, *et al.*, 2006; Chapman, *et al.*, 2009).

Sphyrna lewini

This species of hammerhead shark is the most common in tropical waters, is caught in artisanal coastal fisheries, as well as in oceanic fishing operations, and is one of the 10 most commercially important species in the Mexican Pacific. The most commonly used fishing gear is surface and bottom longlines (Compagno et al., 1995 and Soriano-Velásquez et al., 2006). In the Gulf of Mexico, it was one of the nine main species documented in the artisanal shark catch during the 1993-1994 fishing season, where longlines and surface and bottom gillnets were used (Castillo-Géniz et al., 1998, Castillo-Géniz, 2001).

In a study of the Gulf of California fishery during 1998-1999, the common hammerhead shark was described as one of the main species caught, especially in the states of Baja California Sur and Sinaloa in spring. Shark fisheries in the Gulf of California region, including hammerheads, are mainly conducted with bottom gillnets, although surface gillnets and bottom and surface longlines are also occasionally used (Bizzarro et al., 2007).

Sphyrna mokarran

The giant hammerhead is distributed in Mexican tropical waters, being reported in the Gulf of Mexico (Castillo-Géniz et al., 1998; Oviedo et al., 2009), Gulf of California (Kato, 1965) and in the Mexican Caribbean (Schmitter-Soto et al., 2000). The first record of *S. mokarran* in Mexican continental waters is from the Tuxpan River and Chiltepec Lagoon in Veracruz. Apparently, the juvenile phase is when it occurs in estuarine and freshwater regions (Castro-Aguirre, 1978). There are historical records of catches by the Mazatlan shark fleet, although the total number of individuals caught is not available (Kato, 1965).

In the Gulf of Mexico, juveniles and adults migrate north during the summer, while gravid females travel to more tropical latitudes during the winter months (Castro, 2011).

- **population situation and status**

In the IUCN publications updated in 2018 for *S. lewini* (Rigby et al., 2019a) and in 2018 for *S. mokarran* (Rigby et al., 2019b), the populations of both species present off the Mexican Pacific coast were not assessed due to lack of information. Similarly, for both species, the 1994-2017 data cited in these assessments show signs of stability or even recovery in the Gulf of Mexico. As a precautionary principle and considering declines in other populations worldwide, the IUCN lists both species as Critically Endangered with a declining trend.

The populations of *S. lewini* and *S. mokarran* in the Atlantic are currently in a better state than in the 1993 baseline. Recently, Pacoreau and collaborators (2023), after applying Bayesian models with the available time series of catches, have found positive trends in the Gulf of Mexico after 1993 with the implementation of fishery management plan measures in the area (Figure 2).



Figure 2. Shows population trends of *S. lewini* (Scalloped Hammerhead) and *S. mokarran* (Great Hammerhead) in the Atlantic. Gray lines denote 95% credible intervals resulting from Bayesian modeling of their population relative to 1993 status. Dark green lines denote increments at 80%, light green lines denote increments at 50%, orange lines decrements at 50%, and red lines decrements at 80%.

The evaluations carried out by INAPESCA in the Fishery Management Plan for Sharks and Rays in Mexico and according to what is published in the [National Fishing Chart](#), the shark fisheries in both coasts are exploited to the maximum sustainable level.

In line with the above, since 2020 CITES Authorities, Fisheries Authorities and academic experts estimated Sustainable Export Volumes (VES; public on the page of the CITES Scientific Authority of Mexico: bit.ly/mitiburon) based on the report of ISC-SWG (2018) for *I. oxyrinchus* and the catch reconstruction methodologies of Saldaña-Ruiz (2017) and Catch-MSY (Martel and Froese, 2013) for the rest of the species. This process is detailed in the following section on population estimation.

- **population estimate and trends**

In order to carry out stock assessments of species included in CITES Appendix II (prior to CoP19), a historical reconstruction of catches was carried out based on information from the Statistical Yearbooks of Aquaculture and Fisheries from 1937 to 2014 (Ministry of the Navy 1937-1969, Department of Fisheries 1979-1981, Ministry of Fisheries 1982-1994, Ministry of Environment, Natural Resources and Fisheries 1995-2001, Ministry of Agriculture, Livestock, Rural Development, Fisheries and Food 2002-2014). Because in those yearbooks sharks are not classified by species, the methodology of Saldaña-Ruiz (2017) was followed to perform the reconstruction of catches in both coasts. For the definition of catch proportions for each species, the best available information for each Mexican coast was used. For the definition of stocks, the definitions of the distribution of each species defined in section 2b were used as a reference. The processing of this information is detailed below:

Historical reconstruction of the catches in the Mexican Pacific Ocean

Two periods of data were considered to estimate the proportion of representation in the Mexican Pacific catches:

- Period 2006-2014: proportions by species and by year were used from the database of the On-Board Observer Program in Baja California and Sinaloa (POT) in conjunction with the species composition of artisanal fisheries of Mexican Pacific sharks resulting from the joint review of CONABIO, INAPESCA and CICESE of 108 scientific publications from 1990-2017 that include scientific

articles, books, theses, congress proceedings and technical reports from INAPESCA (see section on "Catch reconstruction" in the References section).

- b. Period 1937-2005: the maximum proportion per species for the years 2006-2014 was used as a base, and this value was weighted considering the historical environment of fisheries in Mexico (Saldaña-Ruiz, 2017) that modeled the fishing effort in that period. These analytical approaches and assumptions are described in Table 2.

The final proportions used to reconstruct the time series of CITES-listed species up to before CoP19 (Panama, 2021) for the Pacific are given in Table 3.

Historical reconstruction of catches in the Atlantic (Gulf of Mexico and Caribbean Sea).

Due to the type of fishing (artisanal) carried out in the Gulf of Mexico and the Caribbean Sea, there is no On-Board Observer Program, so data from catches collected at the Fisheries Offices (CONAPESCA) and from landing samples at different sites reported in specific studies carried out by INAPESCA were used, as well as the historical fishing factors in Mexico from Table 2.

Surplus production model.

Once the historical catches by species and coastline were obtained, the method developed by Martell and Froese (2013) was applied, which uses a simple Schaefer (1954) production model in which MSY is calculated only for r-K pairs that do not exceed carrying capacity values or collapse to the stock subsequent to the last year of the time series. This requires:

1. Time series with total catch: the reconstructed time series for the Pacific and Atlantic were used.
2. Initial relative biomass: the initial data for the lower and upper limits of the initial relative biomass were 0.8 and 0.9, assuming that this represented 80% and 90% of the carrying capacity, respectively.
3. Decline level: the B_e/K relationship was used to calculate this, where B_e is the biomass of the last year, as a function of the ratio of the last year's scaled catch to the maximum catch of the time series: C_e/C_{max} (C_e is the last year's catch and C_{max} is the maximum catch of the time series), when $C_e/C_{max} > 0.5$ then $B_e/K \in [0.3, 0.7]$, and when $C_e/C_{max} \leq 0.5$ then $B_e/K \in [0.01, 0.4]$.
4. Carrying capacity (K) values (Zhou and Sharma 2013): as a lower value of the carrying capacity, the value in weight of the highest annual catch (record year) was considered (Martell and Froese, 2013), and as an upper value, 50 times the value of the maximum catch was taken, assuming that the catch never exceeded 0.5% of the carrying capacity.
5. Intrinsic rate of population increase (r): the values in Table 4 were used and a uniform distribution was assumed.

Table 2. Historical fishing factors of the shark fishery in Mexican waters used for the weighting of the historical catch reconstruction (1937-2014). Source Saldaña Ruiz, 2017. Table references are in the original source.

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-Carvalho 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-Carvalho 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 <i>et al.</i> 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 <i>et al.</i> 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

Table 3. Proportion of the catch in weight of Mexican shark species listed in CITES before CoP19 for the Mexican Pacific (A) and Atlantic (B).

A. Proportions by species for the Pacific									
Year	A. pela	A. super	A. vulpi	C. falci	S. lew	S. moka	S. zygae	C. longi	Others
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. Proportions by species for the Atlantic									
Year	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			

Table 4. Values of the intrinsic population growth rate (r) for *Sphyrna lewini* and *S. mokarran* used in the last estimation of the VES.

Species	r (min - max)	References
<i>Sphyrna lewini</i>	0.055 - 0.24	Cortés (2002, Anislado-Tolentino <i>et al.</i> (2008)
<i>Sphyrna mokarran</i>	0.055 - 0.1059	Carrier <i>et al.</i> (2010)

For each of the species, 30,000 Monte Carlo simulations were carried out, and then the biomass in year t (B_t) was divided by the biomass that would generate the MSY (MSY) to observe its trend over time. Once the input elements for the model were obtained, the MSY was estimated and the corresponding graphs were made using

the programming language R studio version 3.6.1. (Programming Language for Statistical Computing and Graphics software, Boston, MA) with the "Schaefer" functions and the "ggplot2" package (Wickham, 2016).

Considering both coasts, the current estimate of biomass at MSY is 4,020.92 full-body tons for *S. lewini* and 400 tons for *S. mokarran*.

- **other biological and ecological factors that may be relevant**

Not applicable.

3. Threats

e) Identify known threats to the species in your country (e.g., habitat destruction, disease, persecution, other exploitation of the species, e.g., bycatch, invasive species, etc.) and what measures (if any) are being implemented to reduce these threats.

Fisheries

For both *S. lewini* and *S. mokarran*, the morphology of their heads increases susceptibility to capture by fishing gear used in target and bycatch fisheries. Threats from fisheries worldwide have been documented by Gallager and Kimley (2018), Rigby and collaborators (2019a,b), Saldaña-Ruiz and collaborators (2022), and Furundarena-Hernández and collaborators (2022). In Mexico there is directed capture in greater proportion by artisanal vessels and bycatch by gillnets (used for catching scale fish; Maguire *et al.*, 2006; Bizarro *et al.*, 2007; Salomón Aguilar *et al.*, 2009). In addition, the commercial value of fins for both species is high, especially in Asian markets (Clarke *et al.*, 2006, Clarke *et al.*, 2004).

In Mexico, since 1993, a moratorium on shark permits was applied in order not to increase the existing fishing effort. This implies that no new permits are issued for the capture of this resource, except in the case of replacing discarded vessels or renewing permits (DOF 2012). The Mexican Official Standard nom-029-pesc-2006 Responsible fishing of sharks and rays, establishing specifications for their use, has the purpose of inducing the sustainable use of these species and is a set of provisions applicable to all fisheries targeting sharks and rays, which prohibits the exclusive use of the fins of any shark species and that in no case may they be landed if their bodies are not on board the vessel, as well as limiting the total effort for shark catch.

In Mexico, the National Fishing Chart (CNP) contains the summary of information from the diagnosis and comprehensive evaluation of fishing activity (DOF 2012), as well as indicators on the availability and conservation of fishery resources in waters under federal jurisdiction. The sheets in this letter contain the description of the species (common and scientific name), fishing indicators, allowable fishing effort, behavior of the fisheries, geographic location of the fishing areas, description of the fishing systems, guidelines and management measures. In it (DOF 2012) it is recommended not to increase the authorized fishing effort and to reduce the authorized fishing units in case the fishing permits are not exercised (Saldaña-Ruiz

and collaborators, 2022). In fishing permits for small boats, the number of permits remained relatively constant throughout the 2011-2017 period.

Similarly, RFMOs have implemented the prohibition of finning in fisheries that apply their recommendations, by requiring that fins remain on the shark's body at the time of commercialization and that the weight of the fins does not exceed 5% of the total body weight of the sharks caught.

In order to protect an important fraction of the reproductive stock of the main species of sharks and rays that are commercially exploited, by reducing the catch of gravid females and neonate sharks, the Agreement that establishes the closed seasons and areas for shark and ray fishing in Mexican waters was published. The closed period covered from June 12 to July 31 in 2012, while in 2013 it was closed from May 1 to July 26 in the Pacific Ocean. In the Gulf of Mexico and Caribbean Sea, it was: Tamaulipas, Veracruz and Quintana Roo from May 15 to June 30, during the period from May 1 to June 30 of each year. In Tabasco, Campeche and Yucatan from May 15 to June 15 and thereafter from August 1 to 29 of each year.

Loss of habitat

Another possible risk that could cause negative impacts on the populations of both species is the loss of habitat in specific breeding areas, due to degradation and contamination of coastal ecosystems, for example, heavy metals and agricultural, livestock and industrial waste, as a consequence of various economic activities (e.g. tourism, oil, port, agricultural and industrial) that are developed in the Mexican coastal zone (Gutiérrez Galindo *et al.*, 1994; Padilla and Sotelo, 2000; Hueter *et al.*, 2005; Bessudo *et al.*, 2011).

In Mexico there are legal instruments for conservation: General Law of Ecological Equilibrium and Environmental Protection, General Wildlife Law, nom-059-semarnat-2010.

Establishment of Natural Protected Areas (Biosphere Reserves, National Parks, Flora and Fauna Protection Areas). Program for the Conservation of Species at Risk (PROCER), whose objective is to promote sustainable development and establish the bases to: guaranteeing a healthy environment for development, health and well-being; defining environmental policy; preservation, restoration and improvement of the environment; preservation and protection of biodiversity, and the establishment and administration of Natural Protected Areas; sustainable use, preservation and restoration of soil, water and other natural resources, so that they are compatible with obtaining economic benefits and society's activities with the preservation of ecosystems; prevention and control of pollution. Derived from this, a total of 176 Natural Protected Areas of Federal jurisdiction. Within these, there are a number of NPAs that provide or have the potential to provide protection to elasmobranchs directly or indirectly.

Climate change

On the other hand, climate change may also represent a threat to the conditions in which both species live now (*S. lewini*) and in the future (both species). According to

Reyes-Bonilla and collaborators (2021) climate scenarios indicate that for Mexico's oceans there will be changes in sea level and in the intensity of storms and hurricanes, while the physicochemical conditions of the seas will be altered by increases in temperature, oxygen concentration, primary productivity, and ocean acidification:

- A vulnerability assessment was carried out with the changes expected to be observed in temperature, primary productivity, and the amount of oxygen in Mexico's seas by 2050 for different species including hammerhead sharks.
- For the analysis, the SSP5 (SSP585) scenario, which reflects fossil fuel driven development, and SSP1 (SSP126), which reflects sustainability for the 2050 horizon, were used. Predictions were made for the following oceanographic variables, within a 30 km radius around each community: sea surface temperature, primary productivity and dissolved oxygen, taken from the Max-PlanckInstitut für Meteorologie.

For *Sphyrna lewini*, which is currently distributed along 460,000 km² of coastline, and in adjacent waters: under the SSP126 scenario, an increase in its area of occurrence of 2% is predicted, while under the SSP585 scenario (warmer and less productive conditions), it would decrease by only 1%, and these changes occur in the most tropical portion of the Mexican Pacific, as well as in Veracruz and Tabasco in the Gulf of Mexico. On the other hand, it is suggested that this shark could increase its presence in the interior of the Gulf of California, which would indicate that oceanographic conditions there would become more suitable for its presence (Figure 3). Other models (Rodríguez-Burgos, *et al.*, 2022) indicate that considering scenarios of greater acidification, the species could migrate southward.

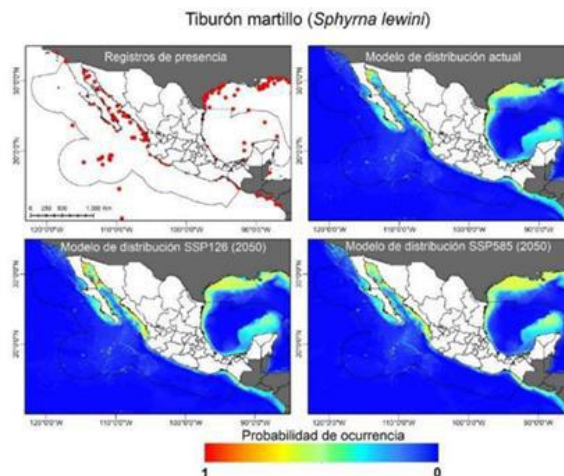


Figure 3. Maps of current and potential (year 2050) distribution of hammerhead sharks *Sphyrna lewini* according to SSP126 and SSP585 climate change scenarios (Taken from Reyes-Bonilla *et al.*, 2021).

The great hammerhead shark (*Sphyrna mokarran*) is currently distributed over an area of approximately 272,000 km², especially in the waters of the Gulf of Mexico. According to the SSP126 scenario, the species would suffer a decrease in its total area of occurrence of 13%, while under the SSP585 scenario the decrease would only be close to 5%. In the Gulf of Mexico, this shark remains practically stable in its area of occurrence, but in the Pacific and Gulf of California its presence would decrease, although the species is not very common (Figure 4).

Currently, Mexico's legal framework on climate policy is robust, it provides a set of tools to face future disturbances, and is supported by a series of international treaties and agreements to which Mexico has adhered. The tools provided for in the General Law on Sustainable Fisheries and Aquaculture, i.e. fisheries management, fisheries management plans and the granting of concessions and permits become indispensable legal instruments for resilience and adaptation to climate change.

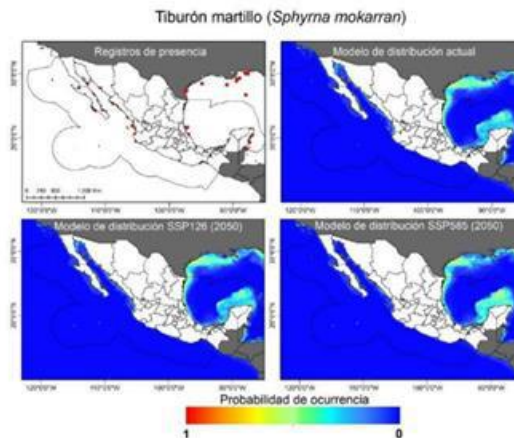


Figure 4. Maps of current and potential (year 2050) distribution of hammerhead sharks *Sphyrna mokarran* according to SSP126 and SSP585 climate change scenarios (Taken from Reyes-Bonilla et al., 2021).

4. Trade

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

The DGVS-SEMARNAT is the Management Authority responsible for submitting to CITES the annual reports of international trade in Mexican species listed in CITES. Reported trade includes the amount authorized and issued in CITES permits up to the cut-off date of the annual report. Some users subsequently request the cancellation/substitution of their permits based on their own interests. Therefore, the information presented in this document constitutes the value actually authorized in each year and the Management Authority will request UNEP-WCMC to update the values in the database.

Based on information provided by CONABIO (NDF), DGVS-SEMARNAT (CITES permits) and PROFEPA (verified exports at ports, airports and borders), Table 5 presents the quantities of fin in international trade for both species for the period 2017 to 2021.

Since the species were listed in the Appendices, the total number of CITES permits authorized by DGVS-SEMARNAT are supported by NDFs issued by CONABIO and the quantities verified at ports, airports and borders by PROFEPA are lower than those authorized.

Table 5. International trade ruled positive in CONABIO's NDF, authorized in CITES permits by DGVS-SEMARNAT and effectively exported according to PROFEPA verifications (2017-2021). Values rounded to the nearest kg.

International trade <i>S. lewini</i> fins (kg)					
Year	2017	2018	2019	2020	2021
NDF (CONABIO)	8654*	222	4631	5293*	6862*
CITES Permit (DGVS)	8545	222	3846	4917	6783
Verified export (PROFEPA)	1896	100	3431	4233	2191
International trade <i>S. mokarran</i> fins (kg)					
Year	2017	2018	2019	2020	2021
NDF (CONABIO)	141.12*	663.30	1366.92*	890.11	1264.02
CITES Permit (DGVS)	141.12	207.30	1366.93	890.11	698.50
Verified export (PROFEPA)	0.00	0.00	1354.00	889.50	701.52

*Due to the operation of the commercialization chain (fin drying times, national commercialization, CITES permit applications, customs procedures for the exit of the product, etc.), the quantity reported (NDF) as well as the quantity verified (actually exported) may include values from years prior to the issuance of the CITES permit.

In order to improve national and international records of trade in CITES-listed Mexican shark species, Mexico has urged CITES Parties not to accept CITES permits without verification by PROFEPA in Box 14 since [Notification to the Parties 988 of October 13, 1997](#) and with reminders in the Animals Committees ([AC29-2017](#), [AC30-2018](#) and [AC31-2021](#)).

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

According to PROFEPA, no irregular export attempts of specimens of *Sphyrna lewini* and *S. mokarran* species have been detected in Mexico in the last 5 years.

The General Directorate of Environmental Verification and Inspection in Ports, Airports and Borders of PROFEPA (DGVIAPAyF), as part of its functions, monitors the press sites of government agencies of "countries of interest", as well as news sites on the Internet, on a daily basis. Thus, it was detected that on February 18, 2023, the Customs Service of the Hong Kong Special Administrative Region, issued a press bulletin communicating the detection and seizure of a shipment, at the International Airport of that city, with 1.2 tons of shark fins, presumably of protected species, without specifying which ones, coming from Mexico; the value in Hong Kong dollars is 40 million (\$ 5,097,640 US dollars) and the case and investigations are in charge of the Agriculture, Fisheries and Conservation Department of the Hong Kong government (Hong Kong Customs Service press release, February 18, 2023: https://www.customs.gov.hk/en/customs-announcement/press-release/index_id_3660.html?p=3&y=&m=).

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

PROFEPA carries out the verification of export shipments, with the purpose of ensuring that the foreign trade actor complies with the provisions of Article 36-A of the Customs Law and promotes the clearance of its goods under a customs regime such as import or export, temporary or definitive. In this case, the documentary verification and physical review of the merchandise is carried out in accordance with a Procedures Manual published in the Official Gazette of the Federation ([Manual of procedures for the import and export of wildlife, forest products and by-products, and hazardous materials and waste, subject to regulation by the Ministry of Environment](#)

[and Natural Resources. DOF 29/01/2004](#)) and, if the legal requirements are met, a certificate is issued for use in customs clearance and the CITES permits issued by the Mexican Management Authority are discharged.

The identification of hammerhead shark species (*Sphyrna lewini* and *Sphyrna mokarran*) in Mexican federal jurisdiction waters is based on the diagnosis of morphological characteristics, so identification guides for specimens, fins and trunks of Mexican sharks have been made available to the staff of inspectors who operate the verification of export shipments of these species, in a shared site in the cloud.

Likewise, catch records allow CONAPESCA to identify which species are fished daily in Mexico. The arrival notices filled out by fishermen are the documents that report to the competent authority the volume of catch obtained by species, as well as the species (scientific and common name) during a fishing day or trip and their completion is mandatory (Art. 4, section VI of the General Law of Sustainable Fisheries and Aquaculture - LGPAS). This link in the production chain is constantly being reinforced through training courses given by CONAPESCA, INAPESCA and CONABIO in conjunction with NGOs such as WWF-Mexico and SOMEPEC, A.C. where identification materials are also used and shared.

Annex 4 details the identification materials developed/used and the training courses that have been carried out, aimed at both fishermen and marketers, as well as the authorities.

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

Mexico does not have export quotas as an instrument for the regulation of international trade of CITES species of fauna and flora. However, Mexico has instruments at the national level, such as Laws, Regulations, Mexican Official Standards (NOM), the National Fishing Charter and the establishment of methodologies to determine Sustainable Export Volumes (VES), whose contents add efforts to promote the sustainable use of sharks, as well as the conservation and protection of elasmobranch species.

j) Include information on how captive-bred or artificially propagated specimens differ in trade from wild-caught specimens, as appropriate.

Not applicable, because there are no specimens bred in captivity to be used for trade and export. Although there is captive management in Mexico for sharks (e.g. aquariums), the environmental requirements are complex and their biological characteristics (late sexual maturity, longevity, low reproduction, among others) make their commercial use impractical due to the care involved (e.g. diseases, adaptation problems).

5. Species management (exploitation in the wild)

k) Provide information on the harvest/trade management measures currently in place (or proposed), including any monitoring programs, threat assessments,

adaptive management strategies and compliance level considerations, and/or harvest or trade quotas (for both domestic and international markets, including how quotas are determined and how they are allocated regionally, as appropriate).

National management of hammerhead shark species *Sphyrna lewini* and *Sphyrna mokarran* in Mexico is under the responsibility of the National Commission of Aquaculture and Fisheries (CONAPESCA), based on technical opinions from the National Institute of Aquaculture and Fisheries (INAPESCA).

CONAPESCA regulates the issuance and renewal of fishing permits based on Art. 8 sections IX and XXII of the [General Law for Sustainable Aquaculture and Fisheries](#) (LGPAS, SAGARPA, 2007). Currently, it is not allowed to increase (permits) the fishing effort for shark fishing, according to the provisions of numeral 4.3.1 of [NOM-029-PESC-2006](#) (DOF 02/14/2007).

Shark fishing permit holders have a permit issued by CONAPESCA and the concessionaire or permit holder must always have on board the document proving that the vessel is authorized to operate, which must have Mexican registration and flag and be registered in the National Maritime Public Registry, under the terms of the Navigation Law, as well as in the National Fishing and Aquaculture Registry (Art. 46 of the LGPAS).

After catching shark specimens, shark fishing permit holders must fill out the notice of arrival form Annex 5 for both large and small vessels (Art. 4, section VI of the LGPAS). This notice of arrival can be filled out in person at one of the [103 fishing offices](#) located along both Mexican coasts, or they can access the [Fishing and Aquaculture Information System \(SIPESCA\)](#) platform via web.

The inventory of species in prohibition ([CONAPESCA-01-069](#), *Inventory of Stocks of Species in Prohibition, for wholesale commercialization or industrialization*) is a mandatory report that must be submitted to CONAPESCA by the holders at the beginning of a period of prohibition, in order to be able to mobilize and commercialize the fishery products that are stored and that according to this report it is demonstrated were extracted or captured before the beginning of the prohibition. The closed season inventory must make reference to the folio of the notice of arrival in which the specimens to be documented were caught. The delivery of this form applies to both large and small vessels, depending on the resource harvested.

For the tracking of larger vessels, the mandatory observance of NOM-062-SAG/PESC-2014 ([DOF 03/07/2015](#)) applies in order to locate them geographically in real time. For some fishery resources, including shark, INAPESCA in collaboration with FIDEMAR implements the on-board observer program, technical staff that performs exclusively scientific work and not surveillance.

For the commercialization of the captured product, the transfer by land, sea or air of live, fresh, frozen or frozen fishery products from fishing or aquaculture must be carried out under the protection of the fishing guide (Art. 76 of the LGPAS; (Annex 6).

The fishing guide must make reference to the folio of the notice of arrival in which the specimens to be moved were caught.

In the case of sale-purchase in national territory, invoices must contain, in addition to the product description, weight and amount, the folio numbers of the arrival notice from which it derives ([Art. 13 of the LGPAS regulations](#)).

According to the [Regulations of the LGPAS](#) (Title Five), the SADER and the Secretary of the Navy are responsible for the inspection and surveillance of fishery products in national territory.

As they are listed in CITES, the CITES Management Authority (Dirección General de Vida Silvestre, DGVS-SEMARNAT), is in charge of issuing the CITES documentation necessary for international trade. In compliance with Article IV of CITES, the DGVS-SEMARNAT requests the Scientific Authority (National Commission for the Knowledge and Use of Biodiversity, CONABIO), a Non Detrimental Finding (NDF) prior to the authorization of CITES documentation for export. Finally, permits that were authorized by DGVS-SEMARNAT are verified at the border by the CITES Enforcement Authority in Mexico (Procuraduría Federal de Protección al Ambiente; PROFEPA).

The legal attributions established for the PROFEPA in the RISEMARNAT related to the transboundary movement of wild species (articles 43 section XX, 52 section I and 55), indicate that its main function is to verify compliance with the Regulations and Non-Tariff Restrictions in the transboundary movement of specimens of species subject to regulation by SEMARNAT. This is done in accordance with the General Wildlife Law and its regulations, as well as foreign trade and customs laws.

In this way, a verification service is provided so that the foreign trade actor complies with the provisions of Article 36-A of the Customs Law and promotes the dispatch of its goods in any customs regime such as import or export, temporary or definitive. In this case, a documentary verification and physical review of the merchandise is performed and, in case of compliance with the legal requirements, a certificate is issued for use in customs clearance and the CITES permits issued by the Mexican Management Authority are discharged.

In the case of transits through national territory, this process is carried out at the request of the customs authority or the foreign trade actor.

In the case of transshipments, PROFEPA acts at the request of the customs authority and generally does so in order to issue a technical opinion on the merchandise observed by the customs authority by non-intrusive methods. This is due to the fact that the merchandise is not intended to be introduced into national territory under a customs regime (import) nor does it comply with the condition of temporality to be considered a temporary import with its respective re-export.

In any of the aforementioned cases, PROFEPA cannot violate the tax locks, so it acts on documents and merchandise placed in view by third parties.

PROFEPA has a computing platform to manage the verification of cross-border movements of goods regulated by SEMARNAT, called the Institutional Verification Registration System (SIREV). This includes shipments of specimens of the aforementioned species. The percentage of compliance for wild species, whether regulated by CITES or included in a risk category in national legislation, as of June 2023 is 99.97% considering the internal operation statistics of the Environmental Verification and Inspection Program in Ports, Airports and Borders.

Details on threat assessment and quotas can be found in sections 3 and 4, respectively.

l) Details on capture methods/mortality rates prior to export (i.e. during and after capture) and how this is taken into consideration when making non-detriment findings.

Not applicable, since there is no record of live specimens of these hammerhead shark species being exported from Mexico.

6. Species management (farm-raised specimens)

m) Provide information on the management of farm-raised animals in trade (e.g., details of farm breeding facilities, including stock numbers (male : female), annual production levels, survival rate of females used in the breeding facility) and details of impacts on wild populations (as appropriate).

In Mexico, there are no titles issued for the commercial farming of sharks in controlled environments.

7. Laws and regulations

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

Considering that Mexico is one of the countries with a high diversity of shark species and one of the main producers and exporters of products derived from these species to various parts of the world, our country has evolved in the development and structuring of a broad legal framework for the management and conservation of sharks and rays at a national and international level, which is constantly being strengthened, in view of which various management instruments are being developed with the purpose of achieving a sustainable use of national fishing resources.

At the international level, Mexico has voluntarily incorporated and complies with the recommendations and resolutions of the Code of Conduct for Responsible Fisheries, the FAO International [Plan of Action for the Conservation and Management of Sharks](#) (IPOA-SHARKS; 1999), CITES, the International Commission for the Conservation of Atlantic Tunas (ICCAT), the Inter-American Tropical Tuna Commission (IATTC) and the

International Scientific Committee for Tuna and Tuna-like Species in the North Pacific (ISC). At the national level, strategies for the sustainable use and long-term conservation of sharks and rays are based on the National Action Plan for the Management and Conservation of Sharks, Rays, and Related Species in Mexico (PANMCT, soon to be updated; CONAPESCA-INP, 2004), the Mexican Official Standard NOM-029-PESC-2006, Responsible shark and ray fishing. Specifications for their management ([DOF, 02/14/2007](#)); the Agreement that modifies the Notice that announces the establishment of closed fishing seasons and areas for different species of aquatic fauna in waters under federal jurisdiction of the United Mexican States, published on March 16, 1994, to establish closed fishing seasons for sharks and rays in the Pacific Ocean and sharks in the Gulf of Mexico ([DOF, 07/07/2021](#)); the agreement establishing a permanent ban on fishing for white shark (*Carcharodon carcharias*) in waters under federal jurisdiction of the United Mexican States (DOF, 27/01/2014) and the Agreement modifying the Notice announcing the establishment of closed seasons and areas for the fishing of different species of aquatic fauna in waters under federal jurisdiction of the United Mexican States, published on March 16, 1994 to modify the period and areas of shark closure in the Gulf of Mexico and Caribbean Sea (DOF, 15/05/2014).

Additionally, there is a permanent closure for some species Numeral 4.2.2. of the NOM: "In no case may specimens of any of the following species be caught and retained: whale shark (*Rhincodon typus*), basking shark (*Cetorhinus maximus*), white shark (*Carcharodon carcharias*), sawfish (*Pristis perotteti*, *P. pectinata* and *P. microdon*) and giant manta rays (*Manta birostris*, *Mobula japanica*, *M. thurstoni*, *M. munkiana*, *M. hypostomata* and *Mobula tarapacana*). Any specimens of these species caught incidentally must be returned to the water. These species may not be retained, alive, dead, whole or any of their parts, and consequently, may not be subject to human consumption or commercialization". (Mexican Official Standard NOM-029-PESC-2006 ;Official Journal of the Federation January 27, 2014; Official Journal of the Federation March 25, 1994)

Among the instruments created to support the National Fishing and Aquaculture Policy are the Fishing Management Plans (PMP), defined as the set of actions aimed at developing fishing activities in a balanced, integral and sustainable manner, based on updated knowledge of the biological, fishing, environmental, economic, cultural and social aspects of the activity. The General Law of Sustainable Fisheries and Aquaculture (LGPAS) states that the National Institute of Fisheries and Aquaculture (INAPESCA) is in charge of elaborating such plans, which is why recently INAPESCA through the Directorate of Fisheries Research in the Atlantic through the Regional Fisheries Research Program of Elasmobranchs have developed and published the Fisheries Management Plan for Sharks and Rays in the Gulf of Mexico and Caribbean Sea, This plan was published in the Official Journal of the Federation on June 9, 2022 and establishes the mechanisms and strategies for the management and conservation of these species. Likewise, the proposal for the Management Plan for Sharks and Rays of the Mexican Pacific is being reviewed and updated, which was prepared by the Directorate of Fisheries Research in the Pacific in 2014.

On the other hand, the National Fishing Charter (CNP) is the binding instrument for administrative decision making by the fishing authority in Mexico and is an essential instrument that presents technical data sheets of the fisheries exploited in Mexico.

These sheets contain the summary of the information from the diagnosis and evaluation of the fisheries. This information allows us to know where, when and how much fishing is allowed without altering the ecological balance and the most appropriate way to extract species that can be harvested. In other words, the [National Fishing Chart](#) helps us to identify the strategies and actions that must be fulfilled to control the fishing effort in Mexico: for the specific case of sharks, the last technical file published for sharks in the Gulf of Mexico and Caribbean Sea was in 2022, which establishes that their population status is at Maximum Sustainable Use, including the populations of *Sphyrna lewini* and *Sphyrna mokarran*; for the Mexican Pacific, the last update of the Sharks file that includes *S. lewini*, *S. zygaena* and *S. mokarran*, was recently updated in 2023 and states that their populations are exploited to the maximum sustainable level. [All versions of the NPC can be consulted online.](#)

In addition to the aforementioned instruments that contribute to the management and conservation of sharks in Mexico, including all species of the *Sphyrna* genus, there is a closed season agreement that protects them during their main reproduction and birth period. In the Gulf of Mexico and Caribbean Sea, the shark closure is currently temporary and divided into two main regions, the first one includes the States of Tamaulipas, Veracruz and Quintana Roo during the period from May 1st to June 30th of each year; while, for the region that includes Tabasco, Campeche and Yucatan the period covers from May 1 to June 15 and then from August 1 to 29 of each year, this last period was established with the purpose of specifically protecting the main reproductive peak and calving of *S. tiburo* in the Campeche Sound where the species is most abundant, while the other closed periods are focused on protecting the main reproductive peak and calving of the most abundant species in the GDMMC, which is *Rhizoprionodon terraenovae*, although it also protects other species such as *S. lewini* and *S. mokarran*.

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

The [General Wildlife Law](#) establishes the specifications for the trade of these species; in the case of exports of specimens, parts and derivatives, it is described in article 55, which states the following:

"The import, export and re-export of specimens, parts and derivatives of wild species included in the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), shall be carried out in accordance with that Convention, the provisions of the present Law and the provisions derived therefrom..."

The provisions of this Law are complemented by the provisions of Article 56 of the [Regulations of the General Wildlife Law](#), which specifies:

"The import, export and re-export of biological material of species included in the CITES appendices, shall be subject to the provisions of said Convention."

In addition, Article 65 establishes that those interested in exporting or re-exporting specimens, parts or derivatives that require CITES permits, must apply to the Secretariat in compliance with the following requirements:

"I. Indicate whether the export is definitive or temporary, "II. In the case of temporary movements, indicate the period of permanence abroad", "III. If they are live specimens, parts or derivatives", "IV. The customs office of exit. In the case of re-exports, the entry customs office shall also be indicated", "V. The country or countries of destination" and, "VI. The purpose of the movement."

In addition to what is stated in the previous paragraph, article 66 describes the information that must be included attached to the request referred to in article 65:

"I. List and, if applicable, description of the specimens, parts or derivatives of wildlife, indicating scientific name, common name, country of origin, country of provenance and quantity, and II. The marking system with the corresponding specifications, when required by CITES dispositions or resolutions..."

In accordance with the aforementioned legislation in force, promoters wishing to import, export or re-export specimens, parts and derivatives of CITES-listed wild species (e.g. *Sphyrna lewini* and *Sphyrna mokarran*), will have to manage, obligatorily, the procedure SEMARNAT-08-009, Authorization, permit or certificate of import, export or re-export of specimens, parts and derivatives of wild life, which may be carried out in person at the Citizen Contact Space (ECC) in Mexico City, or the respective Federal Representations of SEMARNAT in the states of the Mexican Republic, or virtually, through the Mexican Foreign Trade Single Window (VUCEM).

The requirements for this procedure and its legal basis are listed below:

- List and description of the specimens, parts and derivatives of wildlife; with legal basis in articles 63 and 66 (described above), of the Regulations of the General Wildlife Law.

Article 63 states the following:

"... I. List and description of the specimens, parts and derivatives of wildlife, indicating scientific name, common name, country of origin, country of provenance and quantity", "II. A simple copy of the CITES export permit or certificate from the country of origin or provenance in the name of the applicant or the represented company", and "III. Marking system with the corresponding specifications, when required by CITES provisions or resolutions"

1. Proof of payment of processing fees; based on article 194-F-B-II of the Federal Law of Fees, in force.
2. Copy of the documentation that accredits the legal origin of the specimens, parts or derivatives. These can be, invoices, or sale notes, or authorization of use, or subsistence authorization); based on article 63.
3. Simple copies of all CITES export and re-export permits or certificates from the countries of origin or immediate provenance; based on articles 63 and 64 of the Regulations of the General Wildlife Law.

In this regard, Article 64 states the following:

"Those interested in obtaining a CITES permit or certificate covering various imports, must attach to the application referred to in the previous article, simple copies of all CITES export and re-export permits or certificates from the countries of origin or immediate provenance, issued in the name of the applicant or of the company represented..."

- Copy of the documents that accredit the applicant's personality; with legal basis in article 12, second paragraph, of the General Wildlife Law.

This legal precept states the following:

"... In each procedure that is carried out, a copy of the official identification or the articles of incorporation in case of legal entities, or the number of the Registry of Accredited Persons in case they have it, must be presented..."

In the case of marine species, the way to prove the legal origin of the species subject to exploitation is based on the [General Law of Sustainable Fisheries and Aquaculture](#), specifically in Article 75, which states:

"The legal origin of the fishery and aquaculture products, shall be accredited with the notices of arrival, harvest, production, collection, import permit and with the fishing guide, as appropriate, in the terms and with the requirements established by this Law and its regulations. For the species obtained under the protection of sport-recreational fishing permits, the legal origin shall be proved with the respective permit.

For the commercialization of fishing and aquaculture products, the tax receipts issued must include the number of the respective permit or concession".

For such purpose, Article 10 of the [Regulations of the General Law of Sustainable Fisheries and Aquaculture](#), dictates the procedure as follows:

"The legal origin of fishery products shall be verified:

"I. From the moment of landing or harvesting, until its alienation to third parties by any title, with the notice of arrival, harvesting, production or collection..."

Finally, in accordance with SEMARNAT-08-009, any request for export of these species requires the exporter to present the following 4 documents:

1. Arrival notice
2. Fishing guide
3. Fishing permit
4. Invoice

References

- An, D. H., Kwon, Y. J., Moon, D. Y., Hwang, S. J., & Kim, S. S. 2009. Estimation of the Ratio of Fin Weight to Body Weight of Sharks for the Korean Tuna Longline Fishery in the Eastern Pacific Ocean. *Korean Journal of Fisheries and Aquatic Sciences*, 42(2), 157-164
- Anislado, V., Gallardo, M., Amezcua, F. & Robinson, C. (2008). Age and growth of the scalloped hammerhead shark, *Sphyrna lewini* (Griffith & Smith, 1834) from the Southern coast of Sinaloa, México. *Hidrobiológica*, 18(1), 31-40.
- Benítez, H., López, G. y Rivera-Téllez, E. (Comps.). (2015). Taller de Evaluación de Productividad, Susceptibilidad y Manejo de tiburones mexicanos listados en el Apéndice II de la CITES. Informe de Resultados - Comisión Nacional Para el Conocimiento y Uso de la Biodiversidad (CONABIO), México, D.F.
- Bessudo, S., Soler, G.A., Klimley, A.P., Ketchum, J.T., Hearn, A. & Arauz, R. (2011). Residency of the scalloped hammerhead shark (*Sphyrna lewini*) at Malpelo Island and evidence of migration to other islands in the Eastern Tropical Pacific. *Environmental Biology of Fishes*, 91(2), 165-176.
- Biery, L., Pauly, D., (2012). A global review of species-specific shark-fin-to-body-mass ratios and relevant legislation. *Journal of Fish Biology* 80, 1643-1677. <https://doi.org/10.1111/j.1095-8649.2011.03215.x>
- Biery, L.E., (2012). Using Shark Catch Data to Estimate the Magnitude and Global Distribution of the Shark Fin Trade (Master of Science). University of Brithis Columbia. Vancouver.
- Bizarro, J.J., Smith, W.D., Hueter, R.E., Tyminski, J., Márquez, J.F., Castillo, J.L., Cailliet, G.M. & Villavicencio, C.J. (2007). The status of shark and ray fishery resources in the Gulf of California: applied research to improve management and conservation. Moss Landing Marine Laboratories Technical Publication.
- Carrier, J., Musick, J. & Heithaus, M. (2010). *Sharks and Their Relatives ii. Biodiversity, adaptative physiology and conservation*. crc Press
- Castillo Geniz, José Leonardo. (2001). "Aspectos biológico-pesqueros de los tiburones que habitan las aguas del Golfo de México". (Tesis de Maestría). Universidad Nacional Autónoma de México, México. Recuperado de <https://repositorio.unam.mx/contenidos/77591>
- Castillo-Géniz, J.L., Márquez-Farías, J.F., Rodríguez de la Cruz, M.C., Cortés, E. & Cid del Prado, A. (1998). The Mexican artisanal shark fishery in the Gulf of Mexico: towards a regulated fishery. *Marine and Freshwater Research*, 49(7), 611-620.
- Castillo-Olguín, E., Uribe-Alcocer, M., Díaz-Jaimes, P., 2012. Assessment of the population genetic structure of *Sphyrna lewini* to identify conservation units in the Mexican Pacific. *Ciencias marinas* 38, 635-652.
- Castro-Aguirre, J.L. (1978). Catálogo sistemático de los peces marinos que penetran en las aguas continentales de México con aspectos zoogeográficos y ecológicos. Dirección General del Instituto Nacional de Pesca.
- Castro, J.I. (2011). *The Sharks of North America*. Oxford University Press.
- Chapman, D.D., Pinhal, D., Shivji, M.S., 2009. Tracking the fin trade: genetic stock identification in western Atlantic scalloped hammerhead sharks *Sphyrna lewini*. *Endangered Species Research* 9, 221-228.
- Clarke, C. S. McAllister, M.K., & Michielsens, C.G. (2004). Estimates of Shark Species Composition and Numbers Associated with the Shark Fin Trade Based Hong Kong Auction Data. *Northwest Atlantic Fishery Science*, 35, 453-465.
- Clarke, C.S., Magnussen, J., Abercrombie, D., McAllister, M. & Shivji, M. (2006). Identification of Shark Species Composition and Proportion in the Hong Kong Shark Fin Market Based on Molecular Genetics and Trade Records. *Conservation Biology*, 20, 201-211.
- Compagno, J.L.V., Krupp, F., Schneider, W. (1995). Tiburones. En W.Fischer, F. Krupp, W. Schenider, C. Sommer, K.E. Carpenter y V.H. Niem (Eds.). *Guía fao para la identificación de especies para los fines de la pesca: Pacífico centro-oriental* (pp. 647-744). FAO
- CONAPESCA-INP, 2004. Plan de Acción Nacional para el Manejo y Conservación de Tiburones, Rayas y Especies Afines en México. Comisión Nacional de Acuacultura y Pesca e Instituto Nacional de la Pesca, Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación. Mazatlán, México. 80 p.

- Corro, D., Rivera, K., (2019). Cálculo del área y peso de pieles de *Carcharhinus falciformis*, tiburón sedoso en los litorales de México (Nota técnica para responder a la consulta de la Autoridad Científica CITES (CONABIO)). INAPESCA.
- Cortés, E., Arocha, F., Beerkircher, L., Carvalho, F., Domingo, A., Heupel, M., Holtzhausen, H., Santos, M.N., Ribera, M. & Simpfendorfer, C. (2010). Ecological risk assessment of pelagic sharks caught in Atlantic pelagic longline fisheries. *Aquatic Living Resources*, 23, 25-34.
- Cortés, E. (2002). Incorporating Uncertainty into Demographic Modeling : Application to Shark Populations and their conservation. *Conservation Biology*, 16(4), 1048-1062.
- Cortés, E., Neer, J. a, (2006). Preliminary reassessment of the validity of the 5% fin to carcass weight ratio for sharks. *Col. Vol. Sci. Pap. ICCAT* 59, 1025–1036.
- Duncan, K.M., Martin, A.P., Bowen, B.W., De Couet, H.G., 2006. Global phylogeography of the scalloped hammerhead shark (*Sphyrna lewini*). *Molecular ecology* 15, 2239–2251.
- Elizondo-Sancho, M., Rodríguez-Arriatti, Y., Albertazzi, F.J., Bonilla-Salazar, A., Arauz-Naranjo, D., Arauz, R., Areano, E., Avalos-Castillo, C.G., Brenes, Ó., Chávez, E.J., 2022. Population structure and genetic connectivity of the scalloped hammerhead shark (*Sphyrna lewini*) across nursery grounds from the Eastern Tropical Pacific: Implications for management and conservation. *Plos one* 17, e0264879.
- Mejuto, J., García-Cortés, B., (2004). Preliminary relationships between the wet fin weight and body weight of some large pelagic sharks caught by the Spanish surface longline fleet. *Collect. Vol. Sci. Pap. ICCAT* 56, 243–253.
- FAO, 2020a. Aquatic Species Distribution Maps. FAO aquatic species distribution map of *Sphyrna lewini* (Scalloped hammerhead). In: FAO Fisheries and Aquaculture Department (FI) [online]. Rome. Updated 2020-01-25
- FAO, 2020b. Aquatic Species Distribution Maps. FAO aquatic species distribution map of *Sphyrna mokarran* (Great hammerhead). In: FAO Fisheries and Aquaculture Department (FI) [online]. Rome. Updated 2020-01-25
- Froese, R., Demirel, N., Coro, G., Kleisner, K.M., Winker, H., (2017). Estimating fisheries reference points from catch and resilience. *Fish Fish* 18, 506–526. <https://doi.org/10.1111/faf.12190>
- Froese, R., Demirel, N., Coro, G., Kleisner, K.M., Winker, H., (2016). Assessments of 48 simulated and 159 real stocks with a Monte Carlo and Bayesian Implementation of a Surplus Production Model. Version of June 23, 2016.
- Furundarena-Hernández, A., Medrano-Gallegos, L., Nalesso, E., Martínez-Cruz, L.E., Oviedo-Pérez J.L., Pérez, J.C., Tovar-Ávila, J. y González-Ocaranza, L. (2022). Capítulo 5. *Sphyrna mokarran* (Rüppell, 1837). Cornuda gigante, great hammerhead shark. En: Conservación, uso y aprovechamiento sustentable de tiburones mexicanos listados en la CITES. Comisión Nacional para el Conocimiento y Uso de la Biodiversidad. México pp. 84-101.
- Green, M.E., Appleyard, S.A., White, W.T., Tracey, S.R., Heupel, M.R., Ovenden, J.R., 2022. Updated connectivity assessment for the scalloped hammerhead (*Sphyrna lewini*) in Pacific and Indian Oceans using a multi-marker genetic approach. *Fisheries Research* 251, 106305. <https://doi.org/10.1016/j.fishres.2022.106305>
- Gutiérrez-Galindo, E.A., Villaescusa-Celaya, J.A., Flores-Muñoz, G. y Ortega-Lara V. (1994). Metales pesados en Sedimentos de la costa fronteriza Baja California (México)-California (EUA). *Ciencias Marinas*, 2, 105-124.
- Hobday, A. J., Smith, A. D. M., Stobutzki, I. C., Bulman, C., Daley, R., Dambacher, J. M., Deng, R.A., Dowdney, J., Fuller, M., Furlani, D., Griffiths, S.P., Johnson, D., Kenyon, R., Knuckey, I.A., Ling, S.D., Pitcher, R., Sainsbury, K.J., Sporcic, M., Smith, T., Turnbull, C., Walker, T.I., Wayte, S.E., Webb, H., Williams, A., Wise, B.S. & Zhou, S. (2011). Ecological risk assessment for the effects of fishing. *Fisheries Research*, 108(2), 372-384.
- Hobday, A. J., Dowdney, C. Bulman, M. Sporcic, M. Fuller, M. Goodspeed, & E. Hutchinson (2007) Ecological Risk Assessment for the Effects of Fishing: Bass Strait Central Zone Scallop Sub-Fishery. Report for the Australian Fisheries Management Authority, Canberra
- Hueter, R.E., Heupel, M.R., Heist, E.J. & Keeney, D.B. (2005). The implications of philopatry in sharks for the management of shark fisheries. *J Northwest Atl Fish Sci* 35, 239–247 41, 81-94.

- Kato, S. (1965). White Shark *Carcharodon carcharias* from the Gulf of California with a List of Sharks Seen in Mazatlan, Copeia. 1965(3), 382.
- Lack, M., Sant, G., Burgener, M. and Okes, N. (2014). Development of a Rapid Management-Risk Assessment Method for Fish Species through its Application to Sharks: Framework and Results. Report to the Department of Environment, Food and Rural Affairs. Defra Contract No. MB0123.
- Maguire, J. J., Sissenwine, M., Csirke, J., Grainger, R. & Garcia, S. (2006). The state of world highly migratory, straddling and other high seas fishery resources and associated species. *Fao Fisheries Technical Paper* 495.
- Martell, S., Froese, R., (2013). A simple method for estimating MSY from catch and resilience. *Fish Fish* 14, 504–514. <https://doi.org/10.1111/j.1467-2979.2012.00485.x>
- Mejuto, J., B. García-Cortés, 2004. Preliminary relationships between the wet fin weight and the body weight of some large pelagic sharks caught by the spanish surface longline fleet. *Col. Vol. Sci. Pap. ICCAT*, 56 (1):243-253.
- Mejuto, J., García-Cortés, B. and Ortiz de Urbina, J. (2009). Ratios between the wet fin weight and body weights of blues shark (*Prionace glauca*) in the Spanish surface longline fleet during the period 1993-2006 and their impact on the ratio of sharks species combined. *Collect. Vol. Sci. Pap. ICCAT*, 64(5): 1492-1508.
- Mejuto, J., Ramos-Cartelle, A., Quintans, M., González, F., Carroceda, A., (2008). Length-weight relationships and morphometric conversion factors between weights for the blue shark (*Prionace glauca*) and shortfin mako (*Isurus oxyrinchus*) caught by the Spanish surface longline fleet in the Atlantic Ocean. *Collect. Vol. Sci. Pap. ICCAT* 62, 1494–1507.
- Neves dos Santos, M., García, A., (2008). New Data on the Ratio Between Fin and Body Weights for Shark Species Caught By the Portuguese. *Col. Vol. Sci. Pap. ICCAT* 62, 1592–1601.
- Norma Oficial Mexicana NOM-029-PESC-2006. Pesca responsable de tiburones y rayas. Especificaciones para su aprovechamiento (DOF 14/02/07).
- Norma Oficial Mexicana NOM-062-SAG/PESC-2014, Para la utilización del Sistema de Localización y Monitoreo Satelital de Embarcaciones Pesqueras (DOF:03/07/2015).
- Oviedo, J.I., González, L., Ramírez, K. y Martínez, L. (2009). Presencia de *Isurus oxirinchus* (Marrajo Dientuso) y *Prionace glauca* (Tintorera) en la Pesquería Ribereña de Elasmobranquios en el golfo de México. *Collective Volume of Scientific Papers*, 64(5), 1644–1649.
- Pacoureaux, N., Carlson, J.K., Kindsvater, H.K., Rigby, C.L., Winker, H., Simpfendorfer, C.A., Charvet, P., Pollom, R.A., Barreto, R., Sherman, C.S., 2023. Conservation successes and challenges for wide-ranging sharks and rays. *Proceedings of the National Academy of Sciences* 120, e2216891120.
- Padilla y Sotelo, L. S. (2000). La población en la región costera de México en la segunda mitad del siglo xx. *Investigaciones geográficas, Boletín del Instituto de Geografía*, 41, 81-95.
- Patrick, W.S., Spencer, P., Link, J., Cope, J., Field, J., Kobayashi, D., Lawson, P., Gedamke, T., Cortés, E., Ormseth, O., Bigelow, K. & Overholtz, W. (2010). Using productivity and susceptibility indices to assess the vulnerability of United States fish stocks to overfishing. *Fishery Bulletin*, 108(3), 305-322."
- Patrick, W.S., Spencer, P., Link, J., Cope, J., Field, J., Kobayashi, D., Lawson, P., Gedamke, T., Cortés, E., Ormseth, O., Bigelow, K., Overholtz, W., (2010). Using productivity and susceptibility indices to assess the vulnerability of united states fish stocks to overfishing. *Fishery Bulletin* 108, 305–322.
- Pérez-Jiménez, J.C., Sosa-Nishizaki, C., Méndez-Loeza, I., Furlong-Estrada, E., Saldaña-Ruiz, L.E., Noguez-Lugo, J.J. y Rivera-Téllez E. (2022). Capítulo 14. Evaluación de la vulnerabilidad de los tiburones de importancia pesquera en México listados en la CITES. En: *Conservación, uso y aprovechamiento sustentable de tiburones mexicanos listados en la CITES*. Comisión Nacional para el Conocimiento y Uso de la Biodiversidad. México pp. 264-289.
- Reglamento de la Ley General de Pesca y Acuicultura Sustentable (RLGPAS) de 1999. El presente reglamento, tiene por objeto reglamentar la Ley de Pesca. 29 de septiembre de 1999. DOF 28-01-2004

- Reglamento de la Ley General de Vida Silvestre (RLGVS) del 2006. El presente reglamento tiene por objeto reglamentar la Ley General de Vida Silvestre. 30 de noviembre de 2006. DOF 09-05-2014. <https://www.icpmx.org/uploads/1/1/8/1/118130934/cambioclimaticoenmexico.pdf><https://www.icpmx.org/uploads/1/1/8/1/118130934/cambioclimaticoenmexico.pdf>
- Reyes Bonilla, H., Morzaría Luna, H.N., Petatán Ramírez, D., Vázquez Vera, L., Cruz Piñón, G., Dorantes, J.M., Torres Origel, J.F., Rojas Montiel, B., Torres Rodríguez, L.M., Cisneros Mata, M.A., Pérez Muñoz, A., Lara Mendoza, R.E., López Téllez, N.A., Díaz Uribe, J.G., Ingle de la Mora, G., Jiménez Quiroz, M.C., Martínez Moreno, R., Castro Garibay, H. y Calderón Alvarado, J.M. (2021). Evaluaciones de vulnerabilidad de las comunidades costeras y de cambio en la disponibilidad de los recursos pesqueros y acuícolas de la costa de México. EDF de México y UABCS. La Paz Baja California Sur, México. 99 p. https://www.gob.mx/cms/uploads/attachment/file/730190/Evaluacion_de_vulnerabilidad.pdf
- Rigby, C.L., Barreto, R., Carlson, J., Fernando, D., Fordham, S., Francis, M.P., Herman, K., Jabado, R.W., Liu, K.M., Marshall, A., Pacoureau, N., Romanov, E., Sherley, R.B. & Winker, H. 2019b. *Sphyrna mokarran*. The IUCN Red List of Threatened Species 2019: e.T39386A2920499. <https://dx.doi.org/10.2305/IUCN.UK.2019-3.RLTS.T39386A2920499.en>. Accessed on 24 August 2023.
- Rigby, C.L., Dulvy, N.K., Barreto, R., Carlson, J., Fernando, D., Fordham, S., Francis, M.P., Herman, K., Jabado, R.W., Liu, K.M., Marshall, A., Pacoureau, N., Romanov, E., Sherley, R.B. & Winker, H. 2019a. *Sphyrna lewini*. The IUCN Red List of Threatened Species 2019a: e.T39385A2918526. Accessed on 24 August 2023.
- Rivera-Téllez, E., Noguez-Lugo J, López-Segurajáuregui, G., Benítez, H., Fernández T., García, M., Gómez S., en preparación. Factores de conversión entre especímenes de tiburones mexicanos listados en la CITES.
- Rodríguez-Burgos, A.M., Briceño-Zuluaga, F.J., Jiménez, J.L.Á., Hearn, A., Peñaherrera-Palma, C., Espinoza, E., Ketchum, J., Klimley, P., Steiner, T., Arauz, R., 2022. The impact of climate change on the distribution of *Sphyrna lewini* in the tropical eastern Pacific. *Marine Environmental Research* 180, 105696.
- SAGARPA (2022) Acuerdo por el que se da a conocer el Plan de Manejo Pesquero de Tiburones y Rayas del Golfo de México y Mar Caribe. Diario Oficial de la Federación (DOF). 09/06/2022 https://www.dof.gob.mx/nota_detalle.php?codigo=5654592&fecha=09/06/2022&print=true
- SAGARPA. (2022): Acuerdo mediante el cual se da a conocer la actualización de la Carta Nacional Pesquera. Diario Oficial de la Federación (DOF). 26/07/2022 https://www.dof.gob.mx/nota_detalle.php?codigo=5659177&fecha=26/07/2022#gsc.tab=0
- SAGARPA. (2023). Acuerdo mediante el cual se da a conocer la actualización de la Carta Nacional Pesquera. Segunda sección. Diario Oficial de la Federación (DOF). 21/07/2023. https://www.gob.mx/cms/uploads/attachment/file/842686/Carta_Nacional_Pesquera_2023.pdf
- SAGARPA. 2007. Decreto por el que se expide la Ley General de Pesca y Acuacultura Sustentables. Diario Oficial de la Federación 24 de julio del 2007 [https://www.dof.gob.mx/nota_detalle.php?codigo=4994238&fecha=24/07/2007#gsc.tab=0]
- Saldaña Ruíz, L.E. (2017). The artisanal shark fishery in the Gulf of California: Historical catch reconstruction and vulnerability of shark species to the fishery. Tesis de Doctorado, Posgrado en Ecología Marina, Ensenada, Baja California, México, CICESE, 73p
- Saldaña-Ruiz, L.E., Martínez-Cruz, L.E., Zea de la Cruz, H., Osuna Peralta, Y., Tovar-Ávila, J., Corro-Espinosa, D. y Medina-Bañuelos, B. (2022). Capítulo 4. *Sphyrna lewini* (Griffith y Smith, 1834). Cornuda común, scalloped hammerhead shark. En: Conservación, uso y aprovechamiento sustentable de tiburones mexicanos listados en la CITES. Comisión Nacional para el Conocimiento y Uso de la Biodiversidad. México pp.62-83.
- Salomón-Aguilar, C.A., Villavicencio-Garayzar, C.J. y Reyes-Bonilla, H. (2009). Zonas y temporadas de reproducción y crianza de tiburones en el Golfo de California: Estrategia para su conservación y manejo pesquero. *Ciencias Marinas*, 35(4), 369-388.
- Schaefer, M.B., (1954). Some aspects of the dynamics of populations important to the management of the commercial marine fisheries. *Inter-American Tropical Tuna Commission Bulletin* 1, 23-56.

- Schmitter-Soto et al. 2000: Schmitter-Soto, J., Vasquez-Yeomans, L., Aguilar-Perera, A., Curiel-Mondragon, C. y Caballero-Vázquez, J.A. (2000). Lista de peces marinos del Caribe mexicano. *Anales del Instituto de Biología Universidad Nacional Autónoma de México, serie zoológica*, 71(2), 143-177.
- Secretaría de Medio Ambiente y Recursos Naturales. Manual de procedimientos para la importación y exportación de vida silvestre, productos y subproductos forestales
- Soriano-Velásquez S.R., Acal-Sánchez, D., Castillo-Géniz, J.L., Ramírez-Santiago, C.E. y Vázquez-Gómez, N. (2006). Tiburón del Golfo de Tehuantepec. En S.F. Arreguín, M.J. Meléndez, M.I. Gómez-Humarán, S.R. Solana y D.C. Rangel (Eds.). *Sustentabilidad y pesca responsable de México, evaluación y manejo 1999-2000* (pp. 325-364). Instituto Nacional de Pesca.
- Tovar-Avila, J., Day, R.W. & Walker, T.I. (2010). Using rapid assessment and demographic methods to evaluate the effects of fishing on *Heterodontus portusjacksoni* off far-eastern Victoria, Australia. *Journal of Fish Biology*, 77(7), 1564-1578.
- Wickham 2016: Wickham H. 2016. *ggplot2: Elegant Graphics for Data Analysis*. Springer-Verlag. EEUU. 259p. doi: 10.1007/978-3-319-24277-4
- Zhou y Sharma 2013: Zhou S, R Sharma. 2013. Stock assessment of two neritic tuna species in Indian Ocean, kawakawa and longtail tuna using catch-based stock reduction methods. Third Working Party on Neritic Tunas, Bali, Indonesia, 2-5 July 2013.

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Scientific articles

- Alejo Plata, M. del C., G. Cerdenares, G. González Medina (2006). "La pesca artesanal de tiburón en la Costa Chica de Oaxaca, México, 2000-2003", en: S. Salas, M.A. Cabrera, J. Ramos, D. Flores y J. Sánchez, (editores). *Memorias Primera Conferencia de Pesquerías Costeras en América Latina y el Caribe. Evaluando, Manejando y Balanceando Acciones*. Mérida, Yucatán, pp. 22-38.
- Alejo Plata, M. del C., M.A. Ahumada Sempoal, J.L. Gómez Márquez, A. González Acosta (2016). "Population structure and reproductive characteristics of the silky shark *Carcharhinus falciformis* (Müller & Henle, 1839) (Carcharhiniformes: Carcharhinidae) off the coast of Oaxaca, Mexico". *Latin American Journal of Aquatic Research* 44: 513-524.
- Anislado Tolentino, V., M.G. Cabello, F.A. Linares, C.R. Mendoza (2017). "Age and growth of the scalloped hammerhead shark, *Sphyrna lewini* (Griffith & Smith, 1834) from the Southern coast of Sinaloa, México". *Hidrobiológica*, 18(1), 31-40.
- Bizzarro, J.J., Smith, W.D., Castillo-Géniz, J.L., Ocampo-Torres, A., Márquez-Farías, J.F. y R.E. Hueter (2009c), "The seasonal importance of small coastal sharks and rays in the artisanal elasmobranch fishery of Sinaloa, México", *Pan-Am. J. of Aquat. Sci.* 4 (4), 513-531.
- Bizzarro, J.J., Smith, W.D., Hueter, R.E. y C.J. Villavicencio-Garayzar (2009b), "Activities and catch composition of artisanal elasmobranch fishing sites on the eastern coast of Baja California Sur, Mexico", *Bull. South Calif. Acad. Sci.* 108 (3), 137-151.
- Bizzarro, J.J., Smith, W.D., Márquez-Farías, J.F., Tyminski, J. y R.E. Hueter (2009a), "Temporal variation in the artisanal elasmobranch fishery of Sonora, Mexico", *Fisheries Research*, 97 (1-2), 103-117. <http://dx.doi.org/10.1016/j.fishres.2009.01.009>.
- Blanco Parra, M. del P., C.A. Niño Torres, A. Ramírez González, E. Sosa Cordero (2016). "Tendencia histórica de la pesquería de elasmobranquios en el estado de Quintana Roo, México". *Ciencia Pesquera* 24: 125-137.
- Bonfil, R.S., D.F. de Anda, R.A. Mena (1990). "Shark fisheries in México: The case of Yucatán as an example". *Elasmobranchs as Living Resources: Advances in the Biology, Ecology, Systematics, and the Status of the Fisheries*: 427-442.
- Cartamil, D., Santana-Morales, O., Escobedo-Olvera, M., Kacev, D., Castillo-Geniz, L., Graham, J.B., Rubin, R.D. y O. Sosa-Nishizaki (2011), "The artisanal elasmobranch fishery of the Pacific coast of Baja California, Mexico", *Fisheries Research*. 108 (2), 393-403.

- Castillo Géniz, J.L., J.F. Márquez Farías, M.C. Rodríguez de la Cruz, E. Cortés, A. Cid del Prado (1998b), "The Mexican artisanal shark fishery in the Gulf of Mexico: towards a regulate fishery", *Marine and Freshwater Research* 49: 611–620.
- Castillo Géniz, J.L., J.F. Márquez Farías, A.C. del Prado Vera, S.R. Soriano Velásquez, C. Ramírez Santiago (1998a). "Diagnóstico de la pesquería artesanal de tiburones del Golfo de México y Caribe mexicano". Informe de avance de investigación. Dirección General de Investigación para la Evaluación y Manejo de Recursos Pesqueros. Programa Tiburón. Instituto Nacional de la Pesca México, D.F. 86 pp.
- Cruz Jiménez, C.S., G. Cerdaneres Ladrón de Guevara, V. Anislado Tolentino, S. Ramos Carrillo (2014). "Descripción del crecimiento del tiburón aleta de cartón *Carcharhinus falciformis*, capturado en Oaxaca: inferencia a partir de modelos múltiples". *Ciencia Pesquera* 22: 47–59.
- Cruz, A., Soriano, S.R., Santana, H., Ramírez, C.E. y J.J. Valdéz (2011), "La pesquería de tiburones oceánicos-costeros en los litorales de Colima, Jalisco y Michoacán", *Rev. Biol. Trop.*, Vol. 59 (2): 655–667.
- Godínez Padilla, C. J., J.L. Castillo Géniz, I. Ortega Salgado (2016b), "Diversidad y abundancia relativa de tiburones pelágicos capturados por la flota industrial palangrera de Ensenada, Baja California, México". *Ciencia Pesquera*, 24, 97–111.
- Godínez Padilla, C.J. y J.L. Castillo Géniz (2016a), "Distribución y abundancia de elasmobranchios capturados por la flota comercial escamero de mediana altura de San Felipe, Baja California, México", *Ciencia pesquera* 24 (1): 27-44.
- Pérez Jiménez, J.C. y I. Méndez Loeza (2015). "The small-scale shark fisheries in the southern Gulf of Mexico: Understanding their heterogeneity to improve their management". *Fisheries Research* 172: 96–10.
- Pérez-Jiménez, J.C., Sosa-Nishizaki, O., Furlong-Estrada, E., Corro-Espinosa, D., VenegasHerrera, A. y O.V. Barragán-Cuencas, O.V. (2005), "Artisanal shark fishery at Tres Marias Islands and Isabel Island in the Central Mexican Pacific", *J. Northw. Atl. Fish. Sci.* 35, 333–343. <http://dx.doi.org/10.1007/s11160-014-9353-y>.
- Ramírez López, K., A. Cruz Jiménez, J.L. Oviedo Pérez, L.E. Martínez Cruz, A. Wakida Kusunoki, D.E. de Anda Fuentes, S.R. Ramírez Amaro (2013). Caracterización de la pesquería de tiburones y rayas del Golfo de México y Mar caribe mexicanos. Instituto nacional de la Pesca. Boca del Río, Veracruz.
- Santana Hernández, H., J.J. Valdez Flores, I. Méndez Gómez Humarán (2009). "Distribución espacial y temporal de las especies que conforman la captura objetivo e incidental, obtenida por barcos palangreros de altura en el Pacífico Mexicano: 1983-2002". *Ciencia Pesquera* 17: 87–96.
- Santana Hernández, H., S. Sarmiento Náfate, J.J. Valdez Flores, J. Villalobos Toledo, A. Labastida Che, J. A. Agustín Jiménez, C. PinedaGarcía. (2010). "Análisis descriptivo de la composición de especies obtenidas por dos flotas dirigidas a la pesca de pelágicos mayores en el pacífico mexicano", en: E. Espino Barr, M.A. Carrasco Águila, E. Romero Hernández, H. Aguirre Villaseñor, O. Miranda Carrillo (editores). V Foro científico de pesca ribereña. Boca del Río, Veracruz, México.
- Smith, W.D., J.J. Bizzarro, G.M. Cailliet (2009), "The artisanal elasmobranch fishery on the east coast of Baja California, Mexico: Characteristics and management considerations", *Ciencias Marinas* 35(2): 209–236.
- Torres Herrera, M.R. y J. Tovar Ávila. (2014). "Temporal variation of shark in the islands and central coast of Nayarit, Mexico, based on official landing statistics". *Hidrobiologica* 24: 99–107.
- Tovar Ávila, J., J.L. Patiño Valencia, M.E. Zárate Becerra (2017). "Análisis de la captura de tiburón en la Isla Isabel, Nayarit, México, durante el periodo 2007-2013". *Ciencia Pesquera* 25: 5–14.

Book chapters

- Carrillo-Colín, Luis & Bada, Esteban. (2021). Estimación preliminar de puntos de referencia para las especies de tiburones de importancia comercial incluidas en los apéndices de la CITES. En Tovar & Castillo (Ed.), *Tiburones Mexicanos de importancia pesquera en la CITES parte II* (69-78). INAPESCA.
- Castillo Géniz, J.L., C.J. Godínez Padilla, I. Ortega Salgado, H.A. Ajás Terriquez (2016a) "La importancia pesquera de los tiburones incluidos en el Apéndice II de la CITES en aguas de México: Costa occidental de Baja California", en: J. L. Castillo Géniz y J. Tovar Ávila (editores), *Tiburones mexicanos de importancia pesquera en la CITES*, Instituto Nacional de Pesca (Inapesca), México, pp. 29-36.

Castillo Géniz, J.L., C.J. Godínez Padilla, I. Ortega Salgado, H.A. Ajás Terriquez (2016b) "La importancia pesquera de los tiburones incluidos en el Apéndice II de la CITES en aguas de México: Golfo de California", en: J. L. Castillo Géniz y J. Tovar Ávila (editores), Tiburones mexicanos de importancia pesquera en la CITES, Instituto Nacional de Pesca (Inapesca), México, pp. 37-39.

Castillo Géniz, J.L., C.J. Godínez Padilla, I. Ortega Salgado, H.A. Ajás Terriquez (2016c) "La importancia pesquera de los tiburones incluidos en el Apéndice II de la CITES en aguas de México: Programa de observadores de tiburón", en: J. L. Castillo Géniz y J. Tovar Ávila (editores), Tiburones mexicanos de importancia pesquera en la CITES, Instituto Nacional de Pesca (Inapesca), México, pp. 56-67.

Corro Espinoza, D. (2016), "La importancia pesquera de los tiburones incluidos en el Apéndice II de la CITES en aguas de México: Sinaloa", en: J. L. Castillo Géniz y J. Tovar Ávila (editores), Tiburones mexicanos de importancia pesquera en la CITES, Instituto Nacional de Pesca (Inapesca), México, pp. 39-44.

Santana Hernández, H. y J.J. Valdez Flores (2016) "La importancia pesquera de los tiburones incluidos en el Apéndice II de la CITES en aguas de México: Colima", en: J. L. Castillo Géniz y J. Tovar Ávila (editores), Tiburones mexicanos de importancia pesquera en la CITES, Instituto Nacional de Pesca (Inapesca), México, pp. 46-49.

Technical reports from INAPESCA's Regional Fisheries Research Centers (CRIP) obtained through INAI.

Castillo Géniz, J.L., A.C. del Prado Vera, S.R. Soriano Velásquez, F. Sancho Vázquez, J.F. Márquez Farías, C. Ramírez Santiago (1997). "Descripción, evaluación y manejo de la pesquería artesanal de tiburón de Puerto Madero, Chiapas". Informe de avance de investigación. Dirección General de Investigación para la Evaluación y Manejo de Recursos Pesqueros. Programa Tiburón. Instituto Nacional de la Pesca México, D.F. 41 pp.

Castillo Géniz, J.L., J.F. Márquez Farías, A.C. del Prado Vera, S.R. Soriano Velásquez, C. Ramírez Santiago (1998a). "Diagnóstico de la pesquería artesanal de tiburones del Golfo de México y Caribe mexicano". Informe de avance de investigación. Dirección General de Investigación para la Evaluación y Manejo de Recursos Pesqueros. Programa Tiburón. Instituto Nacional de la Pesca México, D.F. 86 pp.

Castillo Géniz, J.L., J.F. Márquez Farías, M.C. Rodríguez de la Cruz, E. Cortés, A. Cid del Prado (1998b), "The Mexican artisanal shark fishery in the Gulf of Mexico: towards a regulate fishery", Marine and Freshwater Research 49: 611-620.

Castillo Géniz, J.L., A.C. del Prado Vera, S.R. Soriano Velásquez, F. Sancho Vázquez, C. Ramírez Santiago, A. Solís Nava (1999). "Descripción, evaluación y manejo de la pesquería artesanal de tiburón de Puerto Madero, Chiapas". Informe de avance de investigación. Dirección General de Investigación para la Evaluación y Manejo de Recursos Pesqueros. Programa Tiburón. Instituto Nacional de la Pesca México, D.F. 42 pp.

Castillo Géniz, J.L., S.R. Soriano Velásquez, A.C. del Prado Vera, C. Ramírez Santiago, F. Sancho Vázquez (2000). "Descripción, evaluación y manejo de la pesquería artesanal de tiburón de Puerto Madero, Chiapas". Informe de avance de investigación. Dirección General de Investigación para la Evaluación y Manejo de Recursos Pesqueros. Programa Tiburón. Instituto Nacional de la Pesca México, D.F. 38 pp.

Castillo Géniz, J.L., S.R. Soriano Velásquez, C. Ramírez Santiago, A.C. del Prado Vera, F. Sancho Vázquez (2001). "Descripción, Evaluación y Manejo de la Pesquería Artesanal de Tiburón de Puerto Madero, Chiapas. Primer Informe Anual (Junio96-Junio97)". Informe de avance de investigación. Dirección General de Investigación para la Evaluación y Manejo de Recursos Pesqueros. Programa Tiburón. Instituto Nacional de la Pesca México, D.F. 46 pp.

Castillo Géniz, J.L. 2002. Elasmobranchios del Golfo de Tehuantepec, litoral chiapaneco. México, D.F. Universidad Autónoma de Baja California Sur. Informe final del proyecto SNIB-CONABIO. 45 pp.

Cruz Jiménez, A. y G. Martínez González. (2005). "La pesquería del tiburón y cazón en el litoral de Tamaulipas durante 2005". Informe final de investigación. CRIP-Tampico. Dirección General de Investigación Pesquera del Atlántico. Instituto Nacional de la Pesca México, D.F. 9 pp.

Cruz Jiménez, A. y G. Martínez González (2006). "La pesquería del tiburón y cazón en el litoral de Tamaulipas durante 2006". Informe final de investigación. CRIP-Tampico. Dirección General de Investigación Pesquera del Atlántico. Instituto Nacional de la Pesca México, D.F. 10 pp.

- Cruz Jiménez, A. (2008). "La pesquería de tiburón y cazón en el litoral de Tamaulipas durante 2007". Informe final de investigación. CRIP-Tampico. Dirección General de Investigación Pesquera del Atlántico. Instituto Nacional de la Pesca México, D.F.
- Cruz Jiménez, A.R. y G. Martínez Pérez (2008). "Análisis de la pesquería del tiburón durante la temporada de pesca 2007, en el litoral de Tamaulipas", en: E. Espino Barr, M.A. Carrasco Águila, E.G. Cabral Solís, P. Fuentes Mata, M. Puente Gómez, A. García Boa (editores). IV Foro científico de pesca ribereña. Acapulco, Guerrero, México
- Cruz Jiménez, A. y E. Conde Galaviz (2009). "Análisis de la pesquería del tiburón en la zona de Barra del Tordo en el litoral costero de Tamaulipas durante el 2009". Informe final de investigación. CRIP-Tampico. Dirección General de Investigación Pesquera del Atlántico. Instituto Nacional de la Pesca México, D.F. 5 pp.
- Cruz Jiménez, A. (2011). "Programa monitoreo de tiburón en la zona pesquera de Barra del Tordo (ZPBT) en Tamaulipas". Informe final de investigación. CRIP-Tampico. Dirección General de Investigación Pesquera del Atlántico. Instituto Nacional de la Pesca México, D.F. 9 pp.
- Oviedo Pérez, J.L., H. Zea de la Cruz, L.E. Martínez Cruz (2013). "Caracterización de la pesquería de tiburones y rayas en el estado de Veracruz". Informe final de investigación. CRIP-Veracruz. Dirección General de Investigación
- Oviedo Pérez, J.L., H. Zea de la Cruz. (2013). "Información georeferenciada de la pesquería de elasmobranquios en el estado de Veracruz para la construcción de un Sistema de Información Geográfica". Reporte técnico. CRIP-Veracruz. Dirección General de Investigación Pesquera del Atlántico. Instituto Nacional de la Pesca México, D.F. 20 pp.
- Oviedo Pérez, J.L., L. González Ocaranza, L.E. Martínez Cruz, J. Balderas Téllez, H. Zea de la Cruz, J. Martínez Trujillo (2012). "Principales especies asociadas a la pesquería de elasmobranquios en la zona central del litoral de Veracruz durante el 2011". Informe final de investigación. CRIP-Veracruz. Dirección General de Investigación Pesquera del Atlántico. Instituto Nacional de la Pesca México, D.F. 15 pp.
- Oviedo Pérez, J.L., L. González Ocaranza, J.A. Pech Paat, K. Ramírez López, H. Santana Hernández, F. Santiago Rangel, L.E. Martínez Cruz (2009). "Incidencialidad de elasmobranquios en la pesca de arrastre de camarón y en la pesca de atún con palangre en el Golfo de México". Informe técnico. CRIP-Veracruz. Dirección General de Investigación Pesquera del Atlántico. Instituto Nacional de la Pesca México, D.F. 17 pp.
- Oviedo Pérez, J.L., L. González Ocaranza, J.A. Pech Paat (2008a). "Presencia de elasmobranquios en la pesca de arrastre de camarón en la zona norte del litoral veracruzano durante los cruceros realizados en junio y julio de 2007 a bordo del buque pesquero Fipesco 105". Informe técnico. CRIP-Veracruz. Dirección General de Investigación Pesquera del Atlántico. Instituto Nacional de la Pesca México, D.F. 15 pp.
- Oviedo Pérez, J.L., L. González Ocaranza, J.A. Pech Paat, J. de J. Rivas Villegas (2008b). "Investigación biológico pesquera de la pesquería de elasmobranquios en la zona centro del estado de Veracruz". Informe final de investigación. CRIP-Veracruz. Dirección General de Investigación Pesquera del Atlántico. Instituto Nacional de la Pesca México, D.F. 25 pp.
- Oviedo Pérez, J.L., L. González Ocaranza, A.J. Valdez Guzmán (2007). "Investigación biológico pesquera de la pesquería artesanal de elasmobranquios en el litoral veracruzano. Evaluación de la incidentalidad de elasmobranquios en las pesquerías de arrastre de camarón y de atún con palangre". Informe anual de investigación. CRIP-Veracruz. Dirección General de Investigación Pesquera del Atlántico. Instituto Nacional de la Pesca México, D.F. 37 pp.
- Oviedo Pérez, J.L., R. Morales Hernández, L. González Ocaranza (2006a). "Investigación biológico pesquera para el desarrollo de esquemas de manejo de las pesquerías artesanales de elasmobranquios del Golfo de México". Informe técnico. CRIP-Veracruz. Dirección General de Investigación Pesquera del Atlántico. Instituto Nacional de la Pesca México, D.F. 19 pp.
- Oviedo Pérez, J.L., R. Morales Hernández, L. González Ocaranza, A.J. Valdez Guzmán, A. Torres Gracida, J.A. Pech Paat, D. Sosa González, L.E. Martínez Cruz (2006b). "Investigación biológico pesquera de la pesquería artesanal de elasmobranquios en el litoral veracruzano". Informe final de investigación. CRIP-Veracruz. Dirección General de Investigación Pesquera del Atlántico. Instituto Nacional de la Pesca México, D.F. 28 pp.

- Santana Hernández, H. y J.J. Valdez Flores (2003). "Caracterización del sistema de mediana altura dirigido al tiburón en el puerto de Manzanillo". Informe final de investigación. CRIP-Colima. Instituto.
- Santana Hernández, H. y J.J. Valdez Flores (2012). "Distribución y abundancia relativa del tiburón oceánico de aletas blancas *Carcharhinus longimanus*, obtenido por barcos palangreros de mediana altura en el Pacífico Central mexicano", en: Díaz-Sánchez A.W., C. Gabriela-Aguilar y O. U. Mendoza-Vargas. (editores). Quinto simposium nacional de tiburones y rayas. Ciudad de México, México.
- Soriano-Velásquez S.R., Acal-Sánchez, D., Castillo-Géniz, J.L., Ramírez-Santiago, C.E. y Vázquez-Gómez, N. (2006). Tiburón del Golfo de Tehuantepec. En S.F. Arreguín, M.J. Meléndez, M.I. Gómez-Humarán, S.R. Solana y D.C. Rangel (Eds.). Sustentabilidad y pesca responsable de México, evaluación y manejo 1999-2000 (pp. 325-364). Instituto Nacional de Pesca.
- Soriano Velásquez, S.R., J.L. Castillo Géniz, D. Acal Sánchez, H. Santana Hernández, J. Tovar Ávila, C. Ramírez Santiago, L.V. González Ania, A. Liedo Galindo, D. Corro Espinosa (2011). Dictamen técnico sobre considerar zonas específicas para la aplicación de las vedas de tiburones y rayas en el Pacífico Mexicano. Instituto Nacional de la Pesca. México, D.F. 34 pp.
- Tovar Ávila, J., J.L. Patiño Valencia, M.E. Zárate Becerra (2012a). "La pesca artesanal de tiburón en Isla Isabel, Nayarit (2007-2011)", en: E. Espino Barr, M.A. Carrasco Águila, S. Sarmiento Nafate, O. Miranda Carrillo (editores). VI Foro científico de pesca ribereña. Tuxtla Gutiérrez, Chiapas, México
- Tovar Ávila, J., M.E. Zárate Becerra, J.L. Patiño Valencia, Y. Green Ruíz, P. Díaz Rubín, J. de la Cruz González, M.R. Torres Herrera, B.A. Espinosa Partida, P.A. Ulloa Ramírez, E. Furlong Estrada, et al. (2012b). "Análisis integral de la pesquería de tiburón en Nayarit". Informe final de investigación. Dirección General de Investigación Pesquera en el Pacífico Norte CRIP-Bahía Banderas. 86 pp.
- Tovar Ávila, J., M.R. Torres Herrera, J. de la Cruz González, A. Lizárraga, C. Guevara, A. Alatorre, E. Furlong Estrada, M.E. Zárate Becerra, J.L. Patiño Valencia, Y. Green Ruíz, et al. (2011). "Análisis de la pesquería de tiburón en Nayarit., Bahía Banderas". Informe final de investigación. Dirección General de Investigación Pesquera en el Pacífico Norte CRIP-Bahía Banderas. 60 pp.
- Tovar Ávila, J., J.L. Patiño Valencia, M.E. Zárate Becerra, Y. Green Ruíz, P. Díaz Rubín, M.R. Torres Herrera, J. de la Cruz González, A. Liedo Galindo, P.A. Ulloa Ramírez, R. Gallegos Camacho, et al. (2010) "Análisis de la pesquería de tiburón en Nayarit". Informe final de investigación. Dirección General de Investigación Pesquera en el Pacífico Norte CRIP-Bahía Banderas. 78 pp.
- Tovar Ávila, J., J.L. Patiño Valencia, M.E. Zárate Becerra, P.A. Ulloa Ramírez, S. Hernández Ventura, J. Rentería Bravo, D.A. Preciado Robles Gil, R. Gallegos Camacho, J.L. Dávila Santos, J.L. Hernández Corona, et al. (2009) "Investigación biológico-pesquera de tiburón en el estado de Nayarit". Informe final de investigación. Dirección General de Investigación Pesquera en el Pacífico Norte CRIP-Bahía Banderas. 48 pp.

Thesis

- Andrade, G. Z. (1996). "Determinación de edad y crecimiento en vértebras del tiburón cornuda, *Sphyrna lewini*, del Pacífico mexicano (1992-1994)". Tesis de Biología, Facultad de Ciencias, Universidad de Guadalajara, México.
- Anislado Tolentino, V. (2008). "Demografía y pesquería del tiburón martillo, *Sphyrna lewini* (Griffith y Smith 1834) (Pisces: Elasmobranchii), en dos provincias oceanográficas del Pacífico mexicano". Tesis de Doctorado. Universidad Nacional Autónoma de México (UNAM).
- Anislado Tolentino, V. (2000). "Ecología pesquera del tiburón martillo *Sphyrna lewini* (Griffith y Smith, 1834) en el litoral del estado de Michoacán, México". Tesis de Maestría en Ciencias. Facultad de Ciencias. Universidad Autónoma de México. 146 pp.
- Anislado Tolentino, V. (1995). "Determinación de la edad y crecimiento del tiburón martillo, *Sphyrna lewini*, (Griffith y Smith, 1834) en el Pacífico Central mexicano". Tesis de Licenciatura en Biología. Facultad de Ciencias. UNAM. 64 p.
- Campos Pérez, S. (1999), "Caracterización y análisis económico de la pesquería artesanal de tiburón en Manzanillo, Colima, México", Tesis de Maestría, Posgrado Interinstitucional en Ciencia Pecuarias, facultad de Medicina Veterinario y Zootecnia, Universidad de Colima 86p.

- Campuzano Caballero, J.C. (2002). "Biología y pesquería del tiburón martillo *Sphyrna lewini* (Griffith y Smith, 1834), en Puerto Madero, Chiapas, Estados Unidos Mexicanos". Tesis de Licenciatura en Biología. Facultad de Ciencias. Universidad Autónoma de México. 210 pp.
- Carrera Fernández, M. (2011). "Parámetros reproductivos de los tiburones piloto (*Carcharhinus falciformis*), martillo (*Sphyrna lewini*) y azul (*Prionace glauca*) en el Pacífico mexicano". Departamento de Pesquerías y Biología Marina. Tesis de Doctorado en Ciencias Marinas. Centro Interdisciplinario de Ciencias Marinas. 120 pp.
- Castillo-Géniz, J.L. (2001). Aspectos biológico-pesqueros de los tiburones que habitan en las aguas del Golfo de México. [Tesis de Maestría]. Universidad Nacional Autónoma de México.
- Damián Guillén, M.I. (2009). "Aspectos biológicos pesqueros de tiburones y especies de captura incidental desembarcados por la flota tiburonera del puerto de Zihuatanejo, Guerrero, México". Tesis de licenciatura. Universidad Nacional Autónoma de México.
- Escobedo Olvera, M.A. (2009). "Análisis biológico pesquero de la pesquería con red agallera de deriva en la península de Baja California durante el período 1999-2008". Tesis de Maestría en Ecología Marina. Posgrado en Ecología Marina. Centro de Investigación Científica y de Educación Superior de Ensenada, Baja California. 160 pp.
- Furlong Estrada, E. (2013). "Evaluación de la pesquería artesanal de tiburón en Nayarit, México, mediante análisis de riesgo ecológico, de resiliencia en las especies más abundantes". Tesis de Doctorado en Ciencias en Biosistemática, Ecología y Manejo de Recursos Naturales y Agrícolas. Centro Universitario de Ciencias Biológicas y Agropecuarias. Universidad de Guadalajara. 129 pp.
- García Rodríguez, E. (2012). "Análisis de la pesquería de tiburón azul en la costa oeste de Baja California con inferencias en el estado de la población". Tesis de Maestría, Posgrado en Ecología Marina, Ensenada, Baja California, México, CICESE, 71p.
- Márquez Farías, J.F. (2002). "Análisis de la pesquería de tiburón de México". Tesis de Maestría en Ciencias Pecuarias. Posgrado Interinstitucional en Ciencias Pesqueras. Universidad de Colima. 96 pp.
- Ocampo Torres, A. (2000). "Aspectos biológico - pesqueros del cazón Pech *Sphyrna tiburo* (Linnaeus, 1758) en las aguas de Campeche, Mexico". Facultad de Ciencias. Universidad Autónoma de México.
- Medina Bautista, J. (2014). "Estructura espacial de la captura de la pesquería de mediana altura de tiburón en el Pacífico mexicano". Tesis de Maestría en Manejo de Recursos Marino. Departamento de Pesquerías y Biología Marina. Centro Interdisciplinario de Ciencias Marinas. 178 pp.
- Walker, T., Dowdney, J., Williams, A., Fuller, M., Webb, H., Bulman, C., Sporcic, M. & Wayte, S. (2007). Ecological Risk Assessment for the Effects of Fishing: Report for the Shark gillnet component of the Gillnet Hook and Trap Sector of the Southern and Eastern Scalefish and Shark Fishery. Report for the Australian Fisheries Management Authority, 299.
- Braccini, J.M., Gillanders, B.M. & Walker, T.I. (2006). Hierarchical approach to the assessment of fishing effects on non-target chondrichthyans: case study of *Squalus megalops* in southeastern Australia. *Canadian Journal of Fisheries and Aquatic Sciences*, 63(11), 2456-2466.
- Pérez Jiménez, J.C. (1997). "Análisis biológico pesquero de tiburones de las familias Sphyrnidae, Alopiidae y Lamnidae (Elasmobranchii) capturados por la principal flota artesanal del sur de Nayarit, México. Temporada 1995-1996". Tesis de Licenciatura en Biología. Centro Universitario de Ciencias Biológicas y Agropecuarias. Universidad de Guadalajara. 76 pp.
- Reyes González, J.A. (1999). Asociaciones interespecíficas de tiburones en la pesquería de Veracruz, México. 53 pp.
- Reyna Matezans, V.A. (2015). "Caracterización de la pesca artesanal de tiburón en Norte y Centro de Veracruz". Tesis de Maestría en Biología Marina. Facultad de Ciencias Biológicas y Agropecuarias. Universidad Veracruzana. 132 pp.
- Righethy Rojo, B. y F.J. Castro Morales (1990). "Estudio de algunos aspectos biológicos del tiburón en la región de Mazatlán, Sinaloa". Tesis Biología Pesquera. Facultad de Ciencias del Mar. UAS. 77p
- Ramírez Amaro, S.R. (2011). "Caracterización de la pesquería artesanal de elasmobranchios en la costa occidental de Baja California Sur, México". Tesis de Maestría. Instituto Politécnico Nacional

- Santana Hernández, H. (2001), Estructura de la comunidad de pelágicos mayores capturados con palangre en el Pacífico mexicano y su relación con la temperatura superficial. Tesis de Doctorado. Posgrado Interinstitucional de Ciencias Pecuarias, Facultad de Medicina Veterinaria y Zootecnia, Universidad de Colima, México. 150p
- Silva Chavarria, F. (2010). "Pesquería artesanal de tiburón en el puerto de Zihuatánjo: su aprovechamiento e indicadores económicos". Tesis de Licenciatura. Universidad Nacional Autónoma de México. 77 p.
- Torres Villegas, C.P. (2003). "Caracterización de la pesquería artesanal de tiburones en el norte de Tamaulipas (Playa Bagdad, Matamoros), México". Tesis de Licenciatura en Biología. Facultad de Ciencias. Universidad Autónoma de México. 165 pp.
- Torres, A. (1999). "Observaciones sobre la biología reproductiva de la cornuda barrosa *Sphyrna lewini* (Griffith y Smith 1834) (Pises: Sphyrnidae) en aguas del noroeste de México". Tesis de licenciatura. Universidad Nacional Autónoma de México.
- Zea de La Cruz, H. (2007). "Edad y crecimiento del tiburón aleta de cartón *Carcharhinus falciformis* (Bibron, 1839) registrado en el Golfo de Tehuantepec". Tesis de Licenciatura en Biología Marina. Instituto Tecnológico de Boca del Río. 65 pp.

Conference proceedings

- Alejo Plata, M. del C., G. Cerdenares, G. González Medina (2006). "La pesca artesanal de tiburón en la Costa Chica de Oaxaca, México, 2000-2003", en: S. Salas, M.A. Cabrera, J. Ramos, D. Flores y J. Sánchez, (editores). Memorias Primera Conferencia de Pesquerías Costeras en América Latina y el Caribe. Evaluando, Manejando y Balanceando Acciones. Mérida, Yucatán, pp. 22-38.
- Benítez-Díaz, H., López, G. y Rivera-Téllez, E. (2015). Taller de Evaluación de Productividad, Susceptibilidad y Manejo de tiburones mexicanos listados en el Apéndice II de la citas. Informe de resultados-Comisión Nacional para el Conocimiento y Uso de la Biodiversidad (CONABIO). https://www.biodiversidad.gob.mx/media/1/planeta/cites/files/Informe_FINAL_V3.3.pdf
- Castellanos Betancourt, J.C., S.R. Soriano Velásquez, C.E. Ramírez Santiago, D.E. Acal Sánchez (2010). "Guía de tronchos de tiburón para las especies desembarcadas en Puerto Chiapas, Chis.: Herramienta útil", en: A.W. Díaz Sánchez, C. Gabriela Aguilar y O.U. Mendoza Vargas. (editores). Cuarto simposium nacional de tiburones y rayas. Ciudad de México, México.
- Celaya Castillo, C., J.P. Arias Aréchiga, J.M. López Vila. (2014). "Caracterización de la pesquería de tiburón en la Bahía de Paredón, Chiapas, México", en: W.A. Díaz Sánchez (editor). Sexto simposium nacional de tiburones y rayas. Mazatlán, Sinaloa, México. Cruz Ramírez, A., C. Ramírez Santiago, S.R. Soriano Velásquez, D. Acal Sánchez (2008). "Biología y reproducción del tiburón tunero (*Carcharhinus falciformis*) en aguas oceánicas del litoral de Manzanillo, Colima, México", en: W.A. Díaz Sánchez, J. Pérez, R. Pérez Orduña y O. U. Mendoza Vargas. (editores). Tercer simposium nacional de tiburones y rayas. Ciudad de México, México.
- Cruz Ramírez, A., S.R. Soriano Velásquez, H. Santana Hernández, C.E. Ramírez Santiago (2010). "Biología pesquera de siete especies de tiburones oceánicos-costeros en los litorales de Colima, Jalisco y Michoacán", en: W.D. Díaz Sánchez, C. Gabriela Aguilar y O. U. Mendoza Vargas. (editores). Cuarto simposium nacional de tiburones y rayas. Ciudad de México, México.
- González Salgado, P., S.R. Soriano Velásquez, C.E. Ramírez Santiago, N. Vásquez Gómez, D.E. Acal, P. Ulloa Ramírez (2006). "Caracterización de la pesca ribereña en la Cruz de Huanacaxtle, Bahía de Banderas, Nayarit", en: E. Espino-Barr, M.A. Carrasco-Águila, M. Puente-Gómez (editores). III Foro científico de pesca ribereña. Puerto Vallarta, Jalisco, México.
- Domínguez, A. P., C. Galván Tirado, S.R. Soriano Velásquez, D.E. Acal (2004). "Composición de la captura comercial de las pesquerías de tiburón y escama desembarcados en Puerto Madero, Chiapas 1996-2003", En: J. Tovar Ávila, M.T. Gaspar Dillanes, N.E. García Nuñez, A.W. Díaz Sánchez, C. Gabriela Aguilar, M.A. Bonilla Vásquez, S. Rodríguez Lorenzo, M.J. Cruz Pacheco, M. Robles Aguirre, A. Macías Oliva y N. Mejía Morán (editores). Primer simposium nacional de tiburones y rayas. Ciudad de México, México.
- Martínez Cruz, L.E., J.L. Oviedo Pérez, L.I. Balan Che. (2014). "Pesquería de rayas en la zona centro del estado de Campeche, México", en: Díaz-Sánchez A.W. (editor). Sexto simposium nacional de tiburones y rayas. Mazatlán, Sinaloa, México.

- Martínez Cruz, L.E., J.L. Oviedo Pérez, L. González Ocaranza (2010). "Pesquería de elasmobranchios en San Pedro, Tabasco", en: Díaz-Sánchez A.W., C. Gabriela-Aguilar y O. U. Mendoza-Vargas. (editores). Cuarto simposium nacional de tiburones y rayas. Ciudad de México, México.
- Martínez Cruz, L.E., J.L. Oviedo Pérez, L. González Ocaranza, J. Maldonado Marín. (2012a) "Pesquería de tiburón en las costas del estado de Campeche en 2011", en E. Espino Barr, M.A. Carrasco Águila, S. Sarmiento Nafate, O. Miranda Carrillo (editores). VI Foro científico de pesca ribereña. Tuxtla Gutiérrez, Chiapas, México.
- Martínez Cruz, L. E., J. Seca Escalante, J.I. Maldonado Martín, J.L. Oviedo Pérez, L. González Ocaranza, L.I. Balan Che (2012b). "Caracterización de la pesquería de tiburón en la zona centro del estado de Campeche en 2010", en: A.W. Díaz Sánchez, C. Gabriela Aguilar y O.U. Mendoza Vargas (editores). Quinto simposium nacional de tiburones y rayas. Ciudad de México, México.
- Miranda Carrillo, O., E. Espino Barr, E. Cabral Solís, M. Puente Gómez, A. García Boa, F.J. de la Cruz González (2010). "Aspectos de la pesca ribereña en la bahía de Barra de Navidad, Jalisco, 2007 a 2009", en: E. Espino-Barr, M.A. Carrasco-Águila, E. Romero-Hernández, H. Aguirre-Villaseñor, O. Miranda-Carrillo (editores). V Foro científico de pesca ribereña. Boca del Río, Veracruz, México.
- Recio Silva, J.L., Dorantes González, O. Méndez (2016). "Caracterización de la pesquería de tiburones en la localidad de Chachalacas, Veracruz, México", en: A.W. Díaz Sánchez (editor). Séptimo simposium nacional de tiburones y rayas. Puerto Vallarta, Jalisco, México. Rodríguez Matus, A, V.H. Galván Piña, B. Aguilar Palomino, S.A. Briones Hernández, J.D. Hermosillo Corona, A.V. Barajas Calderón, E.A. Becerra Vega, C.A. Amezcua Gómez (2014). "Pesca incidental de tiburones en la costa sur de Jalisco, México", en: A.W. Díaz Sánchez (editor). Sexto simposium nacional de tiburones y rayas. Mazatlán, Sinaloa, México. Santana Hernández, H. y J.J. Valdez Flores (2012). "Distribución y abundancia relativa del tiburón oceánico de aletas blancas *Carcharhinus longimanus*, obtenido por barcos palangreros de mediana altura en el Pacífico Central mexicano", en: Díaz-Sánchez A.W., C. Gabriela-Aguilar y O. U. Mendoza-Vargas. (editores). Quinto simposium nacional de tiburones y rayas. Ciudad de México, México.
- Santana Hernández, H., S. Sarmiento Náfate, J.J. Valdez Flores, J. Villalobos Toledo, A. Labastida Che, J. A. Agustín Jiménez, C. PinedaGarcía. (2010). "Análisis descriptivo de la composición de especies obtenidas por dos flotas dirigidas a la pesca de pelágicos mayores en el pacífico mexicano", en: E. Espino Barr, M.A. Carrasco Águila, E. Romero Hernández, H. Aguirre Villaseñor, O. Miranda Carrillo (editores). V Foro científico de pesca ribereña. Boca del Río, Veracruz, México.
- Tovar Ávila, J., J.L. Patiño Valencia, M.E. Zárate Becerra (2017). "Análisis de la captura de tiburón en la Isla Isabel, Nayarit, México, durante el periodo 2007-2013". *Ciencia Pesquera* 25: 5-14.
- Tovar Ávila, J., J.L. Patiño Valencia, M.E. Zárate Becerra (2012a). "La pesca artesanal de tiburón en Isla Isabel, Nayarit (2007-2011)", en: E. Espino Barr, M.A. Carrasco Águila, S. Sarmiento Nafate, O. Miranda Carrillo (editores). VI Foro científico de pesca ribereña. Tuxtla Gutiérrez, Chiapas, México
- Tovar Ávila, J., M.E. Zárate Becerra, J.L. Patiño Valencia, Y. Green Ruíz, P. Díaz Rubín, J. de la Cruz González, M.R. Torres Herrera, B.A. Espinosa Partida, P.A. Ulloa Ramírez, E. Furlong Estrada, et al. (2012b). "Análisis integral de la pesquería de tiburón en Nayarit". Informe final de investigación. Dirección General de Investigación Pesquera en el Pacífico Norte CRIP-Bahía Banderas. 86 pp.
- Tovar Ávila, J., J. Rentería Bravo, D.A. Preciado Robles Gil, R. Gallegos Camacho, E. Zárate Becerra, J. L. Patiño Valencia, J.L. Dávila Santos (2008). "Variación espacio-temporal de la abundancia relativa de tiburones frente a las costas de Nayarit, México", en: A.W. Díaz Sánchez, J. Pérez, R. Pérez Orduña y O. U. Mendoza Vargas. (editores). Tercer simposium nacional de tiburones y rayas. Ciudad de México, México.
- Vázquez Rojano, R.M. (2004). "Aspectos biológicos de tiburones y rayas en la costa centro y sur de Sinaloa, en invierno y primavera", En: J. Tovar Ávila, M.T. Gaspar Dillanes, N.E. García Nuñez, A.W. Díaz Sánchez, C. Gabriela Aguilar, M.A. Bonilla Vásquez, S. Rodríguez Lorenzo, M.J. Cruz Pacheco, M. Robles Aguirre, A. Macías Oliva, N. Mejía Morán (editores). Primer simposium nacional de tiburones y rayas. Ciudad de México, México.
- Vélez Marín, R, J.F. Márquez Farías, A. Castillo Cervantes, F. Ascencio Borondon (2008). "Abundancia estacional del tiburón tunero *Carcharhinus falciformis*, capturado por la flota palangrera de mediana altura de Manzanillo, Colima (2002-2007)", en: E. Espino Barr, M.A. Carrasco Águila, E.G. Cabral Solís, P. Fuentes Mata, M. Puente Gómez, A. García Boa (editores). IV Foro científico de pesca ribereña. Acapulco, Guerrero, México.

- Wakida Kusunoki, A.T y D. de Anda Fuente (2012). "La captura de tiburón ¿realmente es una pesquería? El caso de Tabasco", en E. Espino Barr, M.A. Carrasco Águila, S. Sarmiento Nafate, O. Miranda Carrillo (editores). VI Foro científico de pesca ribereña. Tuxtla Gutiérrez, Chiapas, México
- Zárate Becerra, M.E., J. Tovar Ávila, J. Rentería Bravo, D.A. Preciado Robles Gil, R. Gallegos Camacho, J.L. Patiño Valencia, J.L. Dávila Santos (2008). "Descripción de la pesca de tiburón en Isla Isabel, Nayarit, México, durante 2007 e inicio de 2008", en: W.A. Díaz Sánchez, J. Pérez, R. Pérez Orduña y O. U. Mendoza Vargas. (editores). Tercer simposium nacional de tiburones y rayas. Ciudad de México, México.

Annex 1

- A. Analysis of Productivity, Susceptibility and Vulnerability (PSA) and Management Risk (MRisk) in the capture of Mexican shark species listed in CITES.
- B. Conversion factors between specimens of Mexican shark species listed in CITES.
- C. Other activities that CONABIO has led to generate base information to issue NDF.

- A. Analysis of Productivity, Susceptibility and Vulnerability (PSA) and Management Risk (MRisk) in the capture of Mexican shark species listed in CITES.

One such method is the Ecological Risk Assessment for Fisheries Effects (ERAEF) proposed by Hobday *et al.* (2007) and has been used to assess the impact of fisheries on sharks (Braccini *et al.*, 2006; Walker *et al.* 2007; Cortés *et al.* 2010; Patrick *et al.* 2010; Tovar *et al.* 2010). This analysis consists of three levels: 1) a qualitative level of Scale, Intensity and Consequence Analysis (sica); 2) a semi-quantitative analysis known as Productivity and Susceptibility Analysis (psa); and 3) a quantitative level of analysis (e.g. a demographic analysis) (Hobday *et al.* 2011).

CONABIO, in collaboration with experts (INAPESCA, CICESE, CICIMAR-BCS and ECOSUR-Campeche) adapted the PSA (Patrick *et al.*, 2010) and Management Risk (MRISK; Lack *et al.*, 2014) methodologies to Mexico to assess the vulnerability of Mexican shark species listed in CITES considering six Fishing Zones along the two coasts of the country and two types of vessels (artisanal and deep-sea).

These two methodologies were applied in a workshop in CDMX (July 8-10, 2015) with the participation of 34 experts from 5 government agencies (CONABIO, INAPESCA, CONAPESCA, SEMARNAT and CONANP), 7 academic institutions (CICESE, CICIMAR, ECOSUR, UNAM, Universidad de Guadalajara, Universidad del Mar and Universidad Veracruzana), 3 civil associations (SOMEPEC A. C., IEMANYA Oceánica A. C. and COBI A. C.) and independent consultants.

Productivity, Susceptibility and Vulnerability Analysis (PSA)

The PES methodologies are semi-quantitative and evaluate the vulnerability of species to harvesting pressures based on their Productivity (biology of the species), Susceptibility (harvesting pressure) and Management (management of the species at the national level).

The report and results of the 2015 workshop are available on the CONABIO website: <https://www.biodiversidad.gob.mx/planeta/cites/index/convocatorias-y-talleres/taller-de-evaluacion-y-manejo-de-tiburones-mexicanos>.

Management risk assessment (MRisk)

Based on the MRisk assessment, and a score with the assessment scale proposed by Lack and collaborators (2014; 6 to 28 points where 6 to 13 indicates high risk, 13 to 21 intermediate risk and 21 to 28 lower risk), the Management Risk for these species in Mexico is high (from 6 to 13 points), being 10 (offshore vessels) and 11.2 (artisanal vessels).

The reliability of the information used was evaluated on a scale of 1 to 50 points (1 to 20 indicates high reliability, 20 to 40 medium and 40 to 50 low), resulting in a high reliability

(1 to 20 points) of 10 points for deep-sea vessels and 14 points for artisanal vessels. However, when comparing the values for the deep-sea and artisanal fleets, the management risk is lower for the species in the deep-sea fleet compared to the artisanal fleets, regardless of the coastline where they are caught (Table A1).

Table A1. MRisk values for larger and smaller fleets according to the methodology adapted from Lack and collaborators (2014) published in Benitez and collaborators (2015). *Multiplied by a factor of 0.8 according to Lack and collaborators (2014) as it is a species with high international demand. **Based on a modification of the rating scale from 1 to 5, where 1 represents the best quality of information.

Artisanal fleet						
Category		Value	Weighting	Results	Trade factor	Quality**
		Average			international*	
State of the population	1	2	2	1.6	0.8	1
Handling system	2	4	8	6.4	0.8	9
Adaptive						
Generic handling	2.7	1	2.7	2.2	0.8	4
Final value				10.2		14
Offshore fleet						
Category		Average	Weighting	Results	Trade factor	Quality**
					international*	
State of the population	1	2	2	1.6	0.8	1
Handling system	2.1	4	8.5	6.8	0.8	7
Adaptive						
Generic handling	3.2	1	3.2	2.6	0.8	2
Final value				11		10

The estimated management risk contemplates that generic management efforts are being made in Mexico (see Annex 1), due to the number of species under exploitation and the diversity of fisheries that impact them. A central recommendation during the workshops was the need for semi-quantitative and quantitative assessments, and to follow up on compliance with established management measures.

Subsequently the species included in CoP17 (South Africa, 2016) in a virtual workshop in 2017 (April 4, 2017) and in March 2018 the assessments of all species were updated and published in chapter 14 of the book "[Conservation, use and sustainable exploitation of Mexican sharks listed in CITES](#)" (Pérez-Jiménez *et al.*, 2022; Figure A1).

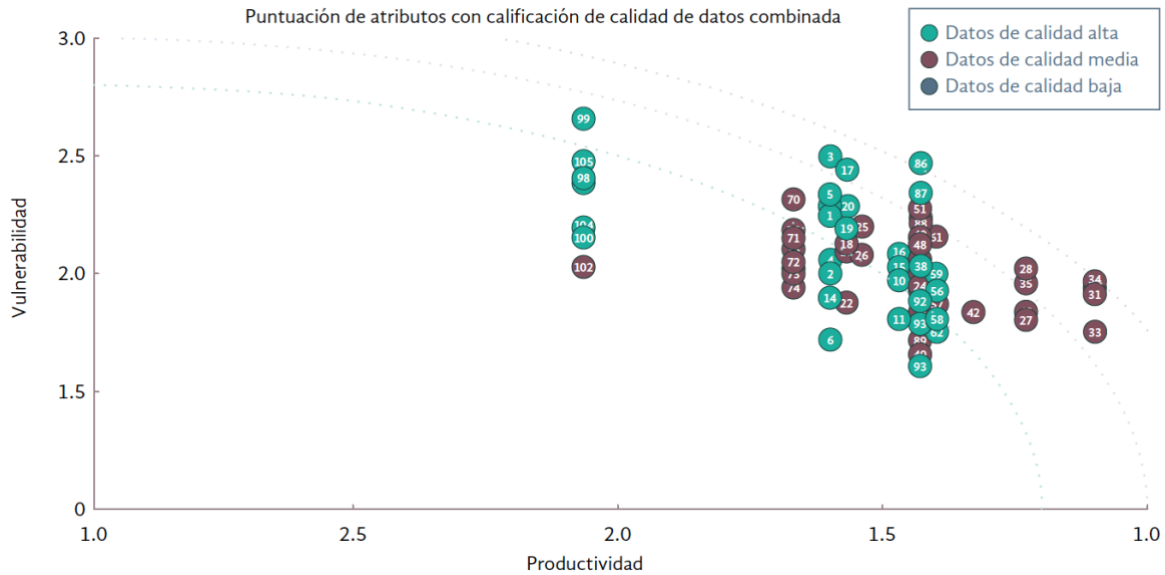


Figure A1. Vulnerability value of each unit of analysis used. Numbers indicate: 1-16 *Sphyrna lewini*, 17-26 *S. zygaena*, 27-37 *S. mokarran*, 38-45 *Carcharhinus longimanus*, 46-55 *Alopias pelagicus*, 56-69 *A. superciliosus*, 70-81 *A. vulpinus*, 82-97 *C. falciformis*, 98-105 *Prionace glauca*. Point values are given in Table 14.4 in Pérez-Jiménez et al., 2022.

These analyses (PSA and MRisk) were scaled by the participants of the "[Workshop on Strengthening technical and administrative capacities in the issuance of CITES-listed Mexican shark export permits](#)" (CDMX, June 2019) to the application of a methodology for the estimation of Maximum Sustainable Yield (MSY) from catches, developed by Martell and Froese (2013) with a simple surplus production model of Schaefer (1954) (see section 2d on population estimation), which were the basis for establishing the VES.

B. Conversion factors between specimens of Mexican shark species listed in CITES.

To facilitate the estimation of equivalences between export quantities (mainly dry fin) and landed catch (whole shark, trunk, fresh fins), the Scientific Authority implemented the following methodology to select the most accurate conversion factors for Mexico (Rivera-Téllez, et al., in preparation):

1. Compilation of papers, reports, theses, among others, on conversion factors among all shark specimens (whole, trunk, fresh fins, dried fins and skins) reported along the commercial chain in Mexico (from landing to export).
2. Classification and scoring of the information collected in three successive categories, using as criteria:

Taxonomic accuracy. A. Specific information at species level, B. Information at genus level, C. Information at higher taxonomic level or with common name. Regional accuracy. A study conducted in Mexico, 2. A study conducted in the Americas, 3. A study conducted elsewhere in the world Sample size. i. Sample size greater than 30, 2. Sample size greater than 30, ii. Sample size less than 30.

3. For each species and specimen, the conversion factor with the highest ranking of these categories was selected.

4. All selected factors were validated in two workshops with experts in 2015 (Benítez et al., 2015) and 2017 (virtual workshop) that counted with the participation of fisheries authorities (CONAPESCA, INAPESCA), academic experts, fishermen and CITES Authorities of Mexico.

5. The conversion factors were presented to CITES at the 31st meeting of the Animals Committee (AC31, 2021; virtual meeting; Sharks and Rays Working Group; agenda item 25; Table A2) and are published in the CITES [Sharks and Rays](#) portal and CITES [Virtual College](#) and can be downloaded directly at the following link: https://cites.org/sites/default/files/CONABIO_NDF_tiburones1.pdf

On the other hand, a conversion factor was also estimated to estimate the skin yield (m²) with respect to the weight and size of an adult specimen of *Carcharhinus falciformis*. To this end, Corro-Espinosa and Rivera-Velázquez (2019) conducted an analysis of the calculation of the area and weight of skins of the species in dry samples of specimens caught in the Gulf of Mexico in 2018, indicating that the average Total Length (TL) of skin of more common individuals in the catch is 90 cm, with an average weight of fresh skin per individual estimated at 2.1 kg and approximately 1.47 kg of dry skin (considering a 30% difference between fresh and dry skin), and an approximate area of 0.33m² per individual (Table A2).

Table A2. Conversion factors in percentage representing the weight of dry fins (AS), fresh fins (AF), whole shark (TC), shark carcass (TT) and skin (m²) for 10 Mexican shark species listed in CITES.

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

*According to the estimates of Biery (2012). **As estimated by Corro-Espinosa and Rivera-Velázquez (2019).

C. Other activities that CONABIO has led to generate base information to issue NDF.

To achieve having all this information, since 2014 the Scientific Authority has made efforts to increase Mexico's capacities in the elaboration of shark NDF, such as the development of identification materials, population studies, exchange of techniques

and methodologies, development of action plans and international cooperation, as well as the organization and participation in expert workshops highlighting:

- In the framework of an international workshop on NDF for sharks, held from August 20-22 (2014) in Bonn, Germany, Mexico (Tovar-Ávila and Castillo-Géniz) presented the case of the *Sphyrna lewini* fishery in southeastern Mexico (Chiapas). The main result of the workshop was the elaboration of a general guide for the elaboration of NDF for CITES-listed sharks (<https://www.bfn.de/fileadmin/MDB/documents/service/skript358.pdf>).
- Mexico participated in the Sharks-NDF workshop held from 24-28 November 2014 in Santa Marta, Colombia, which aimed to follow up on the work done by previous workshops (such as the Bonn workshop, see par. 2.1), and among its main results was the presentation of the "isharkfin", which is an identification software developed by FAO (an application to assist in the identification of finned sharks through photographs). The CITES Law Enforcement Authority (PROFEPA) is routinely using the "isharkfin" software in shark fin shipments that have CITES export permits and have been verified in the main maritime and inland ports, international airports and borders of the country.
- 2015, CDMX: [Workshop on Productivity, Susceptibility and Management Assessment of Mexican Sharks listed in CITES Appendix II](#) (July 8-10, 2015). Productivity and Susceptibility Analysis (PSA; Patrick, et al., 2010) and Management Risk (MRISK; Lack, et al., 2014) methods were analyzed and adapted to Mexico to assess the vulnerability of hammerhead and whitetip shark species.
- 2017, CDMX: [North American Action Plan for Sustainable Trade of Shark Species](#) (January 17-18, 2017). Action plan with the objective of promoting legal, sustainable and traceable shark trade. To have advice from the authorities responsible for the implementation of CITES in Canada, the United States and Mexico.
- 2017, Virtual: Teleconference for the Productivity, Susceptibility Assessment (PSA) and Management of Mexican Sharks listed in CITES Appendix II and Blue Shark (April 4, 2017). The Mexican CITES shark species (*Carcharhinus falciformis*, *Alopias vulpinus*, *A. pelagicus*, *A. superciliosus*) and additionally the blue shark (*Prionace glauca*) were evaluated with the PSA method (Productivity and Susceptibility Analysis, Patrick, et al, 2010) as a reference in the analysis.
- 2018 Vancouver, Canada: Training workshop on shark fin identification and transnational illegal trade (July 10-12, 2018.) As a result of the joint work between the governments of Canada, the United States and Mexico aimed at promoting legal, sustainable and traceable trade in certain North American native species included in CITES Appendix II.
- - 2018, CDMX: Expert workshop: Strengthening of the Mako Shark amendment proposal (October 19, 2018.) Biological parameters, Harvest and trade (national and international) and Management (national and international).
- - 2019, CDMX: [Workshop on Strengthening technical and administrative capacities in the issuance of export permits for Mexican sharks listed in CITES](#) (June 6 and 7, 2019). Strategies and opportunities were analyzed to ensure that the use and international trade of eight species of Mexican sharks included in

the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is legal, sustainable and traceable.

- 2022, CDMX: Strengthening the implementation of CITES in Mexico for Appendix II listed sharks (SOMEPEC-CONABIO-WWF; funded by SharkConservation Fund). Fishery sustainability ambassadors (students and researchers) from the main fishing camps in Baja California Sur, Sinaloa, Chiapas and Colima (states with the highest landings of CITES species in NDF applications) were trained to conduct regional workshops.
- - 2022, CDMX: Publication of the book "[Conservación, uso y aprovechamiento sustentable de tiburones mexicanos listados en la CITES](#)", This book compiles the current scientific information available on 12 Mexican sharks listed in CITES. This book compiles the current scientific information available on 12 Mexican sharks listed in the CITES Appendices.

Annex 2 (in digital)

AGREEMENT modifying the Notice announcing the establishment of closed seasons and areas for the fishing of different species of aquatic fauna in waters under federal jurisdiction of the United Mexican States, published on March 16, 1994, to modify the closed season and areas for sharks in the Gulf of Mexico and the Caribbean Sea.

Annex 3. Information submitted by Mexico to CITES on the work done to generate baseline information for the development of NDFs for sharks.

Document	Information submitted to CITES on NDF making in Mexico	Recommendations of the Working Group	AC Recommendation
AC28 Doc. 17.1.1 Annex7 (2015) AC28 Inf. 27(2015)	Additional information on shark fisheries management measures: <ol style="list-style-type: none"> a. Mexico's participation in NDF workshop in 2014 (Bonn, Germany) b. Workshop on Productivity, Susceptibility and Management Assessment of Mexican sharks listed in CITES Appendix II (July 8-10, 2015, CDMX): Participation of 34 experts (academia, government, civil associations and independent consultants). Assessment of PES and MRisk, of the 4 Mexican shark species included in CITES subject to fishing and international trade in Mexico (<i>S. lewini</i>, <i>S. mokarran</i>, <i>S. zygaena</i> and <i>C. longimanus</i>). 	Note the examples of application of the MRisk method (AC28 Inf. 27).	The AC took note of the recommendations of the Shark Working Group.
AC29 Doc. 23 A1 (Rev. 1) (2017)	Response to Notification 031/2017 Request for new information on shark and ray conservation and management activities: <ol style="list-style-type: none"> 1. Scientific information on Mexican sharks and research activities in Pacific and Atlantic. 2. Virtual workshop to assess (PSA and MRisk) <i>Alopias</i> spp and <i>Cacharhinus falciformis</i> species at national level (April, 2017). 	Sin recomendaciones específicas sobre las respuestas de los países a la Notificación 2017/031.	El AC adoptó las recomendaciones del GT, sin recomendaciones específicas a las Partes que respondieron a la Notificación 2017/031.
AC30 Doc. 20 A1 (2018)	Response to Notice 2018/041 Request for new information on shark and ray conservation and management activities, including legislation: <ol style="list-style-type: none"> a) enforcement workshop (Vancouver, July 10-12, 2017) under the CEC North America project. b) Compilation of species-specific data on shark catch and fishing activities, with emphasis on CITES-listed species. c) Issuance of NDFs d) Identification capacity building e) Updating of legislation 	Sin recomendaciones específicas 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 específicas a las Partes que respondieron a la Notificación 2018/041.
AC31 Doc. 25 A2 (2020)	Response to Notification 2020/016 Request for new information on shark and ray conservation and management activities, including the title of the legislation: <ol style="list-style-type: none"> a) NDF development b) CCA Project. "Supporting Sustainable Trade in CITES Species" (2017-2018) in follow-up to the 2015-2016 operational plan CEC Project "Strengthening the Conservation and Sustainable Production of 	Sin recomendaciones específicas sobre las respuestas de los países a la Notificación 2020/016.	El AC adoptó las recomendaciones del GT, sin recomendaciones específicas a las Partes que respondieron a la Notificación 2020/016.

	<p>Selected Appendix II Species in North America"</p> <p>c) "Workshop on Strengthening technical and administrative capacities in the issuance of export permits for CITES-listed Mexican sharks" (June, 2019) to analyze strategies and opportunities to strengthen the legal, sustainable and traceable international harvest and trade of eight CITES-listed Mexican shark species.</p>		
AC31 Doc.14.1 (2021) NDF Guidance (2021)	In response to Notification to the parties 2021/007 , the "Manual of procedures for issuing technical considerations by species for the formulation of Non-Detriment Findings (NDF): Sharks" was presented.	---	Sin recomendaciones específicas sobre las respuestas de los países a la Notificación 2021/007
CoP19 Inf. 59 (2023)	The CoP was informed about the publication of the book "Conservación, uso y aprovechamiento sustentable de tiburones mexicanos listados en la CITES" whose objective is to strengthen the implementation of Appendix II for sharks and to have scientific information as a basis for making NDF. Published by CONABIO in collaboration with experts from INAPESCA and CICESE and 36 experts.	---	---
AC32 Doc.37 A2 (2023)	<p>Response to Notification 2023/027 Request for new information on shark and ray conservation and management activities:</p> <ol style="list-style-type: none"> 1. Issuance of NDFs by Mexico 2. Publication of supporting materials and update of management documents. 3. More precise conversion factors for Mexico (whole shark, trunk, fresh fins). 	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 específicas a las Partes que respondieron a la Notificación 2023/027

Annex 4

Courses

1. 2023. Identification of shark species through their fins. Regional Center for Aquaculture and Fisheries Research in Lerma, Campeche. National Institute of Fisheries and Aquaculture.
2. 2023. An induction talk on the use of technology for inspectors, such as the FinFinder app, as a tool for fin identification, was given on August 16, 2023.
3. 2022. [Strengthening the implementation of CITES in Mexico for Appendix II listed sharks](#) (SOMEPEC/CONABIO/WWF-Mexico; financed by SharkConservation Fund): 5 regional training workshops were held for filling out arrival notices and species identification in the camps with the largest record of catches for export.
4. 2021. [Capacity building for making non-detriment findings \(NDF\) for the following Mexican sharks listed in CITES: *Sphyrna lewini*, *S. mokarran*, *S. zygaena*, *Alopias vulpinus*, *A. pelagicus*, *A. superciliosus*, *Carcharhinus falciformis*, *C. longimanus*, *Isurus oxyrinchus* and *I. paucus* \(RE007\)](#). CONABIO. June 15, 2020 to June 16, 2021.
5. 2021: [Videocapsule for the strengthening of non-detriment findings \(NDF\) for sharks and rays included in CITES Appendix II](#): the relevance of correctly filling out the arrival notices and the essential role played by fishermen in the description of the species (common name and scientific name) was highlighted. Collaboration between CONABIO and WWF-Mexico.
6. 2019. [Workshop on Strengthening technical and administrative capacities in the issuance of export permits for Mexican sharks listed in CITES](#). CONABIO-INAPESCA-CCA. June 6-7, 2019. CDMX.
7. 2018. The correct identification of specimens in transit of national and international trade is rectified by Federal Fisheries Officials of CONAPESCA and by the Federal Attorney's Office for Environmental Protection (PROFEPA) who have also received training courses for this at the [Training Workshop on Shark Fin Identification and Transnational Illegal Trade](#) in Vancouver, Canada from July 10-12, 2018.
8. 2014-2015. CONAPESCA provided eight training courses on the correct identification using visual guides in eight states of the Republic: Sinaloa, Sonora, Oaxaca, Campeche, Colima, Veracruz, Tamaulipas and Baja California. The courses have been developed in collaboration with the Instituto Nacional para el Desarrollo de Capacidades del Sector Rural, A. C. (INCA Rural) and have had the participation of 270 fishermen, with the purpose of improving the specific reports of the catches of each species of hammerhead sharks by means of visual signals.

Identification (or support) materials

1. 2022 [Publication of the book "Conservación, uso y aprovechamiento sustentable de tiburones mexicanos listados en la CITES"](#): AC-CITES (CONABIO) promoted together with the Centro de Investigación Científica y de Educación Superior de Ensenada (CICESE) and the Instituto Nacional de Pesca y Acuicultura (INAPESCA), and 38 authors, this work to generate a baseline of the current state of knowledge on the biology, conservation status and sustainable use of Mexican shark species listed in CITES, including details on their morphology.
2. 2022. Accompanying [manual for fishery sustainability ambassadors](#): Contains minimum information on legal provisions for the use and trade of sharks at the national level, the regulations for the international trade of listed sharks. It contains

minimum information on legal provisions for the use and trade of sharks at the national level, regulations for international trade of CITES-listed sharks, lessons learned to promote fair prices among links in the commercialization chain, and tools to promote their sustainable, legal and traceable use. Its objective is to provide fishermen with the necessary information and tools to fill out arrival notices, learn about government programs and current laws, among others.

3. 2022: Dissemination [posters](#) that aim to support different actors in the commercial chain of specimens, parts and derivatives of Mexican sharks listed in CITES, from fishermen to traders, including species identification.
4. [Compilation of different identification guides for Mexican sharks listed in CITES for downloading from the AC -CITES web page.](#)
 - a. Cantú JC. [Sharks of Mexico, Central America and the Caribbean](#). Humane Society International-MarViva-Defenders of Wildlife-Teyeliz-PRETOMA.
 - b. Cantú JC. [South American sharks of the Pacific Ocean](#). Humane Society International-MarViva-Defenders of Wildlife-Teyeliz-PRETOMA.
 - c. Castellanos-Betancourt JC, CE Ramírez-Santiago and JL Castillo Géniz. 2013. [Catalog of shark fins, trunks and heads in the Mexican Pacific](#). INAPESCA.
 - d. Castro JI, Castillo-Géniz JL and JF Márquez-Farías. [Guide for the Identification of Commercially Important Shark Species in the Pacific Ocean](#). CONAPESCA.
5. Castro JI, Castillo-Géniz JL and JF Márquez-Farías. [Guide for the Identification of Commercially Important Shark Species in the Gulf of Mexico](#). CONAPESCA.
6. Domingo A, E Cortés, R Forselledo and W Driggers. [Guide for the Identification of Atlantic Ocean Sharks](#). International Commission for the Conservation of Atlantic Tunas.
7. Martínez-Ortíz J. 2009. [Field Guide for the Identification of the Principal Sharks of the Eastern Pacific Ocean](#). APEC Project FWG 01/2001 T. First edition. Guayaquil, Ecuador. 20 pp.
8. NOAA. Shark Identification [Guide. Under the Caribbean Small Boat Commercial Permit for Highly Migratory Species](#).

Others

1. 2022. Sharks and Rays of the Southeastern Gulf of Mexico, presentation made during the 60th Anniversary of INAPESCA at the Regional Center for Aquaculture and Fisheries Research in Ciudad del Carmen. Information presented to the fishing sector of Tabasco and southern Campeche.
2. 2021. [Workshop to Update the National Plan of Action for the Management and Conservation of Sharks and Rays](#) (PANMCTR). INAPESCA-CONAPESCA-WWF. April 23, 2021.
3. 2021: [Videocapsule for the strengthening of the Non Detrimental Finding \(NDF\) of sharks and rays included in CITES Appendix II](#): The relevance of the correct filling of the arrival notices and the essential role that fishermen play in the collection of information to evaluate the state of the resource they exploit was highlighted. Collaboration between CONABIO-WWF.
4. 2019. Informative meeting to publicize the most important aspects and implications of research on sharks in the southeastern Gulf of Mexico, Regional Center for Aquaculture and Fisheries Research in Ciudad del Carmen. National Institute of Fisheries and Aquaculture.

Annex 5. Notice of Arrival form for large and small vessels (digital)

Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación Comisión Nacional de Acuacultura y Pesca													
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="text-align: center;">Homoclave del formato</td></tr> <tr><td style="text-align: center;">FF-CONAPESCA-005</td></tr> <tr><td style="text-align: center;">*Fecha de publicación del formato en el DOF</td></tr> <tr><td style="text-align: center;">30 / 09 / 2015</td></tr> <tr><td style="text-align: center;"><small>DD / MM / AAAA</small></td></tr> </table>	Homoclave del formato	FF-CONAPESCA-005	*Fecha de publicación del formato en el DOF	30 / 09 / 2015	<small>DD / MM / AAAA</small>	<p>Aviso de arribo de embarcaciones mayores de 10 toneladas de registro bruto</p> <p><small>Con fundamento en los artículos 45 fracción VIII y 47 del Reglamento de la Ley de Pesca</small></p>	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="text-align: center;">Folio</td></tr> <tr><td style="text-align: center;">Fecha de solicitud del trámite</td></tr> <tr><td style="text-align: center;"><small>DD / MM / AAAA</small></td></tr> </table>	Folio	Fecha de solicitud del trámite	<small>DD / MM / AAAA</small>			
Homoclave del formato													
FF-CONAPESCA-005													
*Fecha de publicación del formato en el DOF													
30 / 09 / 2015													
<small>DD / MM / AAAA</small>													
Folio													
Fecha de solicitud del trámite													
<small>DD / MM / AAAA</small>													
Datos generales del solicitante													
1. Lugar / oficina de pesca:		2. Clave oficina de pesca:											
3. Período que ampara: <small>DD / MM / AAAA - DD / MM / AAAA</small>		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													
<p>23. Documentos anexos a presentar</p> <p>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.</p> <p>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.</p> <p>Importante: este documento no es válido si lleva tachaduras o enmendaduras, utilice el reverso para notificaciones o sellos de control interno.</p>													
<p>Acuse de recibo de la oficina de SAGARPA/CONAPESCA</p> <p>Nombre: _____</p> <p>Cargo: _____</p> <p>Firma y sello: _____</p>			<p>El declarante</p> <p>Nombre: _____</p> <p>Cargo: _____</p> <p>Firma: _____</p>										
<p>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).</p>													

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 DD	/ 09 MM	/ 2015 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 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. 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 <input type="radio"/> No <input checked="" type="radio"/>	

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).

Annex 6. Fishing Guide Format (digital)



SECRETARÍA DE AGRICULTURA,
GANADERÍA, DESARROLLO RURAL,
PESCA Y ALIMENTACIÓN

GUIA DE PESCA



COMISION NACIONAL DE
ACUICULTURA Y PESCA

FOLIO: _____

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

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: _____

_____ A _____ DE _____ DE _____ año

lugar de asignación de folio, sello y firma _____ día _____ mes _____ 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 ENMENDATURAS