

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



Nineteenth meeting of the Conference of the Parties
Panama City (Panama), 14 – 25 November 2022

CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II

A. Proposal

- Inclusion of the species *Staurotypus triporcatus* (Mexican giant musk turtle) in Appendix II, in accordance with Article II, Paragraph 2a of the Convention, and satisfying Criterion A of Annex 2a, subparagraph B, of Resolution Conf. 9.24 (Rev. CoP17).
- Inclusion of the species *Staurotypus salvini* (Chiapas giant musk turtle) in Appendix II, under Criterion A of Annex 2b of Resolution Conf. 9.24 (Rev. CoP17) regarding look-alike species.

B. Proponents

El Salvador and Mexico*

C. Supporting statement

1. Taxonomy

- 1.1 Class: Sauropsida
- 1.2 Order: Testudines
- 1.3 Family: Kinosternidae (Subfamilia Staurotypinae)
- 1.4 Genus, species or subspecies, including author and year: *Staurotypus triporcatus* (Wiegmann, 1828)
- 1.5 Scientific synonyms: *Terrapene triporcata* Wiegmann, 1828
Staurotypus Triporcatus Duméril y Bibron, 1835
Claudius pictus Cope, 187
- 1.6 Common names: English: Mexican giant musk turtle, Mexican Musk Turtle, Northern Giant Musk Turtle
French:
Spanish: Tres lomos, Galápago (Veracruz), Guao (Tabasco), Morocoy (Tabasco), Tres filos (Chiapas), Maya-Yucateco: Jolom kok (Campeche, Quintana Roo).

* 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.

Note: Current CITES reference nomenclature: Fritz and Havas (2007).

1.7 Code numbers: *Staurotypus triporcatus*: TSN 551864

Staurotypus salvini: TSN 551863

2. Overview

The freshwater turtle *Staurotypus triporcatus* is harvested for meat and is an important resource for fishermen and local communities in its area of distribution. It is one of the most coveted freshwater turtles because of its size, which means that its populations are under great pressure from harvesting (**Section 6**). Due to its size and attractive appearance, the species is also found in the domestic and international pet trade. Large quantities of these turtles are exported, mainly to China, with thousands of specimens being traded and exported every year (**Sections 6.2 and 6.4**). As occurs with other reptiles, illegal trade and international trafficking of the species are frequent. In the latest seizure made in 2020, 505 specimens of *S. triporcatus* were seized by Customs in the cargo zone of Mexico City International Airport (**Section 6.4**). The region inhabited by *S. triporcatus* is characterized by high turtle endemism and a high level of anthropogenic modification (Ennen et al. 2020). Apart from illegal trade, *S. triporcatus* is further threatened by habitat loss and disturbance due to land use changes for agriculture and livestock farming (see **Sections 4.1 and 5**). Excessive harvesting of wild specimens, and habitat modification have left populations vulnerable in a large part of its range (**See Section 5**).

Staurotypus triporcatus is listed under NOM-059-SEMARNAT-2010 (DOF, 2019) as a “threatened” species, and in the IUCN Red List as “near threatened” (likewise, *S. salvini*), and is not currently listed in any of the CITES Appendices (**Sections 7 and 8**). In 2016, Reynoso et al., in coordination with CONABIO (CITES Scientific Authority in Mexico), carried out a study on the current conservation status, uses and management of the species *C. angustatus* and *Staurotypus triporcatus* (Reynoso et al. 2016), which showed that both species were at risk from hunting, trade, and habitat degradation.

Currently, the species continues to be found in trade and in preventive seizures, more so in recent years, including export records (see **Section 6.4**). Inclusion of the species in CITES Appendix II is considered necessary in order to implement better protection measures and avoid international trade leading to unsustainable harvesting of wild specimens from populations that are already vulnerable and could disappear in the future.

It is proposed that *Staurotypus salvini* also be included in Appendix II because of the difficulty in distinguishing between the two species (available information on *S. salvini* is included in **Annex VI**).

3. Species characteristics

3.1 Distribution

Staurotypus triporcatus is found in the lowlands (between 0 and 300 masl) of the Gulf of Mexico watershed and the Caribbean, particularly in Mexico, from central Veracruz, Tabasco, and northern Oaxaca, northern and eastern Chiapas, and the base of the Yucatan peninsula (in Campeche, up to the River Champotón); in Central America, in north and northeast Guatemala, northern Belize, and marginally in northwest Honduras (Ernst and Barbour, 1989; Legler and Vogt, 2013). According to the projected potential distribution model of Reynoso et al. (2016), distribution of *S. triporcatus* in Mexico covers an area of approximately 91,370 km², representing 4.65 % of national territory (Reynoso et al., 2016; **Figure 1**).

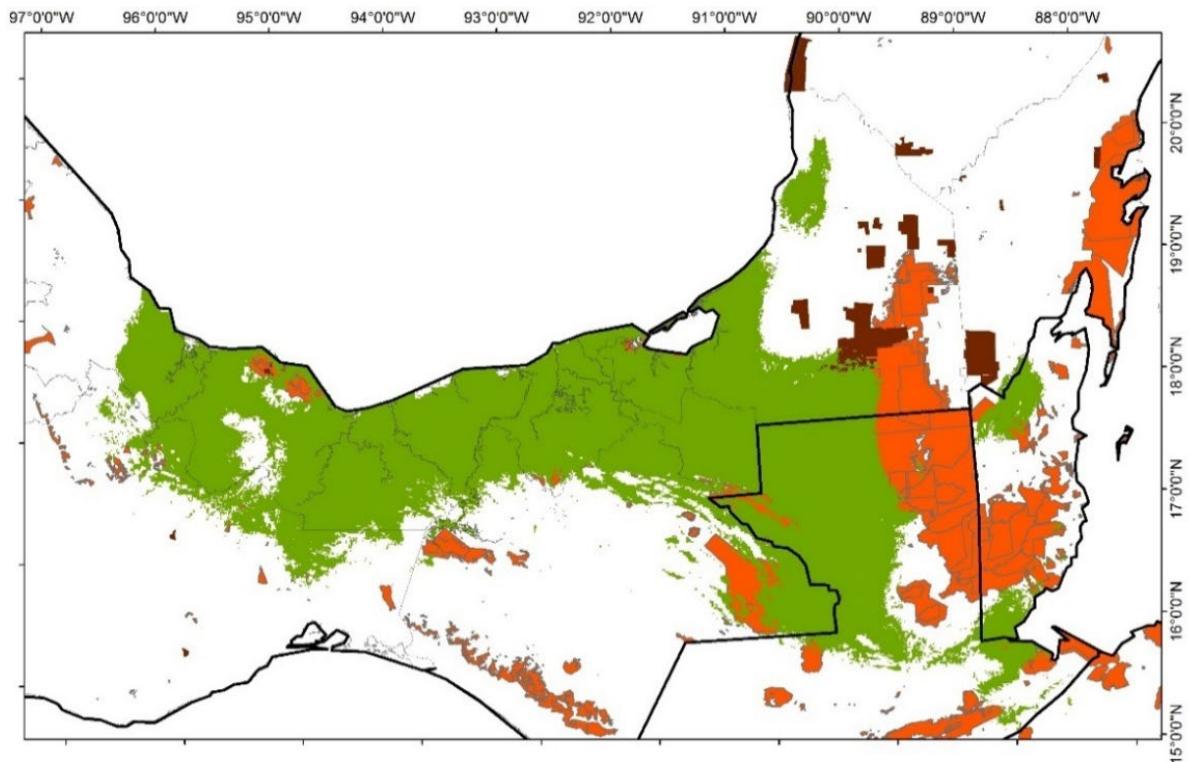


Figure 1. Potential range of *Staurotypus triporcatus* (Reynoso et al., 2016).

Green: possibility of finding *S. triporcatus* associated with water bodies;

Orange: Natural protected areas;

Red: polygons showing Wildlife Management Units (UMA) in Mexico. Only a few free-ranging Wildlife Management Units are registered for this species (overlapping red and green areas).

3.2 Habitat

The species occurs in a wide range of permanent aquatic habitats such as lakes, lagoons, rivers, streams, mangrove swamps and marshes. It is more abundant in river zones with slow-flowing waters, between 1 m and 2 m deep, near the shore where it hunts for its prey (Legler and Vogt, 2013), and is only found on land when nesting or aestivating. The main types of vegetation inhabited by the species are deciduous tropical forests, evergreen tropical forests (rain forests), grasslands and wetlands. Physiography is notably homogeneous throughout its range, the only notable interruption being the Tuxla mountain range (Reynoso et al., 2021).

3.3 Biological characteristics

Staurotypus triporcatus is a predominantly aquatic species that is usually found in the silty bottoms of permanent water bodies. When the water level is low and the temperature high, these turtles burrow underground and aestivate without leaving the water (Vogt, 1997; Ernst y Babour, 1989).

Staurotypus triporcatus is an omnivore and feeds mainly on molluscs, but also eats fruit, seeds or even juveniles of other turtles such as *Kinosternon acutum*, *K. leucostomum* and *Claudius angustatus* (Vogt and Guzmán, 1988; Vogt, 1997). Nonetheless, it may become strictly carnivorous (like other turtles, especially during the dry season; Moll 1990).

The onset of vitellogenesis coincides with the end of the dry season (May–June). Mature follicles are found in the ovaries up until the end of August. The nesting period lasts from late August till March, and females can lay up to six clutches. The peak nesting period occurs between October and November. Clutch sizes vary between three and seventeen eggs (mean clutch size: 9.8 eggs) measuring 35–44 mm, 21–26 mm, each weighing between 12 g and 17 g (Vogt, 1997b; Legler and Vogt 2013; González-Porter, pers. com.). Embryonic diapause has been observed within the eggshell, where there is a temporary arrest of embryo development at an early stage, thereby reducing oxygen consumption

and enabling the embryo to survive underwater until the nest dries out. Incubation time varies between 180 and 260 days (although it may start at any time after 80 days), depending on substrate humidity and temperature. Hatchlings are born in June with the first rains and weigh between 8 g and 12 g, with a straight carapace length (CL) between 25 mm and 58 mm (Vogt, 1997a, González-Porter pers. com.). Sex is genetically determined (Sites et al., 1979; Vogt and Flores-Villela, 1992). According to Legler and Vogt (2013), size at sexual maturity is more than 220 mm in females, and over 180 mm in males. These turtles can breed at 4 or 5 years of age (González-Porter, pers. com.); their longevity is unknown, although there is a record of a turtle in captivity that was, at least, 43 years old (Iverson, 2016).

3.4 Morphological characteristics

Staurotypus triporcatus has an elongated, oval-shaped carapace; the anterior part is short and narrow, while the posterior is rounded. These turtles can reach a size of 350–500 mm and weigh up to 10 kg (Calderón-Mandujano, pers. com.; Orenstein 2012, Legler y Vogt, 2013). The carapace has three very distinct, longitudinal keels (crests), which are brown in colour, and subtly streaked with darker pigment (**Annex II, Figure 1 - b**). These crests become more prominent with age. The plastron is small and cruciform in shape, anterior lobe is shorter than the posterior lobe; creamy-yellowish colour with small dark brown spots (**Annex II, Figure 1 b**). The bridge connecting the carapace and the plastron is yellow, sometimes with dark seams, and is the same width as the humeral; broader-than-long abdominal scutes, and narrow femoral scutes. (Ernst and Babour, 1989). The head is black, white-reticulated, with a large proportion of muscles, and a large mouth (Vogt, 1997); two sensory barbels on the chin. Tails are longer and thicker in males than in females, this being the only morphological difference between males and females, other than that females are usually larger than males. Hatchlings have a dark brown carapace with black mottling, reticulated plastron with white and black colorations (Vogt, 1997).



Figure 2. *Staurotypus triporcatus* (Left: Gracia González-Porter; Right: Ismael Quiroz Guerrero).

3.5 Role of the species in its ecosystem

The species preys on molluscs and small prey. Eggs and juveniles are prey to raccoons (*Procyon*) and white-nosed coatis (*Nasua narica*), and probably opossums (*Didelphis* spp.) and skunks. The main predator of adult turtles is Morelet's crocodile (*Crocodylus moreletii*; Legler and Vogt, 2013), and there have been reports of jaguar predation (*Panthera onca*; Castañeda et al. 2013). These turtles facilitate seed dispersal of some palms of the genera *Bactris*, *Chamaedorea*, *Desmoncus*, and *Sabal* (E. Reyes-Grajales, pers. obs.; Legler and Vogt, 2013).

4. Status and trends

4.1 Habitat trends

A large part of the potential range of *S. triporcatus* has been modified as a result of land use changes for agriculture and livestock farming; in 2016, approximately 55,514 km², which represents 62 % of the potential range of the species in the country, had been modified, mainly for agriculture and livestock farming (induced or cultivated pastureland; **Annex I, Figure 1**; INEGI Series VI 2016) (Reynoso et al., 2016). Although the species may survive in these disturbed areas, its survival is threatened by ploughing, the use of agrochemical products, and pre-sowing burn-off.

There are two areas in Mexico where habitats have been conserved: in the western part of the range, where there are more unmodified water bodies available for these turtles (e.g., the Alvarado Lagoon System in Veracruz); in the eastern part of the range, where the most extensive habitat is conserved in Natural Protected Areas (NPAs) such as the Centla Swamps in Tabasco, Catazajá Lagoon System and the Blue Mountains in Chiapas, and the Términos Lagoon System in Campeche (Reynoso et al., 2021). These include submerged pastures, mangrove forests, and tular and riparian vegetation. However, habitat modification has occurred in much of the buffer zones of these NPAs. The species is relatively abundant in the Hondo River (along the Belize–Mexico border; Calderón-Mandujano, pers. com.; Reynoso et al., 2016).

4.2 Population size

While the size and density of the populations of *S. triporcatus* throughout its range are unknown, there are some studies on general, local, or not so recent abundances or densities: Moll (1990) estimated a density of 0.0008 individuals/m² (8 ind/ha) in Corozal district, Belize. In 2009–2010, Calderón-Mandujano (pers. com.) reported densities ranging from 0.004 ind/m² (40 ind/ha) near La Unión (River Hondo, between Belize and México), and in zones further from the town, up to 0.016 ind/m² (160 ind/ha); similarly, population density in the north of Chetumal Bay was 0.004 ind/m² (40 ind/ha). Reynoso et al. (2016) studied population trends in 37 locations in the states of Veracruz, Tabasco, Oaxaca, Chiapas, and Campeche from 2012 to 2014; the authors reported low abundances, ranging from 0.0004 ind/m² (4 ind/ha) to 0.0035 ind/m² (35 ind/ha), noting that this abundance was probably overestimated because of the method used; there were five sites where no specimens were captured.

4.3 Population structure

Turtle populations are structured by carapace length (CL) rather than by age or reproductive status. According to Legler and Vogt (2013), size at sexual maturity is more than 220 mm in females, and over 180 mm in males. Torre (2004) considered lengths greater than 250 mm to be reproductive individuals. Mean carapace lengths found by Reynoso et al. (2016) were 188 mm in females, 197.99 mm in males, and 77 mm in juveniles. Mean weight was 1,403.6 g in females, 1,839.76 g in males, and 104.78 g in juveniles. A ratio of 1:1.16 (male:female) was found, where 84 % of captured individuals were adults and 16 % unsexed juveniles. In comparison, Vogt (1997) found 80 % of adults (only at the Margarita River in Veracruz), while Torre (2004) reported 90 % of juveniles at the same location (a drastic decline in adult turtles). Calderón-Mandujano found nine individuals at the River Hondo, with carapace lengths ranging from 247mm to 289 mm, and weights between 2,290 g and 3,150 g; eight adult males and one unspecified individual. Different population structures were found at wetland sites in Mexico (La Mancha, Cansaburros), La Mancha being the only site where a higher ratio of adult individuals was found (Cázares, 2015).

4.4 Population trends

Population studies of *S. triporcatus* show a notable change in the population structure, and a decline in the number of individuals. One of the populations at Oaxaca lagoon, Chiapas, practically disappeared in 1992, nine years after the study (Legler and Vogt 2013). Vogt (1997) assessed turtle populations at River Margarita, Veracruz, and reported 80 % of reproductive adults among the population; however, Torre (2004) reported 90 % of juveniles (first age classes) for the same site and failed to find any of the turtles tagged in Vogt's study of 1997 (it should be underlined that assessing tagged turtle populations at a river site is a challenge because of their high mobility).

In a further study on turtles found in fishmonger shops and markets in the municipality of Tlacotalpan Veracruz, López (2009) found that the most consumed adult turtles were of the species *S. triporcatus*, because of their large size and because they provided much more meat than juveniles. Reynoso et al. (2016) found that, generally speaking, sizes were smaller than previously reported. Calderón-Mandujano (pers. com.) reported that, according to fishermen at the River Hondo, turtles were becoming more and more scarce, and smaller in size. Even though sampling methods and efforts differed in many studies, the apparent decline in the number of large individuals, and the lower number of turtles found in previously abundant areas, as well as the capture of solely juveniles, etc., are almost definitely linked to overharvesting of adult specimens for local consumption. A population comprised mainly of immature animals is considered unstable, with a low reproductive rate, and characteristically high mortality of hatchlings and juveniles (Reynoso et al., 2021). Trends at Natural Protected Areas are unknown.

4.5 Geographic trends

The projected potential distribution of *S. triporcatus* in Mexico covers an area of approximately 91,370.08 km² (Reynoso et al., 2021). Based on an analysis of vegetation layers and land use between 1997 and 2016, it was estimated that the original vegetation had been modified by land use changes in 62 % of the area (**Annex I, Figure 1**; INEGI, series III–1997, IV–2009, and VI–2016; Reynoso et al., 2016).

5. Threats

According to Reynoso et al. (2016, 2021) the main threats to the populations of *S. triporcatus* are the offtake of individuals from the wild for consumption and for the sale of meat, and captures for sale abroad. Fishermen prefer Mexican giant musk turtles (*Staurotypus* spp.) to other species because they are larger and provide more meat. Selective harvesting of reproductive adults is a major threat to the population; large numbers are harvested, particularly at the start and end of the rainy season when water bodies are shallow, and the turtles are easy to catch. We have the example of Oaxaca where, according to Legler and Vogt (2013), hunters had road access to a distribution site and, in less than six months, the number of adults had declined by 90 %.

Further, Reynoso et al. (2016 y 2021) reported that the second most important threat is land-use change for agriculture, which has led to the loss of more than half the original vegetation where the species occurred. Even so, provided that water bodies are conserved, turtles can survive even in cultivated and induced pastureland. However, in these areas they are easily captured or killed by tractors, ploughing, pre-sowing burn-off, or poisoning from fertilizers and agrochemical products. Another significant factor is road construction, which disrupts some water bodies and causes others to dry out.

6. Utilization and trade

6.1 National utilization

Staurotypus triporcatus is widely consumed in Mexico and Belize (Bocanegra et al., 2012; Legler and Vogt, 2013). Hunting is a longstanding practice among fishermen and local communities near where the species is found, and represents an important source of income (Reynoso et al., 2021). There is a high local demand for its meat during Lent and just before Easter. The morphology of this turtle, particularly its three carapacial keels and mottled colouring, makes it a much coveted, and highly-demanded species in the domestic and international pet trade (Reynoso et al., 2021).

6.2 Legal trade

Domestic trade: Legal use and trade of the species are implemented through Wildlife Management Units (referred to by their Spanish acronym UMA) or Premises and facilities that manage wildlife in confined form (referred to by their Spanish acronym PIMVS; see **paragraphs 7.1., 8.1 y 8.4**). According to DGVS-SEMARNAT, trade has only been authorized for captive-bred specimens. According to the information at DGVS-SEMARNAT (2020), there are fourteen UMA/PIMVS registered in Mexico to manage and use *S. triporcatus*. Between 2015 and 2020, DGVS-SEMARNAT authorized the commercial use of 21,689 live specimens of *S. triporcatus*, all of which were captive-bred (**Annex IV, Figure 1**).

International trade: According to Reynoso et al. (2016, 2021), *Staurotypus triporcatus* sells well on the international reptile market. Compared to other turtles such as *C. angustatus*, *S. triporcatus* is sold in larger quantities: prices range from \$79 for a hatchling or juvenile to \$1,000 for a large adult (**Annex IV, Table 3**). In Europe, prices range from €450 to €1,000 for an adult specimen (Evert Henningheim, pers. com.; in Reynoso et al., pers. com.). Recently, there has been an increase in meat exports to eastern international markets (Reynoso et al., 2021).

Since the year 2000, Mexico has authorized the export of some 24,500 individuals, the majority in the past ten years. The Federal Attorney's Office for Environmental Protection (PROFEPA), which is responsible for monitoring compliance with the legal framework and verifying permits and documents for trade and export of the species, reports that between 2013 and 2020, 15,884 live specimens of *S. triporcatus* were exported (**Annex IV, Figure 2**); China is the main destination of exports, receiving 86 % of all exported specimens, followed by Hong Kong with 11 %, and Japan and the USA, with 2 % and 1 % respectively. Malaysia and South Korea are also exporting countries (**Annex IV, Table 1**). It is

important to note that some specimens traded as *S. triporcatus* may actually be specimens of *S. salvini*, particularly in the case of juvenile specimens, because of their great similarity (see **Section 9**).

On consultation, the United States of America (USFWS) reported 719 specimens of *S. triporcatus* from Mexico in the period 2015–2020, 255 of which were specimens taken from the wild (W); specimens were declared for commercial purposes, except in one case (carapace, for personal purposes); Hong Kong was shown as the final destination for the majority of specimens. With regard to previous periods (1999–2014), the United States of America reported the import of 619 specimens and export of 2,666 specimens (USFWS; LEMIS Data, 1999–2015).

6.3 Parts and derivatives in trade

In the case of legal trade, usually live specimens of *S. triporcatus* are traded to be sold as pets. The main turtle derivative found in the illegal domestic trade is meat. Carapaces, which are attractive because of the three keels, and eggs, which purportedly have medicinal and aphrodisiacal effects, are also found in trade (Reynoso et al., 2016). With regard to illegal international trade, mainly live specimens are traded for pets (Reynoso et al., 2021).

6.4 Illegal trade

Domestic: trade is common and, to a great extent, illegal. Turtles are sold by the roadside (**Annex IV, Figure 4**), in markets, and in private homes where turtles are kept in homemade enclosures; some turtles are kept for days with the hook still in their snout until they are sold (Reynoso et al. 2016). There is a turtle-meat market located near Minatitlan wharf in Veracruz, where several species have been seen, including *S. triporcatus*, *Dermatemys mawii* (Central American river turtle), and *Kinosternon* sp. (mud turtles), (Reynoso et al., 2016). The price of a specimen of *S. triporcatus* sold by the roadside ranges from 200 to 500 pesos (between \$10 and \$25), depending on size.

A large number of PROFEPA's surveillance operations take place on the roads, one of the most frequent places for sales (**Annex IV, Figure 4**). Since 2010, PROFEPA has seized a total of 1,106 specimens (963 – *S. triporcatus*, 143 – *S. salvini*) (**Annex IV, Table 3**).

International: The majority of turtles seized over the past ten years were obtained from two incidents that took place in 2020: at the cargo zone in the International Airport in Mexico City, where a shipment of 15,000 turtles intended for China was seized because no export permit had been submitted (503 specimens were identified as *S. triporcatus*; PROFEPA, 2020); and at a warehouse for the distribution and sale of the species (368 – *S. triporcatus*, 135 – *S. salvini*). Other specimens found in this seizure were similar species from the same family: *Claudius angustatus* and five species of the genus *Kinosternon*. Several turtles still had hooks in their snout. Possibly, the seizures reported for *S. triporcatus* reflect only a part of the illegal trade. The high demand for the species, mainly in Asian countries, make it a highly susceptible species for international illegal trade (Reynoso et al., 2021).

Internet trade: A general internet search in October 2020 by Reynoso et al. (2021) returned 33 results for ten websites advertising *S. triporcatus* for sale. On most of these websites, there was no mention of trade or export permits, and only a few stated that the turtles were captive-bred. Prices ranged from \$79 to \$525 per hatchling or juvenile, and between \$250 and \$750 for a large-sized adult. In the European trade, prices ranged from €100 to €900. According to Reynoso et al. (2021), there does not seem to be any captive breeding of this species in Asia; therefore, any specimens must have been illegally obtained from the wild.

6.5 Actual and potential trade impacts

The potential impact of trade on the species is the decline of wild populations, given that there is very intense hunting and persistent trade. The growing demand for specimens in international trade is a further threat, along with local/regional consumption, and could cause further population decline, particularly because part of the (illegal) exports are sourced from the wild (Reynoso et al., 2021).

7. Legal instruments

7.1 National

The main legal instruments in Mexico regulating the use and conservation of wildlife, their habitats and ecosystems, are the General Law on Ecological Equilibrium and Environmental Protection (LGEEPA; SEDUE 1988), the General Wildlife Law (LGVS; SEMARNAT 2000), and its regulations (SEMARNAT 2006). There are also further instruments that complement these laws, the NOM-059-SEMARNAT-2010 Mexican list of endangered species (DOF, 2019), Environmental Protection – Native Mexican wild flora and fauna – Risk categories and specifications for inclusion, exclusion, or change.

The General Wildlife Law establishes the criteria for the types of management and use of wildlife that can take place in Mexico. The species is classified in the list of endangered species (NOM-059-SEMARNAT-2010; DOF 2019) in the category “threatened”. Accordingly, it may be harvested only when priority is given to harvesting and capture for the purpose of restoration, repopulation, reintroduction and scientific research, and provided that 1). specimens were obtained from controlled breeding, which further contributes to population development through programmes, projects or actions that are guaranteed by the Secretariat, where applicable, in the case of confined specimens, and 2). which contributes to population development through controlled breeding, in the case of specimens of free-ranging wild species (Articles 84 and 85 of the General Wildlife Law). In Mexico, wild species can only be used through Wildlife Management Units (UMA) or Premises and facilities that manage wildlife in confined form (PIMVS), based on a Management Plan, approved by the authorities, that outlines the actions to be implemented for species of interest. The General Directorate of Wildlife (DGVS-SEMARNAT) will authorize the harvesting of specimens, provided that Wildlife Management Units (UMA) or Premises and facilities that manage wildlife in confined form (PIMVS) meet the requirements provided by any applicable legislation for harvesting of the species (free-ranging and in captivity).

Similarly, Article 420 of the Mexican Federal Criminal Code imposes penalties on any person who fails to comply with the provisions of the General Wildlife Law, including any irregularities regarding the legal origin and traceability of specimens, or in the use of supporting documents:

“Article 420.- A penalty of one to nine years imprisonment, and a fine equivalent to three hundred to three thousand days, shall be imposed upon any person who illegally:

IV. Carries out any activity for the purpose of trafficking, or captures, possesses, transports, collects, introduces or takes out of the country, any specimen, product or subproduct thereof, and any other genetic resources of any species of prohibited terrestrial or aquatic wildlife that is considered endemic, threatened, at risk of extinction, subject to special protection or regulated by an international treaty to which Mexico is a Party, or

V. Harms a specimen of a species of the aforementioned terrestrial or aquatic wildlife.

An additional penalty will apply of up to three more years imprisonment and an additional fine of up to one thousand more days, when the activities described in this article take place in or affect a natural protected area, or when such activities are engaged in for commercial purposes.

Article 420 quater. A penalty of one to four years imprisonment and a fine equivalent to three hundred to three thousand days shall be imposed upon any person who:

II. Enters false data in records, log books, or any other document, with the intent to simulate compliance with any obligations under Federal environmental laws and regulations;”.

7.2 International

Staurotypus triporcatus is listed in the IUCN Red List as Low Risk/Near Threatened” (LR/NT; Tortoise and Freshwater Turtle Specialist Group, 1996; errata version published in 2016). In view of the time that has passed since the last assessment, and current threats, the species should be re-assessed (Reynoso et al., 2021). The species is not included in any of the CITES Appendices. Both species (*S. triporcatus* and *S. salvini*) are categorized as Endangered in the list of threatened species in Guatemala (LEA CONAP).

8. Species management

8.1 Management measures

Activities involving the breeding, protection, sustainable use, recruitment, reintroduction, among others (as defined in the General Wildlife Law) of *Staurotypus triporcatus* may be implemented through Wildlife Management Units (UMA) or Premises and facilities that manage wildlife in confined form (PIMVS), or at their request, provided such activities have been approved by SEMARNAT in a management plan (see **Section 7.1**).

8.2 Population monitoring

There is no type of programme in place to monitor the wild populations of *S. triporcatus*.

8.3 Control measures

8.3.1 International

8.3.2 Domestic

DGVS-SEMARNAT authorizes the UMA and the PIMVS to manage and trade turtles, provided that they comply with all regulations relating to breeding, maintenance and use of the species. The Enforcement Authority (PROFEPA) carries out inspections of these facilities to verify compliance.

Border control is based on the recognition of administrative acts (permits and authorizations) issued by DGVS-SEMARNAT in its capacity as the authority for establishing non-tariff regulations and restrictions on cross-border movements of wildlife specimens (in cooperation with the Secretariat of Economy), and on the verification of such specimens by the enforcement authority (PROFEPA) at the authorized entry and exit points for goods and people to and from national territory, for commercial or non-commercial purposes. In the latter case, once compliance with non-tariff regulations and restrictions has been verified, and the authorization or permit issued by DGVS-SEMARNAT has been validated by PROFEPA, the customs authority will authorize customs dispatch for the formal import or export of goods (Customs Act, Article 36A). Health measures are established at the request of the foreign trade agent and in accordance with the requirements of the destination country, prior to shipment of the specimens, and will be verified by health authorities in the destination country on import.

8.4 Captive breeding and artificial propagation

Captive breeding is carried out successfully by some UMA/PIMVS (**see section 6.2**), and also at an international level (Reynoso et al., 2021; Bakowskie and Bakowskie, 2011).

8.5 Habitat conservation

In Mexico, the turtle *S. triporcatus* can be found in Natural Protected Areas: Los Tuxtlas Biosphere Reserve (although only in the lower zones, 200–300 masl); Centla Swamps Biosphere Reserve; Popotera lagoon wetlands; Términos Lagoon Flora and Fauna Protection Area; Chan-Kin Flora and Fauna Protection Area; areas for ecological conservation at Arroyo Moreno and Catazajá lagoon system; also, a small part of the Calakmul Biosphere Reserve (**Figure 1**). The area of distribution within Natural Protected Areas is 7,905 km², which is equivalent to only 8.65 % of total distribution in Mexico (Reynoso et al., 2016). Ramírez et al. (2015) reported *S. triporcatus* at La Lacandona, although existing models show that its distribution at the Blue Mountains Reserve is probably marginal. Further, DGVS-SEMARNAT reported that, prior to 2015, they had records of at least 21 free-range wildlife management units registered for this species (i.e., wildlife management units that are allowed to implement in situ conservation in areas where turtles of the species are distributed).

8.6 Safeguards

9. Information on similar species

Other genera: the genus *Staurotypus* is distinguishable from any of the turtles in the family Kinosternidae (*Kinosternon*, *Claudius*, *Sternotherus*), even in juveniles: the plastron is small and has distinct keels. The species can be distinguished from *Claudius angustatus* by its carapace, which is almost completely oval-shaped (with three barely perceptible keels) in *C. angustatus*, while in *Staurotypus* the three keels are very distinct (**Annex II, Figure 1-a and b**). Adults of *Staurotypus triporcatus* are larger than all other turtles in the family Kinosternidae.

Other species of the same genus: there are problems in distinguishing *Staurotypus triporcatus* from *S. salvini* (Chiapan giant musk turtle), the only other recognized species in the genus *Staurotypus*. Distribution of these species is allopatric: the former is restricted to the Atlantic coastal plain in Mexico, Belize, Guatemala and Honduras, and the latter to the Pacific coastal plain in Mexico, Guatemala and El Salvador. Practically the only difference is in size: *S. salvini* is much smaller, and often lighter-toned (**Annex II, Figure 1-b and c**); maximum carapace length in adult specimens of *S. salvini* is 250 mm, and in adults of *S. triporcatus* 400 mm (Legler and Vogt, 2013). Some characteristics that might help to distinguish between the two, although not altogether reliable (Iverson, 1985, Smith y Smith 1979), are the unique features of *S. salvini*: length of the interabdominal plastron seam (between 14 % and 19 % of plastron length), uniformly coloured or mottled head, mottled/reticulate pattern (when present) is faint, unlike *S. triporcatus*. Further, the dorsolateral carapacial keels do not extend from the anterior to the posterior margins in *S. salvini*, but do so in *S. triporcatus*. In the juvenile stage, it is almost impossible to distinguish between the two species. Even an adult specimen of *S. salvini* and a juvenile *S. triporcatus* may be similar in size (Reynoso et al., 2016, 2021). Due to this similarity, there is a possibility that *S. salvini* could be traded as *S. triporcatus*, and because of the problems this might raise when carrying out inspections, it would be important to consider listing both species in the same CITES Appendix.

Genetic barcodes for *C. angustatus* and *Staurotypus* spp. have already been identified and might help in the identification of specimens when the species cannot be identified (e.g., meat, pieces of shell, or bone fragments, etc.). **Annex III** includes the proposed barcode (sequencing) for genetic identification of *S. triporcatus* and *S. salvini* (Reynoso et al., 2016, 2021).

10. Consultations

As range States of the species, Belize, Guatemala and Honduras were consulted on 29 March 2022, and El Salvador on 10 May 2022. El Salvador replied on 11 May that they were interested in co-authoring the proposal; Honduras replied on 8 June that they supported the proposal. At the time of writing, no replies had been received from Belize or Guatemala.

The IUCN Tortoise and Freshwater Turtle Specialist Group was consulted in February 2021, and expressed its support for Mexico's proposal to include *Staurotypus triporcatus* and *S. salvini* in CITES Appendix II.

11. Additional remarks

12. References

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ANEXO I / ANNEX I

(English and Spanish only / seulement en anglais et espagnol / únicamente en inglés y español)

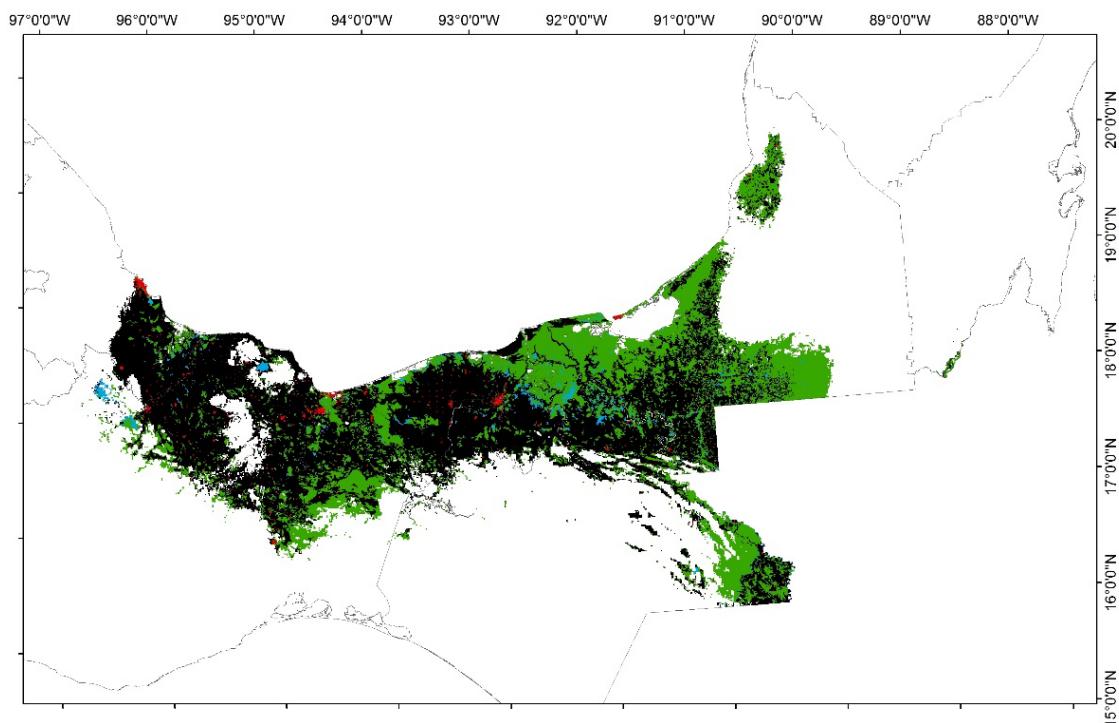


Figura 1. Mapa del cambio de uso de suelo en la zona de distribución de *Staurotypus triporcatus*. En negro se muestra el área modificada para uso agropecuario y en rojo las zonas urbanas.

Figure 1. Change in land use change within *Staurotypus triporcatus* potential distribution area. In black is shown modified land to agricultural and cattle activities; in red, urban areas.

ANEXO II / ANNEX II

(English and Spanish only / seulement en anglais et espagnol / únicamente en inglés y español)

CARACTERÍSTICAS DE *Staurotypus triporcatus* Y COMPARACIÓN CON ESPECIES SIMILARES
***Staurotypus triporcatus* - SPECIES CHARACTERISTICS AND COMPARISON BETWEEN SIMILAR**
SPECIES

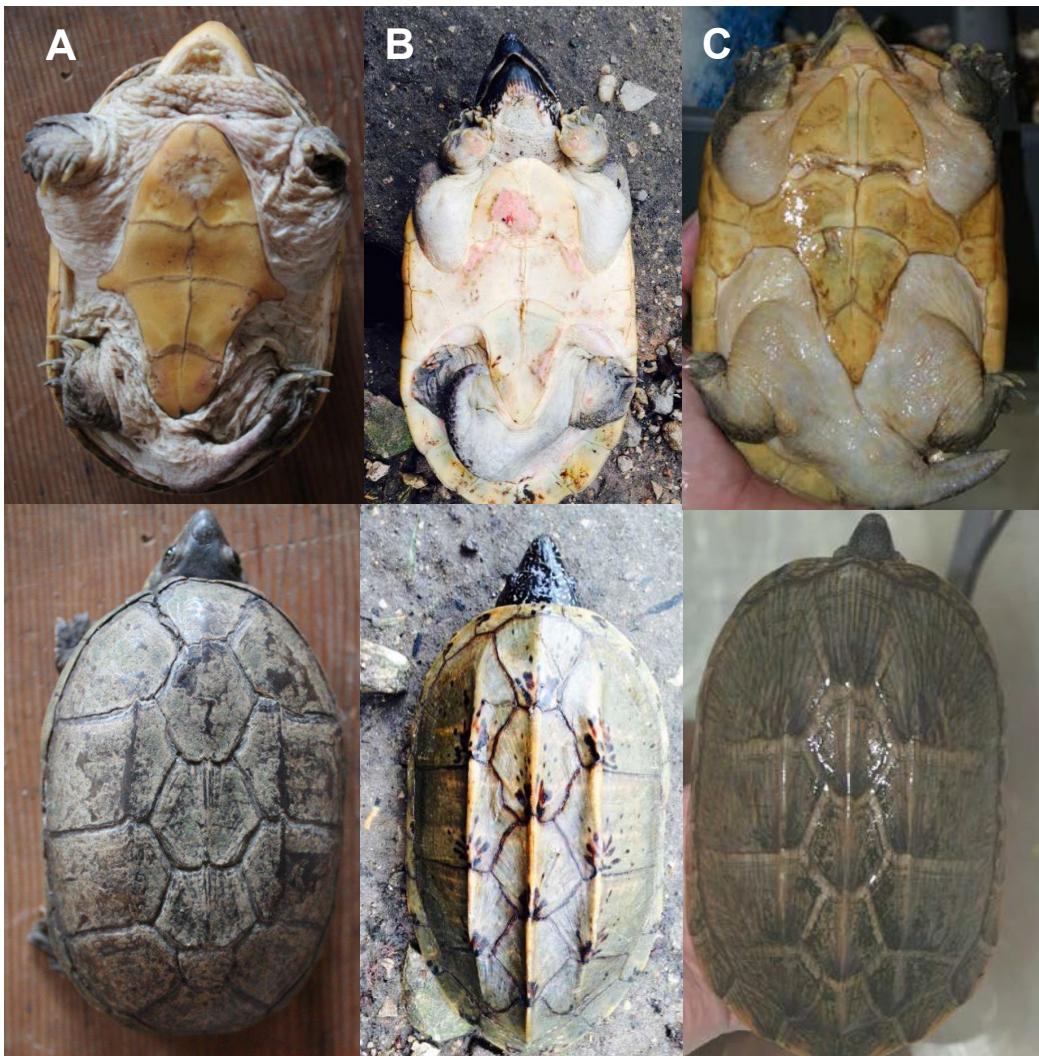


Figura 1. Vista ventral (arriba) y dorsal (abajo) de A) *Claudius angustatus*,
B) *Staurotypus triporcatus* y C) *Staurotypus salvini*.

Figure 1. Ventral view (up) and dorsal view (down) of A) *Claudius angustatus*,
B) *Staurotypus triporcatus* and C) *Staurotypus salvini*.

ANEXO III / ANNEX III

(English and Spanish only / seulement en anglais et espagnol / únicamente en inglés y español)

CÓDIGO DE BARRAS sugerido de *Staurotypus triporcatus* y *S. salvini*.
SUGGESTED CODE BAR OF *Staurotypus triporcatus* y *S. salvini*.

Genebank <https://www.ncbi.nlm.nih.gov/genbank/>

Staurotypus triporcatus

ACCESSION: HQ329723, 650 bp, Citocromo Oxidasa Subunidad I (COI), partial cds; mitochondrial.
<https://www.ncbi.nlm.nih.gov/nuccore/HQ329723.1>

1 tataccta atttggggct tgagctggca taatttgaac agcattaagc ttaataattc
61 gtacagaact aagccaaacca ggaacttatt taggagatga ccaaatttac aatgtggttg
121 tgacagctca tgctttgtc ataattttct ttatggttat acctattata attgggttgtt
181 ttggaaactg acttatcccc ttaataatcg gagcgctga tatagcattt ccccgataaa
241 aacaatataag ctctgatta ctccccccctt ctctactatt actactagcc tcacatggaa
301 ttgaaggcagg tgcttggaca ggtatgaactg tctaccctcc ctggctagt aacctagccc
361 atgcaggagc ttctgttagat ctaactatct tctcccttc cctagctggt gcatcttcaa
421 tttaggggc aattaactt attaccacaa caatcaacat aaaatccccca gccatatcac
481 aatatcacac accccctgtt gtatggccg tacttattac agctatcttg ctcttctat
541 cactacctgt acttgctgca ggtattacaa tactacttac agatcgaaac ctaacaccaa
601 cctctttga tccagctgga ggcggagacc caattttata tcaacaccta

Staurotypus salvini

ACCESSION: HQ329722, 650 bp, Citochromo Oxidasa Subunidad I (COI), partial cds; mitochondrial.
<https://www.ncbi.nlm.nih.gov/nuccore/HQ329722.1>

1 tataccta atttggggct tgagctggca taatttgaac agcattaagc ttaataattc
61 gtacagaact aagccaaacca ggaacttatt taggagatga ccaaatttac aatgtggttg
121 tgacagccca tgcttcgtc ataattttct ttatggttat acctattata attgggttgtt
181 ttggaaactg acttatcccc ttaataatcg gagcgctga tatagcattt ccccgataaa
241 aacaacataag ctctgacta ctgccccctt ctctactact actactagcc tcacatggaa
301 ttgaaggcagg tgcttggaca ggtatgaacta tctaccctcc cttagctagt aacctagccc
361 atgcaggagc ttctgttagat ctaactatct tctcccttc cctagctggt gcatcttcaa
421 tttaggggc aattaactt attaccacaa caatcaacat aaaatccccca gccatatcac
481 aatatcacac accccctgtt gtgtgatccg tacttattac agctatcttg ctcttctat
541 cactacctgt acttgctgca ggtattacaa tactacttac ggatcgaaac ctaacaccaa
601 cctctttga cccagctgga ggcggagacc caattttata tcaacaccta

ANEXO IV / ANNEX IV

(English and Spanish only / seulement en anglais et espagnol / únicamente en inglés y español)

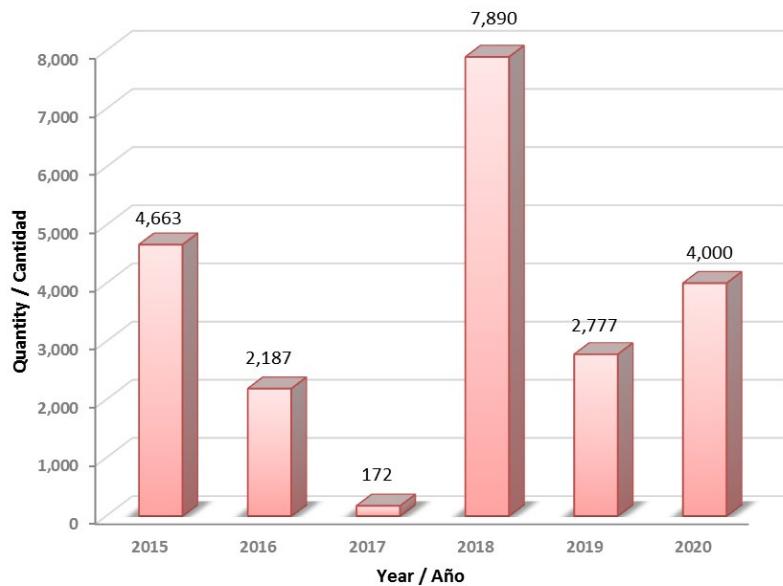
**APROVECHAMIENTO, COMERCIO Y TRÁFICO
USE, LEGAL AND ILLEGAL TRADE**

Figura 1. Número de ejemplares de *Staurotypus triporcatus* autorizados para aprovechamiento de 2015 a julio de 2020, solo de cría en cautiverio (datos DGVS). // **Figure 1.** Authorized specimens of *S. triporcatus* for use, from 2015 to July 2020. Only from captive breeding.

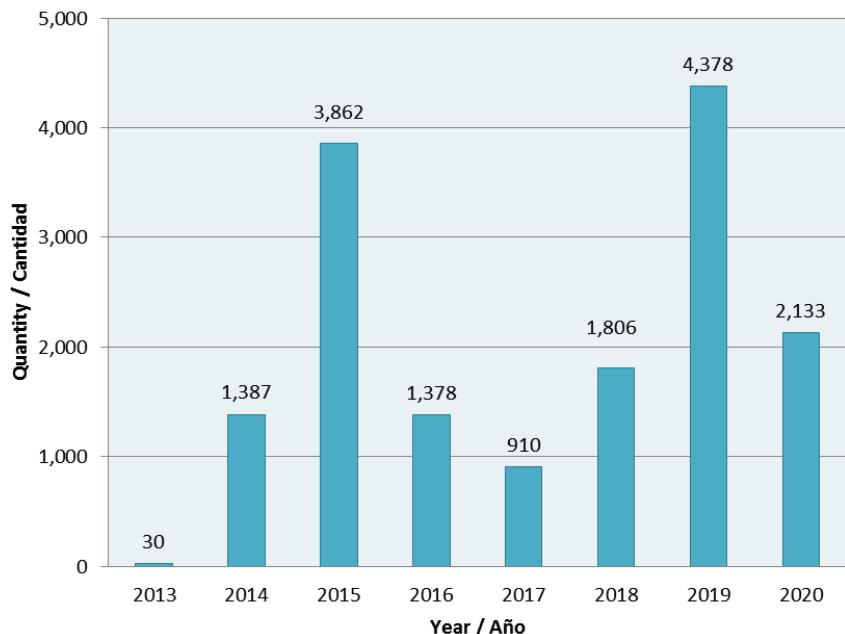


Figura 2. Número de ejemplares de *Staurotypus triporcatus* autorizados para exportación de 2013 a julio de 2020 (datos PROFEPA). // **Figure 2.** Authorized specimens of *S. triporcatus* for export, from 2013 to July 2020 (PROFEPA data).

Cuadro 1. Número de ejemplares de *Staurotypus triporcatus* exportados de 2015 a 2020 y su país de destino (datos PROFEPA). // **Table 1.** Exported specimens of *S. triporcatus*, 2015-2020 and their destination country (PROFEPA data).

País de destino / Country export	Cantidad/ Quantity
China	13,691
Hong Kong	1,761
Japón	343
E.U.A.	50
Malasia	29
Corea	10
Total	15,884

Cuadro 2. Registro del número de ejemplares de *Staurotypus triporcatus* aprovechados, exportados y asegurados ante la DGVS-SEMARNAT y PROFEPA, de 2015 a julio de 2020. // **Table 2.** *S. triporcatus* specimens for use, export and seized, from 2015 to July 2020.

Year / Año	Aprovechamiento / Use	Exportaciones / Export DGVS	Exportación / Export PROFEPA
2015	4,663	2,078	3,862
2016	2,187	576	1,378
2017	172	1,197	910
2018	7,890	1,005	1,806
2019	2,777	1,338	4,378
2020	4,000	1,792	2,133
Total	21,689	7,986	14,467

Cuadro 3. Registro del número de ejemplares de *Staurotypus spp.* asegurados por la PROFEPA, de 2015 a 2021 // **Table 3.** *Staurotypus spp.* specimens seized from 2015 to 2021.

Año	Entidad	Municipio	Nombre científico	Cantidad asegurada
2015	-	-	<i>Staurotypus triporcatus</i>	27
2016	-	-	<i>Staurotypus triporcatus</i>	28
2017	Campeche	Seybaplaya	<i>Staurotypus triporcatus</i>	6
2017	Distrito Federal	Nezahualcóyotl	<i>Staurotypus triporcatus</i>	1
2017	Tabasco	Centro	<i>Staurotypus triporcatus</i>	1
2017	Veracruz	Catemaco	<i>Staurotypus triporcatus</i>	24
2017	Tabasco	Centla	<i>Staurotypus triporcatus</i>	1
2017	Jalisco	Tlaquepaque	<i>Staurotypus salvini</i>	3
2017	Veracruz	Ursulo Galván	<i>Staurotypus triporcatus</i>	2
2017	Distrito Federal	Venustiano Carranza	<i>Staurotypus triporcatus</i>	2
2017	Chiapas	Arriaga	<i>Staurotypus triporcatus</i>	1
2017	Distrito Federal	Venustiano Carranza	<i>Staurotypus triporcatus</i>	2
2017	Morelos	Cuautla	<i>Staurotypus triporcatus</i>	1
2018	Veracruz	Tlacotalpan	<i>Staurotypus salvini</i>	3
2018	Veracruz	Tlacotalpan	<i>Staurotypus salvini</i>	2

2018	Tabasco	Nacajuca	<i>Staurotypus triporcatus</i>	3
2019	Puebla	Puebla	<i>Staurotypus triporcatus</i>	28
2019	Distrito Federal	Chimalhuacán	<i>Staurotypus triporcatus</i>	1
2020	Tabasco	Centla	<i>Staurotypus triporcatus</i>	5
2020	Jalisco	Tlaquepaque	<i>Staurotypus triporcatus</i>	1
2020	Distrito Federal	La Paz	<i>Staurotypus triporcatus</i>	368
2020	Distrito Federal	La Paz	<i>Staurotypus salvini</i>	135
2020	Distrito Federal	Venustiano Carranza	<i>Staurotypus triporcatus</i>	2
2020	Distrito Federal	Venustiano Carranza	<i>Staurotypus triporcatus</i>	503
2021	Distrito Federal	Naucalpan de Juárez	<i>Staurotypus triporcatus</i>	2
2021	Distrito Federal	Benito Juárez	<i>Staurotypus triporcatus</i>	4
2021	Morelos	Cuautla	<i>Staurotypus triporcatus</i>	2
2021	Distrito Federal	Venustiano Carranza	<i>Staurotypus triporcatus</i>	3
Total			<i>Staurotypus triporcatus</i>	969
			<i>Staurotypus salvini</i>	143

Tabla de datos proporcionada por la Subprocuraduría de Recursos Naturales –PROFEPA // Data provided by the Deputy Attorney for Natural Resources - PROFEPA



Figura 4. Operativo de vigilancia en una carretera de Tabasco en el que se encontraron cinco tortugas de *Staurotypus triporcatus* (Fuente: PROFEPA 2020). // **Figure 4.** Operation to seize wildlife in a highway in the State of Tabasco; five *S. triporcatus* turtles were found.

COMERCIO WEB / Web Trade

Cuadro 4. Comercio de *Staurotypus triporcatus* a través de páginas y foros en internet. Se muestran los principales sitios web que comercializan a la tortuga, la mayoría de las publicaciones ofrecen varios ejemplares en venta. // **Table 4.** Web trade of *S. triporcatus* – webpages and forums. Table shows the main websites where *S. triporcatus* was found for sale; most of publications offers more than one turtle.

Página o foro web Webpage or forum	Número de ofertas / publicaciones # offers or publications	Precios promedio por estadio o sexo Mean price for gender or sex	País de la publicación Publication country
Terraristik	14	Hatchling-Juvenil € 150 Adult € 900	Germany, Italy, Spain, Poland, U.K., Austria, Switzerland, Czech Republic
Turtle source	7	Hatchling-Juvenil USD 119 - 179; Adult USD 249 - 395	USA
American Reptiles	3	Hatchling-Juvenil USD 100; female USD 250, male USD200	USA
Strictly reptile	1	Hatchling-Juvenil / no visible price	USA
Redfootranche	1	Juvenil USD 160	USA
Reptiletrade	1	Adult MXN750 (37 USD).	Mexico
Bonkay	2	Hatchling-Juvenil MXN525 (26 USD); Adult MXN 1498 (75 USD)	Mexico
My turtle source	1	Adult 689 USD	USA
Morphmarket	1	Female 175 USD	USA
Turtles and tortois inc.	2	79 - 300 USD	USA

ANEXO V // ANNEX V

(English and Spanish only / seulement en anglais et espagnol / únicamente en inglés y español)

Relación de contribuyentes y revisores de la propuesta de inclusión de la tortuga
Staurotypus triporcatus al Apéndice II de la CITES.

List of contributors and reviewers of the CITES Appendix II inclusion proposal for *Staurotypus triporcatus* turtle

Nombre	Institución
Redacción de la propuesta	
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M.C. Canek Rivera Arroyo	
Insumos adicionales	
	Teyeliz A.C.
	Defenders of Wildlife México
Revisores de la propuesta	
	Autoridad Científica CITES de México / Comisión Nacional para el Conocimiento y Uso de la Biodiversidad
Dra. Gracia González Porter	
Dr. Rodrigo Macip Ríos	Escuela Nacional de Estudios Superiores, Unidad Morelia. Universidad Nacional Autónoma de México
Biól. Eduardo Reyes Grajales	El Colegio de la Frontera Sur, San Cristóbal, Chiapas
M.C. Juana Margarita Garza Castro	Facultad de Ciencias, Universidad Nacional Autónoma de México, Coyoacán, CDMX
Dr. Romel René Calderón Mandujano	Colegio de la Frontera Sur / Universidad Autónoma de Chiapas – ICS.
Participantes externos	
Evert Henningheim	IUCN Iguana Specialist Group, Trade

ANEXO VI // ANNEX VI

(Spanish only / seulement en espagnol / únicamente en español)

Información adicional: *Staurotypus salvinii*

A. Nombre

Género, especie o subespecie: *Staurotypus salvinii* (Gray, 1864).

Sinónimos científicos [*Stauremys salvinii* (Gray, 1870), *Staurotypus marmoratus* (Fischer, 1872), *Claudius severus* (Cope, 1872)].

Nombres comunes: Español: Crucilla, Tortuga almizclera crucilla. Inglés: Chiapan Giant Musk Turtle, Pacific Coast Giant Musk Turtle.

B. Distribución

Se distribuye en cuerpos de agua de tierras bajas desde México por la vertiente del océano Pacífico (desde el estado de Oaxaca y Chiapas), hasta Guatemala y El Salvador en Centroamérica (Gray, 1864; Legler y Vogt, 2013). **Figura A**.

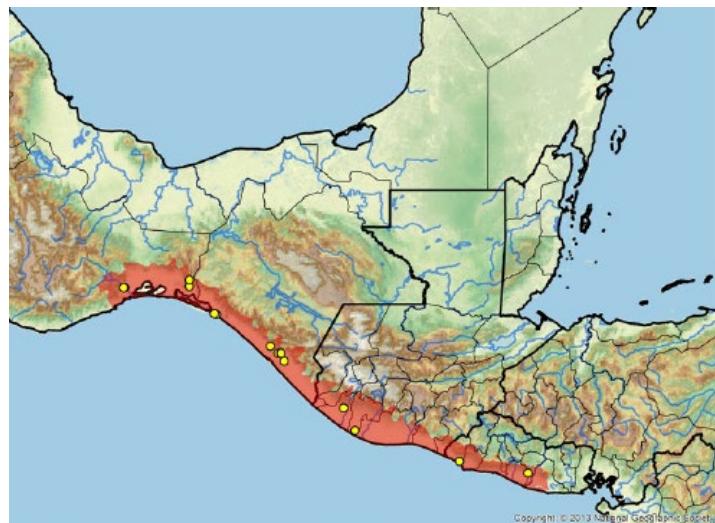


Figura A. Distribución potencial de *Staurotypus salvinii*. Mapa tomado de Legler y Vogt (2013).

C. Descripción morfológica

El caparazón es mediano a grande (aprox. 40 cm de longitud del caparazón, LC; pueden llegar a 189 cm en LC), de color marrón oscuro a gris oliva, puede o no tener un patrón moteado descolorido, de forma ovalada y fuertemente carinado. Los escudos vertebrales suelen ser más largos que anchos; y presentan once pares de escudos marginales (Iverson, 1985). El plastrón es pequeño de color amarillo, a veces con un tinte rosado; su longitud es inferior al 70% de la longitud del caparazón. El lóbulo plastral posterior triangular es estrecho y carece de bisagra; el lóbulo plastral anterior es redondeado y más largo que el posterior y el puente excede 7.5% de la longitud plastral. Presenta un endoplastrón grande con siete u ocho escudos plastrales. Ocasionalmente hay un escudo intergular, y el escudo abdominal excede 13% de la longitud del plastrón. Los escudos anales a menudo están parcial o completamente fusionados (Iverson, 1985). La piel es de color blanco a grisácea marmoleada, aunque debajo de las extremidades es blanca. El color de la cabeza puede ser de un olivo oscuro o gris uniforme (principalmente en especímenes envejecidos) o finamente, moteada con naranja o amarillo (Ernst y Barbour 1989, Iverson 1985, Smith y Smith 1979). La cabeza es larga de piel suave; la cara presenta forma cónica. Nariz terminal, boca inferior; pico largo dentando en el final. Garganta verrugosa, piel del cuerpo y extremidades granulares. Las extremidades y la cola son de color marrón grisáceo. Dedos de las patas bien desarrolladas con 4 o 5 garras. Cola corta, cónica con series centrales y laterales de tubérculos formando 3 crestas cortas. (Gray, 1864).

Dimorfismo: las hembras exhiben una mayor altura del caparazón y se diferencian significativamente de los machos por tener mayores proporciones de plastrón, lóbulo anterior, lóbulo posterior y longitudes de puente con respecto a la longitud del caparazón (Dean y Bickham 1983). En los machos la cola es más larga, ancha y termina en punta; también han desarrollado parches de escamas tuberculadas (órganos de agarre) en las superficies posteriores de cada pierna y muslo (Iverson, 1985). Respecto a las crías y juveniles, en un reporte de cría en cautiverio se observó que las crías tenían un caparazón que era casi negro con quillas amarillas, su plastrón amarillo claro con una figura central negra y marcas negras a lo largo de las costuras, su cabeza gris

oscuro con algunas vermiculaciones amarillentas, la punta de su hocico amarillo vivo, su mandíbula gris uniforme a verde, y sus extremidades y cola de gris oscuro (al nacer) (Sátorhelyi y Farkas, 1979). Es posible que la LC promedio varíe dependiendo del área de distribución (Llebaria, 2012).



Figura B. *Staurotypus salvini*. Créditos: Izquierda (Antonio Muñoz Alonso / CONABIO); derecha (Rodrigo Vidal / CONABIO).

D. Hábitat

La especie se desarrolla en ambientes terrestres y acuáticos (el cual incluye dulce acuícola, salobre y marino). Tiene preferencia por los cuerpos de agua con cursos de flujo lento con un fondo suave y abundante vegetación (Ernst y Barbour 1989). Habita en selvas bajas perennifolias (Dean & Bickham, 1983), con clima cálido húmedo y en un rango de temperatura de 20°C – 30°C. En Chiapas y Oaxaca (Méjico), ocurre en lagunas costeras, lagos poco profundos, remansos y cuerpos de agua temporales, particularmente donde el agua es turbia (Legler y Vogt, 2013). Existen algunas observaciones (iNaturalist, 2021) que la ubican en cuerpos de agua rodeados de vegetación modificada hacia agricultura; sin embargo, se desconoce qué tan frecuente pudiera ser en estas áreas. En El Salvador se ha observado en hábitat modificados cerca de carreteras y ferrocarriles, incluso cerca de cañerías (Legler y Vogt, 2013).

E. Características biológicas

- Hábitos: *S. salvini* es nocturna, y más activa desde el inicio de la temporada lluviosa (en mayo), hasta octubre. Presenta conducta de estivación durante la época seca (noviembre a abril). No se le registra tomando el sol durante el día, como ocurre con otras tortugas. El rango hongareño se estimó en 1,200 m², y recapturas se presentaron a no más de 80 metros (Dean 1980, en Legler y Vogt, 2013).
- Alimentación: es un omnívoro oportunista, con la vegetación como alimento básico. Consume insectos, peces, crustáceos, anfibios, e incluso tortugas pequeñas y algunos reptiles (Legler y Vogt, 2013). Es posible que su alimentación sea similar a la de *Staurotypus triporcatus* (**ver sección 3.3.** de la propuesta).
- Reproducción: La anidación posiblemente comienza en octubre, y la eclosión se dé en marzo/abril, casi al final de la estación seca. Pudiera formar varias nidadas al año, cada una con 7 a 12 huevos (Legler y Vogt, 2013). Schmidt (1970) reportó el tamaño promedio de una nidada: longitud de 40.2 mm, ancho de 19.3 mm, y un peso de 14 g (Legler y Vogt, 2013). La eclosión de huevos de cría en cautiverio tomó de 145-207 días, presentando posible diapausa embrionaria (Legler y Vogt, 2013).
- Función de la especie en su ecosistema: se desconoce cuál es su papel en el ecosistema. Sin embargo, su dieta pudiera ser similar a la de *S. triporcatus*, al igual que los animales que la depredan (**ver sección 3.5** de la propuesta). Legler y Vogt (2013) indican ejemplares con daños en caparazón, probablemente por mordidas de caimán.

F. Estado y tendencias de la población y del hábitat

Existe muy poca información sobre la densidad y/o abundancia de esta especie. Dean (1980) reportó en un área en Chiapas, 63.6 ind/ha (0.0001 ind/m²); de igual forma, encontró un radio de 1.36:1 (macho:hembra). Se desconoce la tendencia poblacional. Sin embargo, ésta podría ser similar a *S. triporcatus*, cuya tendencia es negativa, por las amenazas antropogénicas, principalmente la captura para consumo local.

G. Amenazas

- **Captura por alimentación y comercio:** Las especies del género *Staurotypus* son muy apreciadas como alimento y se cazan persistentemente (Smith y Smith 1979); de acuerdo con Teyeliz (Com. pers.), en El Salvador también es consumida. Sus ejemplares pueden ser colectados como mascotas o para satisfacer el comercio internacional. En el aseguramiento precautorio realizado por la PROFEPA en 2020 de 15,000 tortugas por ser exportadas (**ver sección 6.4** de la propuesta), se encontraban 291 individuos identificados como *S. salvini*.

- **Pérdida de hábitat:** Aunque se desconoce el impacto directo de este factor para *S. salvini*, a través de imágenes satelitales sobre las áreas potenciales de distribución, colecta y observación ciudadana (Google Earth, 2021; iNaturalist 2021; Enciclovida, 2021), se pueden encontrar observar amplias áreas modificadas para agricultura y ganadería con poca cobertura vegetal natural, especialmente en los alrededores de lagunas costeras de Chiapas donde se presenta el mayor número de ejemplares en colecciones científicas. Las amenazas de hábitat pudieran ser similares a *S. triporcatus* (**ver sección 5** de la propuesta)
- Al considerar las amenazas similares que *S. triporcatus* (**ver sección 5** de la propuesta), y la persistencia y aumento del comercio para el género (**ver sección 6** de la propuesta), así como la similitud entre las dos especies (**ver sección 9** de la propuesta), es posible prever que las poblaciones se verán afectadas; asimismo, la distribución potencial de la especie (más limitada que *S. triporcatus*) se suma como un factor de riesgo adicional.

H. Utilización y comercio

- Nacional: es consumida regularmente, similar a *Straurotypus triporcatus* (**ver secciones 5 y 6.1** de la propuesta). Es buscada también como mascotas en el comercio internacional; de acuerdo con Bruoth y Schaffer (2004), es una especie adecuada para mantener y criar en cautiverio; de las tres especies que conforman la subfamilia (*Claudius angustatus*, *S. triporcatus* y *S. salvini*), es aparentemente la más fácil de mantener en cautiverio (Llebaria, 2012). Se ha registrado que la especie ha sido criada en Europa (Sachsse & Schmidt, 1976; Bruoth & Schaffer, 2004; Llebaria, 2012, Schilde, 2015).
- Internacional: de acuerdo con Teyeliz A.C., no hay registros de exportaciones legales de *S. salvini* entre 2000 y 2007. De igual forma, reporta que los EUA (con información de LEMIS, 1999-2015) han exportado 2,626 individuos de *S. salvini*, e importado al menos 902 individuos.

I. Instrumentos jurídicos

Tanto nacional como internacionalmente, aplican los mismos instrumentos descritos en las **secciones 7.1 y 7.2** de la propuesta.

J. Medidas de gestión y Ordenación de la especie

- En caso de aprovechamiento, tanto de vida silvestre como de cría en cautiverio, las disposiciones legales son las mismas que las indicadas en *Starotypus triporcatus* en las **secciones 7 y 8** de la propuesta, sobre el manejo en UMA (Unidades de Manejo para la Conservación de la Vida Silvestre) y PIMVS (Predios e Instalaciones que Manejan Vida Silvestre).
- IUCN: De forma internacional, *S. salvini* se encuentra enlistada por la IUCN como Bajo riesgo/casi amenazada (Low Risk/NT = Near Threatened; Tortoise & Freshwater Specialist Group, 1996; errata version published in 2016). Sin embargo, por el tiempo que ha pasado desde su última revisión y las amenazas que enfrenta ahora, es necesaria una reevaluación.
- Conservación del hábitat: En México, la especie se puede encontrar dentro de las Áreas Naturales Protegidas: potencialmente en las tierras bajas de las Reservas de la Biosfera La Sepultura y El Triunfo, así como en la Reserva de la Biosfera La Encrucijada, todas en el estado de Chiapas (SEMARNAT-CONANP, 2017).

K. Información sobre especies similares

Ver sección 9 de la propuesta.

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