



**Recommendations of the Species Survival Network to the
United States Fish and Wildlife Service regarding
Species Proposals and Working Documents for
Consideration at CITES CoP19**

SPECIES PROPOSALS

► Central African Primates

SSN urges the Service to propose transferring the following species from CITES Appendix II to I: *Cercocebus chrysogaster* (Golden-bellied mangabey), *Cercopithecus dryas* (Dryas monkey), *Cercopithecus hamlyni* (Owl-faced monkey), *Cercopithecus lomamiensis* (Lesula), *Cercopithecus lhoesti* (L'Hoest's monkey), *Colobus angolensis* (Angolan colobus), *Lophocebus albigena* (Grey-cheeked mangabey), *Lophocebus aterrimus* (Black mangabey) and *Miopithecus talapoin* (Southern talapoin monkey). These species meet the criteria for listing on Appendix I found in Article II, paragraph 1, of CITES, “threatened with extinction which are or may be affected by trade” and the biological criteria for listing on Appendix I in Resolution Conf. 9.24 (Rev. CoP17), Annex 1, in that there has been “A marked decline in the population size in the wild, which has been inferred or projected on the basis of a decrease in area of habitat; a decrease in quality of habitat; and/or levels or patterns of exploitation” (Criterion C(ii)). In addition, for *C. dryas*, “the wild population is small, and is characterized by an observed, inferred or projected decline in the number of individuals or the area and quality of habitat” (Criterion A(i)).

These species, classified as Endangered or Vulnerable in the IUCN Red List, have been recently exported from or are subject to export quotas in the Democratic Republic of the Congo (DRC). [Note: text on the following species sourced from the IUCN Red List;¹ trade data includes gross exports of live, wild specimens from DRC sourced from the CITES Trade Database².]

- *Cercocebus chrysogaster* (Golden-bellied mangabey): Endangered (IUCN 2020); range State: Democratic Republic of Congo (DRC).

Summary: This species is poorly known. There are no detailed studies of the species, which is documented by fewer than 20 specimens (understood to be museum specimens). It occurs in two widely-separated, known populations, both of which are in decline. The species does not occur in any protected areas. Threats include uncontrolled commercial bushmeat hunting targeting the species across its range, and reduction in occupancy due to habitat loss and degradation by logging. Thirty percent of the species’ remaining range is assigned to logging concessions. The species is killed in large numbers for the domestic commercial bushmeat trade. Market surveys cited in the IUCN assessment found that the western population accounted for 30-70 percent of the bushmeat available in some markets³, while the eastern population represented about 10 percent of all bushmeat recorded in Lusambo in 2010⁴. Captive animals are offered for sale on the streets of Kinshasa, but in declining numbers.

Trade (from DRC): 29 live, wild specimens exported in 2018; 60 live, wild specimens exported in 2019; export quota of 300 live wild specimens was established in 2018. Twelve live wild

¹<https://www.iucnredlist.org/>

²<https://trade.cites.org/>

³ Inogwabini, B.I. and Thompson, J.A.M. 2013. The golden-bellied mangabey *Cercocebus chrysogaster* (Primates: Cercopithecidae): distribution and conservation status. *Journal of Threatened Taxa* 5: 4069-4075.

⁴ Thompson, J.A.M. and Hart, J. 2015. Biological Inventory and Survey of Bonobos within the Lukenie-Sankuru-Lusambo Forest Block, Democratic Republic of Congo. Unpublished report to USFWS. Lukuru Foundation, Kinshasa.

specimens seized in Zimbabwe in September 2020 (specimens were sourced from DRC and were destined for South Africa).⁵

- *Cercopithecus dryas* (Dryas monkey): Endangered (IUCN 2019); range State: DRC.
Summary: One of Africa's least known and most enigmatic monkeys, this species occurs in very small, widely-separated populations over a very large area, with no evident contact between them. Although the precise limits of this species' distribution are not known, it is uncommon and very localized wherever it has been found. The overall population size estimate is less than 250 adults. Further surveys are urgently needed to assess the distribution and population status of this species, which is hunted throughout its range.

Trade (from DRC): 20 live wild specimens exported 2010-2019; annual export quota of ten live, wild specimens established for years 2011-2013; prior to these exports, no specimens were known to be held in captivity.⁶

- *Cercopithecus hamlyni* (Owl-faced monkey): Vulnerable (IUCN 2020; assessed 2018); range States: DRC, Rwanda.

Summary: *C. hamlyni* has undergone past reductions and continues to decline due to hunting and, increasingly, to habitat loss and fragmentation. Most of the species' range is in a region of endemic and ongoing human conflict, which has exacerbated known threats and weakened organized efforts to protect these primates. Habitat loss and degradation, due primarily to deforestation by shifting cultivators and small holder farmers, exacerbated by rural population growth and increased artisanal mining, is the most significant threat at present and is growing rapidly. Although this species is not a frequent target of hunters, its terrestrial habits make it vulnerable to snares set for other species. Four hunters in three villages to the south and west of Kalima, bordering the region's remaining forest areas, stated that snare captures of *C. hamlyni* have been declining for the past 15 years, and are now uncommon.

Trade (from DRC): Four live, wild specimens were exported in 2005 and one in 2018; a quota of 300 live, wild specimens was established in 2018.

- *Cercopithecus lomamiensis* (Lesula): Vulnerable (IUCN 2020; assessed 2019); Range State: DRC.

Summary: First described in 2012, *C. lomamiensis* has a small extent of occurrence (likely less than 20,000 km²), which, despite its remoteness, is exploited by commercial bushmeat hunters supplying regional urban centres, in particular Kisangani. The species is largely terrestrial, and is vulnerable to snare trapping and hunting with dogs (indeed the first specimens collected were obtained from hunters). The total population size is unknown, but thought to be more than 10,000 individuals. It is uncommon or absent from secondary forests. The species is threatened over most of its range by uncontrolled commercial bushmeat hunting and should be considered for designation as a totally-protected species at the national level.

Trade: Two live, wild specimens seized in Zimbabwe in September 2020; specimens were sourced from DRC and were destined for South Africa.⁷

- *Cercopithecus lhoesti* (L'Hoest's monkey): Vulnerable (IUCN 2019; assessed 2016); as *Allochrocebus lhoestirange States: Burundi, DRC, Rwanda, Uganda.*

Summary: *C. lhoesti* has undergone a significant population decrease in the past and continues to decline. The current population size is unknown, but the population in DRC is decreasing due

⁵<https://www.nationalgeographic.com/animals/article/animals-from-africa-s-biggest-trafficked-primate-confiscation-fo>

⁶according to Species360, no Members of WAZA members have kept *Cercopithecus dryas* or *Cercopithecus lomamiensis* between Jan 2000 and April 2021.

⁷<https://www.nationalgeographic.com/animals/article/animals-from-africa-s-biggest-trafficked-primate-confiscation-fo>

to hunting. Most of this species' range is in a region of intense conflict. This has exacerbated the known threats, which are mainly bushmeat hunting and habitat loss due, in large part, to artisanal mining. The species is hunted with guns and is trapped by snaring for bushmeat. Much of the geographic range of L'Hoest's monkey has seen significant human population growth, displacement and armed conflicts that have put pressure on natural resources. Mining is of particular concern as mining operations can open up formerly remote areas to exploitation and settlement, leading to habitat loss. Mines are also centers of commercial bushmeat trade and a stimulus for poaching in protected areas.

Trade (from DRC): Twelve live, wild specimens exported in 2018 and 55 live, wild specimens exported in 2019; annual export quota of 300 live, wild specimens was established for both 2018 and 2019. Two live specimens seized in Zimbabwe in September 2020 (specimens were sourced from DRC and were destined for South Africa)⁸.

- *Colobus angolensis* (Angolan colobus): Vulnerable (IUCN 2020; assessed 2016); range States: Angola, Burundi, DRC, Kenya, Malawi, Mozambique, Rwanda, Tanzania, Uganda, Zambia.

Summary: Despite a very large geographic range, the species is threatened in most parts of its range by habitat loss, degradation and fragmentation caused mainly by collection of timber and fuelwood, conversion of forest to farmland, the expansion of human settlements and encroachment due to a fast-growing human population. Hunting is also a major threat to *C. angolensis*, particularly in Central Africa, where it is targeted for bushmeat because of its large size. Hunting for pelts has been reported in Kenya and Tanzania. Despite the existence of largely intact, suitable and protected habitat in the Domaine de Chasse de Swa-Kibula, southwestern DRC, *C. a. angolensis* became locally extinct before 1990 due to unsustainable hunting. Although hunting may be a particularly high threat in the Congo Basin, a number of other populations have already been extirpated from suitable habitats elsewhere, suggesting unsustainable levels of hunting. In the unprotected Udzungwa Scarp Nature Reserve in the Udzungwa Mountains, Tanzania, declines to near local extinction of *C. a. sharpei* due to hunting in a span of less than 10 years have been documented. The major threats for *C. a. palliatus* in residential areas on the southern Kenya coast are vehicle casualties and electrocution on power lines and transformers which, together, make up 60 percent of the animal welfare cases recorded by the NGO Colobus Conservation (Colobus Conservation unpubl. data 2017).

Trade (from DRC): Four live, wild specimens exported in 2018 and 33 live, wild specimens exported in 2019; annual export quota of 50 live, wild specimens was established for 2018 and 2019.

- *Lophocebus albigena* (Grey-cheeked mangabey): Vulnerable (IUCN 2020; assessed 2017); range States: Burundi, Cameroon, Central African Republic, Congo, DRC, Equatorial Guinea, Gabon, Rwanda, Tanzania, Uganda.

Summary: *L. albigena* was formerly widespread in both primary and secondary forest. The expansion of access infrastructure throughout its range, increasing consumerism (especially in the western part of its range) and increasing human population has led to more intense and widespread hunting pressure. Because it is large-bodied and brings a higher profit per cartridge, it is preferentially selected by hunters and tends to be eliminated or at least greatly reduced in abundance before smaller-bodied monkey species. The species now appears to be extremely rare throughout Equatorial Guinea and it has been extinct or almost extinct in eastern Nigeria since the 1990s. It is extinct along the western border of Cameroon and can be quite uncommon elsewhere except in well-protected national parks and wildlife reserves. Habitat loss is resulting in population declines in the west and extreme east of its range, and its population density is now low in unprotected forests. Hunting is an increasing threat throughout its range. The species is eaten locally for food in villages and traded to urban populations. There are large areas of "empty

⁸<https://www.nationalgeographic.com/animals/article/animals-from-africa-s-biggest-trafficked-primate-confiscation-fo>

forest” in its range, especially in the west, where the habitat is intact but the animals are absent due to hunting.

Trade (from DRC): Export of live, wild specimens included 22 in 2005, ten in 2011, 11 in 2013, four in 2019; annual export quota of 300 live, wild specimens was established in 2018 and 2019.

- *Lophocebus aterrimus* (Black mangabey): Vulnerable (IUCN 2020; assessed 2018); range States: DRC, Angola (possibly extinct).

Summary: Poaching of this species for the bushmeat trade is intensifying, and much of the forest in its range is now almost empty of large mammals, including Black mangabeys. Because of its relatively large body size, *L. aterrimus* is more attractive to hunters than the smaller *Cercopithecus* monkeys with which it shares its range. It is also threatened by habitat loss and is suspected to have declined by at least 30 percent over the past three generations (30 years) based on intensifying hunting pressure for the bushmeat trade and habitat loss in the south of its range. Little is known about the status of this species; however, it is subject to intense, uncontrolled poaching for its meat in most parts of its range. It is also threatened by loss of forest habitat in the south of its range; bushmeat data collected along the Congo River suggest that very few of these monkeys have been sold at the markets during the past decade, implying that very few are left in the forest.

Trade (from DRC): 149 live, wild specimens exported in 2018 and 141 live, wild specimens exported in 2019; annual export quota of 300 live, wild specimens was established in 2018 and 2019.

- *Miopithecus talapoin* (Southern talapoin monkey): Vulnerable (IUCN 2020; assessed 2018); range State: Angola, DRC.

Summary: Very little is known about the population status of this species, but it is thought to be decreasing across its range. Recent information shows that despite its small size this primate is now hunted for bushmeat in Angola and DRC. Habitat loss due to commercial timber harvesting is occurring at key forest sites in its geographic range, especially in Angola. It is now rarely seen in the largest protected area where it occurs (in Angola), which is being heavily encroached upon by people.

Trade (from DRC): 91 live, wild specimens exported in 2018.

Of the 27 primate species subject to export since 2000 in DRC, three are classified by IUCN as Endangered, seven as Vulnerable, six as Near Threatened, and eleven as Least Concern. SSN is concerned that the exploitation of primate species in the DRC is not sustainable and that export quotas and trade are not the result of science-based assessments. It appears that the final destination of most specimens of these species from DRC is China, and to a lesser extent the Middle East.⁹

The take and consumption of wild meat of these species is a significant threat. It is estimated that in DRC alone, people annually consume up to 1 million kilograms of bushmeat.¹⁰ Studies from densely forested populous areas of DRC estimate that small diurnal monkeys, specifically *Cercopithecus* spp. and *Cercocebus* spp. are preferred protein sources and account for around one third of the bushmeat market;^{11 12} and this trade is growing. A 2012 study¹³ estimates that the number of carcasses of diurnal monkeys in market in Kisangani, DRC, increased fourfold from 2002 and 2008-2009; from 2,221 to 8,228

⁹CITES Trade Database

¹⁰<https://www.dw.com/en/could-africas-taste-for-bushmeat-trigger-the-next-pandemic/a-56696576>

¹¹van Vliet N, Nebesse C, Gambalemoke S, Akaibe D, Nasi R. The bushmeat market in Kisangani, Democratic Republic of Congo: implications for conservation and food security. *Oryx*. 2012;46(2):196–203.

¹²van Vliet N, Nebesse C, Nasi R. Bushmeat consumption among rural and urban children from Province Orientale, Democratic Republic of Congo. *Oryx*. 2015;49(1):165–74.

¹³file:///tmp/mozilla_annie0/vanVlietetal2012b.pdf

carcasses; the prices for these species also increased significantly during this time.¹⁴ Some theorize that traded juvenile primates are a ‘byproduct’ of the bushmeat trade.¹⁵

Regarding illegal trade, in September 2020 Zimbabwean officials confiscated the following specimens from DRC being transported in a truck entering Zimbabwe from Zambia and bound for South Africa: twelve Golden-bellied mangabeys, (*Cercocebus chrysogaster*), two L’Hoest’s monkeys (*Allochrocebus lhoesti*), two Lesulas (*Cercopithecus lomamiensis*), two Grey-cheeked mangabeys (*Lophocebus albigena*), five Putty-nosed monkeys (*Cercopithecus nictitans*) and two Allen’s swamp monkeys (*Allenopithecus nigroviridis*).¹⁶ The traffickers were arrested, convicted and sentenced, and the primates were sent to a sanctuary in DRC, where they are native.¹⁷ The final destination in South Africa was unknown, but we note that there is a substantial internal and export trade of primates in South Africa and given that the shipment included the recently described Lesula, the destination was presumably an experienced collector.

Approximately 60 percent of primate species are now threatened with extinction, and approximately 75 percent have declining populations. In the DRC, one of four countries in which two-thirds of all primate species reside,¹⁸ these species are subject to significant threats including legal and illegal international trade, killing for consumption and habitat loss. We believe that small African primates are experiencing a conservation crisis; a DRC-based conservation organization states that, “We do field work and every time in our field work we come across monkeys being butchered. And our fear is that by the time we have protected all the great apes, we’ll realize that all the smaller monkeys that we neglected have disappeared completely.”¹⁹ SSN encourages the United States to address this unsustainable trade by proposing to include these species in CITES Appendix I.

► *Copsychus* (genus) (Magpie-robins and Shamas)

SSN urges the Service to propose listing the genus *Copsychus* (Magpie-robins and Shamas) on CITES Appendix II. The genus includes the following seven species: Madagascar magpie-robin (*Copsychus albospectularis*), Seychelles magpie-robin (*Copsychus sechellarum*), Oriental magpie-robin (*Copsychus saularis*), White-rumped shama (*Copsychus malabaricus*), White-browed shama (*Copsychus luzoniensis*), White-vented shama (*Copsychus niger*), and Black shama (*Copsychus cebuensis*). The genus ranges from Madagascar to India, China, the Philippines, Borneo and Bali.

The species in this genus meet the criteria for listing on Appendix II found in Article II, paragraph 2(a), “all species which although not necessarily now threatened with extinction may become so unless trade in specimens of such species is subject to strict regulation in order to avoid utilization incompatible with their survival,” and/or Article II, paragraph 2(b), “other species which must be subject to regulation in order that trade in specimens of certain species referred to in sub-paragraph (a) of this paragraph may be brought under effective control”, and Resolution Conf. 9.24 (Rev. CoP17), Annex 2a, Criterion B: “It is known, or can be inferred or projected, that regulation of trade in the species is required to ensure that the harvest of specimens from the wild is not reducing the wild population to a level at which its survival might be threatened by continued harvesting or other influences.”

All but two species in the genus are classified as Least Concern by IUCN. The Seychelles magpie-robin (*Copsychus sechellarum*) and the Black shama (*Copsychus cebuensis*), both island endemics with very small populations, are classified as Endangered. Despite this, members of this genus are famous songsters that are highly sought after for the songbird trade, particularly in Southeast Asia. The two most widespread species, the Oriental magpie-robin (*Copsychus saularis*) and the White-rumped shama

¹⁴*Ibid.*

¹⁵<https://www.nationalgeographic.com/animals/article/animals-from-africa-s-biggest-trafficked-primate-confiscation-fo>

¹⁶<https://www.nationalgeographic.com/animals/article/animals-from-africa-s-biggest-trafficked-primate-confiscation-fo>

¹⁷https://www.prweb.com/releases/rescued_monkeys_arrive_at_j_a_c_k_sanctuary_a_pasa_member/prweb17739479.htm

¹⁸file:///tmp/mozilla_annie0/2017Estradaetal.pdf

¹⁹<https://pasa.org/awareness/the-pasa-interview-adams-cassinga/>

(*Copsychus malabaricus*), have been subjected to unsustainable levels of exploitation, including increased pressure from international trade as local populations, once easily accessible, decline and disappear. These two species were among the most common wild-caught songbirds in bird markets surveyed in Kalimantan in 2015–2017, with 2,708 *C. saularis* and 1,665 *C. malabaricus* recorded.²⁰ In the past few decades both species have undergone dramatic declines, particularly in Java, where they were once common.²¹

The Oriental magpie-robin (*Copsychus saularis*) is, or was, a common bird in many parts of Southeast Asia, but escalation of pressure from the songbird trade has greatly reduced populations in parts of Indonesia including Java, where the species is in severe decline. As a result, birds are increasingly smuggled into Indonesia from Malaysia. At least 26,950 birds were seized in 44 incidents in Indonesia, Malaysia and Singapore from January 2015–December 2020, averaging at least 613 birds per seizure. 17,314 (64 percent) of the birds were being smuggled from Malaysia to Indonesia. Seizures in 2020 alone involved at least 17,736 (66 percent) of all birds confiscated during this period, possibly indicating a recent escalation of demand.²² Within Malaysia, the species is protected only in the East Malaysian state of Sabah.

The White-rumped shama (*Copsychus malabaricus*) is a remarkable songster and has long been a popular species in the South-East Asian cage-bird trade. As a result, the species has been extirpated across wide swathes of its Southeast Asian range following heavy poaching.²³ Despite local protection in six out of its nine range states, demand remains high. According to a survey of bird owners in Medan, Indonesia,²⁴ wild birds are perceived to be better singers than captive-bred birds. This preference likely increases the pressure on wild populations.

According to a report published in 2018,²⁵ combined data from surveys across Indonesia, Malaysia, Singapore, Thailand and Vietnam carried out between 2007 and 2018 recorded 8,271 White-rumped shama for sale openly in local bird markets. Another 917 were found for sale online in six snapshot internet trade studies in Indonesia, Malaysia and Thailand between 2016 and 2018. In addition, 432 seizures were recorded between 2008 and 2018, involving 15,480 birds; significantly, 291 of these occurred between January 2014 and June 2018. Of all recorded seizure incidents, 12 percent involved international trade and accounted for 67 percent (10,376) of all White-rumped shama seized. Because most seizure records are incomplete, the true figure is likely to be much higher. The authors of the report strongly recommend that White-rumped shama be listed in Appendix II of CITES.

► *Phrynosoma* spp. (horned lizards)

SSN urges the Service to propose the inclusion of *Phrynosoma* spp. (horned lizards) on CITES Appendix II, in accordance with CITES Article II, paragraph 2, “Appendix II shall include: (a) all species which although not necessarily now threatened with extinction may become so unless trade in specimens of such species is subject to strict regulation in order to avoid utilization incompatible with their survival” and

²⁰ Rentschlar, K. A., Miller, A. E., Lauck, K. S., Rodiansyah, M., Bobby, Muflihati, & Kartikawati. (2018). A Silent Morning: The Songbird Trade in Kalimantan, Indonesia. *Tropical Conservation Science*, 11, 1–10. <https://doi.org/10.1177/1940082917753909>.

²¹ Mittermeier, J. C., Oliveros, C. H., Haryoko, T., Irham, M., & Moyle, R. G. (2014). An avifaunal survey of three Javan volcanoes--Gn Salak, Gn Slamet and the Ijen highlands. *BirdingASIA*, 22(October 2013), 91–100.

²² Chng, S.C.L., Saaban, S., Wechit, A. and Krishnasamy, K. (2021). *Smuggled For Its Song - The Trade in Malaysia's Oriental Magpie-robins*. TRAFFIC, Southeast Asia Regional Office, Petaling Jaya, Selangor, Malaysia.

²³ Ng, E. Y. X., Garg, K. M., Low, G. W., Chattopadhyay, B., Oh, R. R. Y., Lee, J. G. H., & Rheindt, F. E. (2017). Conservation genomics identifies impact of trade in a threatened songbird. *Biological Conservation*, 214(August), 101–108. <https://doi.org/10.1016/j.biocon.2017.08.007>.

²⁴ Burivalova, Z., Lee, T. M., Hua, F., Lee, J. S. H., Prawiradilaga, D. M., & Wilcove, D. S. (2017). Understanding consumer preferences and demography in order to reduce the domestic trade in wild-caught birds. *Biological Conservation*, 209, 423–431.

²⁵ Leupen, B. T. C., Krishnasamy, K., Shepherd, C. R., Chng, S. C. L., Bergin, D., Eaton, J. A., Yukin, D. A., Hue, S. K. P., Miller, A., Nekaris, K. A. I., Nijman, V., Saaban, S., & Imron, M. A. (2018). Trade in White-rumped Shama *Kittacincla malabarica* demands strong national and international responses. *Forktail*, 2018(34), 1–8.

Resolution Conf. 9.24 (Rev. CoP17), Annex 2a, Criterion B: “It is known, or can be inferred or projected, that regulation of trade in the species is required to ensure that the harvest of specimens from the wild is not reducing the wild population to a level at which its survival might be threatened by continued harvesting or other influences.”

Horned lizards are highly desirable by collectors because of their unique appearance including a strongly flattened body usually armed with sharp occipital spines, relatively short legs and a slow and awkward gait. They are noticeably reluctant to move even when approached by a potential predator. Among their other unusual features are more variable body temperatures than other sympatric lizards, a conspicuously specialized diet consisting largely of ants, an exceptionally large stomach for their body size, and a specialized dentition that facilitates ant-eating. They produce large numbers of relatively small eggs or young, and expend a considerable amount of matter and energy on each clutch or litter.²⁶

The genus *Phrynosoma* is confined to North America, ranging from southern Canada to Mexico. One species, *Phrynosoma asio*, has been reported from Guatemala on the basis of anecdotal data but has never been seen or collected there.²⁷ There are 21 extant species currently recognized, of which several have been recently discovered or elevated to species status (e.g. *P. bauri*, *P. diminutum*, *P. ornatissimum*, *P. brevirostris* and *P. sherbrookei*).^{28 29 30} Seven species are endemic to Mexico and two to the United States (Table 1).

Table 1. *Phrynosoma* species and distribution

Species	Mexico	USA	Canada	Distribution Map
<p><i>Phrynosoma asio</i></p> 	X (endemic)			
<p><i>Phrynosoma bauri</i></p> 		X (endemic)		
<p><i>Phrynosoma blainvillii</i></p> 	X	X		

²⁶Pianka, E. R., & Parker, W. S. (1975). Ecology of horned lizards: a review with special reference to *Phrynosoma platyrhinos*. *Copeia*, 141-162.

²⁷M.Sc. Daniel Ariano pers. com. 2021

²⁸Montanucci, R. R. (2015). A taxonomic revision of the *Phrynosoma douglasii* species complex (Squamata: Phrynosomatidae). *Zootaxa*, 4015, 1-177.

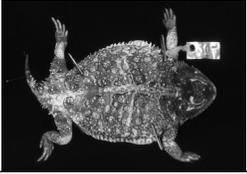
²⁹Uetz, P., Freed, P. & Hošek, J. (eds.) (2020) The Reptile Database, <http://www.reptile-database.org>, accessed (Feb 10, 2020)

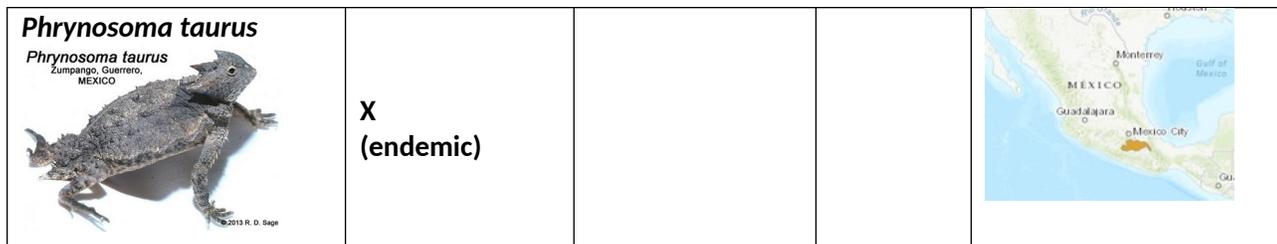
³⁰de Oca, A. N. M., Arenas-Moreno, D., Beltrán-Sánchez, E., & Leaché, A. D. (2014). A new species of horned lizard (genus *Phrynosoma*) from Guerrero, México, with an updated multilocus phylogeny. *Herpetologica*, 70(2), 241-257.

<p><i>Phrynosoma braconnieri</i></p> 	<p>X (endemic)</p>			
<p><i>Phrynosoma brevirostris</i></p> 		<p>X</p>	<p>X</p>	
<p><i>Phrynosoma cerroense</i></p> 	<p>X (endemic)</p>			
<p><i>Phrynosoma cornutum</i></p> 	<p>X</p>	<p>X</p>		

Species	Mexico	USA	Canada	MAP
<p><i>Phrynosoma coronatum</i></p> 	<p>X</p>	<p>X</p>		

<p><i>Phrynosoma diminutum</i></p> 		<p>X (endemic)</p>	
<p><i>Phrynosoma ditmarsii</i></p> 	<p>X (endemic)</p>		
<p><i>Phrynosoma douglasii</i></p> 		<p>X</p>	<p>X</p> 
<p><i>Phrynosoma goodei</i></p>  <p><small>Phrynosoma goodei Morongo, Morongo Co., north of Appleton © Lauric Vitt</small></p>	<p>X</p>	<p>X</p>	
<p><i>Phrynosoma hernandesi</i></p> 	<p>X</p>	<p>X</p>	<p>X</p> 
<p><i>Phrynosoma mcallii</i></p> 	<p>X</p>	<p>X</p>	

Species	Mexico	USA	Canada	MAP
<i>Phrynosoma modestum</i> 	X	X		
<i>Phrynosoma orbiculare</i> 	X (endemic)			
<i>Phrynosoma ornatissimum</i> 	X	X		
<i>Phrynosoma platyrhinos</i> 	X	X		
<i>Phrynosoma sherbrookei</i> 	X (endemic)			
<i>Phrynosoma solare</i> 	X	X		



Photos from The Reptile Data Base and Montanucci 2015³¹; Maps from IUCN RedList and INaturalist

Four species in the genus were listed on Appendix II in 1992: *P. coronatum*, *P. blainvillii*, *P. cerroense* and *P. wigginsii* (now considered a synonym of *P. cerroense*).³² In 2007, IUCN classified *P. mcalli* as Near Threatened, *P. blainvillii*, *P. braconnieri*, *P. cornutum*, *P. coronatum*, *P. douglassi*, *P. goodei*, *P. hernandezi*, *P. modestum*, *P. orbiculare*, *P. platyrhinos*, *P. solare*, *P. taurus* as Least Concern and *P. ditmarsii* as Data Deficient (IUCN 2020). However, an update of these outdated assessments is needed. Mexico classifies *P. cerroense*, *P. taurus*, *P. mcalli*, *P. orbiculare* as Threatened, and *P. asio*, *P. braconnieri*, as Under Special Protection; The states of Texas, Arizona, California, Colorado, Montana and Oklahoma classify *P. blainvillii*, *P. cornutum*, *P. hernandezi* and *P. mcalli* as either Threatened, Vulnerable or Special Concern; and Canada classifies *P. hernandezi* as Special Concern and *P. douglassi* as Extirpated (Table 2).

Table 2. *Phrynosoma* species conservation status

Species	Mexico	USA	Canada	IUCN (2007)
<i>Phrynosoma asio</i>	Special Protection			
<i>Phrynosoma blainvillii</i>		California: Vulnerable		Least Concern
<i>Phrynosoma braconnieri</i>	Special Protection			Least Concern
<i>Phrynosoma cerroense</i>	Threatened			
<i>Phrynosoma cornutum</i>		New Mexico: Provides full protection Oklahoma: Special Concern Colorado: Special Concern Texas: Threatened		Least Concern
<i>Phrynosoma coronatum</i>				Least Concern
<i>Phrynosoma ditmarsii</i>				Data Deficient
<i>Phrynosoma douglasii</i>			Extirpated	Least Concern
<i>Phrynosoma goodei</i>				Least Concern
<i>Phrynosoma hernandesii</i>		New Mexico: Provides full protection	Special Concern	Least Concern

³¹Montanucci, R. R. (2015). A taxonomic revision of the *Phrynosoma douglasii* species complex (Squamata: Phrynosomatidae). *Zootaxa*, 4015, 1-177.

³²Leaché, Adam D. and Charles W. Linkem 2015. Phylogenomics of Horned Lizards (Genus: *Phrynosoma*) Using Targeted Sequence Capture Data. *Copeia* 2015 (3): 586-594

		Texas: Threatened		
		Montana: Potentially at risk		
<i>Phrynosoma mcallii</i>	Threatened	California: Imperiled		Near Threatened
		Arizona: Threatened		
<i>Phrynosoma modestum</i>				Least Concern
<i>Phrynosoma orbiculare</i>	Threatened			Least Concern
<i>Phrynosoma platyrhinos</i>				Least Concern
<i>Phrynosoma solare</i>				Least Concern
<i>Phrynosoma taurus</i>	Threatened			Least Concern

Source: Mexico DOF 2019³³, Canada COSEWIC 2018³⁴, 2019³⁵, USA CNDDDB 2021³⁶, New Mexico Game and Fish 2018³⁷, 2021³⁸, Montgomery 2003³⁹.

Phrynosoma species are traded internationally for the pet trade. According to *Phrynosoma* export data for the period 2006-2015 obtained from the U.S. Fish and Wildlife Service's Law Enforcement Management Information System ("LEMIS") under Freedom of Information Act requests, 21,170 live specimens of at least nine *Phrynosoma* spp. were exported from the United States in 2006-2015, including 192 specimens of *P. cornutum*, two specimens of *P. hernandezi*, 52 specimens of *P. asio*, *P. taurus* and *P. braconnieri* which are endemic to Mexico, and 223 unidentified specimens. 93.8% or 19,868 specimens came from the wild, while 3.8% or 815 specimens were declared captive bred, and 2.3% or 487 specimens were born in captivity (Table 3).

Table 3. LEMIS Exports of *Phrynosoma* species 2006-2015

Species	Total	Wild	Captive bred	Born in Captivity	Total
<i>P. platyrhinos</i>	20,199	19,038	759	402	20,199
<i>P. modestum</i>	496	440	1	55	496
<i>P. spp.</i>	223	217	2	4	223
<i>P. cornutum</i>	192	166		26	192
<i>P. asio</i> *	38		38		38
<i>P. taurus</i> *	13		13		13
<i>P. coronatum</i>	5	5			5
<i>P. hernandezi</i>	2	2			2
<i>P. braconnieri</i> *	1		1		1
<i>P. solare</i>	1		1		1
TOTAL	21,170	19,868	815	487	21170

³³Diario Oficial Federal DOF 14/11/2019 MODIFICACIÓN del Anexo Normativo III, Lista de especies en riesgo de la Norma Oficial Mexicana NOM-059-SEMARNAT-2010, Protección ambiental-Especies nativas de México de flora y fauna silvestres-Categorías de riesgo y especificaciones para su inclusión, exclusión o cambio-Lista de especies en riesgo, publicada el 30 de diciembre de 2010

³⁴COSEWIC. 2018. COSEWIC assessment and status report on the Greater Short-horned Lizard *Phrynosoma hernandesi* in Canada. Committee on the Status of Endangered Wildlife in Canada. Ottawa. xi + 64 pp. (<http://www.registrelep-sararegistry.gc.ca/default.asp?>)

³⁵COSEWIC Annual Report 2018-2019 https://wildlife-species.canada.ca/species-risk-registry/virtual_sara/files/cosewic/Rapport-Cescc-Report-v00-2019Oct-En.pdf

³⁶California Natural Diversity Database (CNDDDB). February 2021. Special Animals List. California Department of Fish and Wildlife. Sacramento, CA.

³⁷New Mexico Game and Fish 2018 Texas Horned Lizard <https://www.bison-m.org/booklet.aspx?SpeciesID=030070>

³⁸New Mexico Game and Fish 2021 Hernandez's Short-horned Lizard <https://www.bison-m.org/booklet.aspx?SpeciesID=030090>

³⁹Montgomery, C. E., & Mackessy, S. P. (2003). Natural history of the Texas horned lizard, *Phrynosoma cornutum* (Phrynosomatidae), in southeastern Colorado. *The Southwestern Naturalist*, 48(1), 111-118.

*Endemic to Mexico

The most highly traded species, by far, was *P. platyrhinus* of which 20,199 were exported, representing 95.4% of United States-related *Phrynosoma* trade, followed by *P. modestum* with 496 specimens representing 2.3% of the trade. Specimens were exported to 32 different countries of which Germany was the foremost recipient with 3,352 specimens, followed by the Netherlands (2,845 specimens), United Kingdom (2,816 specimens), Japan (2,602 specimens) and Canada (1,915 specimens). The European Union is the main market for *Phrynosoma* live specimens, followed by Asia (Japan, Hong Kong, Thailand, Korea, and Taiwan) (Table 4). During a 12-month survey in Germany in 2018 nine *Phrynosoma* species were recorded in trade (*P. asio*, *cornutum*, *coronatum*, *P. goodei*, *P. modestum*, *P. orbiculare*, *P. platyrhinus*, *P. solare*, and *P. taurus*), for prices of 40-375 Euro per individual⁴⁰.

Table 4. Main countries importing *Phrynosoma* specimens from the USA 2006-2015

Importing Country	Quantity
Germany	3352
Netherlands	2845
United Kingdom	2816
Japan	2602
Canada	1915
Switzerland	1171
Austria	1133
Hong Kong	813
Spain	696
Czech Republic	679
Thailand	595
Korea	553
Italy	552
Taiwan	515

Mexico exported 45 specimens of live *Phrynosoma* between 2000 and 2017: 24 *P. asio*, 12 *P. orbiculare*, 8 *P. coronatum*.⁴¹ From 2000 to 2020, Mexico seized 302 *Phrynosoma* specimens: *P. orbiculare* (46), *P. asio* (30), *P. cornutum* (12), *P. mcalli* (6) and *P. sp.* (203).⁴²

The collection of horned lizards as pets or to sell commercially in the pet trade may have affected some populations, especially near towns and cities.⁴³ Hundreds of thousands of horned lizards were shipped out of Oklahoma and Texas and sold for pets in the eastern United States and Europe from the early 1900's until the 1980's.^{44 45 46} In the 1950's a single pet dealer in Texas was selling more than 50,000 horned lizards each year.⁴⁷ In 1967, the Texas legislature passed protective legislation preventing collection, exportation and sale of *Phrynosoma cornutum* from the state. Prior to passage of this legislation, hundreds of thousands of horned lizards were exported (dead and alive) from Texas every

⁴⁰ Altherr, S., Freyer, D. & K. Lameter (2020): Extract of an unpublished database for the study "Strategien zur Reduktion der Nachfrage nach als Heimtieren gehaltenen Reptilien, Amphibien und kleinen Säugetieren. Bundesamt für Naturschutz (ed.), Bonn, Germany, BfN-Skripten 545, https://www.bfn.de/fileadmin/BfN/service/Dokumente/skripten/Skript_545.pdf

⁴¹ SEMARNAT 2019 Dirección General de Vid Silvestre Oficio Núm SEMARNAT/UCPAST/UT/392319; SEMARNAT 2018-2019 Oficio Núm. SEMARNAT/UCPAST/UT/304/18. 29 January 2018 and Oficio Núm. SEMARNAT/UCPAST/UT/2725/19. 20 August 2019

⁴² PROFEPa 2019 Oficio PFPA/1.7/12C.6/02176/19, 29 NOV. 2019 y 2021 Oficio PFPA/1.7/12C.6/00061-21, 10 Feb 2021

⁴³ Oklahoma Wildlife Department 2021 <https://www.wildlifedepartment.com/wildlife/nongamespecies/reptiles/texas-horned-lizard>

⁴⁴ Dropkin, A. 2015 Our Toad to Ruin. Texas Monthly <https://www.texasmonthly.com/the-culture/our-toad-to-ruin/>

⁴⁵ Pianka Eric R. and Wendy L. Hodges. 2007 Horned Lizards, <http://www.zo.utexas.edu/faculty/pianka/phryno.html> and <http://www.zo.utexas.edu/faculty/pianka/phryno2.html>

⁴⁶ Oklahoma Wildlife Department 2021 <https://www.wildlifedepartment.com/wildlife/nongamespecies/reptiles/texas-horned-lizard>

⁴⁷ Dropkin, A. 2015 Our Toad to Ruin. Texas Monthly <https://www.texasmonthly.com/the-culture/our-toad-to-ruin/>

summer to tourists, curiosity seekers and would be pet owners, leading only to the demise of the lizards.⁴⁸ Horned lizards are now protected in Oklahoma and Texas and this activity is illegal. However, in areas where collecting was common some populations may not yet have recovered.⁴⁹ 8,000 horned lizards were collected each year in California in the 1890's until the 1930's, depleting the local populations.⁵⁰ Some *Phrynosoma* species are bred in captivity by zoos.⁵¹ In the United States pet trade, *P. platyrhinos* are sold for USD \$39.99⁵² and USD 149.99⁵³; *P. asio* are sold for USD \$700 a pair⁵⁴. Because of their special diet of ants (*P. solare* and *P. platyrhinos* diet consists up to 90% ants),⁵⁵ most of these lizards die from improper care within a few weeks, and no self-sustaining captive-bred populations have ever been developed.⁵⁶ If a horned lizard has adequate fat reserves it can live for months in an inadequate captive environment, but it is certain death for almost all the collected lizards.⁵⁷ People have tried to keep them as pets only to find out they are difficult to keep alive in captivity.⁵⁸ Most wild caught horned lizards die within a year of captivity due to stress and bad husbandry.⁵⁹

Resolution Conf. 12.11 (Rev. CoP18) Annex lists Montanucci (2004)⁶⁰ as the standard reference for currently-listed *Phrynosoma* spp. As a number of species have been described since its publication, a new standard reference will need to be adopted should the entire genus be listed on the Appendices. SSN recommends that the Service propose that the Animals Committee be directed to consider, in collaboration with the Nomenclature Specialist for Animals, the suitability of adopting more recent standard references, including Montanucci (2015)⁶¹ for the *P. douglasii* complex, for *Phrynosoma* spp.

► *Homalopsis* spp. (Masked water snakes, Puff-faced water snakes)

SSN urges the Service to propose the inclusion of *Homalopsis* spp. in CITES Appendix II. The European Union may be an appropriate co-sponsor for this proposal.

The genus of Asian water snakes presently comprises five species: *H. buccata*, *H. hardwickii*, *H. mereijcoxi*, *H. nigroventralis*, and *H. semizonata*. Most literature on trade in this genus refers to *H. buccata*, a species complex which was split into separate species only in 2012 (see Table 1).

H. buccata meets the criteria for listing in Appendix II found in Article II, paragraph 2(a) of the Convention: "all species which although not necessarily now threatened with extinction may become so unless trade in specimens of such species is subject to strict regulation in order to avoid utilization incompatible with their survival" and Resolution Conf. 9.24 (Rev. CoP17), Annex 2a, paragraph B: "It is known, or can be inferred or projected, that regulation of trade in the species is required to ensure that the harvest of specimens from the wild is not reducing the wild population to a level at which its survival might be threatened by continued harvesting or other influences."

⁴⁸Pianka Eric R. and Wendy L. Hodges. 2007 Horned Lizards, <http://www.zo.utexas.edu/faculty/pianka/phryno.html> and <http://www.zo.utexas.edu/faculty/pianka/phryno2.html>

⁴⁹Oklahoma Wildlife Department 2021 <https://www.wildlifedepartment.com/wildlife/nongamespecies/reptiles/texas-horned-lizard>

⁵⁰Manaster, J. (2002). Horned lizards. Texas Tech University Press.

⁵¹Recchio, I, Robertson-Billet, M, Rodriguez, C and Haigwood J. 2014 Captive Husbandry and Reproduction of *Phrynosoma asio* (Squamata: Phrynosomatidae) at the Los Angeles Zoo and Botanical Gardens Herpetological Review, 2014, 45(3), 450–454. Society for the Study of Amphibians and Reptiles

⁵² <https://www.backwaterreptiles.com/other-lizards/desert-horned-lizard-for-sale.html>

⁵³ <https://www.gotoreptiles.com/horned-toad-lizard-small.html>

⁵⁴ <http://www.faunaclassifieds.com/forums/showthread.php?t=682468>

⁵⁵Sherbrooke, W. C. (2003). Introduction to horned lizards of North America (No. 64). Univ of California Press.

⁵⁶Oklahoma Wildlife Department 2021 <https://www.wildlifedepartment.com/wildlife/nongamespecies/reptiles/texas-horned-lizard>

⁵⁷Pianka Eric R. and Wendy L. Hodges. 2007 Horned Lizards, <http://www.zo.utexas.edu/faculty/pianka/phryno.html> and <http://www.zo.utexas.edu/faculty/pianka/phryno2.html>

⁵⁸Sherbrooke, W. C. (2003). Introduction to horned lizards of North America (No. 64). Univ of California Press

⁵⁹Alsup, V. 2013. Desert Horned Lizard Care. Beasties Publishing; Edición 2nd electronic (8 abril 2013)

⁶⁰MONTANUCCI, R.R. (2004). Geographic variation in *Phrynosoma coronatum* (Lacertilia, Phrynosomatidae): further evidence for a peninsular archipelago. Herpetologica, 60: 117.

⁶¹Montanucci, R. R. (2015). A taxonomic revision of the *Phrynosoma douglasii* species complex (Squamata: Phrynosomatidae). Zootaxa, 4015, 1-177.

The remaining species of the genus *Homalopsis* should be listed for look-alike reasons, in accordance with Article II, paragraph 2(b) of the Convention and Resolution Conf. 9.24 (Rev. CoP17), Annex 2b, paragraph A: “The specimens of the species in the form, in which they are traded, resemble specimens of a species included in Appendix II under the provisions of Article II, paragraph 2 (a), or in Appendix I, so that enforcement officers who encounter specimens of CITES-listed species are unlikely to be able to distinguish between them.” However, as *H. mereijcoxi* and *H. nigroventralis* are native to Cambodia and Viet Nam where *Homalopsis* is heavily exploited, they may in future qualify under Annex 2a, paragraph B.

International trade:

Asian water snakes of the genus *Homalopsis* are heavily traded for regional consumption as food, for the international reptile skin trade, and occasionally for the exotic pet trade:

- *H. buccata* is heavily exploited in Tonlé Sap Lake in Cambodia, and populations appear to be declining in this particular area. Cambodia is exporting large numbers to Thailand, Viet Nam, and China.
- *Homalopsis* spp. are traded internationally to Vietnamese and Chinese markets as food and to Thai markets for their skins. Between 1991 and 2001, 1,448,134 skins of *H. buccata* were imported into China for the leather trade. This species was the third most common reptile skin imported into the United States during 1984-1990, with a total import of 1,645,448 skins.⁶²
- Within the period 1997-2016, Germany, Spain, and Portugal imported at least 918,466 skins and 3,668 leather products⁶³ of *H. buccata*. Only 55,020 skins were marked as captive-bred (mainly from Viet Nam), while the remaining 94 percent were from snakes taken from the wild or of unknown origin. The main exporting country was Indonesia (often as re-exports from Singapore), followed by Viet Nam.⁶⁴ During the same period Germany and the United Kingdom imported 60 live individuals for the exotic pet trade.
- In recent years, Indonesia’s Ministry of Environment and Forestry has sharply increased export quotas for *H. buccata*. In 2015-2018, export quotas were in the range of 95,000-110,500, but the quota was doubled in 2019 to 226,260, and has since then been further increased to 900,075 (in 2020) and 950,000 (in 2021).⁶⁵
- In Viet Nam, *H. buccata* (*sensu lato*) is among the three most abundant reptile species in trade.⁶⁶
- In Cambodia, *H. buccata* is caught in large numbers for the exotic leather trade and as food for crocodile farms: About 20 percent of the 6.9 million water snakes that are annually caught in the Tonle Sap Lake were *H. buccata*.

⁶² Murphy, J., Brooks, S.E. & Zug, G.R. 2010. *Homalopsis buccata*. The IUCN Red List of Threatened Species 2010: e.T176682A7283049. <https://dx.doi.org/10.2305/IUCN.UK.2010-4.RLTS.T176682A7283049.en>. Downloaded on 08 April 2021.

⁶³ *Homalopsis* spp. is not yet covered by CITES, but since 1997, *Homalopsis buccata* is listed in Annex D of the European Union’s wildlife trade regulation. Under this Annex trade is not regulated but recorded. As not all EU Member States are reporting their Annex D imports, which is voluntary, those records, which are also included in the UNEP WCMC trade database, are incomplete.

⁶⁴ UNEP-WCMC (2021): Trade database, selection for *Homalopsis* spp., commercial trade. <https://trade.cites.org/>

⁶⁵ Ministry of Environment and Forestry: Quota for taking plants and catching wildlife – Perodes 2015-2021.

⁶⁶ Stuart, B. 2004. The harvest and trade of reptiles at U Ming Thuong National Park, southern Viet Nam. *TRAFFIC Bulletin* 20(1): 25-34.

Conservation status:

IUCN Red List assessments for this genus are outdated and do not reflect recent changes in taxonomy: Only two species were categorized in 2009 in the IUCN Red List, *H. buccata* (Least Concern, population trend unknown) and *H. nigroventralis* (although “only known from eight specimens” also classified as Least Concern, population trend unknown). At that time, IUCN stated for *H. buccata* that “when this species complex becomes divided into separate species, it is probable that the smaller range segregate species may be considered to be more threatened through the collection for skins.” Indeed, in 2012, its taxonomy was reviewed: *H. hardwickii* and *H. semizonata* were resurrected, and *H. mereijcoxi* was described as a separate species.⁶⁷

While global data on populations are lacking, at least in some regions wild populations have already declined. In Tonle Sap Lake in Cambodia, fishermen report a decline of water snakes by 74-84 percent from 2000 to 2005.⁶⁸ There are two types of snake fisheries in Cambodia: the generalized crocodile food fishery, and the more species- and size-selective skin trade fishery: In 2010, it was estimated that farmed crocodiles consume between 2.7 and 12.2 million snakes per year, of which about 20 percent are *Homalopsis* spp.⁶⁹ The fisheries for the skin trade mainly target large-sized fecund females, which may have a disproportionate impact on the long-term survival of the population.

As a result of the CITES Asian snake trade workshop in Guangzhou (China) in 2011, Cambodia and Indonesia were investigating the utility of listing *H. buccata* in Appendix III⁷⁰, but a decade later the genus remains without international protection. To ensure that use of this heavily traded species is not detrimental to their survival, a listing of *Homalopsis* spp. in CITES Appendix II is overdue.

Table 5: *Homalopsis* species, range, and taxonomic review

Species	Range States	IUCN	Comments
<i>H. buccata</i> Linne's water snake	Bangladesh; Cambodia; Indonesia; Laos; Malaysia; Nepal; Singapore; Thailand; Viet Nam	LC (2009; outdated)	Trade data often for species complex
<i>H. hardwickii</i> Northwestern masked water snake	NE India		Valid species since 2012
<i>H. mereijcoxi</i> Thai masked water snake	Cambodia, Thailand, and Viet Nam		Valid species since 2012
<i>H. nigroventralis</i> Mekong masked water snake	Cambodia, Laos, and Thailand	LC (2009; outdated)	
<i>H. semizonata</i> Burmese masked water snake	Myanmar		Valid species since 2012

⁶⁷ Murphy *et al.* 2012. The masked water snakes of the genus *Homalopsis* Kuhl & van Hasselt, 1822 (Squamata, Serpentes, Homalopsidae), with the description of a new species. *Zootaxa* 3208: 1–26

⁶⁸ Brooks *et al.* 2005. Vulnerability of Cambodian water snakes: Initial assessment of the impact of hunting at Tonle Sap Lake. *Biol. Cons.* 139: 401 – 414

⁶⁹ Brooks *et al.* 2010. Snake prices and crocodile appetites: Aquatic wildlife supply and demand on Tonle Sap Lake, Cambodia. *Biol. Cons.* 143(9): 2127-2135

⁷⁰ CITES AC25 Doc. 18, 2011. Snake trade and conservation management (Decisions 15.75 and 15.76).

► *Crotalus* genus (Rattlesnakes)

SSN urges the Service to propose listing rattlesnakes of the genus *Crotalus* in CITES Appendix II as follows:

- *Crotalus adamanteus* (Eastern diamondback rattlesnake) and *C. horridus* (Timber/Canebrake rattlesnake) in CITES Appendix II in accordance with Article II.2(a) of the Convention and Resolution Conf. 9.24 (Rev. CoP17) Annex 2 a Criterion B. (It is known, or can be inferred or projected, that regulation of trade in the species is required to ensure that the harvest of specimens from the wild is not reducing the wild population to a level at which its survival might be threatened by continued harvesting or other influences);
- *C. catalinensis* (Catalina Island rattlesnake) and *C. pusillus* (Tancitaran dusky rattlesnake) in CITES Appendix II in accordance with Article II.2(a) and Annex 2 a Criterion A (It is known, or can be inferred or projected, that the regulation of trade in the species is necessary to avoid it becoming eligible for inclusion in Appendix I in the near future); and
- All other species of the genus *Crotalus* (see list in Table 2) in CITES Appendix II in accordance with Article II.2(b) under Annex 2 b Criterion A, as whole animals or their parts and products (rattles, bone, meat, fangs, oil and/or skin patches) may resemble those of *C. adamanteus*, *C. horridus*, and/or *C. catalinensis*. *Crotalus durissus* (cascabel rattlesnake) is currently listed on CITES Appendix III.

Crotalus adamanteus

The Eastern diamondback rattlesnake is one of the most heavily persecuted reptiles in the eastern United States. *C. adamanteus* is historically associated with the endangered longleaf pine ecosystem of the southeast.⁷¹ The northern boundary of its range has contracted southwards in the past century, and its remaining range is now fragmented by agriculture, intensive pine tree farming, and urbanization. Even the most viable populations in the heartland of the species' range, in northern Florida and southern Georgia, once contiguous and robust, are showing evidence of decline, based on published statements of rattlesnake roundup hunters and officials and the declines in numbers and size/age class of the largest snakes brought into rattlesnake roundups. The species is considered to be endangered in the balance of its historical range.⁷²

Because the species has a slow life history with long birth intervals and long gestation periods, it is particularly susceptible to over-exploitation by humans.⁷³ The rattlesnake skin trade likely takes thousands of Eastern diamondbacks each year with no limit placed on annual harvest.⁷⁴ Skin dealers have a huge network of pick-up stations where they advertise for people to bring in killed snakes to be frozen until the dealers can make the rounds and pick up the carcasses.⁷⁵

The largest numbers of Eastern diamondback rattlesnakes killed for the skin trade occurs in north Florida.⁷⁶ Analysis of reptile dealer reports from 1990 to 1994 show that 42,788 Eastern diamondback rattlesnakes were purchased by Florida hide dealers and taxidermists, primarily from Georgia, Alabama, and Florida.⁷⁷ Today, the total take of Eastern diamondback rattlesnakes for the skin trade is likely much less due to the increasing rarity of the species.⁷⁸

⁷¹<https://www.sciencedirect.com/science/article/abs/pii/S0006320708002620>

⁷²https://www.researchgate.net/publication/228542734_Effects_of_rattlesnake_roundups_on_the_Eastern_Diamondback_Rattlesnake_Crotalus_adamanteus

⁷³<https://www.sciencedirect.com/science/article/abs/pii/S0006320708002620>

⁷⁴Timmerman, W. and W. Martin. 2003. Conservation Guide to the Eastern Diamondback Rattlesnake. Society for the Study of Amphibians and Reptiles. 55 pp.

⁷⁵https://www.biologicaldiversity.org/species/reptiles/eastern_diamondback_rattlesnake/pdfs/Eastern_diamondback_rattlesnake_Listing_Petition_08-22-2011.pdf

⁷⁶https://www.researchgate.net/publication/281538859_Distribution_and_habitat_relationships_of_the_eastern_diamondback_rattlesnake_Crotalus_adamanteus

⁷⁷Timmerman, W. and W. Martin. 2003. Conservation Guide to the Eastern Diamondback Rattlesnake. Society for the Study of Amphibians and Reptiles. 55 pp.

⁷⁸https://www.biologicaldiversity.org/species/reptiles/eastern_diamondback_rattlesnake/pdfs/Eastern_diamondback_rattlesnake_Listing_Petition_08-22-2011.pdf

The Eastern diamondback rattlesnake receives no protection from capture in Mississippi,⁷⁹ Alabama⁸⁰, Georgia⁸¹, Florida⁸², and South Carolina⁸³. North Carolina protects Eastern diamondback rattlesnakes as an endangered species⁸⁴ and possession in Louisiana is prohibited⁸⁵; the species likely is extirpated in both states.^{86 87}

*Crotalus horridus*⁸⁸

The range of the Timber rattlesnake is from south-central New Hampshire and the Lake Champlain region of Vermont south to northern Florida and west to eastern Texas, central Oklahoma, eastern Kansas, southeastern Nebraska, southern and eastern Iowa, and southeastern Minnesota. On Lake Erie Islands, southeastern New England, and north-central North Carolina, populations of Timber rattlesnake are patchy and isolated.⁸⁹ The species disappeared from Maine in the 1800s and from Canada and Rhode Island during the twentieth century. Otherwise, this species occupies most of its original range, but at many fewer localities and in greatly depleted numbers.

C. horridus exhibits certain attributes characteristic of K-selected species: delayed age of first reproduction and low frequency of reproduction. A study in the state of New York⁹⁰ concluded that first reproduction occurred at a mean age of 9.6 years, mean length of reproductive cycles was 4.2 years, mean reproductive life span was 9.6 years, and average fecundity was 7.7 offspring per litter. Although several female snakes produced multiple broods (as many as seven litters over life spans as long as 32 years), most females reproduced only once and the mean number of lifetime reproductive events was 1.7 efforts per female.⁹¹

The behavior of gravid females makes them potentially more visible and disproportionately prone to capture. During the 3-4-month gestation period, they feed very little or not at all, spending most of their time in one restricted, visible area. During the summer gravid females usually inhabit open areas such as rocks, exposed walls, or roadsides with less canopy closure than areas used by males and nongravid females.

Although there are no quantitative data on actual numbers or densities over large areas, evidence from long-term monitoring programs, scientific studies and observations by snake hunters indicate that *C. horridus* populations are declining over much of the species' range, and only relict populations remain in many states.

Den sites, called hibernacula, are used for overwintering. They are usually rocky outcroppings, open scree slopes, or fallen rock that provide underground crevices for protection from predation and weather. Timber rattlesnakes hibernate collectively during the winter. According to long-time observers and snake hunters, den populations are down to 15-40 percent of levels typical of forty years ago, and that only 25

⁷⁹https://www.mdwfp.com/media/256526/endangered_species_of_mississippi.pdf

⁸⁰<https://www.outdooralabama.com/hunting-wildlife-regulations/nongame-reptiles-protected-alabama-regulations>

⁸¹https://georgiabiodiversity.org/natels/element_lists?group=reptile

⁸²<https://myfwc.com/media/1945/threatend-endangered-species.pdf>

⁸³<https://www.dnr.sc.gov/marine/mrri/acechar/speciesgallery/Reptiles/EasternDiamondback/index.html>

⁸⁴<https://content.ces.ncsu.edu/endangered-species>

⁸⁵https://www.wlf.louisiana.gov/assets/Conservation/Protecting_Wildlife_Diversity/Files/rare_animals_tracking_list_2020.htm

⁸⁶<https://srelherp.uga.edu/snakes/croada.htm>

⁸⁷https://www.biologicaldiversity.org/species/reptiles/eastern_diamondback_rattlesnake/natural_history.html

⁸⁸Information on *C. horridus* is taken from the United States proposal to list *C. horridus* in CITES Appendix II at CoP11 in 2000 unless otherwise noted: <https://cites.org/sites/default/files/eng/cop/11/prop/44.pdf>

⁸⁹<https://www.fs.fed.us/database/feis/animals/reptile/crho/all.html>

⁹⁰<https://bioone.org/journals/herpetologica/volume-72/issue-4/Herpetologica-D-16-00019.1/Lifetime-Reproduction-in-a-Northern-Metapopulation-of-Timber-Rattlesnakes-i/10.1655/Herpetologica-D-16-00019.1.full>

⁹¹<https://bioone.org/journals/herpetologica/volume-72/issue-4/Herpetologica-D-16-00019.1/Lifetime-Reproduction-in-a-Northern-Metapopulation-of-Timber-Rattlesnakes-i/10.1655/Herpetologica-D-16-00019.1.full>

percent are believed to have populations of 45 or more snakes. Communal denning of Timber rattlesnakes makes them particularly vulnerable to persecution by humans.⁹²

Major threats to the long-term survival of *C. horridus* include habitat degradation and destruction, collection for rattlesnake roundups and commercial skin and pet trades, intentional killing, and highway mortality. *C. horridus* are captured for utilization in "rattlesnake roundups", the live pet trade, skin trade, meat trade and for sale as "novelties" (stuffed and mounted snakes, jewelry, etc.). A 2015 study⁹³ of the species in Indiana found that 30 percent of mortalities were associated with human activities—including human persecution and vehicle strike.

Trade in *C. adamanteus* and *C. horridus*

A wide array of products of *C. adamanteus* and *C. horridus* are traded and widely available online for sale: Rattles are traded individually or as keychains or pendants; rattlesnake fangs, vertebrae and ribs (for jewelry making or as jewelry); and whole skins or swatches as novelties (jewelry, wallets, belts, pens, bows, etc.). Meat from *C. adamanteus* also is available at the price of US\$99.99 for two pounds⁹⁴ or as "rattlesnake sausage."⁹⁵ Whole skins of *C. adamanteus* sell for up to US\$200 each,⁹⁶ whole skins of *C. horridus* sell for up to US\$170.00 each;⁹⁷ dealers specifically mention "Eastern"⁹⁸ or "Southeast"⁹⁹ diamondback (*C. adamanteus*) or "canebreak/canebrake"¹⁰⁰ rattlesnake (*C. horridus*). On *Amazon.com*, products are identified as "Eastern or Western diamondback."¹⁰¹ Live specimens of both species are exported from the United States. *C. adamanteus* is regularly offered in the European pet trade for 150-250 € each, while *C. horridus* is occasionally offered at a higher price of 280-400 €. ¹⁰² Exports of *C. adamanteus* from the United States during the period 2006-2015 included 196 pairs of shoes, 15 live, 530 kg meat and 158 skins; exports of *C. horridus* included 55 live and 44 pairs of shoes. Homeopathic products labeled as *C. horridus* are advertised online in USA, UK,¹⁰³ Belgium¹⁰⁴ and India.¹⁰⁵

*Crotalus catalinensis*¹⁰⁶

C. catalinensis is endemic to Isla Santa Catalina, a 40 km² island in the Gulf of California, off the coast of Loreto, in Mexico. The species is classified as Critically Endangered because of the species' highly restricted range, the recent past presence of feral cats, persecution for illegal trade, and killing by occasional encounters with visitors to the island. Abundance data gathered between 2003 and 2004 fluctuated between 0.23 (one snake every four person-hours) in June to 2.11 (two snakes per person-hour). Most of its diet (70 percent) is composed of the endemic mouse *Peromyscus slevini*, the only ground mammal species on the island.

⁹²<https://srelherp.uga.edu/snakes/crohor.htm>

⁹³<https://www.holohil.com/wp-content/uploads/2017/05/Olson-et-al-2015.pdf>

⁹⁴<https://www.exoticmeatmarkets.com/Eastern-Diamond-Back-Rattlesnake-2-Lbs-p/rattlesnakeeastern32.htm>

⁹⁵<https://www.exoticmeatmarkets.com/Eastern-Diamond-Back-Rattlesnake-2-Lbs-p/rattlesnakeeastern32.htm>; "Our rattlesnake sausages are made from Eastern Diamondback Rattlesnake Meat or Prairie Rattlesnake Meat."

⁹⁶<https://www.hideandfur.com/inventory/55400012.html>

⁹⁷https://www.etsy.com/listing/1002409595/canebrake-rattlesnake-timber-c071-rattle?ga_order=most_relevant&ga_search_type=all&ga_view_type=gallery&ga_search_query=timber+rattlesnake&ref=sc_gallery-1-2&from_market_listing_grid_ad=1&plkey=fe34257b7e52aebc5f7ddf101a6a6fc358e2c18%3A1002409595

⁹⁸https://www.etsy.com/listing/1001228363/44-eastern-diamondback-rattlesnake-hide?ga_order=most_relevant&ga_search_type=all&ga_view_type=gallery&ga_search_query=rattlesnake+skin&ref=sr_gallery-1-29&organic_search_click=1

⁹⁹<https://www.hideandfur.com/inventory/5540.html>

¹⁰⁰<https://kevinscatalog.com/products/canebrake-rattlesnake-belt>

¹⁰¹<https://www.amazon.com/Chichester-Inc-Rattlesnake-Keychain-AZ-42-31T/dp/B01MYXBR2H>

¹⁰² Altherr, S.; Freyer, D. & K. Lameter (2020): extraction from unpublished database for the study: Strategien zur Reduktion der Nachfrage nach als Heimtiere gehaltenen Reptilien, Amphibien und kleinen Säugetieren. Bundesamt für Naturschutz (ed.), Bonn, Germany, BfN-Skripten 545, 466 pp.

¹⁰³<https://buxtonandgrantpharmacy.co.uk/product/crotalus-horridus/>

¹⁰⁴<https://www.zwitserseapotheek.com/en/granulen-globulen/c/crotalus-horridus-9-ch-oplossing-9997832.html>

¹⁰⁵<https://www.schwabeindia.com/dilutions-potencies/2737-crotalus-horridus.html>

¹⁰⁶Information on *C. catalinensis* is taken from the IUCN Red List unless otherwise noted:<https://www.iucnredlist.org/species/64314/12764544>

The main threat to this species is the loss of individuals by killing and illegal collection. "Pitfall" traps have been found on the island, and some fishermen have observed people collecting reptiles in bags. Other fishermen have allegedly taken people to the island to collect the species. It is mainly nocturnal and its passive behavior make it easy to be found, caught and/or killed. The species is desirable because it is endangered, it occurs only on the island of Santa Catalina and, unlike other *Crotalus* species, it lacks a rattle.¹⁰⁷

It is very difficult to monitor illegal collecting of rattlesnakes from the island, mainly because of the diverse people involved including wildlife traffickers, people interested in keeping the snakes as pets, people who take them for exhibition in zoos, and both Mexican and foreign researchers who do not have collecting permits.¹⁰⁸

The species is categorized as Threatened in Mexico and protected from g, or capture, possess, transport, collect, import or export.¹⁰⁹ Ten specimens were seized by Mexican authorities between 2000 and 2020. A total of six skins of this species were seized from travelers upon entry to the United States during the period 2006-2015.

International trade in *Crotalus* spp. is significant. It is estimated that more than 125,000 rattlesnakes enter trade annually in the United States, many from "rattlesnake roundups" for which rattlesnakes are specifically targeted.¹¹⁰ Mexican *Crotalus* species are also targeted, chiefly for trade in skin products, with the genus constituting the second most exported reptile species from Mexico: a total of nearly 7,000 wild-sourced *Crotalus* skin products were exported to the United States from Mexico between 1995 and 1999.¹¹¹ From 2006-2015, the United States exported 2,379 live *Crotalus* specimens, mostly (2,002) for commercial purposes, with most of the remainder (208) for personal purposes. Between 2006 and 2015, 453 bodies, 604 meat products, 2,803 medicinal part or products, 366 oil products, 6,555 powder, 51 pairs of shoes, 136 skins, 67 tails, and 51 unspecified specimens derived from wild-sourced *Crotalus* species were refused, and subsequently seized or abandoned upon import from Mexico to the United States. Mexico's Procuraduría Federal de Protección al Ambiente (PROFEPA) seized a total of 693 live *Crotalus* specimens from 23 species and 3,252 *Crotalus* products from 2000-2020.^{112,113} Mexico exported 457 live specimens from 22 species of *Crotalus* from 2000-2017.¹¹⁴

Given the significant levels of trade in *Crotalus* spp. and the threatened status of *C. adamanteus*, *C. horridus* and *C. catalinensis*, we encourage the United States to propose listing the genus *Crotalus* on Appendix II. Such a listing will assist in clarifying the current levels of international trade in all *Crotalus* species and ensure that these beautiful predators remain a living symbol of the American and Mexican wilderness and their peoples.

¹⁰⁷https://www.researchgate.net/publication/334731282_Living_Without_a_Rattle_The_Biology_and_Conservation_of_the_Rattlesnake_Crotalus_catalinensis_from_Santa_Catalina_Island_Mexico

¹⁰⁸https://www.researchgate.net/publication/334731282_Living_Without_a_Rattle_The_Biology_and_Conservation_of_the_Rattlesnake_Crotalus_catalinensis_from_Santa_Catalina_Island_Mexico

¹⁰⁹Mexico's Federal Penal Code Article 420.

¹¹⁰https://www.researchgate.net/publication/262130132_Rattlesnake_Commercialization_Long-Term_Trends_Issues_and_Implications_for_Conservation

¹¹¹ http://www.seaturtle.org/PDF/Arroyo-Quirozi_2010_BiodiversityConserv.pdf

¹¹²PROFEPA 2019 Oficio PFPA/1.7/12C.6/02176/19, 29 NOV. 2019 and 2021 Oficio PFPA/1.7/12C.6/00061-21, 10 Feb 2021

¹¹³These included: belts with rattlesnake head; rattlesnake skin; rattlesnake oil; wallets with rattlesnake skin; bags with rattlesnake skin; rattlesnake leather boots; rattlesnake leather bracelet; rattlesnake head; rattlesnake carcass; capsules with rattlesnake ground meat; rattlesnake meat; cigar cases with rattlesnake skin; rattlesnake leather belts; rattlesnake fangs; rattlesnake hatchlings in alcohol; rattlesnake bodies; rattlesnake body parts; necklace rattlesnake charms; rattle of rattlesnake; bottle with rattlesnake; rattlesnake in taxidermy; pieces of rattlesnakes; bottles with rattlesnake oil; pocket knife with rattlesnake skin; rattlesnake incrustation cap; rattlesnake huarache; rattlesnake leather purses; rattlesnake leather wristbands; parts of rattlesnake; pectoral of rattlesnake; rattlesnake skin; ointment with bee poison and rattlesnake oil; rattlesnake carcass pieces; rattlesnake coin holder; rattlesnake bell bracelets; rattlesnake belt trim; rattlesnake wildlife products; piece of skin; rattlesnake ointment; complete desiccated rattlesnake; skinless rattlesnake

¹¹⁴SEMARNAT 2018-2019 Oficio Núm. SEMARNAT/UCPAST/UT/304/18. 29 January 2018 and Oficio Núm. SEMARNAT/UCPAST/UT/2725/19. 20 August 2019

Table 6: *Crotalus* spp.

Species Common name	IUCN Status	Range
<i>Crotalus adamanteus</i> Eastern diamondback rattlesnake	Least Concern (2007)	United States
<i>Crotalus aquilus</i> Queretaran dusky rattlesnake	Least Concern (2007)	Mexico
<i>Crotalus atrox</i> Western diamondback rattlesnake	Least Concern (2007)	Mexico, United States
<i>Crotalus basiliscus</i> Basilisk rattlesnake	Least Concern (2007)	Mexico
<i>Crotalus catalinensis</i> Catalina Island rattlesnake	Critically Endangered (2007)	Mexico
<i>Crotalus cerastes</i> Sidewinder	Least Concern (2007)	Mexico, United States
<i>Crotalus durissus</i> Cascabel rattlesnake	Least Concern (2007)	Colombia to Argentina (not including Ecuador and Chile)
<i>Crotalus enyo</i> Lower California rattlesnake	Least Concern (2007)	Mexico
<i>Crotalus horridus</i> Timber rattlesnake (<i>atricaudatus</i>)	Least Concern (2007)	Mexico, United States
<i>Crotalus intermedius</i> Mexican smallhead rattlesnake	Least Concern (2007)	Mexico
<i>Crotalus lannomi</i> Autlan rattlesnake	Data Deficient	Mexico
<i>Crotalus lepidus</i> Rock rattlesnake	Least Concern (2007)	Mexico, United States
<i>Crotalus mitchelli</i> Southwestern speckled rattlesnake	Least Concern (2007)	Mexico, United States
<i>Crotalus molossus</i> Black tailed rattlesnake	Least Concern (2007)	Mexico, United States
<i>Crotalus oreganus</i> Northern Pacific rattlesnake	Least Concern (2007)	Canada, Mexico, United States
<i>Crotalus polystictus</i> Mexican lancehead rattlesnake	Least Concern (2007)	Mexico
<i>Crotalus pricei</i> Twin spotted rattlesnake	Least Concern (2007)	Mexico, United States
<i>Crotalus pusillus</i> Tancitaran dusky rattlesnake	Endangered (2007)	Mexico
<i>Crotalus ruber</i> Red diamond rattlesnake	Least Concern (2007)	Mexico, United States
<i>Crotalus scutulatus</i> Mojave rattlesnake	Least Concern (2007)	Mexico, United States
<i>Crotalus stejnegeri</i> Longtail rattlesnake	Vulnerable (2007)	Mexico
<i>Crotalus tancitaransis</i> Tancitaro rattlesnake	Data Deficient	Mexico
<i>Crotalus tigris</i>	Least Concern (2007)	Mexico, United States

Species Common name	IUCN Status	Range
Tiger rattlesnake		
<i>Crotalus tortugensis</i> Tortuga Island rattlesnake	Least Concern (2007)	Mexico
<i>Crotalus transversus</i> Cross-banded mountain rattlesnake	Least Concern	Mexico
<i>Crotalus triseriatus</i> Central Plateau dusky rattlesnake	Least Concern (2007)	Mexico
<i>Crotalus unicolor</i> Aruba Island rattlesnake		Aruba
<i>Crotalus vegrandis</i> Uracoan rattlesnake		Venezuela
<i>Crotalus viridis</i> Prairie rattlesnake	Least Concern (2007)	Canada, Mexico, United States
<i>Crotalus willardi</i> Ridge-nosed rattlesnake	Least Concern (2007)	Mexico, United States

► *Kinosternon* (genus) (Mud turtles)

SSN urges the Service to consult with the Government of Mexico on a proposal to list mud turtles in the genus *Kinosternon* in the CITES Appendices, with some species (including *K. cora* and *K. vogti*) proposed for Appendix I and the remaining species proposed for Appendix II. The United States is a range State for six species in this genus, including two endemic species (*K. baurii* and *K. subrubrum*) and four others shared with Mexico (*K. arizonense*, *K. flavescens*, *K. hirtipes*, and *K. sonoriense*). SSN urges the Service to lend support to such a proposal and, if appropriate, to offer to act as a co-sponsor.

► *Typhochlaena* C. L. Koch, 1850 (genus) (Tarantulas)

SSN urges the Service to approach Brazil with an offer to co-sponsor a proposal to list tarantulas in the genus *Typhochlaena* C. L. Koch, 1850 (Araneae, Theraphosidae) on CITES Appendix I. The genus is endemic to Brazil and includes five species: *Typhochlaena amma* Bertani, 2012, *Typhochlaena costae* Bertani, 2012, *Typhochlaena curumim* Bertani, 2012, *Typhochlaena paschoali* Bertani, 2012 and *Typhochlaena seladonia* (C. L. Koch, 1841).¹¹⁵ Species of *Typhochlaena* are mostly found in Brazilian Atlantic rainforest from Ceará in the north to Espírito Santo in the south and in some dry areas in Central-West Brazil. The ranges of the various species do not overlap.

The species in this genus meet the criteria for listing on Appendix I found in Article II, paragraph 1, of CITES, “threatened with extinction which are or may be affected by trade” and the biological criteria for listing on Appendix I in Resolution Conf. 9.24 (Rev. CoP17), Annex 1, in that populations are small with “each subpopulation being very small” (Criterion A(ii)) and with restricted distributions characterized by “fragmentation or occurrence at very few locations” (Criterion B(i)).

All species are protected under Brazilian law (IBAMA 1998 – Lei de Crimes Ambientais 9605/98). *Typhochlaena curumim* and *T. seladonia* are included in the Brazilian Red List of Threatened Species.¹¹⁶

¹¹⁵ Nomenclature taken from the World Spider Catalog, archive dated 21 January 2012). <https://wsc.nmbe.ch/genus/3438/Typhochlaena>

¹¹⁶ ICMBio [Instituto Chico Mendes de Conservação da Biodiversidade] (2018) Livro Vermelho da Fauna Brasileira Ameaçada de Extinção: Volume VII – Invertebrados. In: Instituto Chico Mendes de Conservação da Biodiversidade (Ed.) *Livro Vermelho da Fauna Brasileira Ameaçada de Extinção*. ICMBio, Brasília, 727 pp.

T. curumim, with a known area of occupancy of only 204 km², is classified as Critically Endangered, while *T. seladonia* is listed as Endangered.

Typhochlaena spiders are highly specialized and occupy specific microhabitats in limited ranges. They are difficult to locate in the field, and are likely to be localized and rare,¹¹⁷ especially away from their preferred microhabitats. Despite being unusual for members of the family Theraphosidae, they are strictly arboreal, building “flattened retreats into shallow depressions in tree trunks, with the bark of the trees used for constructing well camouflaged lids that make them difficult to find”.¹¹⁸ Recent field observations suggest that they may require the presence of specific tree species.¹¹⁹ The distribution of *T. seladonia* appears linked to that of the Sandpaper tree (*Curatella americana*; Dilleniaceae), while *T. costae* appears to prefer the Pequi (*Caryocar brasiliense*, Caryocaraceae), itself a potentially endangered species¹²⁰.

Typhochlaena spiders are rare in scientific collections. At the time of the most recent revision of the genus in 2012¹²¹ only 40 specimens were known, although field studies have since located additional populations. Nonetheless, these spiders are numerous in the pet trade. According to a recent study,¹²² “[a] brief online search revealed specimens of *Typhochlaena* spp. being sold in Germany, Spain, Czech Republic, Austria, South Africa, Poland, United Kingdom, Canada, and the United States”.

Although Brazilian environmental law precludes the collection, possession, transport, export, and commercialization of Brazilian wildlife apart from exceptional cases (IBAMA 1998 – Lei de Crimes Ambientais 9605/98), “theraphosid specimens are constantly smuggled out of the country to supply the pet trade.” In addition, although adults of *T. seladonia* are distinctive, adults of other species in the genus are easily confused and identification of spiderlings (or ‘slings’, as they are called by hobbyists) of all species is extremely difficult.¹²³

Members of the family Theraphosidae are in high demand among spider fanciers. Illegal trade in tarantulas from Brazil is an ongoing problem.¹²⁴ Fukushima *et al.*¹²⁵ noted that “tarantula trafficking has low priority for enforcement authorities. Loopholes in Brazilian environmental law, permeability of borders, and the ease of smuggling spiders internationally by “brown-boxing” specimens (i.e. sent in unlabeled packages by post) also contribute to the flow of tarantulas from Brazil to other points of the world.” *Typhochlaena* species are highly desired by tarantula hobbyists and are considered to be among the most expensive tarantula species in the market. *T. seladonia* is advertised on a Polish spider site for 350zł (US\$92.08),¹²⁶ and on a German site for €275 (US\$329.23).¹²⁷ Fukushima *et al.* recommend that all *Typhochlaena* spp. be included in Appendix I of the Convention.¹²⁸

¹¹⁷ Caroline Fukushima, pers. comm.

¹¹⁸ Andre, C. (2020). Tree selectivity by the theraphosid spider *Typhochlaena costae* Bertani, 2012 (Araneae, Mygalomorphae, Theraphosidae). *British Tarantula Society Journal*, 34 (3): 22-41.

¹¹⁹ Andre, C. & Hüsser, M. (2018). About trapdoors and bridges – New insights in the little-known ecology and lifestyle of the genus *Typhochlaena* C.L. Koch, 1850. *British Tarantula Society Journal*, 32 (3): 3–29.

¹²⁰ Andre (2020), op. cit.

¹²¹ Bertani, R. (2012). Revision, cladistic analysis and biogeography of *Typhochlaena* C. L. Koch, 1850, *Pachistopelma* Pocock, 1901 and *Iridopelma* Pocock, 1901 (Araneae, Theraphosidae, Aviculariinae). *ZooKeys*, 230, 1–94. <https://doi.org/10.3897/zookeys.230.3500>

¹²² Fukushima, C. S., Cardoso, P., & Bertani, R. (2020). Description of the male of the critically endangered tarantula *Typhochlaena curumim* Bertani, 2012 (Araneae, Theraphosidae), with comments on tarantula trade and conservation. *ZooKeys*, 2020(938), 125–136. <https://doi.org/10.3897/zookeys.938.51442>

¹²³ Caroline Fukushima, pers. comm.

¹²⁴ Caldas, A.T.M., Dias, M.A., & Peres, M. (2018). Invertebrate (Araneae: Mygalomorphae) illegal trade: an ignored side of wildlife trafficking. *American Journal of Zoology* 1 (1): 20–23. <https://doi.org/10.11648/j.ajz.20180101.14>

¹²⁵ Fukushima *et al.*, op. cit.

¹²⁶ <https://spidershop.pl/en/product/typhochlaena-seladonia-1/> (accessed 15 April 2021)

¹²⁷ <https://www.terrarium.com/tb/buy-and-sell/biete-for-sale-0-1-typhochlaena-seladonia-1-5cm/a899939/> (accessed 15 April 2021)

¹²⁸ Fukushima *et al.*, op. cit.

The United States has already taken action with respect to spiders in this genus. In addition to possible illegal exports of wild-caught *Typhochlaena* specimens from Brazil, captive-bred *Typhochlaena seladonia* have been imported into the United States from Europe.¹²⁹ However, as Brazil has never authorized export of this species such specimens would have been derived from illegally-imported founder stock. In July 2018, the Service confiscated a shipment of *T. seladonia* from a well-known breeder, on the grounds that as the species was protected in Brazil its import violated the Lacey Act. He has apparently threatened legal action against the Service, and a crowdfunding site (which so far has fallen far short of reaching its goal) has been started to raise funds to cover his fees.¹³⁰ Due to the action by the United States, traders, breeders and hobbyists are being more careful in doing transactions involving this species worldwide.¹³¹ As the species is still in demand, however, trade “under the table” may be continuing at an undetermined level.

CITES has not adopted a standard reference for the family Theraphosidae. Resolution Conf. 12.11 (Rev. CoP18) Annex lists standard references for the members of the family currently listed in the Appendices (*Aphonopelma* and *Brachypelma* spp.), including a 2006 version of the World Spider Catalog. The taxonomy of *Typhochlaena* was, however, revised in 2012 and 4 new species were described.¹³² As a new standard reference will need to be adopted should *Typhochlaena* be listed on the Appendices, SSN recommends that the Service propose that the Animals Committee be directed to consider, in collaboration with the Nomenclature Specialist for Animals, the suitability of adopting a recent archive of the World Spider Catalog¹³³ as the standard reference for all Araneae (spiders).

► *Liphistius malayanus* Abraham, 1923 (Giant armored or Malaysian trapdoor spider)

SSN urges the Service to propose listing the species *Liphistius malayanus* Abraham, 1923 (Giant armored trapdoor spider, Malaysian trapdoor spider) on CITES Appendix I. As this species is endemic to Malaysia, we recommend that the Service approach Malaysia with an offer to co-sponsor the proposal.

Based on the limited data available, this species meets the criteria for listing on Appendix I found in Article II, paragraph 1, of CITES, “threatened with extinction which are or may be affected by trade” and the biological criteria for listing on Appendix I in Resolution Conf. 9.24 (Rev. CoP17), Annex 1, in that the wild population is small with “each subpopulation being very small” (Criterion A(ii)), “a majority of individuals being concentrated geographically during one or more life-history phases” (Criterion A(iii)), and “a high vulnerability to either intrinsic or extrinsic factors” (Criterion A (v)), and has a restricted distribution characterised by “fragmentation or occurrence at very few locations” (Criterion B(i)), “a high vulnerability to either intrinsic or extrinsic factors” (Criterion B(iii)), and “an observed, inferred or projected decrease in... the quality of habitat” (Criterion B(iv)).

The species is known from several lowland and upland localities in the states of Selangor and Pahang in the western part of central Malaysia,¹³⁴ including Fraser’s Hill, where its embankment habitat is under threat from construction (although it has been claimed that this species is endemic to Fraser’s Hill, this is incorrect). It is in demand for the pet trade, and has been intensively collected, particularly at Fraser’s Hill where it is now rare.¹³⁵ In 2005, spiderlings were being offered for US\$60,¹³⁶ and a current site lists the

¹²⁹<https://tomsbigspiders.com/2018/05/30/brown-boxing-tarantulas/>

¹³⁰ <https://www.gofundme.com/f/the-fight-for-t-seladonia>

¹³¹ <https://www.tarantulaforum.com/threads/anyone-breeding-or-selling-t-seladonia.26302/>

¹³² Bertani, op. cit.

¹³³ <https://wsc.nmbe.ch/>

¹³⁴ Schwendinger, P. J. (2017). A revision of the trapdoor spider genus *Liphistius* (Mesothelae: Liphistiidae) in peninsular Malaysia; Part 1. *Revue Suisse de Zoologie*, 124(2), 391–445. <https://doi.org/10.5281/zenodo.893555>

¹³⁵ <http://samadi.de/projects/kumalo/index.php/en/countries-en/malaysia-en>

¹³⁶ <https://www.thestar.com.my/news/nation/2005/04/02/tarantula-under-threat>

species at US\$30.¹³⁷ Although protected under Malaysian law since 2010, specimens were advertised for sale on a Malaysian website cited in 2016,¹³⁸ although the site apparently no longer lists the species.¹³⁹ Illegal trade has been characterized as “apparently a direct threat to the *Liphistius* populations in Malaysia,”¹⁴⁰ including *L. malayanus*.

Liphistius malayanus was categorized as “Protected Wildlife” under the First Schedule (Part One) of the Wildlife Conservation Act 716 (2010). In 2012 the Act was amended to include all Malaysian *Liphistius* spp., including *L. tioman* Platnick & Sedgwick, 1984 which is categorized as “Totally Protected Wildlife.” There are, however, limited data on the status and life history of this and other *Liphistius* spp. in Malaysia.¹⁴¹

See our comments under *Typhochlaena* (above) with respect to selection of a standard nomenclatural reference for spiders.

► *Thelenota* (genus) (Sea cucumbers)

SSN urges the Service propose listing *Thelenota ananas*, *T. anax*, and *T. rubralineata* (sea cucumber species) on Appendix II. All three species are native to the United States, as they each occur in the Northern Marianas Islands, and *T. anax* also occurs in American Samoa.^{142,143,144}

Thelenota ananas, *T. anax*, and *T. rubralineata* meet the criteria for listing in Appendix II found in Article II, paragraph 2(a) of the Convention: “all species which although not necessarily now threatened with extinction may become so unless trade in specimens of such species is subject to strict regulation in order to avoid utilization incompatible with their survival” and Resolution Conf. 9.24 (Rev. CoP17), Annex 2a, paragraph A: “It is known, or can be inferred or projected, that regulation of trade in the species is required to ensure that the harvest of specimens from the wild is not reducing the wild population to a level at which its survival might be threatened by continued harvesting or other influences” and paragraph B: “It is known, or can be inferred or projected, that regulation of trade in the species is required to ensure that the harvest of specimens from the wild is not reducing the wild population to a level at which its survival might be threatened by continued harvesting or other influences.” *T. ananas*, which is considered Endangered by IUCN because it has suffered marked population decline, qualifies for Appendix I, and we urge the Service to consider this possibility when preparing its proposal. However, at the very least, *T. ananas* should be proposed for Appendix II with the other *Thelenota* species.

Many commercially-exploited sea cucumber populations are likely declining across the globe. Scientists estimate that 10 percent of sea cucumber fisheries worldwide are depleted, 38 percent over-exploited, and 14 percent fully exploited.¹⁴⁵ Many sea cucumber species are vulnerable to overexploitation due to their late age of maturity, slow growth and low rates of recruitment, as well as their ease of capture due to low mobility and accessibility in relatively shallow waters.¹⁴⁶ Overall, global catch and production in sea

¹³⁷ <http://venomousreptiles.org/classifieds/detail/23786>, accessed 14 April 2021

¹³⁸ Nurul Syuhadah Binti Mohamed Dzarawi. (2016). *Ecology and systematics of the genus Liphistius (Aranae: Liphistiidae) from Peninsular Malaysia*. M.Sc. Thesis, University of Malaya, Kuala Lumpur. Appendix I.

¹³⁹ <https://exoreptiles.com/my/>, accessed 8 April 2021.

¹⁴⁰ Nurul Syuhadah, op. cit.

¹⁴¹ Nurul Syuhadah, op. cit.

¹⁴² Conand, C., Gamboa, R. & Purcell, S. (2013a). *Thelenota ananas*. The IUCN Red List of Threatened Species 2013: e.T180481A1636021. <http://dx.doi.org/10.2305/IUCN.UK.2013-1.RLTS.T180481A1636021.en>. Downloaded on 20 April 2021.

¹⁴³ Conand, C., Gamboa, R. & Purcell, S. (2013b). *Thelenota rubralineata*. The IUCN Red List of Threatened Species 2013: e.T180285A1610697. <http://dx.doi.org/10.2305/IUCN.UK.2013-1.RLTS.T180285A1610697.en>. Downloaded on 20 April 2021.

¹⁴⁴ Conand, C., Purcell, S. & Gamboa, R. (2013c). *Thelenota anax*. The IUCN Red List of Threatened Species 2013: e.T180324A1615023. <http://dx.doi.org/10.2305/IUCN.UK.2013-1.RLTS.T180324A1615023.en>. Downloaded on 20 April 2021.

¹⁴⁵ Purcell, S. W. (2014). Value, market preferences and trade of beche-de-mer from Pacific Island sea cucumbers. *PloS one*, 9(4), e95075.

cucumber fisheries has increased 13- to 16-fold over the past two to three decades.¹⁴⁷ Prices have also risen substantially; one study concluded that market prices increased six- to twelve-fold over a decade for the species evaluated.¹⁴⁸

Thelenota ananas, *T. anax*, and *T. rubralineata* are all commercially exploited for and threatened by the international *beche-de-mer* trade.

Thelenota ananas has been assessed as Endangered by IUCN. IUCN estimates that populations have declined by 80-90 percent in at least 50 percent of its range and are considered overexploited in at least 30 percent.¹⁴⁹ Although generation length is unknown, scientists believe echinoderms may not go through senescence and therefore generation length may exceed several decades.¹⁵⁰

Thelenota anax is considered uncommon throughout its Indo-Pacific range. IUCN assessed the species as Data Deficient; however, the species is increasingly being targeted in fisheries as the stocks of other sea cucumber species decline.¹⁵¹ *T. anax* is the largest exploited sea cucumber species, and IUCN considers populations “very vulnerable to overexploitation” and has recommended that “exploitation of this species should be avoided”.¹⁵²

Thelenota rubralineata is considered very rare. IUCN assessed the species as Data Deficient, as little is known about its biology and population status. It is exploited in some parts of its range, but it is difficult to quantify the fishery’s scale due to the lack of species-specific statistics. However, given the rarity of this species and the fact that it is slow-growing and long-lived, it is considered “likely very vulnerable to overfishing” by IUCN.¹⁵³

Inclusion of the three *Thelenota* species in CITES Appendix II will help ensure that the continued trade is not detrimental, supporting the interests of fishermen, exporters and importers and preserving these species and their important ecological role for future generations.

¹⁴⁶ Anderson, S. C., Flemming, J. M., Watson, R., & Lotze, H. K. (2011). Serial exploitation of global sea cucumber fisheries. *Fish and Fisheries*, 12(3), 317-339.

¹⁴⁷ Anderson, S. C., Flemming, J. M., Watson, R., & Lotze, H. K. (2011). Serial exploitation of global sea cucumber fisheries. *Fish and Fisheries*, 12(3), 317-339.

¹⁴⁸ Purcell, S. W. (2014). Value, market preferences and trade of beche-de-mer from Pacific Island sea cucumbers. *PloS one*, 9(4), e95075.

¹⁴⁹ Conand, C., Gamboa, R. & Purcell, S. (2013a). *Thelenota ananas*. The IUCN Red List of Threatened Species 2013: e.T180481A1636021. <http://dx.doi.org/10.2305/IUCN.UK.2013-1.RLTS.T180481A1636021.en>. Downloaded on 20 April 2021.

¹⁵⁰ Conand, C., Gamboa, R. & Purcell, S. (2013a). *Thelenota ananas*. The IUCN Red List of Threatened Species 2013: e.T180481A1636021. <http://dx.doi.org/10.2305/IUCN.UK.2013-1.RLTS.T180481A1636021.en>. Downloaded on 20 April 2021.

¹⁵¹ Conand, C., Purcell, S. & Gamboa, R. (2013c). *Thelenota anax*. The IUCN Red List of Threatened Species 2013: e.T180324A1615023. <http://dx.doi.org/10.2305/IUCN.UK.2013-1.RLTS.T180324A1615023.en>. Downloaded on 20 April 2021.

¹⁵² Conand, C., Purcell, S. & Gamboa, R. (2013c). *Thelenota anax*. The IUCN Red List of Threatened Species 2013: e.T180324A1615023. <http://dx.doi.org/10.2305/IUCN.UK.2013-1.RLTS.T180324A1615023.en>. Downloaded on 20 April 2021.

¹⁵³ Conand, C., Gamboa, R. & Purcell, S. (2013b). *Thelenota rubralineata*. The IUCN Red List of Threatened Species 2013: e.T180285A1610697. <http://dx.doi.org/10.2305/IUCN.UK.2013-1.RLTS.T180285A1610697.en>. Downloaded on 20 April 2021.

WORKING DOCUMENTS

► Funding for future Meetings of the Conference of the Parties

SSN is struck by the fact that, for a number of reasons, four of the nineteen Meetings of the Conference of the Parties – more than 25 percent – have had to be postponed and relocated. For at least two of these meetings, financial reasons were identified as the cause. SSN considers it important that future CoPs be held in different parts of the world, particularly in biodiverse countries, and is concerned that as both costs and the size of meetings increase in the future, fewer countries will be capable either of offering to host the meeting or providing facilities with enough seating space to allow for the full and transparent participation of both Parties and Observers. We note that the withdrawal of Costa Rica as the host of CoP19 has meant that the meeting is now likely to be held at a facility in Geneva with serious space constraints, and that this may mean limits to delegation size and the loss of opportunity for many attendees to fully participate in deliberations.

SSN believes that this problem is likely to become more common in the future, assuming that public health considerations allow the resumption of full face-to-face meetings as a matter of course. We therefore urge the Service to introduce draft Decisions directing the Secretariat and the Standing and Budget Committees to explore funding mechanisms with the aim of guaranteeing that future meetings of the Conference of the Parties will not have to be postponed or withdrawn for financial reasons.

► Wildlife Trade and Zoonoses

SSN believes that the CITES Convention has an important role to play, on its own and in concert with other international bodies such as the World Health Organization, in helping to lower the risk of disease resulting from trade in wildlife. Wildlife markets, breeding farms, and the trade supplying them were likely involved as either original sources or major points of transmission for the viruses causing SARS and COVID-19,¹⁵⁴ and other forms of wildlife exploitation such as the pet trade have played a role in the spread of zoonotic disease. Though trade in mammals and birds has been particularly associated with the spread of pandemic zoonotic disease, trade in taxa such as reptiles and amphibians can pose disease risks to humans such as salmonella outbreaks, as well as to native fauna including the spread of chytrid fungus.¹⁵⁵ We urge the Service to suggest, possibly through submission of a Working Document, ways in which CITES, as written, can aid in minimizing, regulating or more carefully monitoring the trade in live wildlife in order to reduce the risk of further outbreaks.

We encourage the Service to recommend the incorporation of the recommendations in the recently issued guidance from WHO, OIE and UNEP, including the call to national competent authorities to suspend the trade in live caught wild animals of mammalian species for food or breeding,¹⁵⁶ in the preambular and operative sections of relevant resolutions, and/or propose a new resolution as appropriate, as well as accompanying draft Decisions to assist with implementation. As the guidance states that “[a]lthough this document focuses on the risk of disease emergence in traditional food markets where live animals are sold for food, it is also relevant for other utilizations of wild animals,” the Service should also recommend the consideration of similar restrictions both for wild non-mammalian species in trade and for species in trade for wider purposes.

SSN welcomes the formation of a Standing Committee Working Group on Zoonotic Diseases, and encourages the Service to take an active role in its deliberations. SSN further encourages the Service to

¹⁵⁴ Orenstein, R. 2020. Wildlife markets and COVID-19. Washington, DC, USA: Humane Society International. <https://www.hsi.org/wp-content/uploads/2020/04/Wildlife-Markets-and-COVID-19-White-Paper.pdf>.

¹⁵⁵ https://www.biologicaldiversity.org/programs/international/pdfs/Dealing-in-Disease_Center-wildlife-imports-report-9-28-20.pdf at page 13.

¹⁵⁶ WHO, OIE, and UNEP. 2021. Reducing public health risks associated with the sale of live wild animals of mammalian species in traditional food markets. World Health Organization, Geneva; World Organization for Animal Health, Paris; and United Nations Environment Programme, Nairobi. WHO/2019-nCoV/Wet_Markets/2021.1

review the text of the Convention as well as existing Resolutions and Decisions in order to identify opportunities for action by CITES. Possibilities include:

- Submission of a draft Resolution calling on Parties to heed the recommendation of WHO, OIE and UNEP to “suspend the trade in live caught wild animals of mammalian species for food or breeding purposes and close sections of food markets selling live caught wild animals of mammalian species.”
- Submission of a draft Resolution clarifying the meaning of the term ‘damage to health’ in Articles III, IV, V, VII and VIII of the Convention with respect to the risk that conditions under which live specimens are shipped may expose them to the risk of infection, depressed immune responses or other conditions that could make them more liable to contract or transmit zoonoses;
- Submission of a draft Decision recommending that Parties review their policies regarding the shipment of and trade in live specimens to identify, and terminate or mitigate, practices that could contribute to the spread of zoonoses, and report on these to the Secretariat and the Standing Committee Working Group on Zoonotic Diseases;
- Submission of amendments to Resolution 10.21 (Rev. CoP16) on *Transport of live specimens* to include language recognizing the risk of transmission of zoonotic pathogens through the trade in live animal specimens, and recommending that minimizing that risk be a priority concern in any revision of transport guidelines (SSN understands that the Secretariat has been in discussions with IATA on this point);
- Submission of amendments to Resolution 13.11 (Rev. CoP18) on *Wild meat* recognizing, in the chapeau, the risk of transmission of zoonotic pathogens posed by trade in wild meat and inserting the need to minimize that risk throughout the operative paragraphs as appropriate, including as an important consideration in the adoption of any strategies, policies, programmes or management systems (operative paragraph 4);
- Submission of amendments to Resolution 8.3 (Rev. CoP13) on *Recognition of the benefits of trade in wildlife* recognizing the risks and costs of such trade, including the increased risk of the spread of zoonotic disease;
- Submission of a draft Decision directing the Secretariat to explore the possibility of concluding a Memorandum of Understanding with the World Health Organization.

► Trade in *Macaca fascicularis* (Long-tailed Macaque)

SSN recommends that the Service submits a Working Document on the trade in Long-tailed macaque (*Macaca fascicularis*) that includes Decision text recommending that exporting and importing Parties agree to promote greater oversight of the burgeoning trade in the species. *M. fascicularis*, previously classified as Least Concern, is now classified as Vulnerable by IUCN (2020; assessed 2015). The number of *M. fascicularis* (the majority designated as source codes “F” and “C:”) entering trade increased from 2015 to 2018 by approximately 83% (see table x). In 2019, there was a decline of exports due to a significant decrease in exports from China (see below).

Table 7. Gross total exports of live *M. fascicularis*, 2015-2019.¹⁵⁷

	2015	2016	2017	2018	2019
Total	39710	47988	52133	72702	56939

Since trade in this species was subject to the CITES Review of Significant Trade in specimens of Appendix II species (Resolution Conf. 12.8 (Rev. CoP17)) (completed in 2016) and to the Review of trade in animal specimens reported as produced in captivity (Resolution Conf. 17.7 (Rev. CoP18)) (completed in 2018), international trade in the species has increased substantially and exports have shifted from China, a non-range State, to range States in Southeast Asia. Additionally, since the start of the COVID-19 pandemic, demand for suitable primates, particularly *M. fascicularis*, in both the United States and China for the development of COVID-19 vaccines and other COVID-19 related research has skyrocketed.^{158,159,160} By November 2020, the shortage of *M. fascicularis* was described as having “serious consequences” for COVID-19 related research.¹⁶¹ Trade in this species may have accelerated further in 2020 and into 2021 for biomedical research purposes associated with the pandemic (including COVID-19 vaccine testing and pathogenesis studies),^{162,163,164} and demand is expected to increase further in the foreseeable future, particularly as “accessing cynomolgus macaques (*M. fascicularis*) will greatly alleviate the pressures on current rhesus stocks”.¹⁶⁵ We are concerned that the anticipated increase in demand, along with the lag times inherent in gathering the necessary trade data and the lengthy process for review, will make it all but impossible to ensure that usual CITES monitoring measures are sufficiently responsive in this unique situation.

For *M. fascicularis* entering trade with source codes “F” and “C”, questions have been raised regarding laundering of wild-caught individuals as captive bred, excessive takes from the wild for breeding center stock, illegal trade of *M. fascicularis* for breeding stock, and levels of export that may exceed what breeding facilities can produce.^{166,167}

M. fascicularis have been subjected to intensive capture for bio-medical research since the 1960s. According to a 2021 study published in *Primate Conservation*, between 2008 and 2019 at least 450,000 live *M. fascicularis* were traded internationally, with over 50,000 identified as wild-caught.¹⁶⁸

Although this species is widely distributed and is known to be tolerant to habitat changes, the excessive hunting and persecution due to negative interactions with humans throughout its range is a cause for concern.¹⁶⁹ In mainland Southeast Asia, such as in Cambodia and Viet Nam, females are taken into breeding facilities and males are exported internationally primarily for use in laboratory research.¹⁷⁰

¹⁵⁷ CITES Trade Database

¹⁵⁸ <https://www.nytimes.com/2021/02/23/business/covid-vaccine-monkeys.html>

¹⁵⁹ <https://www.shine.cn/news/metro/2101243703/>

¹⁶⁰ <https://www.eara.eu/post/eara-acts-on-serious-shortage-of-monkeys-needed-for-covid-19-research>

¹⁶¹ <https://www.eara.eu/post/eara-acts-on-serious-shortage-of-monkeys-needed-for-covid-19-research>

¹⁶² <https://nprc.org/research/the-monkeys-behind-covid-19-vaccines/>

¹⁶³ <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7241101/>

¹⁶⁴ Salguero, F.J., White, A.D., Slack, G.S. et al. Comparison of rhesus and cynomolgus macaques as an infection model for COVID-19. *Nat Commun* 12, 1260 (2021). <https://doi.org/10.1038/s41467-021-21389-9>

¹⁶⁵ *ibid.*

¹⁶⁶ Hansen, M. F., Gill, M., Nawangsari, V. A., Sanchez, K. L., Cheyne, S. M., Nijman, V., & Fuentes, A. (2021). Conservation of Long-tailed Macaques: Implications of the Updated IUCN Status and the CoVID-19 Pandemic. *Primate Conservation*, 2021(35), 1–11.

http://static1.1.sqspcdn.com/static/f/1200343/28405085/1613509898320/PC35_Hansen_et_al_conservation_M_fascicularis.pdf

¹⁶⁷ <https://cites.org/sites/default/files/eng/com/ac/28/Inf/E-AC28-Inf-32.pdf>

¹⁶⁸ Hansen et al., *op. cit.*

¹⁶⁹ Eudey, A., Kumar, A., Singh, M. & Boonratana, R. 2020. *Macaca fascicularis*. The IUCN Red List of Threatened Species 2020: e.T12551A17949449.

¹⁷⁰ Hansen et al., *op. cit.*

Despite high levels of exploitation, population sizes of long-tailed macaques are largely unknown.¹⁷¹ Their flexibility and preference for forest edge draws them to anthropogenic habitats, where their visibility results in assumptions of over-abundance. *Macaca fascicularis* is also suspected to have undergone declines of over 30% throughout its range in the last 36-39 years (three generations).¹⁷² "Ignorance and lack of conservation action on an apparent "abundantly" seen species will continue to impact its status in the future, therefore we expect a reduction of at least 30% to also occur over the next 36-39 years."¹⁷³ Incorrect extrapolations and overestimation of long-tailed macaque population sizes may be occurring across their range, and systematic surveys are needed to assess their true population size.¹⁷⁴ .

In recent years, the United States has been the largest importer of live *M. fascicularis* (approximately 60 percent of gross imports from 2015-2019),¹⁷⁵ primarily from China. Exports from China slowed throughout 2019,¹⁷⁶ either due to the COVID-19 pandemic¹⁷⁷ or as a product of United States trade tariffs imposed in late 2019¹⁷⁸. Despite accelerating demand for the species primarily for biomedical research, there has been a general shortage of primates, particularly *M. fascicularis*, in both the United States and China for the development of COVID-19 vaccines.^{179,180,181} In response to this shortage, the price for a *M. fascicularis* (for research) within the United States has more than doubled from a year ago to well over \$10,000.¹⁸²

When exports from China slowed significantly (from 31,000 live *M. fascicularis* in 2018 to 703 live in 2019), Cambodia became the world's largest exporter, with exports close to doubling from 2018 to 2019 (from 9,610 live *M. fascicularis* in 2018 to 17,422 in 2019). However, it is very unlikely that Cambodia's breeding facilities would have been able to almost double the production of *M. fascicularis* within one year. *M. fascicularis* breeds slowly in captivity. Wild females attain sexual maturity at four years of age and give birth to a single offspring. Inter-birth intervals average 18 months, with full weaning of the young taking 10 months.

The quota for wild-caught *M. fascicularis* in Indonesia had been zero in Indonesia since 2016¹⁸³, but Indonesia re-initiated trade in 2019 with the export of 1,569 live *M. fascicularis*¹⁸⁴ and an export quota of 2,070 wild-caught *M. fascicularis* for 2021 has been allocated by the Ministry of Environment and Forestry.¹⁸⁵ Vietnam's exports have also increased substantially, from 4,912 in 2015 to 12,023 in 2019.¹⁸⁶

In 2018, there was a resumption in the trade in *M. fascicularis* from the Philippines.¹⁸⁷ The Department of Environmental and Natural Resources (DENR) announced that it was considering granting permits to allow the capture of *M. fascicularis* for breeding facilities and 1,053 *M. fascicularis* were exported to the

¹⁷¹Hansen et al., op. cit.

¹⁷²Eudey, A., Kumar, A., Singh, M. & Boonratana, R. 2020. *Macaca fascicularis*. The IUCN Red List of Threatened Species 2020: e.T12551A17949449.

¹⁷³*Ibid.*

¹⁷⁴Hansen et al., op. cit.

¹⁷⁵CITES Trade Database

¹⁷⁶<https://www.nytimes.com/2021/02/23/business/covid-vaccine-monkeys.html>

¹⁷⁷<https://www.nytimes.com/2021/02/23/business/covid-vaccine-monkeys.html#libid>.

¹⁷⁸<https://www.cnbc.com/2019/08/24/trumps-tariffs-on-china-monkeys-could-severely-damage-us-medical-research.html>

¹⁷⁹<https://www.nytimes.com/2021/02/23/business/covid-vaccine-monkeys.html>

¹⁸⁰<https://www.shine.cn/news/metro/2101243703/>

¹⁸¹<https://www.theatlantic.com/science/archive/2020/08/america-facing-monkey-shortage/615799/>

¹⁸²<https://www.nytimes.com/2021/02/23/business/covid-vaccine-monkeys.html>

¹⁸³Hansen et al., op. cit.

¹⁸⁴CITES Trade Database

¹⁸⁵See Annex 1.

¹⁸⁶*ibid.*

¹⁸⁷CITES Trade Database

United States in 2019.^{188, 189}

Export of *M. fascicularis* from Lao PDR has been subject to a trade suspension since 2016 in response to a review under CITES Resolution Conf. 12.8 (Rev. CoP17).¹⁹⁰ Lao PDR had not exported *M. fascicularis* since 2011,¹⁹¹ but it has now reported an export quota of 3,000 captive-bred specimens for 2020 and 2021 from the Souk Vannaseng Trading Company Ltd. This company has been implicated in a prosecution in Uganda involving 1,303kg of ivory (437pcs) seized in February 2017.¹⁹² In 2014, the Lao government authorized this company to export 90 tonnes of elephant ivory. The same company has reportedly exported large amounts of tiger products to Vietnam and provided Chinese companies based in Lao PDR with the raw materials for the production of tiger bone wine for the Chinese market.¹⁹³ It also has been implicated in the illegal trade in wild-caught *M. fascicularis* sourced from Cambodia.¹⁹⁴

Given the significant role of the United States in the trade of this species, the Service should ensure that any capture of wild *M. fascicularis* for breeding or export is not contributing to the decline of this threatened species in the wild and that *M. fascicularis* in trade reported as captive-bred are genuinely bred in captivity.

These examples highlight the need for oversight in trade of this species. SSN recommends that the Service submit a working document for consideration at CoP19 which should recommend that range States that are exporting or intend to export this species should:

- undertake science-based field surveys to establish the status of wild populations;
- update laws and regulations that apply to takes from the wild (including for augmentation of captive breeding stock) and the operation of breeding farms to include export requirements, animal welfare standards, and inspection procedures;
- provide data on breeding stock including number of males and females, ages, number of progeny produced by year, etc.
- provide anticipated quotas for capture from the wild and export of *M. fascicularis*;
- establish a transparent reporting and monitoring system for captive breeding operations.

In addition, all Parties should carefully monitor trade in *Macaca mulatta* (rhesus macaques), baboons (*Papio* spp.) and vervet monkeys (*Chlorocebus aethiops*) on an ongoing basis, as these species are being considered as promising alternatives to macaques for nonhuman models in COVID-19 research.¹⁹⁵

► Resolution Conf. 10.14 (Rev. CoP16) – Quotas for leopard hunting trophies and skins for personal use

The United States is the world's largest importer of leopard hunting trophies. Between 2009 and 2018, 10,887 leopard trophies were traded internationally. During this period, the United States imported 5,321 leopard hunting trophies, followed by France which imported 787 leopard hunting trophies.¹⁹⁶

We request the Service to consider supporting Draft Decisions, or amendments to Resolution Conf. 10.14 (Rev. CoP16) which may be proposed at CoP19, aimed at strengthening the scientific oversight of annual leopard quotas and reducing overexploitation of this declining species for international trade. We also ask the Service to support the requests of Malawi, Kenya, and Ethiopia to remove or revise their quotas in the Resolution.

¹⁸⁸<https://businessmirror.com.ph/2020/08/30/monkey-business-in-the-philippines/>

¹⁸⁹CITES Trade Database

¹⁹⁰<https://cites.org/sites/default/files/notif/E-Notif-2020-006.pdf>

¹⁹¹CITES Trade Database

¹⁹²<https://reports.eia-international.org/niap/niap-country-laos/>

¹⁹³https://issuu.com/eia1984/docs/cultivating_20demand_20_20the_20gr

¹⁹⁴<https://www.theguardian.com/environment/2016/sep/26/bach-brothers-elephant-ivory-asias-animal-trafficking-network>

¹⁹⁵<https://www.nature.com/articles/s41684-021-00755-6>

¹⁹⁶ CITES trade data. Search terms: trophies, bodies, skins and rugs for H purpose code and trophies for P purpose code.

The following are our concerns relating to the sustainability of international trade in leopard hunting trophies:

A) Conservation Status of the Leopard

(1) The IUCN Red List status of the leopard throughout its range has changed from Least Concern in 2002, to Near Threatened in 2008, to Vulnerable in 2016 (maintained in 2020). The evidence presented in the latest assessment suggests that leopard populations have been dramatically reduced due to continued persecution with growing human populations, habitat fragmentation, increased illegal trade, excessive harvesting for ceremonial use of skins, prey base declines and poorly-managed trophy hunting. The species has suffered an estimated regional range loss of approximately 21% in southern Africa and >30% worldwide in the last three generations (22.3 years).

The IUCN assessment notes that there are few reliable data on changes in leopard status throughout Africa over the last three generations, although there is compelling evidence that subpopulations have likely declined considerably. It also notes that many of the threats facing leopards reflect those facing lions (populations of which are estimated to have declined by 42% across Africa over the previous three generations) and that pressure on leopard populations is likely greater, as a larger proportion of their range extends beyond protected areas and they have not benefitted from reintroduction programs in the way lions have.

With regard to trophy hunting, the IUCN assessment notes that Balme et al. (2009) showed that trophy hunting was a key driver of leopard population decline prior to intervention in northern KwaZulu-Natal Province, South Africa. Similarly, Pitman et al. (2015) demonstrated that leopards were being over-harvested across much of their range in Limpopo Province, South Africa.

(2) Despite the compelling evidence for considerable subpopulation declines, and the acknowledgement that poorly-managed trophy hunting represents an ongoing threat to the species, the total annual CITES export quotas have increased five-fold, from 460 in 1983 to 2,648 in 2007-2019. The current CITES leopard hunting quota system has attracted criticism from CITES Observers, leopard scientists and big cat conservation organizations.

(3) AC30 Inf. 18, submitted by Humane Society International, recommended that Resolution Conf.10.14 (Rev. CoP16) be revised to establish a process that will ensure there is scientific justification for the leopard quotas approved by the Conference of the Parties (CoP) and amended to include a procedure for review of such quotas, including a requirement that any Party wishing to retain their leopard quota must provide scientific justification for doing so at each meeting of the CoP. Furthermore, all matters relating to the establishment, continuance or increase of leopard quotas should be subject to approval by a two-thirds majority vote of the Parties.

(4) AC30. Inf. 23, submitted by Panthera, reiterated the widespread criticism of the modelling exercise for leopard population estimates used to determine existing CITES quotas. This model omits critical factors such as anthropogenic mortality and prey availability, and depends on questionable assumptions including the assumption that leopards occur at a maximum density in all available habitat, which is demonstrably not the case. Despite the concern that the quota system has been relying on a deeply flawed modelling process, leopard export quotas have not been reviewed or revised for almost 20 years. Panthera provided evidence in this document of the effects of trophy hunting on leopard populations, and recommendations on how best to mitigate potential detrimental impacts.

(5) Since CoP18, two important scientific papers have been published on the offtake of leopards, its sustainability, and its impacts on leopard populations that should be taken into account in any modification of the existing CITES process for setting quotas:

- Trouwborst *et al.* 2019. Spotty Data: Managing International Leopard: Trophy Hunting Quotas Amidst Uncertainty. Journal of Environmental Law, DOI: [10.1093/jel/eqz032](https://doi.org/10.1093/jel/eqz032)

- Naude *et al.* 2020. Unsustainable anthropogenic mortality disrupts natal dispersal and promotes inbreeding of leopards. Ecology and Evolution. DOI: [10.1002/ece3.6089](https://doi.org/10.1002/ece3.6089)

The first tests the quotas for leopard trophy hunting established under CITES and concludes, *inter alia*, that the various national approaches and the CITES regime supporting them largely fail to meet the general principles of precaution, sustainable use, and adaptive management, and that the quotas have been inadequately performing their assigned function within the Convention's framework. The authors offer recommendations on how to embed a science-based, sustainable, precautionary and adaptive approach to quota-setting within the CITES system.

The second examines the effects of the anthropogenic mortality of leopards, including trophy hunting, on natal dispersal mechanisms, and the consequences for genetic structure, outbreeding behavior and gene flow. It compares two southern African leopard populations, one recovering from historical human-related mortality, and one relatively undisturbed. The authors conclude, *inter alia*, that the recovering population suffered from disrupted and reduced subadult male dispersal, leading to kin-clustering and localized inbreeding, with potential consequences for the future viability of the population.

B) We also call the Service's attention to the following developments during and since CoP18 in relation to Parties which have quotas in the Resolution.

Malawi's and Kenya's leopard quotas:

(1) Malawi: CoP18 Doc. 46 paragraph 4 noted that during an oral report at the 29th meeting of the Animals Committee, Malawi replied that its mammal populations were generally too low for any form of sustainable utilization and specified that its leopard population size and status were not well known. As a result, Malawi requested that its leopard quota be removed or suspended until the situation improved.

(2) Kenya: CoP 18 Doc.46 paragraph 9 noted that in June 2018 Kenya responded to the Secretariat stating that Kenya has outlawed wildlife hunting and dealership in wildlife trophies in 1977 and 1978 respectively, and therefore indicated that the leopard quota in the Resolution did not apply and requested it be deleted from the Resolution.

(3) CoP18 Doc.46 paragraph 9. g) noted that the Animals Committee informed the Standing Committee in document SC70 Doc.55 that Kenya and Malawi wished for their quotas to be removed from the Resolution.

(4) CoP18 Doc.46 paragraph 13 proposed that Kenya's and Malawi's quotas be struck out. Unfortunately, Kenya's and Malawi's requests were **not** respected and honored at CoP18 and their quotas remain in the Resolution.

Ethiopia's leopard quota:

(1) Ethiopia has an annual quota of 500 in the Resolution.

(2) In response to Decision 18.165, Ethiopia submitted its review of its leopard quota to the 31st meeting of the Animals Committee in document AC31 Doc.29.2 Annex 2.

(3) Paragraph 50 noted that the Ethiopian Wildlife Conservation Authority had allocated country-wide hunting quotas of 15 and 18 leopards for 2018 and 2019. However, no leopards were hunted in 2019, and only two leopards were hunted in 2018 out of the 15 allocated in the quota for that year.

(4) Paragraph 66 stated that Ethiopia is requesting that a quota of **20** leopard hunting trophies be approved by CITES. This quota represents a 96% decrease on the current quota of 500, which was established mainly to export skins for personal use and not hunting trophies.

► International Trade in Frogs for Consumption

SSN urges the Service to submit a Working Document for CITES CoP19 calling for a study on the international trade in frogs, including frogs' legs, for human consumption, in order to elucidate actions CITES might take to ensure that this trade is not detrimental to the survival of wild populations of frogs. We also encourage the Service to cooperate with the European Union (EU), especially Belgium and France as the leading consumer countries of frog products, in the development of a Working Document.

In many parts of the world frogs are consumed for meat^{197,198,199,200,201} and, in some regions, for medicinal purposes.^{202,203} The regional and international trade in frogs' legs is minimally regulated and remains heavily dependent on wild-caught specimens. Accordingly, scientists warn that a significant portion of the trade is probably unsustainable.^{204,205} Farming has often been proven to be unprofitable and poses a risk of environmental pollution.²⁰⁶ Data on wild populations, trade volume and its impact – especially on species level – are scarce and, if available at all, are often outdated.

The issue of trade in frogs' legs was discussed at CITES as early as 1985, when India and Bangladesh, the world's largest exporters at that time, successfully requested a listing of the green pond frog (*Euphlyctis hexadactylus*, formerly *Rana hexadactyla*) and the Indian bullfrog (*Hoplobatrachus tigerinus*, formerly *Rana tigrina*). India banned export of frogs' legs in 1987 and Bangladesh followed in 1989.²⁰⁷ Since then, Indonesia has assumed the role of leading supplier of frogs' legs to the world market, with the European Union being its main importer, followed by the United States.²⁰⁸

According to data from EUROSTAT, the European Union imported 40,708,800 kg of frogs' legs between 2010-2019.²⁰⁹ Assuming that one kilogram of frogs' legs is equivalent to 20-50 individual frogs,²¹⁰ the EU imports for the decade may represent 814 million to 2 billion animals. With more than 30 million kg of frog leg exports, Indonesia is the largest supplier for the EU, followed by Viet Nam (8.44 million kg), Turkey

¹⁹⁷ Altherr, S. Goyenechea, A. & D.J. Schubert (2011): Canapés to extinction— the international trade in frogs' legs and its ecological impact. Pro Wildlife, Defenders of Wildlife and Animal Welfare Institute (eds.), Munich (Germany), Washington, D.C. (USA), 36 pp.

¹⁹⁸ Grando, M. (2020): The Asian market of frogs as food for humans during COVID-19. Risk and consequences for public health. *Med. Pap.* 6(4): 77-87

¹⁹⁹ Akiniyemi, A. & E.D. Ogaga (2015): Frog Consumption Pattern in Ibadan, Nigeria. *J. Stud. Man. Plan.* 1(3): 522-531.

²⁰⁰ Neang, T. & T. Eastoe (2010): An Investigation into Frog Consumption and Trade in Cambodia. Fauna & Flora International Cambodia Programme, Report, 25 pp.

²⁰¹ Jenkins, R.K.; Rabearivelo, A.; Chan, C.T.; Andre, W.M.; Randrianavelona, R. & J.C. Randrianantoandro (2009): The harvest of endemic amphibians for food in eastern Madagascar. *Trop. Conserv. Sci.* 2(1):25-33,2009

²⁰² Ghosh, S. (2018): Frogs in Sikkim Himalayas threatened by extraction for meat, allegedly of medicinal value. *Mongabay*, Online Article as of 27 March.

²⁰³ Mohnke, M.; Onadeko, A.B.; Hirschfeld, M. & M.O. Rödel (2010): Dried or Fried: Amphibians in Local and Regional Food Markets in West Africa. *TRAFFIC Bulletin* 22(3): 117-128.

²⁰⁴ Warkentin, I.G.; Bickford, D.; Sodhi, N.S. & C.J. Bradshaw (2009): Eating Frogs to Extinction. *Cons. Biol.* 23(4): 1056-1059.

²⁰⁵ Mohnke, M. (2011): (Un)sustainable use of frogs in West Africa and resulting consequences for the ecosystem. Dissertation. Humboldt University, Berlin, Germany. 194 pp.

²⁰⁶ Nguyen, M.O. (2014): The future viability of the frog farming industry in Tien Giang Province and Ho Chi Minh City, Vietnam. Thesis. Central Queensland University, Australia, 454 pp.

²⁰⁷ Altherr, S. Goyenechea & D.J. Schubert (2011): Canapés to extinction – The international trade in frogs' legs and its ecological impact. Pro Wildlife, Defenders of Wildlife & Animal Welfare Institute (eds), Munich (Germany), Washington (USA), 36 pp.

²⁰⁸ Ibid.

²⁰⁹ EUROSTAT (2020): Import data 2010-2019 for the commodity groups 02082000 and 02089070, frog legs fresh, refrigerated, or frozen. <https://ec.europa.eu/eurostat/web/international-trade-in-goods/data/database>

²¹⁰ Veith, M. *et al.* (2000). A test for correct species declaration of frog legs imports from Indonesia into the EU. *Biodiv. & Cons.* 9:333-341.

(almost 1.6 million kg), and Albania (586,500 kg). This trade volume is only slightly smaller than a decade ago: Between 2000 and 2009, 46.4 million kgs of frogs' legs were imported by the EU, with 84 percent from Indonesia, 8 percent from Vietnam, 4 percent from Turkey, 3 percent from China, and 1 percent from other countries.²¹¹ Since then, Indonesia's role as leading supplier has decreased from 84 percent (for the period 2000-2009) to 74 percent (for the period 2010-2019), while Viet Nam increased from 8 percent to almost 21 percent, respectively. Turkey remained at a constant level of 4 percent of the EU's imports, while China decreased from 3 percent to now 0.1 percent, and Albania increased its supply from very small amounts within the period 2000-2009 to now 1.44 percent.

The constantly high offtake for the international frogs' legs trade has reportedly caused a decline of wild populations, especially in Indonesia and Turkey: a recent publication by Cicek *et al.* (2020) highlights the rapid decline of wild Anatolian water frogs (*Pelophylax* spp.) in Turkey due to over-collection for the European market.²¹²

A study by the Sorbonne University in Paris, France, in 2017 showed that while deep frozen frogs' legs in French supermarkets were labelled as *Limnonectes macrodon* (originally the most sought-after species), less than 1 percent of them were correctly identified and 98.5 percent of the frogs were instead *Fejervarya cancrivora*.²¹³ The scientists assume that this quasi-absence of *L. macrodon* in trade reflects its rarity in the wild and the fact that its natural populations are declining rapidly. With an alarmingly high national catch quota in Indonesia for *F. cancrivora* (almost 57 million animals allowed for export in both 2020²¹⁴ and 2021²¹⁵), it is feared that this species may follow a similar trend. Unfortunately, the IUCN Red List assessment for *Fejervarya cancrivora* dates from 2004 and is seriously outdated.

The United States imports both live frogs and processed frogs' legs for consumption, and the imports of "*Rana* spp." reached 43 million kgs for the period 2000-2009. American bullfrogs (*Lithobates catesbeianus*, formerly *Rana catesbeiana*) were the most dominant species in this trade, mainly imported from China (44 percent) and Taiwan (37 percent). For other *Rana* species Mexico was by far the largest supplier (43 percent), followed by Viet Nam (14 percent), Indonesia (12 percent), China (8 percent) and others²¹⁶.

For most other countries, whether suppliers or importers, trade data and data on the related impact on wild populations are lacking.

SSN is concerned that there has been no progress on the implementation of CITES Decision 18.194 on Conservation of Amphibians. Therefore, we urge the Service to take action on this issue, with the following suggested options:

- Submission of a Working Document and draft Decisions with regard to the international trade of frogs for human consumption. The proposed Working Document should request Parties to provide data on national and international trade in frogs for human consumption, if possible to the species level, including data on sources source (wild, farmed, captive-bred), as well as data on existing controls intended to verify the identification of species entering trade. It should also request information on trends in wild frog populations and related ecological impacts. Such data would provide a vital basis for considering future listing initiatives for relevant species in CITES Appendix II. A third aspect that

²¹¹ Altherr, S. Goyenechea, A. & D.J. Schubert (2011): Canapés to extinction— the international trade in frogs' legs and its ecological impact. Pro Wildlife, Defenders of Wildlife and Animal Welfare Institute (eds.), Munich (Germany), Washington, D.C. (USA), 36 pp.

²¹² Cicek, K.; Ayaz, D.; Afsar, M.; Bayrakci, Y.; Peksen, C.A. *et al.* (2020): Unsustainable harvest of water frogs in southern Turkey for the European market. *Oryx* May, 9 pp. 10.1017/S0030605319000176

²¹³ Ohler, A. & V. Nicolas (2017): Which frog's legs do froggies eat? The use of DNA barcoding for identification of deep-frozen frog legs (Dicroglossidae, Amphibia) commercialized in France. *Eur. J. Taxon.* 271: 1–19.

²¹⁴ Ministry of Environment and Forestry (2020): Quota for taking plants and catching wildlife – Periode 2020. http://178.128.117.95/admin-absch/assets/media/uploads/doc_publikasi/KUOTA%202020.pdf

²¹⁵ Ministry of Environment and Forestry (2021): Quota for taking plants and catching wildlife – Periode 2021.

²¹⁶ Altherr, S. Goyenechea, A. & D.J. Schubert (2011): Canapés to extinction— the international trade in frogs' legs and its ecological impact. Pro Wildlife, Defenders of Wildlife and Animal Welfare Institute (eds.), Munich (Germany), Washington, D.C. (USA), 36 pp.

should be requested is information on the management and control of authorized catches used to restock farms.

- Amend Decision 18.194 paragraph a) to add the words "including the international trade of frogs for human consumption" after "amphibian species in international trade", and add a further subparagraph (vii) to read "compile information on trade in specimens sourced from the wild, ranched and bred-in-captivity; related ecological impacts; and control and management mechanisms designed to ensure that specimens in trade are not mislabeled".

► Introduction from the Sea

SSN strongly encourages the Service to take action to ensure that CITES continues to monitor and, where needed, actively enhance implementation of provisions relating to Introduction from the Sea (IFS). One useful step in this direction could be to propose that relevant resolutions such as Resolution Conf. 11.3 (Rev. CoP18) on Compliance and Enforcement should be reviewed and amended to ensure that they contain appropriate language referring to IFS and related guidance.

From the beginning in 1973, trade regulated by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) has included Introduction from the Sea (IFS). The Convention text defines (IFS) as "transportation into a State of specimens of any species which were taken in the marine environment not under the jurisdiction of any State". In 2013, at CITES CoP16, Parties adopted additional guidance regarding the practical implementation of these provisions in Resolution Conf. 14.6 (Rev. CoP16). Subsequently, in 2015, the CITES Secretariat, in collaboration with the Food and Agriculture Organisation of the United Nations (FAO), developed basic training materials on IFS in the context of advancing the implementation of CITES for listed shark species.²¹⁷

In 2018, the CITES Secretariat circulated a Questionnaire²¹⁸ with the goal of assessing the status of implementation of IFS and Resolution Conf. 14.6 (Rev.CoP16) and reported its findings, together with an analysis of available trade data in 2019, to the 70th meeting of the Standing Committee. In its report, contained in document SC70 Doc. 34, the CITES Secretariat "*notes that not many Parties have legislation or regulations in place for the different scenarios outlined under Resolution Conf. 14.6 (Rev. CoP16) on Introduction from the sea, and that the practical experience in implementing these provisions is still very limited, in particular in view of the small number of commercial trade transactions reported.*"

SSN commends the United States for being one of the few Parties that has responded to the Questionnaire, has incorporated Introduction from the Sea into national regulations in line with Resolution Conf. 14.6 (Rev.CoP16), and has had practical experience in implementing IFS through these regulations.

SSN also notes that, since the CITES Secretariat's report to the 70th meeting of the Standing Committee, FAO has cooperated with the CITES Secretariat to develop and publish guidance on implementing CITES through national fisheries legal frameworks. Notably, this guidance also includes draft provisions on IFS.

SSN is greatly concerned that the general level of implementation of CITES provisions on IFS still appears to be low 48 years after the Convention was first adopted and 8 years since the Conference of Parties provided further guidance on their implementation. SSN considers that this lag may potentially hamper the full and effective implementation of CITES for listed commercially exploited marine species, in particular sharks (See SSN comment on sharks and rays) and requires urgent remedial action. A recent study demonstrating that, globally, the abundance of oceanic sharks has declined by 71.1% highlights the need to protect sharks also in the high seas²¹⁹. As one of the few existing, binding mechanisms with the

²¹⁷ See https://cites.org/sites/default/files/eng/prog/shark/docs/8%20Introduction%20From%20the%20Sea_EN%20%28small%29.pdf

²¹⁸ <https://cites.org/sites/default/files/notif/E-Notif-2018-067-A.docx>

²¹⁹ <https://www.nature.com/articles/s41586-020-03173-9>

scope to regulate the take of marine species from the high seas IFS potentially represents one of the strongest, but underutilized, tools that could help reverse this trend for CITES-listed species.

► Sharks and Rays

SSN considers it critical for the CITES community to continue to actively advance and closely monitor the implementation of CITES for sharks and rays. SSN therefore urges the Service to propose a number of actions to improve implementation of CITES listings for sharks and rays for consideration at CoP19. Many sharks are particularly vulnerable to overexploitation owing to their late maturity, longevity and low fecundity. SSN has long emphasized that a combination of trade and fishing regulations are critical to conserve shark species, and that CITES as a legally binding instrument with strong compliance mechanisms has a critical role to play in this regard.

SSN notes that the United States was on the forefront of listing elasmobranchs on CITES as a proponent or co-proponent of proposals to list sawfishes in 2007, the 3 large species of hammerhead sharks and oceanic whitetip sharks in 2010, the oceanic whitetip in 2013, and devil rays in 2016. The United States was also one of the early funders of the implementation of these listings, funding multiple implementation workshops in Central and South America and in West Africa.

SSN is pleased with much of the progress that Parties have made in implementing CITES for listed species of shark and rays, and commends the United States and other countries for these efforts. SSN, however, also notes that a recent IUCN Red List update has shown continued deterioration of the conservation status for many sharks and rays,²²⁰ including CITES-listed species. Amidst this alarming trend, several potential remaining gaps in the implementation of CITES for sharks were identified during the intersessional period between CoP17 and CoP18, including a mismatch of the CITES trade data against expert expectations²²¹ and possibly low levels of implementation of CITES provisions on Introduction from the Sea (IFS).²²²

It is with that in mind that SSN therefore strongly urges the United States to consider propose the following actions at CoP19:

1. Resolve implementation challenges due to look-alike issues for family Sphyrnidae

The CITES Animals Committee has recognized^{223 224} that look-alike issues involving unlisted species in the family Sphyrnidae, in their most traded form (fins), challenge the implementation of CITES Appendix II for the three listed species of hammerhead sharks (*Sphyrna lewini*, *S. mokarran*, *S. zygaena*). At the time when the United States first proposed listing hammerhead sharks in 2010, and when the species were approved for listing in 2013, evidence of trade in the smaller hammerhead species was lacking. Since then, studies²²⁵ have found fins from these species in the international shark fin trade. To regulate that trade and facilitate enforcement of the already listed hammerhead species, SSN asks the United States to consider submitting a family listing proposal which would add all currently unlisted hammerhead shark species and any new species discovered in the future on Appendix II to ensure, if adopted, that all species in the family Sphyrnidae are included.

²²⁰ <https://www.iucnssg.org/press/oceanic-sharks-and-rays-face-unprecedented-extinction-risk-from-overfishing>

²²¹ Compare Decision 18.221 a) <https://cites.org/eng/taxonomy/term/42086>

²²² <https://cites.org/sites/default/files/eng/com/sc/70/E-SC70-34.pdf>

²²³ [AC30 Inf. 14](#)

²²⁴ [AC30 Com. 8](#)

²²⁵ Fields AT, Fischer GA, Shea SKH, Zhang H, Abercrombie DL, Feldheim KA, Babcock EA, Chapman DD. 2018 Species composition of the international shark fin trade assessed through a retail-market survey in Hong Kong. *Conserv. Biol.* 32, 376–389. (doi:10.1111/cobi.13043); Cardeñosa D, Fields AT, Babcock E, et al. Indo-Pacific origins of silky shark fins in major shark fin markets highlights supply chains and management bodies key for conservation. *Conservation Letters*. 2020:e12780. <https://doi.org/10.1111/conl.12780>

2. Review CITES trade in oceanic whitetip (*Carcharhinus longimanus*) sharks against State obligations under RFB management measures

SSN is concerned by discrepancies in trade data for oceanic whitetip (*Carcharhinus longimanus*) sharks between the CITES trade database and reports on catches to the FAO and Regional Fisheries Management Organizations (RFMOs). This species has recently been re-assessed as Critically Endangered globally by IUCN²²⁶. CITES Resolution Conf. 12.6 (Rev. CoP18) on the Conservation and management of sharks “*encourages Parties to improve data collection and reporting (where possible by species and gear type), adopt management and conservation measures for shark species, and enhance implementation and enforcement of these actions through domestic, bilateral, RFMOs or other international measures*”²²⁷ in trade data for oceanic whitetip (*Carcharhinus longimanus*) sharks. The retention of this species has been banned by all of the major regional fisheries management organizations (RFMOs) for tuna for several years, and it is listed on Appendix I of the Convention on Migratory Species (CMS). There should therefore be very little if any legal international trade in this species, assuming Parties’ full implementation of their international obligations. Yet, despite the broad RFMO coverage for this species, 16 instances of trade for commercial purposes were recorded in the CITES trade database from 2013-2019 (accessed 15.04.2021). Research²²⁸ on the fin market in Hong Kong continues to find more specimens of this species than are being reported in the CITES trade database, indicating that unreported international trade may be taking place in non-compliance with CITES requirements. As one of the lead proponents for listing oceanic whitetip sharks on CITES, SSN encourages the United States to take any action it deems appropriate to examine and address potential compliance issues, for example urging reporting and compliance related actions in a Decision.

3. Assess the implementation status of Introduction from the Sea provisions and, if necessary, consider actions to close implementation gaps

Given that many CITES-listed species of sharks are caught in areas beyond national jurisdiction, proper implementation of IFS provisions and the issuance of corresponding certificates is a critical component for effective implementation of CITES listings of these sharks. We therefore highlight that the suggested actions under SSN’s submission regarding IFS would also greatly contribute to advancing the implementation of CITES for listed shark species.

²²⁶ <https://www.iucnredlist.org/species/39374/2911619>

²²⁷ See paragraph 3. <https://cites.org/sites/default/files/document/E-Res-12-06-R18.pdf>

²²⁸ Cardenaosa, D., Fields, A.T., Babcock, E.A., Zhang, H., Feldheim, K., Shea, S.K., Fischer, G.A. and Chapman, D.D., 2018. CITES-listed sharks remain among the top species in the contemporary fin trade. *Conservation Letters*, 11(4), p.e12457.