Nineteenth meeting of the Conference of the Parties (CoP 19)

Comments on Proposals and Working Documents

German Society of Herpetology (DGHT)

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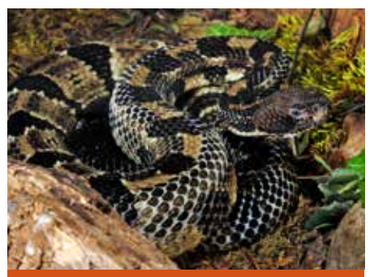

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Preface

CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) is an international agreement between governments. Its aim is to ensure that international trade in specimens of wild animals and plants does not threaten the survival of the species.

CITES does not regulate the exploitation and trade of species within a state. Listing a species under Appendix I, II or III does not, and cannot, replace national legislation and its enforcement. Listing a species under a CITES Appendix may help to prosecute the illegal international trade, because CITES permits have to be checked by customs. However, this is only a secondary step to protect wild populations, because specimens removed from the wild generally cannot be returned (see Resolution Conf. 17.8).

Our comments on the proposals refer to the criteria for amendment of appendices I and II of CITES outlined in Resolutions Conf. 9.24 (Rev. CoP17) and Res. Conf. 9.25 (Rev. CoP18) (see also Challender *et al.* 2019):

Species may be included in Appendix I if they are or may be affected by collection for trade, and if they meet biological criteria including factors relating to population status and habitat distribution. As set out previously, range states remain responsible for the conservation of wild populations, including exploitation and national trade.

A species may be included in Appendix II of CITES if regulation of trade is necessary to prevent that the species might qualify for Appendix I listing in the future.

Species that are not threatened by legal collection for trade should, by definition, be precluded from listing on any CITES Appendix. "Look-alike" species in accordance with Article II, paragraph 2 (b) should only be listed if it is unlikely that enforcement officers would be able to distinguish them. We have checked the availability of determination keys, and reject listings of species that are identifiable, because trade regulations for such species might negatively affect livelihoods and even conservation. We would welcome continued efforts by CITES to enable enforcement officers to currently identify plants and animals, including identification of local forms or morphs with similar taxonomies yet different market values.

If a party seeks for a better monitoring of the international trade patterns as well as trade volumes for a species, this species or a specified population should be listed under CITES Appendix III. As a requirement, the submitting Party is asked to make any domestic laws and regulations (and interpretations thereof) applicable to the protection of the proposed species available. A listing in Appendix III provides law enforcement agencies in consumer and transit countries with a means to take action against trade in illegally sourced specimens (see also Heinrich, Shepherd & Sy 2022).

Species that lack specific protective legislation in range countries should also be precluded from listing on any CITES Appendix, because listing would not help conserve the species in the wild (i.e., species would continue to be exploited and traded), whereas confiscated individuals at international borders would rarely be suitable candidates for repatriation (according to Resolution Conf. 17.8). We strongly recommend not to over-use of IUCN Red List status as the main (or even only) criterion to propose CITES listings, as it is misleading and may even become detrimental to efforts of species conservation. Instead, we would support CITES to help range countries develop appropriate national legislation.

For each proposal, we have compiled information on population status and main threats. We have assessed the principal factors affecting the respective species' long-term survival with an emphasis on threats caused by collection from the wild for the international trade. We have also evaluated available trade information, whenever possible primary data, to determine if trade includes recently wild-caught animals, captive-bred offspring, or specimens caught long ago (possibly under an outdated scientific name); additionally, we tried to evaluate if trade was according to legislation (Challender *et al.* 2021).

We have also summarized required conservation actions as suggested in Red List assessments and other literature.

Since working documents for this CoP19 meeting often refer to the captive breeding potential of species, we have summarized expert information on long-term husbandry and captive breeding, mainly in Europe, based on private breeder's experience and on published data. A detailed evaluation of the captive breeding potential of species for which the proposals will be accepted by CoP19, like Langner *et al.* (2021) and Langner *et al.* (2022), will of course contain much more species-specific information on the requirements for captive breeding.

Comments on listing proposals are marked with a headline: "Support" or "Reject", followed by a short explanation, and – as appropriate -additional suggestions on species protection measures.

Comments on the Reptile and Amphibian Proposals to Amend Appendices I and II

CoP19 Prop. 11: *Caiman latirostris* Daudin, 1802, Broad-snouted caiman (Population of Brazil) – Transfer of the population of Brazil from Appendix I to Appendix II

Proposal: Transfer of the population of Broad-snouted caiman *Caiman latirostris* of Brazil from Appendix I to Appendix II of CITES, in accordance with Article II, paragraph 2. a), of the Convention and with Resolution Conf. 9.24 (Rev. CoP17) Annex 4, paragraph A. 2. A, ii).

Proponent: Brazil

Taxonomy

There are no valid subspecies of *Caiman latirostris*, but genetic analysis revealed three clades in Brazil, which were closely associated to river basins: 1) Saõ Francisco and Jequitinhonha, 2) Doce, and 3) Paraná (Borges *et al.* 2018).

Population Status and Main Threats

IUCN Red List: Least Concern (Siroski *et al.* 2020), and the current population trend (over all populations) is stable. Although considered as a species of Least Concern by the Brazilian government, some Brazilian populations of *C. latirostris* are still under hunting pressure (Borges *et al.* 2018).

Caiman latirostris is actually listed under CITES Appendix I, except for the population of Argentina, which has been listed under Appendix II since 1997 (CoP10 Prop.1).

Caiman latirostris is impacted by habitat loss, pollution, illegal hunting (in some States of Brazil where the population is low) and construction of large hydroelectric dams. Habitat destruction has increased significantly in recent years. In north-eastern Brazil, illegal hunting still supplies local markets for meat in small cities along the São Francisco River basin.

Conservation actions needed

Dams have been shown to affect *C. latirostris* reproduction, putting various populations at risk. Additional attention should be given to the spatial distribution of all these impacts and their effects on each particular Evolutionary Significant Unit (Borges *et al.* 2018).

Captive Breeding

In Europe, the first captive breeding occurred 1964 at Erfurt Zoo (Jarvis & Biegler 1966).

There are currently five operating farms in Brazil. They are located in Southeast and Northeast states, managing around 6,100 specimens. Specimens are used for both meat and skin. It is important to note that in order to trade products, specimens can only be processed in abattoirs inspected by sanitary authorities, either Municipal, State or Federal. The species responds well to captive management, presenting satisfactory growth and reproduction (cited from CoP19 Prop. 11).

Caiman latirostris Foto: A. Kwet

In Brazil, the wild and captive population of *Caiman latirostris* has been monitored using conservation genetics, for example to carry out parentage analysis in captive populations and assess dispersion patterns in natural populations (reviewed in Zucoloto *et al.* 2021).

DGHT Position: Support

The transfer of the Brazilian population of *Caiman latirostris* from CITES Appendix I to Appendix II is supported.

Additional Remarks

Brazil should continue to monitor the wild population as well as the captive breeding groups using the established conservation genetic tools.

CoP19 Prop. 12: *Crocodylus porosus* Schneider 1801, Indo-Pacific saltwater crocodile (population of Palawan Islands, Philippines) – Transfer from Appendix I to Appendix II with a zero-export quota for wild specimens

Proposal: Transfer of the Philippine population of Saltwater crocodiles (*Crocodylus porosus*) in Palawan Islands, Philippines from Appendix I to Appendix II, with a zero-export quota for wild specimens, in accordance with Resolution Conf. 9.24 (Rev. CoP17).

Proponent: Philippines

Taxonomy

Crocodylus porosus has a wide distribution, and can travel long distances by the sea. There are phylogeographic clusters, but it is certainly not possible to assign any animal to a certain population.

Population Status and Main Threats

The wild population of Palawan has obviously recovered, but despite public education there is growing hostility towards *C. porosus*, which are large and dangerous predators, generally feared, causing fatal and non-fatal attacks on local people (cited from CoP19 Prop.12).

On the IUCN Red List *Crocodylus porosus* has been assessed as Least Concern in 2019.

The Saltwater crocodile is a famous example for split listing: The populations of Australia, Indonesia, Malaysia … and Papua New Guinea are included in CITES Appendix II since 2017 (CoP17 Prop. 24), while the remaining populations are included in Appendix I.

Conservation actions needed

The largest risk posed to successful *C. porosus* conservation is the cohabitation of humans with an apex predator. Public awareness and education programs can help alleviate parts of this threat. In Palawan most local communities depend on fishing, with fishers living in stilt houses in coastal areas. Sustainable incentives for local people to tolerate *C. porosus* are critical to sustaining the recovering since 1992.

Captive Breeding

There are currently three CITES-registered farms in Palawan, which export raw skins compliant with CITES regulations including universal tagging. Current farm stocks are around 35,000 individuals.

In breeding farms outside the Philippines *Crocodylus porosus* has been hybridized with *C. niloticus* and *C. siamensis* (Wei *et al.* 2022).

DGHT Position: Support

The transfer of the Palawan population of *Crocodylus porosus* from CITES Appendix I to Appendix II is supported.

Additional Remarks

The reasons for farming the Saltwater crocodile in the Philippines and transferring the population of Palawan from CITES Appendix I to Appendix II (split listing), with a zero-export quota for wild specimens and products, are summarized in Manalo & Aquino (2020), see also Cooney *et al.* (2021).

Crocodylus porosus Foto: A. Kwet

CoP19 Prop. 13: *Crocodylus siamensis* Schneider 1801, Siamese crocodile (population of Thailand) – Transfer from Appendix I to Appendix II with a zero-export quota for wild specimens

Transfer of the Thai population of *Crocodylus siamensis* from Appendix I to Appendix II with a zero quota for wild specimens, on the basis of Article II, paragraph 2 (a), of the text of the Convention and in accordance with the Precautionary measures as defined in Annex 4 (A.2.a) of the Resolution Conf. 9.24 (Rev. CoP 17).

Proponent: Thailand

Taxonomy

Crocodylus siamensis is a widespread species, but it is not known whether genetically different local forms do exist. Some hybrid animals (with *C. porosus* and *C. rhombifer*) occur even in different wild populations.

Population Status and Main Threats

The newest IUCN Red List assessment was in 2012, the species as a whole was assessed as Critically Endangered, and in Thailand, fewer than five wild nests and few hatchlings have been recorded over the past five years, suggesting low clutch fertility.

The IUCN Crocodile Specialist Group assessed the Thailand population (Platt *et al.* 2018) as: "*The critically endangered national status of C. siamensis in Thailand appears unchanged. Surveys since the early 1990s have confirmed several small populations of doubtful viability persisting in marginal habitats.*"

C. siamensis is listed under CITES Appendix I since 1975. The CoP 16 Prop. 25 to transfer the Thailand population to Appendix II already in 2013 had been rejected.

Commercial hunting in the mid-twentieth century for the skin trade is considered to be the principal cause for the historical decline of *C. siamensis*. Current and ongoing threats in virtually all range states include the illegal collection of eggs and crocodiles, habitat loss and degradation, and incidental capture/drowning in fishing gear.

Conservation Actions Needed

Lapbenjakul *et al.* (2017) have analysed the genetic diversity in the captive population and suggest the establishment of an appropriate source population from a scientifically managed perspective for an in situ/ex situ conservation program and reintroduction of crocodile individuals to the wild in Thailand.

The crocodile industry has an important role to play in the conservation of wild populations, through funding of surveys and/or other conservation initiatives. The ultimate goal aims to re-establish viable wild populations and their sustainable utilization. Farms are encouraged to segregate genetically pure *C. siamensis* for conservation.

Crocodylus siamensis Foto: A. Kwet

Captive Breeding

In Thailand, a captive breeding program has been established since 1937. Currently, Thailand has 29 CITES registered commercial breeding farms. These farms jointly formed an association which has objectives for crocodile trade, conservation and sustainable utilization. To effectively control of raising and trading of parts and derivatives from the same species with different CITES appendices among range states, regional regulation of registration for captive-breeding institution with the management authorities and the marking system of live and products will be harmonized among range states.

Hybridization between *C. siamensis* and *C. porosus* occurs in some breeding farms in most range countries, and is bi-directional between males and females of the parent species (Lapbenjakul *et al.* 2017). Hybrid crocodiles (*C. siamensis* × *C. porosus*) are fertile, and reportedly grow faster and produce higher quality skins than either parent species.

Smaller numbers of several *Crocodylus* species are maintained at zoos in Europe, North America and Asia. Captive populations represent a source of crocodiles for population augmentation and reintroduction, but because hybrids cannot be distinguished based on phenotype, genetic screening is necessary to confirm species identity of any crocodiles selected for release.

DGHT Position: Support

The transfer of the Thai population of *Crocodylus siamensis* from CITES Appendix I to Appendix II is supported.

Additional Remarks

The rapid genetic identification system should be developed further and used in population, ecology, and conservation studies especially for re-introduction programs, but also for genetic management of the breeder stock in the breeding farms.

CoP19 Prop. 14: *Physignathus cocincinus* Cuvier, 1829, Green Water Dragon – Include in Appendix II

To list *Physignathus cocincinus* in CITES Appendix II, in accordance with Article II, Paragraph 2 (a) of the Convention satisfying criterions A and B, Annex 2(a) of Resolution Conf. 9.24 (Rev. CoP17). It is known, or can be inferred or projected, that the regulation of trade in the following species is necessary to avoid it becoming eligible for inclusion in Appendix I in the near future; and it 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.

Proponents: European Union and Viet Nam

Taxonomy

Physignathus cocincinus is the only remaining species in this genus, all the other "water dragons" have been assigned to different genera. The subspecies *P. c. mentager* and *P. c. caudicinctus* (Barbour 1912) are considered invalid. Natural distribution: Cambodia, China (Guangdong, Guangxi, Yunnan), Laos, Myanmar, Thailand, and Vietnam (incl. Cat Ba Island); introduced in Hong Kong, Malaysia (West Malaysia [Penang Island]), and Florida.

Population Status and Main Threats

Vulnerable; Population Trend: Decreasing (Stuart *et al.* 2019). This species, while widespread, is subject to high rates of harvesting throughout most of its range. Harvesting takes place principally at a subsistence level for food, but the species is also heavily exploited, especially in Viet Nam, for export to support the European pet trade.

It is likely that the reported extent of international trade of nearly 70,000 imported live individuals per year into the US and the EU (between 2010 and 2017) with the greatest part originating from the wild from Vietnam may strongly impact wild populations (Gewiss *et al.* 2020). Throughout the species' natural range, the fragmentation and loss of suitable habitats also detrimentally affect the populations of the species.

In Europe, the species is traded in very high numbers, captive bred animals being usually more expensive than imports.

Conservation Actions Needed

The establishment of legally commercial breeding programs, validated by governmental and scientific expertise, within and outside of range states is suggested to meet the current demand for *P. cocincinus* as pet and food.

Captive Breeding

The first extensive breeding report has been published already in 1982 (Dedekind & Petzold 1982). The first comprehensive husbandry guide dates from 1993, and the first edition of the well-known German booklet on *Physignathus cocincinus* was printed in 2004 (Werning 1993; 2004) and later translated into several other European languages.

Physignathus cocincinus Foto: B. Pfau

Captive bred Water Dragons can get rather tame and learn to respect the terrarium glasses as a territorial boundary, but imported animals often do not lose their dashing flight behaviour, and they tend to develop veterinary issues such as bacterial infections.

DGHT Position: Support

Listing this species under CITES Appendix II is likely an effective measure to allow only sustainable collection from the wild for the legal trade.

Additional Remarks

A genetic identification system for the different populations should be developed to better monitor the international trade.

CoP19 Prop. 15: *Cyrtodactylus jeyporensis* (Beddome, 1878) Jeypore Indian gecko – Include in Appendix II

The Proponents propose to include *Cyrtodactylus jeyporensis* in Appendix II of CITES as the species meets the criteria in paragraph 2(a) of Article II of the Convention and criteria A in Annex 2a of Resolution Conf, 9.24 (Rev. CoP17), as on the basis of available trade data and information on the status and trends of the wild population, it can be inferred that the regulation of trade in the species is necessary to avoid it becoming eligible for inclusion in Appendix I in the near future.

Proponent: India

Taxonomy

The species had been described from one single male, and it was thought to be extinct for 135 years until its rediscovery in 2010 (Agarwal *et al.* 2012). Some scientists assigned it to the genus *Geckoella*, which has been synonymized with *Cyrtodactylus* in 2012 (Wood *et al.* 2012).

Population Status and Main Threats

Surveys indicate that the population of the species may be declining at a fast rate. (Mohapatra 2021), but data on the real population size are lacking. Nothing much is known about the biological characteristics of the species in the wild except observations on the daily activities of the species.

The distribution range of the species does not fall in any protected areas under the Wild Life (Protection) Act, 1972. The main threats to the species are from habitat loss, habitat degradation, forest fires, mining activities, tourism and selective collection for illegal trade of the species, but since in India, the collection or obtaining of the species for research, commercial utilization, … requires permission of the National Biodiversity Authority under Sections 3, 19 and 20 of the Biological Diversity Act, 2002, the species should already be protected from collection for the legal international pet trade.

Conservation Actions Needed

The habitat of *C. jeyporensis* is degrading due to forest fire, grazing, and mining activities. In the Deomali and Potangi hills (Type locality), the habitat degradation is due to tourist activities, shrinkage of primary forests, mining, quarrying, and forest fires. No information on plans for habitat restoration could be found.

The species is intended to be included in Schedule-I of Wild Life (Protection) Act, 1972, in the near future, which means even better prosecution of any collectors of wild animals of this species, but not a better habitat protection.

Captive Breeding

There are some offers of captive bred animals, of this species on social media platforms, but this species is obviously rare in trade.

DGHT Position: Reject

Based on literature records and an overall view of what is known about trade volumes, there is no evidence for the proposal's statement that *C. jeyporensis* is threatened by unsustainable collection for the international pet trade.

Additional Remarks

We suggest that India facilitates and sponsors research on the biology, population status and habitat requirements of this species and develops and implements a species-specific conservation concept.

Cyrtodactylus jeyporensis
Foto: Anon

CoP19 Prop. 16: *Tarentola chazaliae* (Mocquard, 1895) Helmethead gecko – Include in Appendix II

Inclusion of the Helmethead gecko, *Tarentola chazaliae*, in Appendix II in accordance with Resolution Conf. 9.24 (Rev. CoP17), as the species satisfies criterion A and B of Annex 2(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 it 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.

Proponents: Mauritania and Senegal

Taxonomy

The proponents place this species in the family Phyllodactylidae, but this is not in accordance with the standard nomenclatural reference adopted by the Conference of the Parties.

The Helmethead gecko had long been assigned to the genus *Geckonia*, and this name is still in use among the reptile keepers and breeders.

Population Status and Main Threats

"Vulnerable" on the IUCN Red List (Wilms *et al.* 2013), and an assessment in the area of occurrence still mentions a decrease of the population, even in the national park where most of the Moroccan population lives (Elbahi *et al.* 2022).

This species is threatened in Morocco (almost a third of its range) by urbanization and fragmentation of its coastal habitats… It is also hit by vehicles along the roads. This species is commonly traded in relatively large numbers, and access to sites where the gecko occurs is facilitated by a road running the length of the coastal and near-coastal strip of Morocco and Western Sahara (Wilms *et al.* 2013). Elbahi *et al.* (2022) state "*Habitat loss and fragmentation are common threats to these reptile species. Vulnerable species, such as Tarentola chazaliae and Testudo graeca, are being collected for the international pet trade…*".

Conservation Actions Needed

No species management plans are known for this species or the habitats outside the protected areas where it occurs (CoP19 Prop. 16). In Morocco it is legally protected, protection in the other range states is unknown.

Since urbanization, and especially roads, have been identified as major threats for this species, a comprehensive population and habitat assessment is still needed, but additionally it is essential to determine spatial and temporal patterns of traffic collisions for this and other vulnerable species in this sensitive habitat, in order to implement a cost-effective program of mitigation measures (Garriga *et al.* 2017).

Captive Breeding

This species has been kept and bred in Europe since the late 1960's (Friedel 1967, Rieppel 1973). A report of breeding in the F2 generation has been published in 1988 (Seufer 1988). This species is still offered on social media platforms, mostly as captive bred animals.

DGHT Position: Reject

Listing of *Tarentola chazaliae* under CITES Appendix II is not justified, since the regulation of the legal international trade in the species, which is obviously unprotected in the proposing states, will not be effective against domestic factors affecting the long-term survival of the respective populations.

Additional Remarks

A species protection system, regarding habitat protection as well as the protection of species of wild flora and fauna, should be implemented and enforced throughout the species' range.

The range countries could list their populations of *Tarentola chazaliae* under CITES Appendix III if they have the appropriate legislation in place for monitoring the international trade with legally wild-caught animals of this species.

Tarentola chazaliae Foto: T. Kunsch

CoP19 Prop. 17: *Phrynosoma platyrhinos* Girard, 1852 Desert horned lizard – Include in Appendix II

Inclusion of the desert horned lizard (*Phrynosoma platyrhinos*) in Appendix II, under the provisions of Article II, paragraph 2(a) of the Convention, in accordance with Resolution Conf. 9.24 (Rev. CoP17), Annex 2a, Criterion A and Criterion B.

Proponent: United States of America

Taxonomy

In CoP19 Prop. 17 two subspecies of *Phrynosoma platyrhinos* are mentioned: *P. p. platyrhinos* and *P. p. calidiarum*, and *P. goodei* is treated as a separate species, but Köhler (2021) synonymized *Phrynosoma platyrhinos calidiarum* with the nominate subspecies, and moved *goodei* (back) to *platyrhinos*.

Phrynosoma_platyrhinos Foto: A. Kwet

Population Status and Main Threats

On the IUCN Red List this species has been assessed as Least Concern (Hammerson *et al.* 2019).

No major threats have been identified. Locally, subpopulations have been reduced or eliminated as a result of urbanization, agricultural development, and off-road vehicle use.

CoP19 Prop. 17 interprets that "*The impacts of collection for trade are magnified by other concurrent threats to the species*". The Netherlands, Japan, and Hong Kong are the top importer countries, and there is some trans-border trade of *P. platyrhinos* with Mexico.

Conservation Actions Needed

Individual States within the United States have set bag and possession limits for *Phrynosoma platyrhinos* within the State or for reptiles and State-listed species more broadly. Though the species is poorly studied, State resource managers and researchers have identified habitat modification, loss, and fragmentation as having negative impact on the species. The Idaho Department of Fish and Game is currently reviewing the status of *Phrynosoma platyrhinos* in the State to determine whether or not it qualifies as a Species of Greatest Conservation Need in the State.

Captive Breeding

P. platyrhinos was the first Horned Lizard species to be captive bred in Europe (Baur 1973), and in the meantime even more information could be gathered on the specific requirements of this species (Schulz 2018). Captive bred animals are offered in specialist shops and on the social media platforms, but offers of wild-caught animals are rare, since these are more difficult to settle in and they should be bought only by experienced keepers.

DGHT Position: Reject

Listing under CITES Appendix II is not justified. *Phrynosoma platyrhinos* and also the closely related *P. goodei* have been assessed as "Least Concern" in 2016, and collection for the legal international pet trade is not a major threat for the wild populations.

Additional Remarks

We recommend a listing under CITES Appendix III to better monitor the international trade with wild-caught animals.

CoP19 Prop. 18: *Phrynosoma* spp.
Horned lizards
– Include in Appendix II

Inclusion of all species of Horned lizards in the genus *Phrynosoma* in Appendix II, under the provisions of Article II, paragraph 2(a) and 2(b) of the Convention, in accordance with Resolution Conf. 9.24 (Rev. CoP17), Annex 2a, Criterion A and Criterion B as per:

P. platyrhinos, *P. asio*, *P. taurus*, *P. orbiculare*, *P. braconnieri*, *P. modestum*, *P. solare* in accordance with criterion A, Annex 2a of the Resolution 9.24 (Rev. CoP17).

b) All the other species of *Phrynosoma* in accordance with criterion A, Annex 2b of the Resolution 9.24 (Rev. CoP17).

Proponent: Mexico

Taxonomy

The species / subspecies delimitations within *Phrynosoma* have long been discussed. Köhler (2021) revised the taxonomy of the species and subspecies of the genus *Phrynosoma* through phylogenetic and species delimitation approaches based on four mtDNA markers, and found 12 species to be valid, while CoP19 Prop. 18 lists 21 species, by elevating the subspecies mentioned by Köhler to full species, similar to the suggestion by Leaché *et al.* (2021).

Population Status and Main Threats

Population size assessment for each species is difficult, due to the taxonomic discussions, but the published population assessments do not indicate a decrease other than from habitat deterioration.

In the IUCN Red List all species which have been assessed as "Least Concern" except for *Phrynosoma ditmarsi*, which has most recently been assessed for the IUCN Red List of Threatened Species in 2007 as Data Deficient (IUCN 2022).

For example, the IUCN assessment on *P. platyrhinos*, a species from the United States and Mexico, reads as: "*No major threats have been identified. Locally, subpopulations have been reduced or eliminated as a result of urbanization, agricultural development, and off-road vehicle use*" (Hammerson *et al.* 2019).

The statement that „*thousands of Horned lizards per year are traded illegally in the … international trade*" cannot be verified. The numbers given for the legal international trade are mainly on *P. platyrhinos*, and of the other species altogether 602 animals have been exported directly from Mexico between 2019 and 2021, and from 2006 to 2015 in total 21.393 living animals from the US, including 54 Horned lizards of Mexican species (see CoP19 Prop. 18, p. 8–10).

For comparison: *Phrynosoma coronatum* had been listed under Appendix II already in 1992, and since then only 9 wild-caught animals have been exported for the legal trade from the US and Mexico until 2021 (UNEP-WCMC 2022).

Phrynosoma taurus Foto: T. Kunsch

Phrynosoma solare Foto: A. Kwet

Compared to the given population sizes it cannot be concluded that the legal international trade would really affect the wild populations of *Phrynosoma* spp.

Conservation Actions Needed

First of all, a better distribution and population assessment of the different *Phrynosoma* spp., range wide, is needed, and then protected areas without intensive agriculture should be created for really threatened populations. In these areas offroad vehicles and insecticides should be banned, since these two factors are the main threats for all Horned lizard species.

Captive Breeding

These lizards do quite well in captivity if their requirements concerning food and lighting are met, see for example Baur (1986), Baur & Montanucci (2008), or Werning (2014), but recently wild-caught animals are difficult to acclimate and recommended only for experienced Horned lizard keepers. Food supplements for ant eating lizards are even commercially available, they can be applied to the feeder insects for the *Phrynosoma* species which also accept insects other than ants. Especially for breeding attempts it is nevertheless recommended to have suitable feeder ants available.

Increasing interest in these species cannot be observed, since the potential keepers, at least in Europe, usually know about the specific requirements regarding technical equipment and feeder animal breeding for these lizards. The animals offered in the social media in Europe are mainly captive bred, and not recently imported illegally, as assumed in CoP19 Prop. 18.

DGHT Position: Reject

There is no information on the possible influence of the legal international trade on the wild populations, and no obvious reason to list all the Horned Toad species under CITES Appendix II.

The justification for this proposal reads as: "*An Appendix II listing of the entire genus would facilitate the work of customs inspectors, as well as deter illegal international trade in rare, endangered and endemic species*" (translated from Spanish), but CITES is the convention on (legal) international trade, and listing a species under CITES Appendix II does not replace adequate training and working conditions for customs inspectors, nor the domestic prevention of illegal collection and trade.

Additional Remarks

The legislation in the range states should be revised and the species protection regulations should be enforced.

We recommend a listing under CITES Appendix III to better monitor the international trade with wild-caught animals.

CoP19 Prop. 19: *Tiliqua adelaidensis* (Peters 1864) Pygmy bluetongue lizard – Include in Appendix I

To include *Tiliqua adelaidensis* in Appendix I, in accordance with Resolution Conf. 9.24 (Rev. CoP17), Annex 1 Paragraph B and Paragraph C.

Proponent: Australia

Taxonomy

The Pygmy bluetongue lizard had been described in the genus *Cyclodus* and has been assigned to *Tiliqua* in 1937. Until 1992, only 20 specimens were recorded of this species. Afterwards, a few small populations have been found in South Australia (Uetz *et al.* 2022).

A population genetic analysis (Smith *et al.* 2009) found a significant genetic structure within sample sites at distances up to 30 m, suggesting restricted gene flow even in small patches of continuous habitat. Studies of social interaction in this species may identify its relative contribution to the observed positive genetic structure.

Tiliqua adelaidensis
Foto: Public domain, via Wikimedia Commons

Population Status and Main Threats

Population size has proven difficult to estimate. Estimates are of under 10,000 and probably around 5,000 individuals in the wild. The overall population trend is considered to be decreasing, with subpopulations known to have been lost potentially as a result of unviability.

Identified threats include changed land use. Grazing is the one agricultural activity that is demonstrably compatible with the survival of the species, and it may even make a positive contribution. Fragmentation of populations poses another threat. Human activities have reduced the species to small populations separated by large areas of hostile terrain that either restrict, inhibit or prevent movement of individuals between populations (Cited from CoP19 Prop. 19).

Conservation Actions Needed

The pygmy blue-tongue lizard occurs only on freehold lands in a highly fragmented landscape dominated by agriculture (predominantly sheep grazing). For this species, mitigating the impacts of the identified threats from intensive agriculture, pollution, and urban development on private lands is now vital to its persistence (Kearney *et al.* 2022).

Besides habitat preservation and enhancement, the removal of foxes and perhaps other introduced predators could help (Nielsen & Bull 2016).

Developing translocation programs for *T. adelaidensis* will be assisted by understanding the population structure at a local scale, to mimic the natural genetic structure and prevent outbreeding or inbreeding depression in artificially founded or augmented populations (Smith *et al.* 2009).

Captive Breeding

Since 2016 the group of T. adelaidensis in Monarto Safari Park in South Australia is reproducing, and behavioural research is being done there to find out whether captive animals could be released back into the natural populations (Daniell *et al.* 2020).

In Europe, *Tiliqua adelaidensis* might be kept and even bred: In 2018 there was an offer by a specialized zoo shop, and even one unpublished breeding result on a social media platform stating that the female had given birth to four juveniles. On Instagram there are some entries, also mainly in 2018, showing obviously captive *T. adelaidensis*. After 2018, no posting on any social media platform could be found.

The species is said to be difficult to keep in the terrarium due to its extreme aggressivity (Hutchinson & Milne 2000, see also Nielsen & Bull 2016).

DGHT Position: Support

Although recently no offers or photos of captive *T. adelaidensis* have been posted on the social media platforms, we agree with the statement in Rev. CoP17 that "*The exceptional small size of the Pygmy Bluetongue, and its extreme rarity, combine to give it a high commercial value among collectors*".

Additional Remarks

Successful keepers should be interviewed to learn more about the conditions for successful ex situ keeping and breeding.

CoP19 Prop. 20: *Epicrates inornatus* (Reinhardt, 1843) Puerto Rican boa – Transfer from Appendix I to Appendix II

To transfer *Epicrates inornatus* from CITES Appendix I to II. [The species does not meet the threatened with extinction criteria (Annex 1) established in Conf. 9.24 (Rev. CoP17 and does not appear to fit the "affected by trade" criteria (Annex 5)].

Proponent: United States of America

Taxonomy

The genus *Epicrates* has been split up after analysing molecular phylogeny and historical biogeography, and this species has been assigned to the genus *Chilabothrus* (Reynolds *et al.* 2013).

Population Status and Main Threats

Epicrates inornatus were listed under CITES Appendix I already since 1976 at CoP1, together with *E. monensis* and *E. subflavus*.

On the IUCN Red List *E. inornatus* has been assessed as Least Concern in 2015. This species is described as common in undisturbed karst areas of north-western Puerto Rico. Much of the boa's apparent rarity undoubtedly relates to observers' difficulties in visually detecting the species in forests, and this boa is not as rare as previously thought (Rodriguez *et al.* 2018).

The most influential threats for this species are habitat loss and fragmentation from human development, predation from exotic mammals (namely cats, *Felis catus*), and poaching and intentional killings.

There is no additional information to suggest that the Puerto Rican boa has been or is being significantly impacted by trade.

Conservation Actions Needed

Tucker *et al.* (2020) calculated that the population is most likely to decline over a 30-year period under the status quo scenario, i.e., if the current rate of urbanization were to continue, but the quasi-extinction probability was low due to the possibility of a large current population size.

Captive Breeding

According to CoP19 Prop. 20 the original German breeding stock came from imports into Germany from Canada in 1982 and 1983. From 2014 on no international trade in this species has been recorded (UNEP-WCMC 2022), but captive bred snakes are regularly offered on European trade platforms.

DGHT Position: Support

We agree with the statement in CoP19 Prop. 20 that Epicrates inornatus does not meet the criteria for listing under CITES Appendix I as indicated in Resolution Conf. 9.24 (Rev. CoP17) and should be transferred from CITES Appendix I to II.

Additional Remarks

Aungst, Puente-Rolón & Reynolds (2020) analysed 50 boas from the US ex situ population and determined overall genetic diversity and relatedness among these individuals. They anticipate that the results will inform current breeding strategies as well as offer additional information that will facilitate the continuation of ex situ conservation breeding or management in boas. We recommend that the Puerto Rica boas which are being kept and bred in Europe should be included in an international ex situ research and breeding project.

Epicrates inornatus Foto: Public domain, via Wikimedia Commons

CoP19 Prop. 21: *Crotalus horridus* Linnaeus, 1758
Timber rattlesnake
– Include in Appendix II

Inclusion of timber rattlesnake (*Crotalus horridus*) in Appendix II, in accordance with Article II Paragraph 2 (a) of the Convention and satisfying Criterion B in Annex 2a of Resolution Conf. 9.24 (Rev. CoP17).

Specifically for Criteria 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.

Proponent: United States of America

Taxonomy

There is only one valid species (*C. horridus*). While there is marked spatial fragmentation between populations and a high level of phenological variability within its range, the largest of any of the world's rattlesnake species (see Andrews & Waldron 2017). Any subspecies described so far (such as *C. h. atricaudatus*, a subspecies that has been assigned to populations of eastern Texas, Oklahoma, Arkansas, Louisiana, Virginia) have been proven to be invalid on the basis of mtDNA analyses (Clark *et al.* 2003).

Population Status and Main Threats

Besides lacking a robust database of range-wide abundance and the estimated numbers of between 100.000 and over 1 million individuals (with the latter magnitude questioning a current threat), there seem to be some main factors threatening the long-term survival of some populations of *C. horridus*, at first place habitat fragmentation, sometimes at extreme levels (e.g. pinewood flats) as outlined in Chapter 4.1 of the supporting statement, road mortality, persecution, illegal collecting and poaching, for example for so called „rattlesnake roundups". These negative impacts have to be addressed by the range states as *C. horridus* – being a classical K-selected species due to low reproductive replacement rate and long-term generation time (maturity between an age of 4 to 6 years with biennial, triennial and even quadrennial female reproductive cycles, see Beaupre *et al.* 2017; Brown 1991; Ernst 1992 and references therein) – might be especially susceptible to small amounts of exploitation (Ernst 1992). The fact that the Timber rattlesnake inhabits communal dens of up to 200 snakes (see Brown & Martin 1990) makes it vulnerable to single hunting events, especially when there is a high proportion of gravid females (see Reinert 1991). Besides this, the degree of decline reported

Crotalus horridus Foto: B. Trapp

in the supporting statement (chapter 4.4) with respect to NatureServe (Brown, Novak & Hammerson 2006) is not based on any reliable dataset across the species' range to meet the guidelines for a marked decline outlined in Annex 5 of Resolution Conf. 9.24 (Rev. CoP17).

Conservation Actions Needed

Mohr & Duvall (2017) recommend continued field studies in order to understand the variable habitat requirements of *C. horridus* in different areas of its range and to infer regionally specific management practices. This seems to be especially important as the conservation status of the Timber rattlesnake, according to NatureServe (Brown, Novak & Hammerson 2006) is very different in the different range states and regions, from "possibly extirpated" to "secure". First of all, the gaps of a range-wide protection (only 18 out of 31 extant United States range states provide legal protection, i.e., prohibiting harvest of Timber rattlesnakes) should be closed (see also Ernst 1992) and enforcement of these statutes (which is often lacking according to Breisch 2021) as well as public awareness of habitat protection should be improved.

Captive Breeding

While there is some controversial evidence of reproductive success in private husbandry (Trutnau 1998, M. Kajcha pers. comm. 2022, W. Schneyer pers. comm. 2022), the ovoviviparous Timber rattlesnake has successfully bred in captivity by experienced breeders, but it has to be considered that the species displays a high degree of reproductive variability during individual lifespan (see for example Beaupre *et al.* 2017).

Nevertheless, controlled ex-situ and in-situ breeding activities might (and should) become a substantial part of creating back-up populations in order to have a background for possible re-introduction programs – but beware of the special aspects of translocation actions reported by Reinert & Rupert (1999).

DGHT Position: Reject

We consider an inclusion of the Timber rattlesnake into Appendix II of CITES as not justified based on the information given in the supporting statement, since there is overwhelming evidence that the main threat of the long-term survival of populations of that species is due to domestic factors outside international trade, especially habitat fragmentation and collecting for different purposes within the range countries. Furthermore, the reported amounts of decline lack a robust database.

While some biological criteria of the species may meet the prerequisites of a listing in App. II, this is not true for the basic requirement "affected by (international) trade" according to Annex 5 of Res. Conf. 9.24 (Rev. CoP 17) and Article I of the Convention, respectively.

As the listing proposal itself states that it is *„unknown and practically impossible to estimate the degree of unregulated international trade in wild or captive bred timber rattlesnakes*" and furthermore *„recent trade volume is relatively low compared to past trade volumes in C. horridus*" together with the statement that the regulations established in some states of the United States *are „likely not sufficient to adequately monitor the demand and trade volume of the species at the macro level*" there is compelling evidence that the Timber rattlesnake is especially exposed to threat factors within its range and that these factors would not be well addressed by an Appendix II listing in CITES.

Additional Remarks

As trade volume of the Timber rattlesnake is substantially unknown, it would be an optimal candidate for an Appendix III listing (according to Res. Conf. 9.25, Rev. CoP 18) to collect data on the amount of global demand at a mid-term scale, thus generating a robust database to evaluate the need of further action at the international level.

CoP19 Prop. 22: *Chelus fimbriata* and *C. orinocensis* Matamata turtle and Orinoco matamata turtle – Include in Appendix II

Include the species *Chelus fimbriata* and *Chelus orinocensis* in Appendix II, in accordance with Article II, paragraph 2 (a) of the CITES Convention, which states, "*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*". Moreover, the species meet criteria A and B of Annex 2 a of Resolution Conf. 9.24 (Rev. CoP17), namely: 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; or 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. They also meet the precautionary measures outlined in Annex 4 of the Resolution, according to which "*When considering proposals to amend Appendix I or II, the Parties shall, by virtue of the precautionary approach and in case of uncertainty either as regards the status of a species or the impact of trade on the conservation of a species, act in the best interest of the conservation of the species concerned and adopt measures that are proportionate to the anticipated risks to the species*".

Proponents: Brazil, Colombia, Costa Rica, and Perú

Taxonomy

Chelus fimbriata (Schneider, 1783) has long been the only Matamata turtle species, until *Chelus orinocensis* Vargas-Ramírez, Caballero, Morales-Betancourt, Lasso, Amaya, Martínez, Silva Viana, Vogt, Pires Farias, Hrbek, Campbell & Fritz, 2020, has been described. European breeders knew for a long time that there are at least two different Matamatas and kept them apart (Büttner 2022).

Chelus fimbriata lives in the Amazonas River basin (Ecuador, Perú, Colombia, Brazil and Bolivia), and in the basin of the river Mahury (Surinam and French Guyana).

Chelus orinocensis has a smaller distribution area in the river basins of the Orinoco, Río Negro and Esequibo (Brazil, Colombia, Guyana and Venezuela).

Chelus orinocensis Foto: O. Klawonn

The taxonomic status of the populations in the Branco River (Brazil) and the Essequibo River (Guyana) requires further research (Vargas-Ramírez *et al.* 2020).

Population Status and Main Threats

Neither of the two species has been assessed for the IUCN Red List. Population estimates are not available yet.

The two known species of the genus *Chelus* are threatened by the deterioration and pollution of the environment, habitat loss and fragmentation, and directly by overexploitation through the collection from the wild of large quantities, mainly of neonates and juveniles, for the international trade (cited from CoP19 Prop. 22). Besides this, in metal mining areas, mercury accumulation might influence the reproduction, hatching rate and survival of the juveniles (Cunha 2015, Büttner 2022).

Conservation Actions Needed

The influence of egg / juvenile harvesting and of mercury pollution on the population density and survival should be investigated as a matter of particular urgency.

Captive Breeding

CoP19 Prop. 22 states that in Peru there are two authorized in situ management areas and four authorized hatcheries, which are the source of production of *Chelus fimbriata* for export for commercial purposes. The exported production amounts to 75.740 live individuals in the period 2010–2020. In Colombia there are no authorizations for captive breeding or ranching for commercial purposes. For Venezuela, Omar Hernandez (personal communication) reported that annually thousands of eggs [of *Chelus orinocensis*] are collected from the wild, incubated in captivity, and that the hatchlings are exported by the pet trade (Vargas-Ramírez *et al.* 2020).

Breeding such high numbers in captivity in several generations (CITES Source Code c or at least f) is highly unlikely in this species, and breeding attempts for both species in Venezuela were obviously not yet successful (Solórzano & Díaz 2022).

Both species have reproduced in captivity in Europe in zoos since the 1940s (Heinroth 1946) and in private aquaterraria since the 1960s (Hausmann 1964, Schaefer 1986). The first F2 breeding, in a German zoo, was mentioned in 1969 (Richter 1969). Meier & Schaefer (2003a; 2003b; 2008) compare their experiences on captive husbandry and breeding of both species in really large private settings, Büttner (2022) shows that adult wild-caught specimens can successfully be acclimated in private aquaterraria, and they will also reproduce, if their specific requirements are met.

DGHT Position: Reject

Listing the Matamata species under CITES Appendix II is not justified, since no population monitoring has taken place and there is no threat assessment is available. Therefore, it cannot be concluded how the legal international trade could threaten any of these species with extinction.

Listing the range state populations of *Chelus* spp. under CITES Appendix III would facilitate a monitoring of the legal international trade in order to prevent ongoing, potentially unsustainable, collection from the wild.

Additional Remarks

It will be necessary to assess the populations of the different "Evolutionarily Significant Units" of both species separately, to conserve the genetic diversity and possible local adaptations of the Matamata species. This genetic differentiation also allows tracing back confiscated trade animals to their source regions, which is important when the release of the turtles should be considered (Vargas-Ramírez *et al.* 2020).

The authorized hatcheries should be closely supervised, and their method for producing such a high number of hatchlings and for ensuring that the collection of the eggs does not negatively affect the wildlife populations, should be published.

CoP19 Prop. 23: *Macrochelys temminckii* (Troost in Harlan 1835) and *Chelydra serpentina* Linnaeus, 1758
Alligator snapping turtle and Common snapping turtle
– Include in Appendix II

Transfer of North American members (*i.e.*, only species found in Canada and the United States of America) of the Snapping Turtle Family Chelydridae from Appendix III to Appendix II in accordance with Article II, paragraph 2(a) of the Convention and Resolution Conf. 9.24 (Rev. CoP17), Annex 2(a) as per:

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.

Macrochelys temminckii (Troost in Harlan 1835)

and in accordance with Article II, paragraph 2(b) of the Convention and Resolution Conf. 9.24 (Rev. CoP17), Annex 2(b) as per:

Criterion 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.

Chelydra serpentina (Linnaeus 1758)

Proponent: United States of America

Taxonomy and Red List Assessments, and Legal Protection

According to the Turtle Taxonomy Working Group (2021) there are two accepted species in the genus *Macrochelys*:

Macrochelys suwanniensis Thomas, Granatosky, Bourque, Krysko, Moler, Gamble, Suarez, Leone, and Roman, 2014, **Suwannee Alligator Snapping Turtle**

Not yet evaluated by the IUCN, Turtle Taxonomy Working Group Provisional Red List: Vulnerable. A Species Status Assessment is available (USFWS 2020), but the service has not yet decided on listing the species under the Endangered Species Act.

Macrochelys temminckii (Troost in Harlan 1835), **Alligator Snapping Turtle**

IUCN Red List: Vulnerable.

Macrochelys temminckii Foto: R. Gonzalez

Macrochelys temminckii Foto: S. Friedt

Based on an assessment of morphological and genetic variation in *M. temminckii*, the historically recognized monotypic genus has been proposed to comprise three species: *M. temminckii*, *M. apalachicolae*, and *M. suwanniensis* (Thomas *et al.* 2014). *M. suwanniensis* and *M. apalachicolae* are considered here as synonyms of *M. temminckii*.

The genus *Chelydra* contains three accepted species:

Chelydra acutirostris Peters, 1862, **South American Snapping Turtle**

Not yet evaluated by the IUCN, Turtle Taxonomy Working Group Provisional Red List: Near Threatened.

Chelydra rossignonii (Bocourt 1868), **Central American Snapping Turtle**

IUCN Red List: Vulnerable.

Chelydra serpentina Linnaeus, 1758, **North American Snapping Turtle**

IUCN Red List: Least Concern.

The subspecies *Chelydra serpentina osceola* has been rejected as a clearly distinguishable subspecies (Steyermark, Finkler & Brooks 2008).

In *M. temminckii* and *M. suwanniensis,* genetic differences between the populations in different river drainages have been described (Roman *et al.* 1999). For *M. temminckii*, *M. suwanniensis* and *C. serpentina*, markers for more detailed conservation genetic studies have been identified, which will be useful in genetic studies associated with informing future management decisions for the wild populations (Pearson, Kreiser & Qualls 2022).

In *Chelydra serpentina*, differences in the threshold temperatures for sex determination and in hatchling growth between northern and more southern populations have been found, indicating a geographic population structure with several conservation units (Ewert, Lang & Nelson 2004).

CoP19 Prop. 23 states, that "*While adults of the two chelydrids are distinguishable, they are not traded in high numbers internationally. Commercial trade is dominated by immature individuals, which are highly similar in appearance. For example, in both species, immatures exhibit dark coloration and have a rough carapace with three distinct keels…*", but the two genera are easily distinguished from each other by the 3 to 5 supramarginal scutes which are present in *Macrochelys* and lacking in *Chelydra*. This feature, and the strongly hooked beak in *Macrochelys,* are easily observed already in juveniles.

The three *Chelydra* species are not easily distinguished from each other. *C. rossignonii* has longer, flatter

Macrochelys temminckii Foto: R. Gonzalez

and more flaplike integumentary appendages on the head and neck, while these appendages are short, blunt and conical or cylindrical in *C. serpentina* and *C. acutirostris* (Legler & Vogt 2013).

Main Threats and Legal Protection

A recent, national assessment of *Macrochelys temminckii* has prompted the United States to propose to list *M. temminckii* as federally Threatened under its U.S. Endangered Species Act. Currently, the primary negative influences on viability of alligator snapping turtles are: legal and illegal intentional harvest (including for export), bycatch associated with commercial fishing of catfish and buffalo, habitat alteration, and nest predation (USFWS 2021).

International export of snapping turtles is primarily composed of immature individuals, and they are traded in large-scale quantities (cited from CoP19 Prop. 23), but especially the juvenile Alligator Snapper turtles live in small streams with a lot of structure (e.g., tree root masses, stumps, submerged trees, etc.) and with a high percentage of canopy cover (USFWS 2021), which makes catching them in their natural habitats by netting or trapping very unlikely. It is therefore highly plausible that many of the exports are labelled as "wild caught" in the CITES trade database, but nearly all of the turtles in this category were likely hatched in a captive facility, … but the farms do not explicitly label these as captive-bred or captive-born because they cannot prove lawful acquisition of founder stock (USFWS 2021).

Because of their long lifespan and high trophic level, chelydrid turtles are especially susceptible to the bioaccumulation of environmental contaminants like heavy metals or pesticides, which affect reproduction and embryo development (Thompson *et al.* 2018, DiGeronimo *et al.* 2018).

This proposal further aims to transfer the other North American chelydrid, common snapping turtle (*Chelydra serpentina*), from Appendix III to Appendix II because of enforcement concerns related to its morphological similarities with *M. temminckii* when immature.

Chelydra serpentina and *Macrochelys temminckii* are being captive bred in the USA for food and also for export, and both snapping turtles, *Chelydra serpentina* as well as *Chelydra rossignonii*, are produced in breeding centres in Mexico. The illegal animal trade across the Mexican/US border is well known, and obviously several protected species are traded, among them some species which are proposed for CITES listing or up-listing at the actual CoP19. Since these two *Chelydra* species are quite similar at first sight, it might well be that *Chelydra rossignonii* is internationally traded as well, even from the territory of the United States.

On the Red List of Mexico *Chelydra serpentina* is specially protected, but *Chelydra rossignonii* has no protection status in Mexico. It is said to be protected in Guatemala, but details are not ascertainable. For *Chelydra acutirostris* no protection seems to be in place in its range countries.

Chelydra serpentina is classified as invasive species in several countries. The CITES Trade database even contains some exports of "wild" sourced Snapping turtles from Hong Kong.

Conservation Actions Needed

The habitats of the chelydrid turtle species should be better protected from environmental pollution, and for the endangered species the natural habitats should be restored.

For *M. suwanniensis*, increased enforcement of state laws or law enforcement presence is needed to reduce poaching or bycatch on illegally set trot or limb lines. Besides habitat modifications long term female population augmentation could be necessary, by implementing head starting and captive breeding programs by federal, state, and non-governmental organizations (USFWS 2020).

Captive Breeding

Macrochelys spp. have been captive bred in the US at least since the early 1990's (Platt 1994), and produced in great numbers for export even before 2006 when this species was listed under CITES Appendix III (Weissgold 2010). For *M. suwanniensis* no licensed breeding farms are known (USFWS 2020).

In China *Macrochelys sp.* and *Chelydra sp.* have been farmed from the early 2000's on (CITES 2002, Shi *et al.* 2008). From the available photos of these breeding farms, it could not be discerned which of the species of these two genera are being bred there.

Chelydra serpentina had been captive bred in Europe already in the 1960's (Lehmann 1966) and in China this species is also successfully farmed. *Chelydra rossignonii* is being commercially farmed in small numbers for the pet trade in southern Veracruz, Mexico (van Dijk *et al.* 2007). *Chelydra acutirostris* is being captive bred at a small scale in Ecuador (Grünewald 2008). All three species are kept and sometimes bred in European Zoos. Private breeding still occurs in Germany, mainly in *Chelydra serpentina*, but since private keeping is restricted, most eggs are discarded and (now unwanted) new hatchlings mostly come from undetected nests in the enclosure.

DGHT Position: Reject

Macrochelys temminckii had been listed under CITES Appendix III since 2006, and *Chelydra serpentina* since 2016. The actual proposal includes the North American species *Macrochelys suwanniensis*, *M. temminckii*, and *Chelydra serpentina*, which are proposed for transfer from CITES Appendix III to Appendix II, and excludes *C. acutirostris* and *C. rossignonii*, because "these two species are geographically separated from North American chelydrids and are unlikely to be encountered in trade from the United States", but the CITES Trade Database lists quite some exports of "*Chelydra serpentina*" from Mexico (of doubtable source code "captive bred", see Pfau *et al.* 2021).

The transfer of these two species on CITES Appendix II is not justified.

Both *Macrochelys* species are threatened by incidental, and in southern locations also by intentional, illegal, trapping, and usage for food, as are the Snapping turtles throughout. Legal international trade of wild-caught turtles or turtle products, even towards the Far East countries, is not a major concern.

Cited from CoP19 Prop. 23: „*Given the potential contribution of international trade to wild harvest, combined with M. temminckii's slow life history and low, declining national population numbers, it is necessary to include this species in Appendix II to complement existing domestic measures and ensure that use is sustainable and international trade is not detrimental to wild populations. It will complement State efforts to manage this species and regulate harvest*." The conclusion from this statement is that the Annex 2(a) Criterion B is not met, since harvesting from the wild and legal trade are already regulated, the breeding farms are licensed and should be supervised, and export permits should not be issued for illegally collected animals. The legal export is therefore an enforcement problem, and not relevant for listing these species under CITES Appendix II.

Listing *Chelydra serpentina* under CITES Appendix II as well has been justified by: „*The inability to easily distinguish the two species could present opportunities for laundering the more threatened M. temminckii as C. serpentina. Accordingly, inclusion of C. serpentina in CITES Appendix II is necessary to ensure that trade in M. temminckii is regulated effectively…*". Our opinion is that the Annex 2(b) Criterion A for *Chelydra serpentina* is not met, since the two Chelydrid genera are distinguishable, even as immature animals, by obvious morphological characters.

Morphological differences among the tree *Chelydra* species are subtle, and they are unlikely to be distinguishable by non-experts in trade based on visual observation, particularly as immatures. Our opinion is that for this reason all *Chelydra* spp. should be listed under the same CITES Appendix.

We recommend that the more endangered species *Macrochelys suwanniensis, Chelydra acutirostris* and *Chelydra rossignonii* should be listed under CITES Appendix III.

Additional Remarks

The national protective laws should be better enforced to really prosecute illegal captures, and the breeding farms should be closely monitored to prevent replenishment of deceased or escaped breeder animals with wild-caught turtles.

The customs officers and the inspectors should be trained in species identification.

For better identification of the population of origin of confiscated animals, and for a survey of the geographic population structure, genetic marker systems should be developed further.

Chelydra serpentina Foto: B. Pfau

CoP19 Prop. 24: *Graptemys barbouri* (Carr and Marchand, 1942), *G. ernsti* (Lovich and McCoy, 1992), *G. gibbonsi* (Lovich and McCoy, 1992), *G. pearlensis* (Ennen, Lovich, Kreiser, Selman and Qualls, 2010), *G. pulchra* (Baur, 1893) Broad-headed map turtles – Include in Appendix II

Graptemys barbouri Foto: B. Pfau

Transfer five species of broad-headed map turtles of the Genus Graptemys: *Graptemys barbouri*, *Graptemys ernsti*, *Graptemys gibbonsi*, *Graptemys pearlensis*, and *Graptemys pulchra* from Appendix III to Appendix II in accordance with Article II paragraph 2(a) of the Convention, satisfying Criterion B, Annex 2a of Resolution Conf. 9.24 (Rev. CoP17.

All other *Graptemys* spp. remain in Appendix III.

Proponent: United States of America

Taxonomy

The Turtle Taxonomy Working Group (2021) lists five species in the so-called broad-headed map turtle group:

Graptemys barbouri (Carr and Marchand, 1942)

G. ernsti (Lovich and McCoy, 1992)

G. gibbonsi (Lovich and McCoy, 1992)

G. pearlensis (Ennen, Lovich, Kreiser, Selman and Qualls, 2010)

G. pulchra (Baur, 1893).

Praschag *et al.* (2017) showed in their genetic analysis that these five species form a distinct genetic cluster, the megacephalic clade, and that the latter four might even be conspecific.

Population Status and Main Threats

On the IUCN Red List these five species are assessed as:

Graptemys barbouri: Vulnerable

G. ernsti: Near Threatened

G. gibbonsi: Endangered

G. pearlensis: Endangered

G. pulchra: Near Threatened.

Habitat loss and degradation is a leading cause of population decline. For the broad-headed *Graptemys* spp., the removal of logs or snags, channelization or impoundment, contaminants from urban and industrial sources, gravel mining and sedimentation are the most serious threats (Ennen, Lovich & Jones 2016).

Graptemys have a marked sexual dimorphism: Females get much larger than males, and in the broad-headed map turtles the females can attain carapace lengths of up to nearly 30 cm, while males are comparatively small with carapace lengths of usually less than 15 cm. Even these large female turtles are kept as pets. Internet searches in May 2022 revealed the presence of multiple advertisements for broad-headed map turtles for national sale in the US, and, based on population surveys, Lindeman *et al.* (2020) proposed U.S. Endangered Species Act listing for *Graptemys pearlensis* and the other, similar looking species, which would prohibit their collection from the wild for the pet trade.

The numbers of broad-headed *Graptemys* turtles in the international trade is very low: Since all *Graptemys* spp. have been listed on CITES Appendix III since 2006, the quantity of wild-caught animals in the legal international trade can easily be determined from the CITES Trade Database (UNEP-WCMC 2022):

Graptemys barbouri: none between 2006 and 2021

G. ernsti: 2 specimens in 2013, for scientific purposes. No living animals in this interval.

G. gibbonsi: 2 specimens in 2013, for scientific purposes. No living animals in this interval.

G. pearlensis: 6 wild-caught live animals in 2018 and one additional live animal with the source code "f".

G. pulchra: none.

In 2021, the U.S. Fish and Wildlife Service announced that it intends to list *Graptemys pearlensis* as Threatened under the Endangered Species Act, and the other four broad-headed map species as Threatened due to similarity of appearance. Two „sawback" species of map turtles are already protected by the U.S. Endangered Species Act: *Graptemys oculifera* and *Graptemys flavimaculata* were listed as Threatened in 1986 and 1991, respectively. Nevertheless 800 *G. oculifera*, which had not been labelled with any code for being captive bred, have been exported to Great Britain in 2014 and 2015 (UNEP-WCMC 2022).

Several US states have species-specific regulations for the broad-headed map turtles, but a nation-wide legal protection is lacking. Alexander (2018) explains that listing map turtles under any CITES Appendix is not enough, and the federal protection under the Endangered Species Act would be really necessary, especially for *Graptemys pearlensis*.

Since the isolating mechanisms preventing hybridization in *Graptemys* are well-developed (Myers 2008), catching hybrids in numbers the wild is unlikely. Therefore, the export of very high numbers of wild-caught "*Graptemys* hybrids" from the USA, from 2011 on (UNEP-WCMC 2022), should be analysed in more detail, concerning proper species identification and possible violation of species-specific protective regulations.

Conservation Actions Needed

- Protecting and improving the water quality of the rivers and streams it inhabits;
- Discouraging channelization and removal of snags;
- Promoting streamside management zones and proper forest management practices within riparian zones;
- Prohibiting or further regulating commercial collecting;
- Further population surveys and systematic monitoring densities of known populations
- Further research on natural history, ecology, and the effects of recovery measures.

The conservation actions for these species should occur in synergy with efforts already underway for the conservation of the respectively syntopic small-headed "sawback" turtle species.

Captive Breeding

In 1997, breeding success from Columbus Zoo was summarized (Goode 1997), among the species they had bred is *Graptemys barbouri* (25 clutches in 8 seasons), and *G. pulchra* (13 clutches in 5 seasons).

Graptemys barbouri has already been captive bred in Germany 1995 (Tippmann 1996), and the first comprehensive report on captive breeding in Germany dates from 2001 (Schulz 2001), and in France from 2002

(Jackson & Guyot-Jackson 2002). *Graptemys gibbonsi* had been bred in captivity in Austria before 2001 (Artner 2001). The European Studbook Foundation maintained several studbooks for *Graptemys* species from 2014 on (Pfau *et al.* 2014).

DGHT Position: Reject

Listing of only the megacephalic map turtle species under CITES Appendix II is not justified, since map Turtles are mainly threatened by habitat degradation, and not by collection of wild turtles for the international pet trade. For most species the demand for pet turtles can be satisfied with captive bred turtles. An overview of the legal international trade is already possible, since all *Graptemys* have been listed on Appendix III already in 2006, but especially the exports of wild-caught turtles should be better supervised and controlled for correct species identification.

Additional Remarks

Enforcement of the U.S. Endangered Species Act listing take prohibitions, via detection of illegal collecting in the wild and illegal sale, combined with prosecution of offenders, would be of paramount importance for all these species (Lindeman *et al.* 2020).

Since species specific trade monitoring is essential for assessing the impact of the collection from wild populations in rare species in general, and in map turtles in particular, USFWS should ensure that the LEMIS database contains taxonomically accurate species codes on all shipments and should make every effort to verify the accuracy of all elements of the declared wildlife (Schlaepfer, Hoover & Dodd 2005).

Additionally, we suggest special trainings in species identification for the inspectors, as suggested below in our position on CoP19 Doc. 39.

Graptemys gibbonsi Foto: B. Pfau

CoP19 Prop. 25: *Batagur kachuga* (Gray, 1831) Red-crowned Roofed turtle – Transfer from Appendix II to Appendix I

The Proponents propose the addition of the Red-crowned Roofed Turtle (*Batagur kachuga*) to CITES Appendix I, in accordance with Article II, paragraph 1, of the Convention. *Batagur kachuga* qualifies for listing on CITES Appendix I because the species faces a high risk of extinction and is detrimentally affected by extrinsic factors, including habitat loss from pollution and hydrological projects, and overharvest for illegal consumption and the illegal international pet trade. The IUCN classifies *B. kachuga* as Critically Endangered under category and criteria A2cd+4cd (i.e., an observed, estimated, inferred or suspected population size reduction of ≥80% over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased or may not be understood or may not be reversible, based on exploitations and/or a decline in habitat.). The species meets the listing criteria for CITES Appendix I because it meets the biological criteria found in Resolution Conf, 9.24 (Rev. CoP17), Annex I, specifically paragraph C(ii):

C: A marked decline in the population size in the wild, which has been:

ii) inferred or projected on the basis of any one of the following:

– a decrease in area of habitat;

– a decrease in quality of habitat;

– levels or patterns of exploitation;

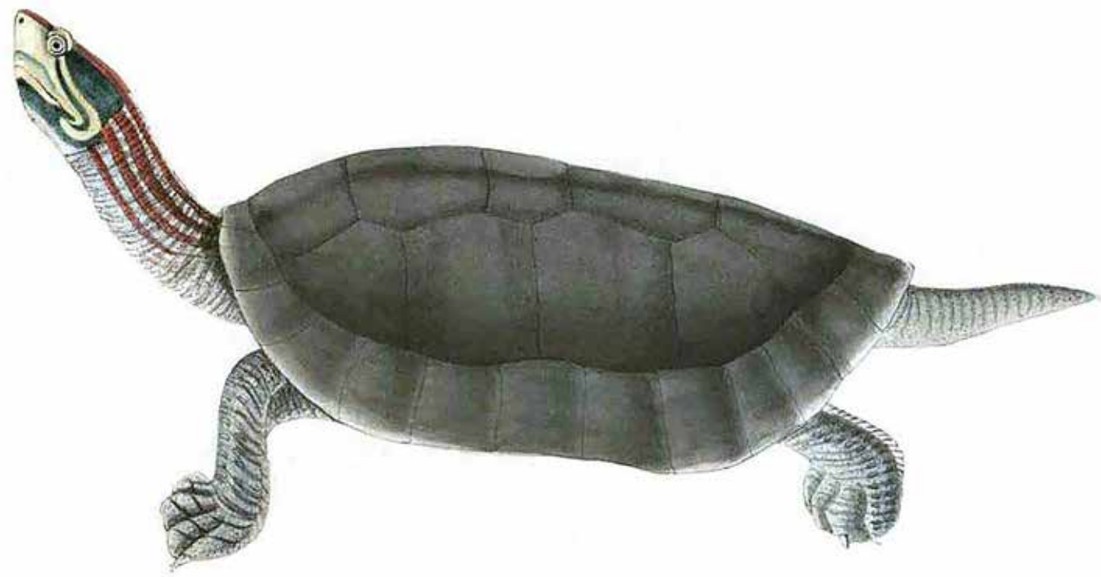
– a high vulnerability to either intrinsic or extrinsic factors; or – a decreasing recruitment.

B. kachuga is or may be affected by trade because live specimens of the species, particularly males, are recorded to have been found in international trade and recent records show that trade is ongoing (UNEP-WCMC; Praschag *et al.* 2019). Due to the ongoing decline in the species' population and continued threats to the species, both of which are expected to continue into the future, any trade in the species will have a detrimental impact on its status.

Proponent: India

Taxonomy

Batagur kachuga has been described as *Emys kachuga* by Gray in 1831 (plate 74), but in the same book, on p. 23, he gave the name *E. lineata* for the same turtle species. Smith (1931) synonymized these and assigned the turtle to the genus *Kachuga*, which means that more relevant information on this turtle species can be found when using this genus name.



Batagur kachuga Foto: Public domain, via Wikimedia Commons

Males in breeding coloration are unmistakable (Whitaker & Yelanka 2021), but the brown-headed females can be confused with *Batagur baska* females (discussion in Turtle Taxonomy Working Group 2021).

Population Status and Main Threats

All the species of *Batagur* have been assessed as Critically Endangered on the IUCN Red List. *Batagur kachuga* has always been considered as very rare. In the IUCN Red List, it had been assessed as Endangered in 1996, and as Critically Endangered in 2000, long before the actual reassessment (Praschag *et al.* 2019). In the past 12–13 years, no reliable records of *Batagur kachuga* are known except from the Chambal River, and, despite a lack of quantitative data, an inferred population reduction of at least 80% in the past 50 years, and ongoing, is realistic.

Batagur kachuga is among the 25 tortoise and freshwater turtle species with the highest risk of extinction (Stanford *et al.* 2020).

The main threat given in Stanford *et al.* (2020) is exploitation for local egg and meat consumption, followed by exploitation for trade (pets, food, medicine) and habitat loss, degradation and fragmentation. *Batagur kachuga* has been recorded in both the subsistence/local and international food market, and also in the international pet market. Harvesting of this species has resulted in large-scale declines (Praschag *et al.* 2019).

In the social media there are several "proud" photos of *Batagur kachuga* of both sexes, obviously being kept in different Asiatic countries, but no information on the legal trade of these animals could be found.

Conservation Actions Needed

Ensuring the occurrence of viable populations inside effectively protected areas is a prime conservation priority. Status surveys across its range are urgently needed, as is monitoring of key populations and studies of natural history. Engaging local communities to minimize exploitation and accidental capture and disturbance is probably essential (Praschag *et al.* 2019).

It seems necessary to establish genetically managed ex situ breeding like the breeding project for the similarly rare and endangered *Batagur baska* (Spitzweg *et al.* 2018).

Captive Breeding

Breeding attempts of *Batagur kachuga* are mentioned in Choudhury, Bhupathy & Hanfee (2000), but the first successful breeding obviously occurred ca. 2005 (Basu *et al.* 2006), and since then there are regular records on breeding this species in the Madras Crocodile Bank (Whitaker 2009, Whitaker 2010).

No real information on keeping or breeding this species outside of India has been published, but the CITES Trade Database shows some trade in the species since 2000, including the import of live captive-bred turtles for commercial trade purposes in 2005 and 2006 (6 and 8 turtles, respectively) into Japan from Lebanon, which reportedly originated in Kazakhstan (cited from CoP19 Prop. 25, see also UNEP-WCMC 2022).

DGHT Position: Support

Batagur kachuga should be listed under CITES Appendix I to better survey the legal international trade, and get more information on the real origin of the traded animals which have been labelled as being captive bred.

Additional Remarks

The international exchange of breeding stock animals for ex situ breeding, and the export / import of samples for genetic research should be facilitated and supported by the scientific authorities of India, even if the species would be listed under CITES Appendix I.

CoP19 Prop. 26*: Cuora galbinifrons* Bourret, 1940 Indochinese Box Turtle – Transfer from Appendix II to Appendix I

Transfer of *Cuora galbinifrons* from Appendix II to Appendix I, in accordance Article II, paragraph 1 of the Convention. The species meets the biological criteria found in Annex 1 of Res. Conf. 9.24 (Rev.CoP17), under criteria A (a small population in the wild with high intrinsic vulnerability) and C (past and ongoing severe decline due to exploitation).

Taxonomy

Cuora galbinifrons s. str. is the nominate species for the "*Cuora galbinifrons* group", which consists of three closely related species. Two of these species, *C. bourreti* and *C. picturata*, had been transferred from CITES Appendix II to Appendix I at the CoP18, but this species remained in Appendix II at that meeting.

Cuora galbinifrons s.str. currently has no accepted subspecies, but there are subtle differences in coloration and perhaps in ecology of different local forms of this species, but the genetic analysis of the samples from the different locations is not yet been completed and published (see Pfau 2022).

Population Status and Main Threats

All three species of the *Cuora galbinifrons* group are assessed as Critically Endangered, with a decreasing population trend, on the IUCN Red List.

The primary threat to *C. galbinifrons*, as well as for the other two species, has been the collection for the pet and Asian consumption trade. Turtles encountered are still collected, regardless of legal protection status or location inside protected areas. Collected turtles are traded, mostly illegally, and often in mixed species transports, through a network of traders at the local, district, and provincial level before being exported or consumed. *C. galbinifrons* is legally protected from exploitation in all range countries, but enforcement may be insufficient to prevent ongoing illegal trade. Inclusion in Appendix I is expected to more effectively address illegal trade in this species, as it is already in the two other species of this species group.

Another major threat factor in the natural habitat is the conversion of the forest into plantations, and thus the loss of habitat.

Conservation Actions Needed

Besides habitat protection and enforcement of the laws, it will be necessary to identify the different conservation units within this species, to prevent genetic pollution when releasing confiscated turtles into the natural populations.

Captive Breeding

There are several well-managed ex situ breeding projects for all three species of the *Cuora galbinifrons* group in zoos and with private people in Europe and the US (Pfau 2022), and great care is taken not to mix the differently-looking local forms of *C. galbinifrons* within these captive populations (Becker 2019).

Farming has been tried in China, but the production of great numbers of these species is rather unlikely, and every breeder should be registered and carefully monitored.

DGHT Position: Support

The three species of *Cuora galbinifrons* sensu lato should be included in the same Appendix of CITES, and inclusion in Appendix I is justified for all of them.

Additional Remarks

The international exchange of breeder animals between the different ex situ breeding groups should be encouraged, and the export of samples collected from wild-caught turtles for genetic research should be facilitated, in order to gain more information on locally adapted "conservation units" in *C. galbinifrons*, below the taxonomic species / subspecies level.

Cuora galbinifrons Foto: B. Pfau

CoP19 Prop. 27: *Rhinoclemmys* spp. Neotropical wood turtles – Include in Appendix II

Inclusion of the neotropical wood turtles of the genus *Rhinoclemmys* in Appendix II in accordance with Article II 2a and II 2b of the Convention.

International legal and illegal trade in these species is increasing. *Rhinoclemmys* is the only geoemydids genus which is currently not represented in the CITES Appendices, and interest in species of this genus appears to have increased dramatically in recent years as other geoemydids have become increasingly difficult to obtain.

Proponents: Brazil, Colombia, Costa Rica, and Panama

Taxonomy and Red List assessments, and Legal Protection

According to the Turtle Taxonomy Working Group (2021) there are nine species in this genus, with the following IUCN Red List or the TTWG Provisional Red List status:

Rhinoclemmys annulata – Near Threatened

R. areolata – Near Threatened

R. diademata – Vulnerable

R. funerea – Near Threatened

R. melanosterna – Least Concern

R. nasuta – Near Threatened

R. pulcherrima – Least Concern

R. punctularia – Least Concern

R. rubida – Near Threatened.

In México *R. areolata* and *R. pulcherrima* are listed as Threatened (Amenazada) and *R. rubida* is under special protection, and in some other range countries the local *Rhinoclemmys* spp. may be included on their Red Lists, but obviously without consequences, since no protective legislation in any of these countries is specified in CITES CoP19 Prop. 27.

"*Trade impacts on Rhinoclemmys spp. have not been studied, but can be expected to increase, since over-exploitation and habitat loss reduce the availability and affordability of Asian geoemydids turtles which could perhaps be replaced on the pet market by Rhinoclemmys spp.*" (from CoP19 Prop. 27). The proposal does not mention that mostly captive bred Asian geoemydid turtles are in the pet trade, which are and will be available and affordable, and that also quite some *Rhinoclemmys* spp. are also being captive bred in large quantities for the domestic pet market in the range countries, thus reducing collection pressure on the wild populations. No information is available on the wild populations, except for occasional scientific studies at specific sites, and there are no population monitoring programs in place for any *Rhinoclemmys* species.

Rhinoclemmys diademata Foto: B. Pfau

Population Status and Main Threats

The most often mentioned threat is habitat degradation / loss, and for some species the intentionally lit dry season fires are an additional menace.

In some regions these turtles are still collected for consumption or traditional medicines. None of the assessments list the collection for the international trade as a threat for any species or subspecies of *Rhinoclemmys*, and the trade volume with wild-caught turtles is low.

Conservation Actions Needed

Choosing the pretty *Rhinoclemmys* species as umbrella species might help to protect the habitats more effectively (Lourenço-de-Moraes *et al.* 2021).

Captive Breeding

In the countries of origin there are quite some large breeding farms for different *Rhinoclemmys* species. In Europe, mainly *R. pulcherrima* has been regularly been captive bred from the 1970s on (Pauler 1980). It is true that many of the *Rhinoclemmys* which were imported into Europe as replacements for other popular pet turtles, which had recently been subjected to trade regulations, did not do well, because they had been kept too dry during collection for transport and until sale (Pawlowski & Krämer 2006). But in the hands of experienced private turtle keepers many of these imports could be acclimated, and now all *Rhinoclemmys* species are kept and bred in Europe and Asia (Ettmar 2020) and captive bred offspring is regularly offered in specialist social media groups.

DGHT Position: Reject

None of the *Rhinoclemmys* species should be included in CITES Appendix II under the provisions of Article II, paragraph 2 (a), because they all do not satisfy the criteria listed in Annex 2 a, and neither any of these species should be included under the provisions of Article II, paragraph 2 (b), because they all do not satisfy the criteria listed in Annex 2 b. The very general statement "*Interest in species of this genus seems to have increased dramatically in recent years as other geoemydids have become increasingly difficult to obtain*" cannot be verified. No overview on an increase of collection from the wild for export is given, and no indication that any wild population is threatened by unsustainable collection for the international trade could be found.

Additional Remarks

We would recommend that the range countries of the different *Rhinoclemmys* species list "their" *Rhinoclemmys* sp. under CITES Appendix III, as soon as they have the appropriate legislation in place and as soon as the population monitoring indicates significant collection for the international trade.

Rhinoclemmys pulcherrima manni Foto: B. Pfau

CoP19 Prop. 28: *Claudius angustatus* (Cope, 1865) Narrow-bridged musk turtle – Include in Appendix II

Inclusion of *Claudius angustatus* in CITES Appendix II, in accordance with Article II Paragraph 2a of the Convention and satisfying Criterion A in Annex 2a of Resolution Conf. 9.24 (Rev. CoP17).

Proponent: Mexico

Taxonomy

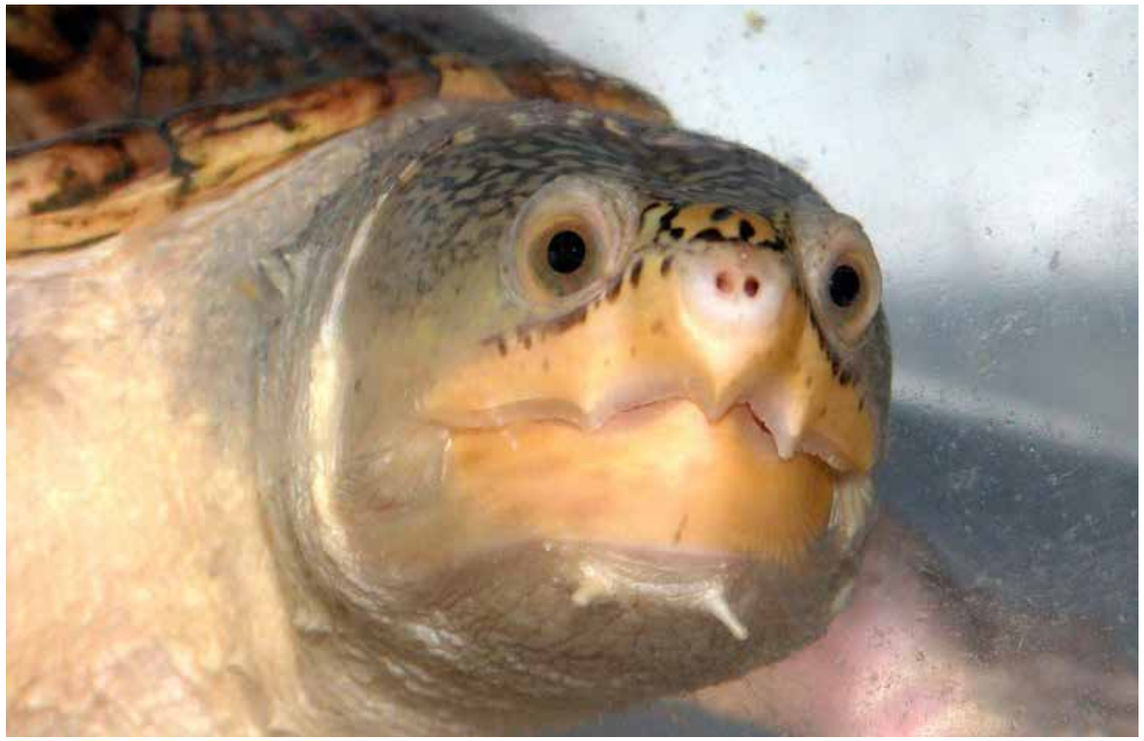
Claudius is a monotypic genus, *Claudius angustatus* being the only species. There are no accepted subspecies, but the early imports into Europe fell into two groups: The „small form", said to originate from the Rio Tlacotalpan, Veracruz, Mexico, with both sexes attaining a carapace length of 11–12 cm, and females depositing only 2 to 4 eggs per clutch. The geographic origin of the „large form" is not known; the carapace is more roundish, and in fully grown males usually 18 cm long, in females 14 cm, and the clutch size is up to 8 eggs (Schilde 2001, Klawonn 2018). A morphometric analysis of samples from different localities in Mexico did not indicate two separate forms (Reynoso, Vázquez Cruz & Rivera Arroyo 2016), and a more precise genetic analysis as planned in Pfau *et al.* (2021) could not be performed, because the permit for sending the samples from Mexico to the specialized laboratory in Germany could not be obtained.

Population Status and Main Threats

No population surveys have been published, but several published and unpublished observations which indicate that many of the different wild populations are decreasing.

In Mexico, *Claudius angustatus* is listed as „in danger of extinction" (P) in the Norma Oficial Mexicana NOM–059–SEMARNAT–2010 (Macip-Ríos *et al.* 2015), and in Guatemala it is „Endangered", which means that the collection of wild turtles is strictly forbidden, except, in rare cases, for licensed breeding stock for the wildlife management centres. In these centres the mortality is high and there is not much reproduction. Nevertheless, between 2015 and 2020, the Mexican Dirección General de Vida Silvestre licensed the export of 10,371 live *Claudius angustatus* (Reynoso & Vázquez Cruz 2021).

The main risks to *C. angustatus* populations are illegal capture for meat consumption and capture for sale as pets. The sale of the meat generates significant income for fishermen and the local communities. The shell



Claudius angustatus Foto: B. Pfau

is used medicinally to cure respiratory diseases, and the eggs are consumed as an aphrodisiac. Besides this traditional use, some seafood restaurants still have these turtles on their menu. Animals which are sold legally in Mexico are said to be captive bred, but in this species captive breeding in those large numbers under the circumstances as described for the licensed wildlife management units is unplausible, and it is well possible that many of the turtles on sale were in fact illegally wild caught.

The second most important threat is the reduction of their habitat through land use change for agriculture, livestock and urban development.

Conservation Actions Needed

There are currently no programs in place to monitor the collection of *C. angustatus* individuals from the wild and no reintroduction or reintroduction programs. Breeding and rearing only occurs in the wildlife management units, and these turtles are for sale, not for reintroduction into the wild. It is possible that turtles are illegally collected from the wild and sold as if they were from captivity.

It is important to implement genetic studies for paternity analysis in authorized farms, and to be able to recognize those turtles that come from the wild. Other marking methods could also be used for the traceability of individual turtles (Reynoso & Vasquez Cruz 2021).

Captive Breeding

In Mexico, legal harvesting, breeding and trade in the species takes place in actually five licensed wildlife management units, which are located within the potential distribution of the natural population of this species. Only the trade in captive bred turtles, for pets and as meat, has been authorized (as cited from CoP19 Prop. 28). Breeding this species under commercial conditions in large numbers is unlikely, and the breeding conditions found by Espejel González (2004) in such an enterprise do not suggest real captive breeding and raising the permitted number of turtles to be sold. The current information on the breeding method and on the expected productivity of each of the wildlife management units, which are licensed for breeding *Claudius angustatus*, is not known.

There are several breeding groups of *Claudius angustatus*, mainly of the "large form", in Europe, which usually can be traced back to the imports in the 1960s (Schilde 2001, Klawonn 2018, Pfau *et al.* 2021). Key factors for successful breeding of this rather aggressive species are keeping the animals individually, with supervised mating, egg incubation with diapause, brumation, and a good feeding regime, avoiding overfeeding (Klawonn 2018).

DGHT Position: Reject

There is no justification for listing *Claudius angustatus* under CITES Appendix II, since none of the given criteria has been met.

The main reason given in CoP19 Prop. 28 for listing this species under CITES Appendix II is the illegal local trade, which will not be regulated by listing the species under CITES Appendix II. The legal international trade is not significant when comparing the number of licensed exports to the numbers of turtles which are collected illegally for food and domestic trade and for international trafficking.

Additional Remarks

We suggest the facilitation of international exchange of samples collected from wild-caught turtles for genetic research, in order to gain more information on locally adapted "conservation units" below the taxonomic species / subspecies level. With better knowledge on the threats for each of these populations, specific conservation measures could be planned and realized to prevent their possible extinction.

CoP19 Prop. 29: *Kinosternon* spp. (except the species included in Appendix I) *Mud turtles* – Include in Appendix II

- Inclusion of the genus *Kinosternon* (20 species) in Appendix II (with the exception of those listed in the following paragraph, in Appendix I), in accordance with the criteria in Resolution Conf. 9.24 (Rev. CoP17):

- Annex 2a criterion A: *Kinosternon abaxillare*, *K. alamosae*, *K. chimalhuaca*, *K. hirtipes*, *K. oaxacae*.

- Annex 2a Criterion B: *Kinosternon acutum*, *K. baurii*, *K. flavescens*, *K. integrum*, *K. leucostomum*, *K. scorpioides*, *K. subrubrum*.

- Annex 2b Criterion A: *Kinosternon angustipons*, *K. creaseri*, *K. dunni*, *K. durangoense*, *K. herrerai*, *K. sonoriense*, *K. steindachneri,* and *K. stejnegeri*.

- Inclusion of *K. cora* and *K. vogti* in Appendix I in accordance with criteria A (i, ii, iii, v) and B (i, iii, iv) of Annex 1 of Resolution Conf. 9.24 (Rev. CoP17).

Proponents: Brazil, Colombia, Costa Rica, El Salvador, México, Panama, and the United States of America

Taxonomy

There are actually 22 species in this genus, 20 of them are proposed for inclusion in Appendix II and the two recently described species are proposed for inclusion in Appendix I.

Widespread species with significant documented phylogeographic differentiation in the form of recognized subspecies or genetically-defined lineages and Evolutionary Significant Units (ESUs) or Management Units (MMUs) may eventually warrant recognition as multiple taxa at the species level. Some species that fall into this category include *Kinosternon hirtipes*, *K. integrum*, *K. scorpioides*… (Turtle Taxonomy Working Group (2021), see also Weaver *et al.* (2022) who suggest changes to subspecies designations to more accurately reflect the evolutionary relationships among populations and assess threats to each subspecies.

Population Status and Main Threats

Actually 27 taxa within the genus *Kinosternon* have been assessed in the IUCN Red List.

One subspecies, *Kinosternon hirtipes megacephalum*, has gone extinct in the 1960s.

6 taxa have been assessed as "Critically Endangered":

Kinosternon hirtipes hirtipes, *K. h. chapalaense*, *K. h. magdalense*, *K. h. tarascense*, *K. sonoriense longifemorale* and *K. vogti*.

Kinosternon sonoriense Foto: M. Meijer

"Vulnerable" are 4 taxa:

Kinosternon abaxillare, *K. angustipons*, *K. cora* and *K. dunni*.

Three taxa have been assessed as "Near Threatened", and 14 are of least concern.

For the subspecies of *K. hirtipes*, the NatureServe Conservation status rank was assessed by Weaver *et al.* (2022). This assessment revealed that all lineages within *Kinosternon hirtipes* are insecure (global, national, and subnational ranks < 3), while the northernmost population of *K. h. murrayi* was even assessed as globally imperiled, and would need urgent conservation actions (for an explanation of the methodology see Faber-Langendoen *et al.* 2012, and for the risk factors in this assessment method see Master *et al.* 2012).

On the updated "Lista de Especies en Riesgo" of Mexico (Semarnat 2019) two taxa are classified as "P" (En peligro de extinción):

Kinosternon sonoriense longifemorale and *K. vogti*.

Eight species are „Pr" (Sujeta a protección especial):

Kinosternon acutum, K. alamosae, K. herrerai, K. hirtipes, K. integrum, K. leucostomum, K. oaxacae and K. scorpioides.

Obviously *Kinosternon abaxillare*, a Mexican micro endemic species which had been assessed as "Vulnerable" on the IUCN Red List, has not been listed in this update of the Norma Oficial Mexicana NOM–059–SEMARNAT–2010.

For *Kinosternon cora* no Mexican red list status or special protection could be found.

In Meso- and South America all species are protected by national laws.

For the critically endangered *K. abaxillare* the main threats are compiled as: "*Most species of the genus Kinosternon have been consumed locally in south-eastern Mexico for subsistence … They are one of the most popular animals for local people to keep as pets. In addition, K. abaxillare is likely to be highly affected by the degradation of ecosystems for conversion sites for agriculture, contamination of waters with pesticides, and the effect of annual fires to clean up crop sites*".

For most other *Kinosternon* species the main threat is loss or pollution of the water bodies where they live in.

International trade is not mentioned as a threat for any species except for *K. vogti*, for which a growing demand has been observed, because the yellow nose in males seems to increase its appeal among hobbyists, but even for this species urbanization and human population growth causing habitat loss in the Ameca River valley appear to be the main threats. Competing turtle species also represent a potential threat to *K. vogti*, since it occurs microsympatrically with *K. integrum*, a species that has the potential to displace *K. vogti*. There is also a documented presence of non-native turtle species throughout the range of *K. vogti* (Cupul-Magaña 2022).

Conservation Actions Needed

Habitat degradation is one threat [for many *Kinosternon* spp.] that can be addressed with cost-effective measures, such as building erosion control structures, repairing dams, and removing silt from impoundments, which should increase the probability of long-term viability of populations throughout the range of the species (Stone *et al.* 2014).

For *Kinosternon abaxillare* and *K. sonoriense* ex situ breeding is recommended in the IUCN Red List (IUCN 2022), and for some of the subpopulations within *K. hirtipes*, Weaver *et al.* (2022) suggest captive breeding programs for augmenting their genetic variation, which may prove valuable for their long-term persistence even in the face of the other threats.

Captive Breeding

Kinosternon scorpioides is farmed in Brazil in small and large breeding enterprises for local consumption (summarized in Pfau & Pempelfort 2018). CoP19 Prop. 29 mentions captive breeding in many countries of origin, but it is not really clear how these breeding facilities are licensed and monitored.

Many *Kinosternon* species have been successfully kept and bred in Europe from the 1970s on (Sachsse 1977).

A special challenge for captive breeding is the diapause during egg development, which in necessary or recommended for breeding success in many *Kinosternon* species (Ewert 1991, Horne 2007). Artner (2009) has extensively discussed the relevance of the diapause for captive breeding. Perhaps this information was not available for the rather unsuccessful in situ breeding attempt with *Kinosternon sonoriense longifemorale* (Long 2018). Besides the need for diapausing in early or late season clutches for incubation success, the necessity of brumation for breeder adults for many species, and the intraspecific aggressivity of many *Kinosternon* spp. should be addressed when trying to produce captive bred hatchlings in large quantities, as summarized in Schilde (2001).

Many of the *Kinosternon* spp. that have been offered on internet trade platforms are in fact captive bred offspring of turtles that had been acquired long ago (under the scientific names that were valid for them at the time of import). Since the scientific names have changed a lot until recently (Turtle Taxonomy Working Group 2021), it is possible that captive bred animals of newly described turtle species are being offered, only because their parents have now been assigned the currently valid scientific name.

DGHT Position: Reject

It is not justified to list all the *Kinosternon* species under CITES Appendix I or II, since there is no indication for unsustainable collection from the wild for the legal international trade. For trained inspectors it is not really difficult to determine the different species correctly.

Most *Kinosternon* species are kept and bred in large quantities all over the world, and most mud turtles in the international trade are captive bred.

Additional Remarks

The DGHT suggests the following approach:

1. Listing *Kinosternon vogti* under CITES Appendix I

The suggested listing of the critically endangered *Kinosternon vogti* López-Luna, Cupul-Magaña, Escobedo-Galván, González-Hernández, Centenero-Alcalá, Rangel-Mendoza, Ramírez-Ramírez & Cazares-Hernández, 2018, under Appendix I, in accordance with Article II, paragraph 1, is justified, since this species meets Criterion A. Additionally, there is obviously interest for this rare and endangered species in the international trade, even if it could not be clarified whether the male advertised by a well-known turtle dealer had already been smuggled out of Mexico or whether the dealer only wanted to find out about potential buyers in China, see for example Felbab-Brown (2022).

2. Listings of certain *Kinosternon* species or subspecies under Appendix II

The available information for some other species might meet the criteria for listing them under Appendix II in accordance with Article II, paragraph 2a, Criterion B:

Kinosternon abaxillare (Baur, 1925)

K. angustipons Legler, 1965

K. cora Loc-Barragán, Reyes-Velasco, Woolrich-Piña, Grünwald, Venegas de Anaya, Rangel-Mendoza & López-Luna, 2020

K. dunni Schmidt, 1947

K. hirtipes (Wagler, 1830)

K. sonoriense longifemorale Iverson, 1981.

Since all these *Kinosternon* species can be determined by a trained inspector using the determination key, no *Kinosternon* species meets criterion A of Annex 2 b for inclusion in Appendix II.

3. Appendix III listing of *Kinosternon* spp.

In order to better monitor the international trade with wild-caught *Kinosternon* spp., all other *Kinosternon* species could be listed under CITES Appendix III by the range states.

Kinosternon cruentatum
Foto: B. Pfau

CoP19 Prop. 30: *Staurotypus salvinii* (Wiegmann, 1828) Mexican giant musk turtle and *S. triporcatus* Gray, 1864 Pacific coast giant musk turtle – Include in Appendix II

- Inclusion of the species *Staurotypus triporcatus* in Appendix II of CITES, in accordance with Article II, paragraph 2a of the Text of the Convention, as well as Criterion A in Annex 2a, paragraph B of Resolution 9.24 (Rev. CoP17).

- Inclusion of the species *Staurotypus salvinii* in CITES Appendix II in accordance with Criterion A of Annex 2b of Resolution Conf. 9.24 (Rev. CoP17) on look-alike species.

Proponents: El Salvador and México

Taxonomy

Staurotypus triporcatus is the largest mud turtle, the maximum known carapace length was 40,4 cm in a female, the largest male was 37,8 cm (Legler & Vogt 2013).

In the smaller *Staurotypus salvinii*, there are no accepted subspecies, but obviously the animals from Mexico get bigger, attaining 20–25 cm carapace length, while the "small Guatemala form" only grows to carapace lengths of 15–20 cm (Bruoth & Schaffer 2004). Ewert & Nelson (1991) mention differences in the sex determination mechanism between two breeding groups of *S. salvinii*, but no more information on the origin of these animals is given.

When fully grown, both species are easy to determine, even if color and pattern are quite variable, but smaller turtles can be confused, and since *S. triporcatus* has a higher market value, shipments of juveniles this species might contain S. salvinii as well.

Population Status and Main Threats

In the IUCN Red List both species have been assessed as "Near Threatened" in 1996.

In the Mexican Red List (Semarnat 2019), *S. triporcatus* is listed as "amenzada" and *S. salvinii* as "Sujeta a protección especial". It is expected that *S. triporcatus* could be recategorized to "P", "En peligro de extinction".

For *S. triporcatus* the main threat is the collection of preferably large individuals for consumption and sale of their meat, and their capture for the legal and illegal international trade. For Mexico, since 2000, approximately 24,500 individuals have been authorized for export, most of them in the last 10 years. the main export destination for these legal exports is China, which receives 86% of all specimens; the second is Hong Kong with 11%, and finally Japan and the USA with 2% and 1%, respectively.

S. triporcatus, and to a lesser extent *S. salvinii*, have frequently been traded in Japanese pet shops (Kameoka & Kiyono 2005), but no indication could be found that *Staurotypus* spp. are being captive bred in large numbers in Japan or in the usual pet trade partner countries.

Recently, there has been an increase in the export of meat to the international market in the Middle East (Reynoso & Vázquez Cruz 2021).

For *S. salvinii* neither the actual population size estimate nor an assessment of the main threats is available, but the tendency is probably similar. This species also lives in estuarine habitats, where the mangrove, in which they find food and shelter, is being cleared for large-scale hotel constructions (Reyes-Grajales pers. comm.).

For both species land use change towards agricultural activities with removing of the original vegetation in order to get pastureland, is reducing the suitable habitats. The turtles can survive in the remaining water bodies, but capture is much easier in these now easily accessible ponds.

Conservation Actions Needed

There are currently no programs in place to monitor the wild populations inside or outside the protected areas. Obviously, as compiled in CoP19 Prop. 30, most populations are declining. A genetic analysis of the different populations in the large area of occurrence would be necessary to find out whether there is a differentiation into distinct subpopulations which should be managed separately (see for example Pfau *et al.* 2021). Then it could be decided whether an ex situ breeding project for the most endangered populations would be necessary, if this species should really be assessed as "in danger of extinction" in near future. Collection from the wild is, of course, strictly forbidden, but obviously better law enforcement and prosecution of collectors and traders would be necessary.

Like in *Claudius angustatus* it would be important to implement genetic studies for paternity analysis in the authorized farms, to prevent the replenishment of the breeding stock with illegally caught wild turtles.

Captive Breeding

Staurotypus triporcatus has been kept and bred in Europe since 1960 (Hausmann 1964; 1966). A summary on the behavior and breeding conditions in aquaterraria is given by Bakowskie & Bakowskie (2011). This species can be kept and bred successfully in large breeding farms in Mexico (González-Porter 2011). CoP19 Prop. 30 summarizes really impressive numbers of captive bred *S. triporcatus* from the licensed wildlife management centers.

Staurotypus salvinii is more aggressive (Schmidt, 1970, Sachsse & Schmidt 1976), especially the large, Mexican, local form (Bruoth & Schaffer 2004) and it is unlikely that they can be farmed in such large numbers as *S. triporcatus*. Nevertheless, captive bred hatchlings of both *Staurotypus* species are offered in the classifieds of a large US internet platform.

DGHT Position: Reject

Listing of *Staurotypus triporcatus* species under CITES Appendix II in accordance with Article II, paragraph 2 (a), Criterion B of the Convention, is not justified, and, correspondingly, listing *S. salvinii* because of the similarity of appearance in young animals (Article II, paragraph 2 (b), Criterion A) is unnecessary.

The legal collection of animals of both species from the wild populations in Mexico already regulated, and for the international trade an export license is required. Nevertheless, illegal collection for the domestic meat and pet market is common and the given numbers of animals for the legal international trade are comparatively low. The origin of these animals or the meat from captivity or from illegal collection from the wild is obviously not monitored, despite the legal restrictions for the sale of both species in Mexico. Nothing is known on the populations and legal or illegal trade in the other range countries than Mexico.

Additional Remarks

It will be necessary to better monitor the natural populations in all the range states of both species, and to really control the trade with animals and meat sold by the licenced UMAs (Unidades de Conservación y Manejo de Vida Silvestre) in Mexico, see for example Feldab-Brown (2022).

We recommend listing both species and the populations of all the range states on CITES Appendix III to monitor the extent of the legal trade, and we suggest a coordinated effort to build up a forensic species identification system for Mesoamerican turtle meat products in the international trade.

Captive breeding, and the international trade / exchange of captive bred animals and samples for genetic research on the potentially different local populations, should be facilitated.

Staurotypus salvinii Foto: B. Pfau

CoP19 Prop. 31: *Sternotherus* spp.
Musk turtles
– Include in Appendix II

Inclusion of all species of musk turtles in the Genus *Sternotherus* spp. in Appendix II in accordance with Article II, paragraph 2(a) of the Convention, and Resolution Conf. 9.24 (Rev. CoP17), Annex 2a, as per:

b) 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.

Proponent: United States of America

Taxonomy

Currently there are 6 species in this genus:

Sternotherus carinatus (Gray, 1856), Razor-backed musk Turtle

Sternotherus depressus (Tinkle & Webb, 1955), Flattened musk Turtle

Sternotherus intermedius (Scott, Glenn & Rissler, 2017), Intermediate musk Turtle

Sternotherus minor (Agassiz, 1857), Loggerhead musk Turtle

Sternotherus odoratus (Latreille, 1802), Common musk Turtle

Sternotherus peltifer (Smith & Glass, 1947), Stripe-necked musk Turtle.

Population Status and Main Threats

Sternotherus depressus has been assessed as "Critically Endangered" in 2010 (van Dijk 2011) and has been assessed a global NatureServe Conservation status of G1 (Critically Imperiled) in 2018 (Cannings 2018). This species is listed as Threatened in the U.S. Endangered Species Act since 1987.

The other *Sternotherus* species are of "Least Concern" in the IUCN Red List– the assessment on *Sternotherus minor* also includes *S. peltifer*, which was a subspecies to this species at the time of assessment, and also *S. intermedius* which looks very similar to *S. peltifer* and *S. minor* at first glance.

Sternotherus depressus is threatened primarily by habitat destruction and alteration and secondarily by collection and disease (Dodd 2008). Additionally, introgressive hybridization with the consequence of reduced

Sternotherus minor Foto: M. Meijer

fitness of the hybrid individuals has been found, mediated by human-induced contact with *Sternotherus peltifer*, which originally lived downstream from the natural habitats of this species (Scott, Glenn & Rissler 2019). Jenkins *et al.* (2022) recently summarized the threat as follows: Declines have largely been attributed to siltation and decreased water quality from extensive coal mining, agriculture, deforestation, and impoundment – they do not mention "collection" as a threat any more.

The other *Sternotherus* species are also mainly impacted by habitat degradation, pollution and loss through impoundments and hydrological changes, which affect turtles directly as well as their molluscan prey base (cited from the IUCN Red List assessment for *S. minor*). For *S. carinatus* the assessment states: Specific populations, particularly in the Pascagoula, are under potential threat from or have actually been impacted by toxic pollutants, deadwood snag removal for navigation purposes, sand and gravel mining, sedimentation, and impoundment. Animals coincidentally caught during fishing may be killed. Some animals, mainly hatchlings, are traded as pets. None of these threats is considered to be sufficiently severe or extensive to threaten the species' survival for the foreseeable future.

Proposal CoP19 Prop. 31 states that "*Although U.S. states have legislation that regulates the collection of Sternotherus and other freshwater turtles, these species are still harvested from the wild in parts of their range within the United States and exported internationally in large commercial quantities*", which means that the national legislation is not sufficient or not enforced, and illegal harvest from the wild is still occurring, and then export permits for these animals are granted without checking how the animals had been obtained.

For the critically endangered *Sternotherus depressus* the LEMIS database states 640 animals, which were exported legally in 2018, and which were labelled as "ranched".

Conservation Actions Needed

For *Sternotherus depressus*, a more aggressive conservation management is recommended, given that there appear to be few genetically pure populations remaining (Scott & Rissler 2015).

Overall, the conservation of musk turtles will depend on the conservation of its habitat.

Captive Breeding

Sternotherus carinatus, *S. minor* and *S. odoratus* are being captive bred in large quantities in turtle farms in the south-eastern United States, and exported for example to Europe. Wild-caught musk turtles are said to be rather delicate and in low demand by importers in Europe (Sachsse 2017). In China, *S. carinatus* and *S. odoratus* are bred in large turtle farms (Zhou *et al.* 2008). These species have also been bred by hobbyists and captive bred juveniles are offered at rather low prices in pet shops and on internet platforms. *Sternotherus minor* has been captive bred in Europe since the 1970's (Sachsse 1977), *S. peltifer* since the 2000's (van den Heuvel & Klerks 2007), and husbandry and captive breeding of *S. depressus* has been described by Praschag (2005).

DGHT Position: Reject

There is no justification for listing the whole genus under CITES Appendix II, because for all the *Sternotherus* species the Annex 2(a) Criterion B is not met, since harvesting from the wild and legal trade are already regulated. All *Sternotherus* are protected at the U.S. State level, and for the collection from the wild a special license is required. Additional listing of these species under CITES Appendix II to regulate the collection from the wild for the international trade is therefore not necessary.

Sternotherus depressus would perhaps qualify for listing under CITES Appendix II, Annex 2(a) Criterion A, this should be assessed and perhaps proposed separately.

Additional Remarks

In order to better monitor the international trade with wild-caught *Sternotherus* spp., listing these species under Appendix III should be considered.

CoP19 Prop. 32: *Apalone* spp. (except the subspecies included in Appendix I) Softshell turtles – Include in Appendix II

Transfer of Genus *Apalone* spp. (Except the subspecies included in Appendix I) to Appendix II, in accordance with Article II, paragraph 2 (a) of the Convention and Resolution Conf. 9.24 (Rev. CoP17), Annex 2a as per:

a) Criteria 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

b) Criteria 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.

Proponent: United States of America

Taxonomy

The proposal includes the three US species:

Apalone ferox (Schneider, 1783)

Apalone mutica (LeSueur, 1827)

- *A. m. mutica* (LeSueur, 1827)
- *A. m. calvata* (Webb, 1959)

Apalone spinifera (LeSueur, 1827)

- *A. s. spinifera* (LeSueur, 1827)
- *A. s. aspera* (Agassiz 1857a)
- *A. s. atra* (Webb and Legler, 1960)
- *A. s. emoryi* (Agassiz 1857a)

Apalone spinifera Foto: L.A. Dawson, Public domain via Wikimedia Commons

A. s. guadalupensis (Webb 1962)

A. s. pallida (Webb 1962).

Apalone spinifera atra, which is currently in Appendix I, is not considered in this proposal and remains unchanged.

Population Status and Main Threats

The red list status of the three species is „Least Concern". The IUCN Red List assessment for *A. spinifera*, for example, list the main threats as: „While *Apalone spinifera* has long been exploited for local consumption (Webb 1962) and more recently for export of adults for food and of hatchlings as pets and for Asian farming operations, and some individuals are destroyed as nuisance bycatch by recreational fishermen, are run over when crossing roads, and populations are affected by pollution, water diversion, and water infrastructure development, the species as a whole is not threatened in its existence by present processes".

In Mexico, *Apalone spinifera emoryi* is listed as „under special protection" (Pr) in the Norma Oficial Mexicana NOM–059–SEMARNAT–2010 (Macip-Ríos *et al.* 2015).

Conservation Actions Needed

Since commercial harvest of turtles is still unregulated in some US states, the natural population of Softshell turtles, as well as of other turtles, declines in the most targeted areas (Massey 2021), and biologists and conservation organizations have begun petitioning states to close or strictly regulate commercial turtle harvest.

Nevertheless, the CITES Trade Database shows that predominantly farmed (and to a lesser extent captive bred) live North American Softshell turtles or products have been exported, even if the legal export of wild-caught turtles or turtle meat would have been possible under Appendix III listing.

Captive Breeding

In Europe, *Apalone* spp. have been kept and bred in zoos and private aquaterraria from the 1990's on (Zoologischer Garten der Stadt Frankfurt 1992, Helm 2018). Feldman & Feldman (2018) describe the farming method for *Apalone spinifera* in a Louisiana turtle farm.

DGHT Position: Reject

The international trade with the North American Softshell turtles (US populations only) is already monitored since 2016, when these species were listed under Appendix III of CITES. There is no reason for stricter regulation of the legal international trade by transferring these species to CITES Appendix II.

We suggest listing the specially protected Mexican population of *Apalone spinifera emoryi* under this CITES Appendix III as well, to get a more comprehensive picture of the international trade with wild-caught animals of all *Apalone* spp.

Additional Remarks

The domestic US protection is likely inadequate to control harvest pressure and resources. The species herein … require a wholistic macro-scale conservation approach that can monitor trade at the federal level to complement regulations already instituted by states where these species occur (cited from Proposal CoP19 Prop. 32).

CoP19 Prop. 33: *Nilssonia leithii* (Gray, 1872) Leith's softshell turtle – Transfer from Appendix II to Appendix I

The Proponents propose the transfer of the Leith's Softshell Turtle (*Nilssonia leithii*) from Appendix II to Appendix I in accordance with paragraph 1 of Article II of the Convention. *Nilssonia leithii* qualifies for listing in Appendix I of the Convention because the species faces a high risk of extinction with rapid declines in population due to loss of habitat and overexploitation for consumption and illegal trade of live animals as well as the calipee (dried, processed carapacial cartilage) (Das *et al.* 2014, Praschag *et al.* 2021). The IUCN classifies *Nilssonia leithii* as Critically Endangered under category and criteria A2cd+4cd (i.e., an observed, estimated, inferred or suspected population size reduction of ≥80%over the last 10 years or three generations, whichever is the longer, where the reduction or its causes may not have ceased or may not be understood or may not be reversible, based on exploitations and/or a decline in habitat.).

Nilssonia leithii qualifies for listing on CITES Appendix I because the species meets the biological criteria found in Resolution Conf, 9.24 (Rev. CoP17), Annex I, specifically categories A(i) and (v), B(i) and B(iv), and C(i) as follows:

A: The wild population is small, and is characterized by: (i) an inferred decline in the number of individuals and the quality of habitat; and (v) a high vulnerability to intrinsic or extrinsic factors, such as habitat loss.

B: The wild population has a restricted area of distribution and is characterized by: (i) fragmentation; and (iv) an inferred decrease in the area of distribution, area of habitat, number of subpopulations, number of individuals, and the quality of habitat.

C: There has been a marked decline in the population size in the wild, which has: (i) occurred in the past and has been observed as ongoing. *Nilssonia leithii* is or may be affected by trade because it is illegally harvested for both domestic and international food markets (Praschag *et al.* 2021), live animals as well as its calipee (Das *et al.* 2014). Due to the ongoing decline in the species' population and continued threats to the species, both of which are expected to continue into the future, any trade in the species will have a detrimental impact on its status.

Proponent: India

Nilssonia leithi Foto: Public domain via Wikimedia Commons

Taxonomy

The species was described as *Trionyx leithi*, and, based on morphology, transferred to the genus *Aspideretes* (Meylan 1987). In 2007 *Aspideretes* was synonymized with *Nilssonia* (Praschag *et al.* 2007), which now contains five rather similar-looking large softshell turtles.

Population Status and Main Threats

N. leithii had been assessed as Near Threatened in 1996, Vulnerable in 2000, but on the actual IUCN Red List this species has been aggravated to Critically Endangered (Praschag *et al.* 2021), the same category as *N. nigricans* and *N. formosa*. The other two species of the former genus *Aspideretes, N. gangetica* and *N. hurum*, are assessed as Endangered.

All the species of the genus *Nilssonia* had been caught for local consumption, but increasingly largescale exploitation for the meat trade is being observed. The trade has shifted from live animals to calipee (dried, processed carapacial cartilage) in recent years.

Pollution, sand mining and hydrological alteration of rivers are additional threats.

Conservation Actions Needed

Law enforcement is required to address illegal trade. Establishment of one or more assurance colonies, as part of a coordinated conservation breeding program, as already suggested by Vijaya (1983), should be considered.

Very little natural history and status data is available, and further surveys and conservation biology studies for the species are urgently needed. Research is needed to identify evolutionary significant lineages and their taxonomic implications.

Additionally, forensic tools to identify the processed species from meat and calipee from the trade should be developed for all the species of *Nilssonia* (Roman & Bowen 2000, Rajpoot, Bahuguna & Kumar 2019).

Captive Breeding

For *N. leithii* no captive breeding attempts are known. *N. gangetica* has been captive bred in Madras Crocodile Bank (Whitaker 2006). For *N. formosa* captive breeding in Mandalay Zoo has been mentioned (Platt *et al.* 2016. Horne, Platt & Praschag 2021), and *N. nigricans* is being kept and bred in a temple pond (Rahman 2008, Kanungo, Islam & Mamun 2020).

DGHT Position: Support

Nilssonia leithii should be listed under CITES Appendix I along with the other three species of the former genus *Aspideretes*. For *N. formosa* no proposal for up-listing has been submitted, but this species would probably meet the criteria for Appendix I listing as well.

Additional Remarks

For all *Nilssonia* species, additional genetic research, and also captive breeding in situ and ex situ, will be necessary. The international exchange of breeding stock animals and samples for genetic research should nevertheless be facilitated.

CoP19 Prop. 34: *Centrolenidae* spp. *Glass Frogs* – Include in Appendix II

The inclusion of all species of the family Centrolenidae in Appendix II.

A1. Inclusion of the following 12 species of glass frogs from the family Centrolenidae (Taylor, 1951) in Appendix II in accordance with Article II paragraph 2 (a) of the Convention and satisfying Criterion B in Annex 2a of Resolution Conf. 9.24 (Rev. CoP17).

Cochranella euknemos (Savage & Starrett, 1967)

Cochranella granulosa (Taylor, 1949)

Espadarana prosoblepon (Boettger, 1892)

Hyalinobatrachium aureoguttatum (Barrera-Rodriguez & Ruíz-Carranza, 1989)

Hyalinobatrachium fleischmanni (Boettger, 1893)

Hyalinobatrachium valerioi (Dunn, 1931)

Hyalinobatrachium iaspidiense (Ayarzagüena, 1992)

Hyalinobatrachium mondolfii (Señaris & Ayarzagüena, 2001)

Sachatamia albomaculata (Taylor, 1949)

Sachatamia ilex (Savage, 1967)

Teratohyla pulverata (Peters, 1873)

Teratohyla spinosa (Taylor, 1949)

A2. Inclusion of all other species in the family Centrolenidae (Taylor, 1951) in Appendix II in accordance with Article II paragraph 2 (b) of the Convention and satisfying Criterion A in Annex 2b of Resolution Conf. 9.24

Hyalinobatrachium fleischmanni Foto: A. Kwet

(Rev. CoP17). At the time of writing (March 2022), this family contains a total of 158 (including 2 newly described species in 2022) described species in the following 12 genera:

Celsiella (2 spp.)

Centrolene (24 spp.) and *Centrolene incertae sedis* (6 spp.)

Chimerella (2 spp.)

Cochranella (8 spp.) and *Cochranella incertae sedis* (7 spp.)

Espadarana (5 sp.)

Hyalinobatrachium (33 spp.)

Ikakogi (2 spp.)

Nymphargus (41 spp.)

Rulyrana (6 spp.)

Sachatamia (5 spp.)

Teratohyla (5 spp.)

Vitreorana (10 spp.).

Proponents: Argentina, Brazil, Costa Rica, Côte d'Ivoire, Dominican Republic, Ecuador, El Salvador, Gabon, Guinea, Niger, Panamá, Perú, Togo, and the United States of America. The table in Annex 7 of the proposal gives the range state consultations and consultations with other CITES Parties. Of the range states 7 are confirmed co-proponents, one will support the proposal at the plenary, but 10 range states did not support the proposal.

Taxonomy

According to Amphibia Web (July 2022) the family Centrolenidae actually contains 161 valid species in 12 genera, and constantly new glass frog species are being detected and described. The Glass frog genera have been reviewed by Guayasamin *et al.* (2009).

Population Status and Main Threats

153 glass frog species have been assessed in the IUCN Red List (IUCN 2022), 10 of them have the category critically endangered, 28 are categorized as endangered, and 21 as vulnerable. More than half of these species have been reassessed after the submission of CoP18 Prop. 38 (CITES 2019) The Red List assessment of such a large group is ambitious and many of these assessments could be applied to other species in this group, too (Ortega-Andrade *et al.* 2021).

The limited information related to these aspects of the population and its structure is due to the great difficulty in generating scientific field information on the status of their populations. In Latin America, investment in field research on species is very limited, so scientific data is scarce and very localized. The biggest threat for the glass frogs in the wild is habitat loss by logging or hydroelectric projects. Besides this, the spread of chytrid fungus and other diseases have already led to a dramatic decline of several populations. Other known threats include the introduction of exotic predatory fish in streams, and pollution resulting from the spraying of illegal crops.

For none of the assessed or reassessed species any threats resulting from use and trade are mentioned, but some assessments even state: "*Collection for the pet trade is ongoing in parts of its range, but at sustainable levels that do not constitute a threat to the species.*"

The CITES Proposal CoP18 Prop. 38 (CITES 2019) already mentioned the trade of glass frogs on internet platforms and trade fairs, and supposed that the traded animals had been illegally collected, but the numbers of really smuggled animals, which were summarized in that document, are quite low compared to the estimated population sizes, and the species which had been detected in the confiscated shipments have been reassessed as „Least Concern" in the IUCN Red List. Most of the mentioned offers on European internet platforms or trade fairs are in fact surplus captive bred animals (often of well-known, experienced breeders, see Annex 5 of the proposal), and if the origin of the parent animals is mentioned, this usually means that the frogs from different geographic locations are being kept and bred separately.

The proposal suggests that "Due to the multitude of environmental and pathogenic pressures that are already causing the decline of many of these species, and the increase in illegal trafficking of these species already identified, any unregulated trade is likely to be detrimental to wild populations of the entire family", but "*In consultations with range states, no population management plans were reported for glass frog species*" and "*it is also important to note that it is very difficult to do scientific field studies on the status of their populations*".

Conservation Actions Needed

For at least eight species an ex situ population may need to be established (IUCN 2022, Guayasamin *et al.* 2020):

Centrolene buckleyi

C. geckoideum

C. medemi

C. ocellifera

C. pipillata

Cochranella duidaeana

C. riveroi

Nymphargus megacheirus.

For *Nymphargus truebae*, which was assessed in 2017 as Critically Endangered and possibly extinct, the assessment specifies that "*Should it still be extant, ex situ and species recovery considerations are recommended for this species*" (IUCN SSC Amphibian Specialist Group 2017).

Especially for species or populations which are severely threatened by chytrid fungus, ex situ captive breeding is recommended (see for example Zumbado-Ulate 2019). Since glass frogs are known to reproduce in captivity when kept by experienced anuran keepers, managed ex situ breeding projects for these and other endangered species should be initiated.

Captive Breeding

Detailed publications on keeping and breeding are rare, but for example Jungfer (1984) gives details on breeding and raising tadpoles of *Hyalinobatrachium valerioi* and on the social behavior (intraspecific aggression in males) and longevity of *Espadarana prosoblepon* in the terrarium. Hoffmann (2010) compares the tadpoles

Sachatamia ilex Foto: A. Kwet

of different glass frog species of the genera *Cochranella*, *Espadarana*, *Hyalinobatrachium*, and *Sachatamia*, which were raised in the laboratory.

In Europe and elsewhere glass frogs have been continuously captive bred up to the F3 generation or more (T. Eisenberg pers. comm., K.H. Jungfer pers. comm.). The most frequently captive bred glass frog species in Europe are *Cochranella granulosa, Espadarana prosoblepon, Hyalinobatrachium aureoguttatum, H. fleischmanni, H. valerioi, Sachatamia albomaculata, Teratohyla pulverata, T. spinosa,* and *Vitreorana antisthenesi*. Despite advertising them sometimes as "Kermit frogs", they are not in big demand in the trade, because they are nocturnally active and rather inconspicuous in the terrarium, and they have special requirements for the husbandry conditions, which cause rather high follow-up costs.

DGHT Position: Reject

We oppose to listing the whole family of glass frogs under CITES Appendix II, since of the 12 species are proposed for listing under CITES Appendix II in accordance with Article II paragraph 2 (a) of the Convention and satisfying Criterion B in Annex 2a of Resolution Conf. 9.24 (Rev. CoP17), none is really collected for the international trade in significant numbers, and all but one are assessed as Least Concern on the IUCN Red List. This species, *Hyalinobatrachium iaspidiense*, had been assessed as Data Deficient in 2004 (La Marca & Señaris), but "*this species occurs widely in the Guianan Region in Brazil, French Guiana, Guyana, Suriname, and Venezuela, and in the Amazonian lowlands of Ecuador and Peru…*" (cited from Cole *et al.* 2013) and no new mention on its rarity or decreasing population could be found.

All the other known glass frog species are proposed for listing because of their similarity (Criterion A in Annex 2b) to certain species which had been seen in trade advertisements, but this is unjustified as well, since in fact all glass frog species can be determined by trained inspectors using the available determination keys, and there is no reason to list just all species in order to "prevent identification hardships for law enforcement officers and to ensure the health and safety of these delicate amphibians by minimizing the amount of handling required to confirm compliance with CITES provisions during inspections". The statement that "*differentiation between species is only possible by using DNA techniques*" is a misinterpretation of the original publication on two new species (Guayasamin *et al.* 2022).

To justify such a proposal, all the range states would have to publish their protective legislation and the status of the glass frog populations, but more than half of the range states did not even support the proposal for listing the glass frogs under Appendix II of the proposal, and the general overview does not indicate the threat for the wild populations from collection for the international trade.

We recommend that the range states which had supported this proposal assess the status of the glass frog populations on their territory, and then list the species which might be threatened by collection for the international pet trade separately under CITES Appendix III.

Additional Remarks

More research on the species-specific sensitivity to chytrid fungus, which is threatening these and other glass frog species in nature, will be necessary. Glass frogs are known for paternal or maternal care of the eggs, but because of the very secretive lifestyle of these frogs and the limited options for field research, the species-specific behaviors are not yet known for most glass frog species (Delia, Bravo-Valencia & Warkentin 2017). Egg care seems to be important for the transmission of immune defense peptides and microbiota to the embryos, and could even inhibit the fungal pathogen *Batrachochytrium dendrobatidis* (Walke *et al.* 2011). The environmental factors influencing the time the parent frog remains with the clutch are very difficult, if not impossible, to observe in detail in the field (Goyes Vallejos & Hernández-Figueroa 2022). We recommend coordinated research projects with ex situ breeding of many different glass frog species, involving experienced private keepers, since especially in anuran species behavioral research is more successful when enthusiasts without a service plan (as is necessary for laboratory or zoo personnel) publish their husbandry conditions and observations (Schulte *et al.* 2020).

Additionally, we suggest that the range countries promote research on the reasons for the decline of the natural populations (see for example Goyes-Vallejos & Ramirez-Soto 2020). This could well include more international exchange of animals with specialist organization which have the necessary laboratories already available, and could manage the suggested ex situ breeding colonies, incorporating and coordinating private keepers for getting more data on behavior and reproduction (K.H. Jungfer pers. comm., see also Kubicki 2022).

Besides this, the range countries should establish a monitored habitat protection system to tackle the main threats for the survival of the species (Kubicki 2007, Rodríguez *et al.* 2019).

CoP19 Prop. 35: *Agalychnis lemur* (Boulenger, 1882) Lemur leaf frog – Include in Appendix II with a zero annual export quota for wild-taken specimens traded for commercial purposes

Inclusion of *Agalychnis lemur* in Appendix II, in accordance with Article II, Paragraph 2 (a) of the Convention and satisfying Criterion B of Annex 2 a of Resolution Conf. 9.24 (Rev. CoP17), with a zero annual export quota for wild-taken specimens traded for commercial purposes.

Proponents: Colombia, Costa Rica, European Union, and Panama

Taxonomy

With CoP15 Prop. 13 (2010) five species of *Agalychnis* have been included in Appendix II of CITES, because this proposal only considered the five species recognized by the CITES standard reference for amphibians at that time (Frost 2004).

Agalychnis lemur had not been listed with them, since this frog had been assigned to the genus *Hylomantis* at the time of decisions of Cop15.

In CoP10 Prop. 35, a new standard reference for *Agalychnis* has been suggested: The AmphibiaWeb extract of 2021. Were this to be adopted, the current listing for Agalychnis spp. would be replaced with individual species listings for, which would have led to a replacement of the Cop15 Prop. 13 list by seven individual species, but in CoP19 Doc. 84(1), the standard reference for amphibians remains unchanged, and the nomenclatural change on *Agalychnis callidryas* is to be adopted at the CoP19: *Agalychnis terranova* has been described as a sister species to *A. callidryas* in 2013 and will subsequently be added to Appendix II.

Population Status and Main Threats

Critically endangered (IUCN SSC Amphibian Specialist Group 2020). The species occurs in Costa Rica (two very small populations remaining in this country), Panama, and marginally in Colombia.

The massive declines in the natural populations may have been due to chytridiomycosis, but this frog species might be less susceptible than other frog species in this area (summarized in Voyles *et al.* 2018). General habitat loss and fragmentation remains a major threat throughout this species' range.

A. lemur Foto: T. Eisenberg

Ongoing collection for the pet trade is unlikely due to rarity in the wild and availability of captive bred animals, most of which are descendants from captive bred frogs from Costa Rica which were imported into Europe via Canada (for example to Manchester Museum, for scientific purposes) several years ago.

Conservation Actions Needed

About 37% of this species' predicted range occurs within protected areas, nevertheless improved habitat protection is needed for the remaining extant subpopulations in Costa Rica. Several successful captive breeding projects have been established since 2001.The driver(s) of declines in several historical sites has been addressed and reintroductions into sites with suitable habitat should be considered (Scheele *et al.* 2021).

Captive Breeding

Reproduction in captivity has been achieved already in the 1990's (Jungfer & Weygoldt 1994), and this species is frequently kept and bred by private persons in Europe (Eisenberg & Kaesling 2012). Captive breeding programs of zoos and scientific institutions from 2001 on (Mebert 2011, Skelton 2012), and the instruments for genetically informed management of breeding groups are already available (Petchey *et al.* 2014).

With the capacities of zoos being limited, and private keepers with the expertise and experience necessary for propagating *Agalychnis lemur* being available, Citizen Conservation is intent on augmenting and consolidating the captive population by incorporating and coordinating private keepers in Europe (Eisenberg 2019). Actually, already 22 % of the planned CC project size for this species has been achieved (Citizen Conservation 2022).

DGHT Position: Support

Agalychnis lemur would even qualify for listing under CITES Appendix I, but since captive breeding is very successful and the resulting trade with captive bred offspring would pose a severe enforcement problem without benefitting the wild populations, we support the proposal for CITES Appendix II, as in the other *Agalychnis* species, and zero export quotas for wild-caught animals for the range countries.

Additional Remarks

Since the genetic diversity in the breeder animals of the ex situ breeding project might get reduced over time, a genetically informed studbook management should be implemented.

CoP19 Prop. 36: *Laotriton laoensis* (Stuart and Papenfuss, 2002) Lao warty newt – Include in Appendix II with a zero annual export quota for wild-taken specimens traded for commercial purposes

To list *Laotriton laoensis*, endemic to the Lao People's Democratic Republic, in CITES Appendix II, with a zero export-quota for wild-taken specimens traded for commercial purposes, in accordance with Resolution Conf. 9.24 (Rev. CoP17). The regulation of trade within this genus is required in accordance with Annex 2 a criterion A, on the grounds that the trade must be regulated to prevent it to become eligible for listing in Appendix I in the near future and criterion B, to ensure that the harvest of wild individuals is not reducing the wild population to a level at which their survival might be threatened.

Proponent: European Union

Taxonomy

Synonym: *Paramesotriton laoensis* Stuart & Papenfuss, 2002 (Gu *et al.* 2012; Phimmachak *et al.* 2012).

Population Status and Main Threats

Endangered (IUCN SSC Amphibian Specialist Group 2014), due to an estimated extent of occurrence of only 4,560 km2, continuing declines in habitat quality and the number of mature individuals, and an extremely restricted population with a single threat-exposed location. The species is in high demand for the international pet trade and also for medicine and food.

Conservation Actions Needed

In the IUCN Red list assessment ex situ conservation and captive breeding/artificial propagation are explicitly mentioned and considered necessary.

Captive Breeding

Several generations of *Laotriton laoensis* have already been captive bred in Germany (Bachhausen 2017).

DGHT Position: Support

This species has not been included in the proposal 40 of CITES CoP18, mainly due to the taxonomic separation of the genus *Laotriton* from *Paramesotriton*.

We support the listing under Appendix II, in order to stop the depletion of the natural population due to collection for the pet trade.

Additional Remarks

Captive breeding and the trade / exchange of captive bred animals should be facilitated, and a European ex situ breeding project might be useful for the conservation of this species.

Laotriton laoensis Foto: J. Nerz

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