Twentieth meeting of the Conference of the Parties (CoP20)

Comments on the Proposals for Amendment of the Appendices (Reptile and Amphibian Species)

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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 et al. 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 the 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 (Challender *et al.* 2023). 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 or based on own experience.

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CoP20 Prop. 19: *Caribicus warreni*, Giant Hispaniolan Galliwasp – Include in Appendix I

Proponent is the Dominican Republic. As this species is endemic to Hispaniola (Dominican Republic and Haiti), consultation is not necessary as Haiti is not party to the convention, although contacts have been initiated with authorities in Panama and Brazil.

The proposal is justified as (translated from Spanish): "The inclusion of this species in Appendix I would be essential for keeping detailed records of trade and ensuring that it does not become a direct cause of extinction, while also serving as a very useful tool for combating and tracking illegal trafficking of these lizards. Taking into account that Appendix I of CITES should include all species that, although not currently endangered, could become so unless trade in specimens of such species is strictly regulated to prevent exploitation incompatible with their survival, the importance of including this species in that appendix of the Convention is emphasised."

Morphology and Taxonomy

The Giant Hispaniolan Galliwasp had been scientifically described already in 1970 as *Diploglossus warreni* (Schwartz 1970): "A large (males to 285 mm snout-vent length) species of *Diploglossus* with head shields not outlined in black. The nuchal region is not lineate. the venter is of some shade of orange, either pattern-less or flecked or mottled with pale grey. The chin and throat scales may be outlined with black or dark brown along the sutures. The transition from dark dorsal scales to orange ventral scales is relatively sharp at the level of the limb insertions. There are no dorsally intercalated scales in the supralabial series".

In 1985 a new, closely related, species, *D. carraui*, was described and the ecology of the two species was analysed (Incháustegui *et al.* 1985). In 2003, Powell & Henderson (2003) placed *C. carraui* in the synonymy of *C. w. warreni* and rejected its recognition as a subspecies. Later, the genus name *Celestus* was used, and Hallermann & Böhme (2002) used the term "*Celestus warreni* complex" which contained *C. warreni*, *C. carraui* and *C. anelpistus*, the latter two were allocated as subspecies to *C. warreni*. Powell & Henderson (2003) have elevated the two subspecies back to species rank.

School & Henderson (2021) defined a new genus from Hispaniola as *Caribicus* n. gen., with the three species *Caribicus anelpistus, C. darlingtoni* (which was described as a new species in the same publication), and *C. warreni.*

Population Status and Main Threats

In the Dominican Republic, *C. warreni* is included in the Red List as Peligro Crítico (CR), which indicates that this is an endemic species, which may only be used for scientific purposes, research, and priority reproduction for conservation (Cited from the proposal).

In the most recent IUCN Red List Assessment (Landestoy *et al.* 2016b), *C. warreni* is considered as "Vulnerable B1ab(iii)" due to its limited distribution (with an extent of occurrence of 14,646 km2), fragmented subpopulations and ongoing threats include expanding agricultural activities, charcoal production, predation by cats, dogs and mongooses, it is killed by local people who mistakenly consider these lizards to be venomous, and it is on the illegal pet trade that continues to decline its extent of occurrence, and quality of habitat, and it is only found in a small protected area.

In the previously published Red List Assessment (McGinnity & Powell 2004) the species had been considered as "Critically Endangered A2ac; B1ab(i,ii,iii,iv)+2ab(i,ii,iii,iv)": Although the generation length is not known with any certainty (see discussion under 'Habitat and Ecology'), an 80% reduction over the last twenty years seems reasonable, and this triggers a Critically Endangered listing. The extent of occurrence is < 100 km² and the area of occupancy is < 10 km². There is continuing decline

in the extent of occurrence, area of occupancy, habitat and numbers of locations and the remaining habitat is severely fragmented.

The two other Hispaniolan Forest lizards are:

Caribicus anelpistus Cochran, 1939, is listed as „Critically Endangered (Possibly Extinct) B1ab(iii)“, because of its limited extent of occurrence (being known from a single locality) and it occurs in a single location, and any surviving population is presumed to be undergoing a continuing decline in the extent and quality of its habitat. Natural habitat at the type locality has been essentially destroyed, although if the species occurred more widely a continuing decline in the extent and quality of its habitat can be inferred. A reported sighting of a giant galliwasp from 2004 may have been *Celestus anelpistus,* however the continued survival of this species is in need of confirmation (Landestoy *et al.* 2016a).

Caribicus darlingtoni (Schwartz, Graham & Duval, 1979) is listed as „Endangered B1ab(iii)“. Due to its limited distribution (with an extent of occurrence of 2,782 km^2), it occurs as a severely fragmented population, and ongoing threats from agriculture expansion, wildfires due to anthropogenic causes and wood extraction. There are no known species-specific conservation measures in place for this species. Further research into its distribution, abundance, and population trends should be carried out to have more knowledge about how the threats are impacting the species. It is found in several protected areas; however, effective protected area management is needed to ensure the survival of this and other forest-dwelling species on Hispaniola (Inchaustegui & Landestoy 2016).

The Giant Hispaniolan Galliwasp in international trade

In the proposal we read: “Trade in *Caribicus warreni* has been detected in Germany, Czechoslovakia and Canada, and trade has been confirmed in the United States, where there is high demand for the species. The average sale price of these specimens abroad is US $40.00 for juveniles and US $190.00 for adults. It should be noted that the Dominican Republic has not authorised the extraction or issued export permits for this species for commercial purposes, meaning that all Giant Galliwasps for sale abroad come from illegal extraction or from Haiti, a country that is not party to the CITES Convention. Therefore, including *Caribicus warreni* in Appendix I will provide greater support for the conservation of the species, both nationally and internationally.” Later we read: There are records of legal trade in this species, as giant Galliwasps were exported legally from Haiti to the United States quite frequently during the 1990s. Regular sales and trade of this species have been detected on the international market, mainly in the United States. Most of this trade is illegal.

Captive bred *Caribicus warreni* are in fact offered regularly on the usual animal sales platforms and breeder pages in Europe and the US, often with photos that show captive husbandry and obviously recently born juveniles. Langner (2019) states that breeding is easy, but since the species is rather large and not very showy, it is not easy to find new homes for the juveniles.

The species is said to occur in the illegal pet trade, and has some significance in local voodoo religions.

Conservation Actions Needed

In the IUCN Red List assessment for *C. warreni* Landestoy *et al.* (2016b) demand that field surveys are required to determine the remaining population size and distribution, so that a species recovery and management plan can be put in place. The species occurs in Loma Isabel de Torres Protected Area, where a scientifically guided population assessment has been initiated in 2018 (infoturdominicano 2018). As to our actual knowledge, the results of this survey have not been published.

C. warreni have been successfully captive bred at Nashville Zoo. This captive breeding program should be intensified or increased. Schools & Hedges (2024) state that, unfortunately, eradication of introduced mammalian predators, including black rats, which are also a threat, is currently not possible on large scale. Analyses of satellite imagery of forest cover for the countries of Haiti and the neighbouring Dominican Republic have shown that protected areas and reserves are often ineffective conservation actions unless accompanied by effective management.

For *C. anelpistus*, Schools & Hedges (2024) refer to the critically endangered status and state: "Natural habitat at the type locality has been essentially destroyed, although if the species occurred more widely a continuing decline in the extent and quality of its habitat can be inferred. … Studies are needed to determine the health of any remaining populations and threats to the survival of the species. Captive-breeding programs should be undertaken, because eradication of introduced mammalian predators is currently not possible on large islands. All mongoose-free islets of Hispaniola need to be thoroughly surveyed for the possible presence of this species."

For *C. darlingtoni*, there are no known species-specific conservation measures in place. Further research into its distribution, abundance, and population trends should be carried out to have more knowledge about how the threats are impacting the species. It is found in several protected areas; however, effective protected area management is needed to ensure the survival of this and other forest-dwelling species on Hispaniola (Inchaustegui & Landestoy 2016).

Captive Breeding

The probably first publication on captive breeding of *Caribicus warreni* is from Knoxville Zoo, but captive reproduction had already occurred before at several zoos, for example Bronx, Knoxville, and Milwaukee (Lawler & Norris 1979). Later, when breeding the species in the Reptile Breeding foundation in Canada, Huff (1985) mentions: "We have also continually had problems with *Diploglossus warreni* eating their young, and with the adults and juveniles viciously attacking one another."

Rather early, an ex-situ breeding program had been established, first in Nashville Zoo (McGinnity 2002). In the proposal there is obviously some confusion with species determination, since in chapter 8.4 the breeding project is cited as: "The Nashville Zoo has been keeping and breeding [*C. warreni*] since 2000. More than 300 offspring have been produced from the founding population, consisting of nine males and nine females originally captured in the wild forest of Come Hombre, Dominican Republic". Continuing this effort, Durrell has produced 97 offspring from two females that bred over a three-year period. *C. warreni* has bred successfully in captivity, producing an F2 generation ('grandchildren') with a low mortality rate (less than 4% at the Nashville Zoo). There is no captive breeding programme for the species in the Dominican Republic." The origin of these species is given obviously incorrect, since the Come Hombre Forest is the type locality of *C. adelpistus*, where only four animals had been caught alive at that time (see below).

There are much more public institutions keeping and breeding *C. warreni* than only the Nashville Zoo. The "Zootierliste" (Graf *et al.* 2025) mentions 20 institutions, and there is even a husbandry guideline for the ex-situ breeding group management in European zoos by the Durrell Wildlife Conservation Trust (Goetz 2008). This report gives a detailed "recipe" how to keep and breed this species. Clutch size is given as 18 to 22 individuals which can be reared in small groups if closely watched for signs of dominance by larger animals, which will need to be introduced to other groups with animals of the same size, or, later be kept individually. Balcar (2011) gives an overview of the ex-situ breeding of this species in European zoos at that time, and talks about the arrival of the new breeding group from Jersey at the Bronx Zoo. Since the species is quite prolific, it is quite likely that zoos have given some surplus animals to experienced private keepers.

In the proposal there is no mention that captive breeding by private breeders ever occurred, and there are in fact rather few husbandry and breeding reports in the terrarium magazines, but Langner (2019) has shown how to keep them, and there is no doubt that these lizards are being captive bred and regularly exchanged within the herp keeper and breeder groups.

For *C. anelpistus*, not much is known on their reproduction: Ovoviviparous. Two wild-caught females gave birth to a total of 42 young between 16 July and 3 August (Schwartz *et al.* 1979), and for *C. darlingtoni* a litter size of two is given (Schools & Hedges 2024).

In the Giant Galliwasp Project description, McGinnity (2002) states: "The only known habitat of *C. anelpistus*, the Come Hombre Forest in the Dominican Republic, was being destroyed as the only four reported wild specimens were collected in 1977. The animals were sent to a zoo where they produced many offspring. Because successful captive management techniques had not been developed, all of the specimens died." A living *C. anelpistus* has not been documented in almost 20 years. The inability to successfully raise young giant galliwasps is the primary reason captive programs have failed in the past." Only in 2020 another *C. anelpistus* was discovered and photographed alive (de Jesus *et al.* 2023), but it was not allowed to live. The specimen has been deposited in the herpetological collection of the National Museum of Natural History Prof. Eugenio de Jesús Marcano (MNHNSD 23.3999).

C. darlingtoni is given as "It is a locally common species. It is however a dry forest species, and this habitat is extremely fragmented within its range (and across Haiti as a whole), with intervening areas often almost or completely desertified and so preventing dispersal between habitat patches (Inchaustegui & Landestoy 2016)." Probably this species has never been kept in human care.

DGHT Position: Reject

Caribicus warreni does not meet the criteria for Appendix I listing. There is no evidence that this species is threatened with extinction. It had been listed as CR in 2004, but in the latest assessment it is considered as being VU. There is no solid indication on current trade in wild-caught animals of this species. The information on breeding of this species in private husbandry had not been investigated when compiling the proposal, and the animals offered in trade portals are in fact captive bred and not always freshly caught or born from females that had been caught in the wild when gravid. The trade with these animals has no effect on the wild population and therefore needs not be strictly regulated by listing the species on CITES Appendix I.

Additional Remarks

Further research on the distribution, abundance, and population trends of all *Caribicus* species should be carried out to learn more about the impact of threats on these species. Since these lizards are killed by locals who mistakenly believe them to be venomous, it is necessary to educate the local population and launch a full-scale goodwill campaign for their conservation.

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CoP20 Prop. 20: *Phyllurus amnicola*, Mount Elliott Leaftailed Gecko – Include in Appendix II

Proponent is Australia.

“The Mount Elliot leaf-tailed gecko is endemic to Australia, and as such, there are no other range states. However, we have consulted with domestic authorities in Australia in the preparation of this proposal.

This proposal seeks to list the Mount Elliot leaf-tailed gecko in CITES Appendix II in accordance with Article II, Paragraph 2 (a) of the Convention, satisfying the criteria outlined in Annex 2a of Resolution Conf. 9.24 (Rev. Cop17); namely, that 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 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.

Despite being a protected area, Mount Elliot is easily accessible and illegal collection of wild specimens is likely to increase to meet growing market demand. Given that the species is only known from four subpopulations, the illegal removal of any individuals from the wild has the potential to significantly reduce population numbers to unviable levels.”

Morphology and Taxonomy

The Mount Elliot leaf-tailed gecko, *Phyllurus amnicola*, is endemic to Mount Elliot in Bowling Green Bay National Park in northeastern Queensland. The animals are beige or white in colour with dark blotches and/or stripes running across their body. The limbs of *P. amnicola* are usually banded with the base colour getting lighter in ventral direction, with the bands becoming more frequent. The "leaf-tailed" name comes from the tail, which resembles a leaf and has a long knob-like tip, and from the compressed morphology of the body (from Wikipedia).

P. amnicola can be confused with only its congeners. *P. amnicola* is distinguished from P. *caudiannulatus* by tail shape (flared vs. cylindrical) (Couper *et al.* 2000).

P. amnicola is found in three areas on Mount Elliot (Alligator Creek, Western Boulders and Cockatoo Creek), with a more recently discovered population on the immediately adjacent mountain, Saddle Mountain. The discovery of this population represents the first record of the species outside of Mount Elliot (Bertola *et al.* 2018).

Population Status and Main Threats

Phyllurus amnicola is listed as Near Threatened under criteria B1a.

Population size for the species is currently unknown (Hoskin *et al.* 2018). As their preferred rocky rainforest habitat is widespread across Mount Elliot, the species is generally presumed to be at high densities within areas of suitable habitat. The exception to this is the population located at Western Boulders. At this locality the species is found at low density, likely due to the exposed boulder features with little associated rainforest (Bertola *et al.* 2018).

The entire known distribution falls within the protected area of Bowling Green Bay National Park (NP). The species is found in three areas on Mount Elliot (Alligator Creek, Western Boulders and Cockatoo Creek), with a more recently discovered population on the immediately adjacent mountain, Saddle Mountain. As a protected area, the species’ habitat is largely shielded from major threats. However, changes to fire regimes in the last century have altered the timing, frequency and intensity of fires, thereby increasing the potential risk of fires in rainforest areas of the region. Mount Elliot is frequently burned as part of routine management activities to control invasive grasses that create

high fuel loads and reduce the risk of bushfire (Hoskin *et al.* 2018, Bertola *et al.* 2018). Although the species primarily occurs in areas of rocky habitat that are buffered from the effects of fire, any loss of local rainforest due to extreme weather events or burning has the potential to reduce the connective pathways between the Mount Elliot and Saddle Mountain populations, thereby increasing habitat fragmentation and degradation.

No population monitoring is in place for the species, and there are no dedicated management plans in place for the species in the wild.

***Phyllurus amnicola* in international trade**

At the most accessible locality (Alligator Creek), where previous surveys had recorded around 20 individuals, a 2012 survey recorded only a single individual in a targeted search (C. Hoskin, unpubl. data). This was later determined to result from a single collection event following the appearance of animals in the illegal pet trade. Animals have been detected in the US and German pet trade within six months to a year following the removal of animals from the Alligator Creek locality.

The proposal states that poaching from the wild to supply trade is known to occur, with the species appearing for sale on many online platforms and social media groups overseas due to their high desirability among collectors. As evidence, it is stated that in 2018, 45 specimens of the species were detected for sale from traders in Denmark, Czechia, France, Russia and the USA (Altherr *et al.* 2019). Some of these advertisements were still visible, and the animals on the photos were obviously captive bred. As stated in the proposal, in 2013 there had been in fact wild collected animals from Alligator Creek in trade, but since then, in the photos from Europe and the US which are available today, no evidence could be found to suggest that the geckos shown might be wild-caught.

This species is already listed on CITES Appendix III since 2022, which means that the legal international trade can now be followed in the CITES Trade Database. Since being listed, only 21 captive-bred live *P. amnicola* were exported from the Czech Republic and 3 captive born specimens from Germany, all exports were destined for Japan. Within the EU these geckos are frequently traded, in Europe at prices up to 200 € for a juvenile and about 1,000 € for a reproducing trio (query in Terraristik.com and social media in July 2025), in the US at up to $500.00 for a juvenile. That is likewise the usual price for other similar gecko species. Only very few wanted advertisements could be found, and these concerned animals with special features, e.g. a special age class to supplement an existing breeding group. This is an indication that the species is not in exceptionally high demand. The price information of 1,250–2,030 € per animal as given in Altherr *et al.* (2019) cannot be verified.

Conservation Actions Needed

The entire known distribution falls within the protected area of Bowling Green Bay National Park (NP). The species is found in three areas on Mount Elliot (Alligator Creek, Western Boulders and Cockatoo Creek), with a more recently discovered population on the immediately adjacent mountain, Saddle Mountain.

Since the Alligator Creek area is a popular tourist attraction, it is nice that visitors to the national park are made aware of the presence of *Phyllurus amnicola* (Queensland Government 2025), but it would certainly be helpful to make it clear that the animals must not be touched – not even to be held for photographs.

Captive Breeding

The proposal mentions that there is some online evidence that the species is bred overseas for commercial sale in countries such as the USA and United Kingdom. A query in the online pet portals and in the social media shows that the species is regularly being bred by private keepers. Actually, the

species is not in exceptionally high demand, since some very reasonable offers remain in the advertisement portals for quite some time.

An overview of the *Phyllurus* species and an outline on husbandry and breeding is given by Porter (1997, 1999), and in the many captive care guides available on the internet which cite these publications.

DGHT Position: Reject

Phyllurus amnicola does not meet the criteria for Appendix II listing, since this CITES Appendix lists species that are not necessarily currently threatened with extinction but that may become so unless trade is closely controlled. If international trade in a species listed in Appendix III begins to negatively impact its survival, moving it to Appendix II ensures stricter regulation and potentially reduces trade volume (all text cited from official CITES documents).

One *Phyllurus amnicola* population had been reduced by one poaching event in or before 2012. Since then, there have been no reliable reports of wild-caught specimens in trade, and since 2022, only 24 *P. amnicola* were registered in international trade as shown by the CITES Trade database (UNEP-WCMC 2025). For the domestic trade within the EU or within the US, the species is being captive bred in sufficient numbers to satisfy the demand.

Obviously, the international trade does not begin to negatively impact the survival in 2025, since the single poaching event on this species dates back more than ten years. The species is already listed on Appendix III, and international trade can already be monitored. A transfer of this species to Appendix II is actually not appropriate nor sensible.

Additional Remarks

A regular population monitoring should be installed to detect any decrease in the population and find out the reasons. Additionally, the burning of invasive grasses as part of routine management activities should be planned according to the weather forecast to prevent the habitat of this species from also being burnt.

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CoP20 Prop. 21: *Phyllurus caudiannulatus*, Ringed Thin-tail Gecko – Include in Appendix II

Proponent is Australia.

"The Ringed Thin-tail Gecko is endemic to Australia, and as such, there are no other range states. However, we have consulted with domestic authorities in Australia in the preparation of this proposal.

The species is eligible for inclusion in Appendix II, in line with CITES Resolution Conf. 9.24 (Rev. CoP17) as it meets the criteria outlined in Annex 2a, namely that 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 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.

Although poaching intensity is believed to be relatively low, the species occurs in accessible areas and is restricted to a low number of fragmented subpopulations. With increasing threats from habitat degradation, climate change, bushfires and illegal harvesting, any depletion of the population from direct take from the wild risks reducing subpopulations to unviable numbers."

Morphology and Taxonomy

Phyllurus caudiannulatus is endemic to the south-east region of Queensland, Australia, occurring primarily in the Dawes Range, the Many Peaks Range and surrounding forestry reserves. Populations are largely restricted to protected areas and found in only three discrete locations within 15 km of one another. It is unknown if connectivity occurs between the three subpopulations of ringed thin-tail geckos. The main subpopulation, located in Bulburin National Park (NP), is geographically isolated from the other two known subpopulations and is believed to be genetically distinct.

The ringed thin-tail gecko has a flattened head and body, with long and slender limbs. The species is dark grey to brown in colour, with fine dark mottling and pale spots. They can be distinguished from other leaf-tailed gecko by having 5-6 distinct pale to white bands on the original tail which may be cylindrical or slightly leaf-shaped. Regenerated tails generally lack the white banding pattern. Further, the lower surfaces of their hindlimbs are covered by small granular scales but with scattered raised tubercles which are largest on their flanks. *Phyllurus* species are typically large and well-camouflaged to the rocks and trees within their natural vine forest and rainforest habitats.

P. amnicola can be confused with only its congeners. *P. amnicola* is distinguished from P. *caudiannulatus* by tail shape (flared vs. cylindrical) (Couper *et al.* 2000).

Population Status and Main Threats

Ringed thin-tail geckos are challenging to detect in the wild due to their cryptic nature (Gynther *et al.*, 2023). They can occur at high densities in areas of Bulburin NP but there is insufficient data to adequately estimate population numbers as there is no population monitoring data currently in place for the species.

The species is only known from three discrete subpopulations, the largest of which occurs within Bulburin NP. An estimated 28% of the modelled potential habitat of ringed thin-tail geckos in Bulburin NP was burnt during the bushfires on 2019-2020, including many critical habitat features such as fig trees, large stags and large fallen logs, that were known to support high densities of the species.

The abundance of the species has likely decreased with degradation of habitat quality in burnt areas. A survey of previously recorded ringed thin-tail gecko habitat sites in 2020 revealed that the species

was found in both burnt and unburnt survey areas where suitable habitat features remained unharmed. At burnt sites, geckos were only detected on unburnt portions of habitat features, such as fig trees with minimal scorching, and previously occupied sites (including large logs and dead stags) that were burnt in the 2019-2020 bushfires had been vacated.

P. caudiannulatus has been assessed on the IUCN Red List as Near Threatened B1a (Couper *et al.* 2018) on the basis that this species has a restricted range and occurs in a single location defined by a threat from illegal collection. It is therefore close to qualifying for listing as threatened applying Criterion B, however, there are no threats to its habitat and there is no current evidence of continuing decline as a result of collection. Illegal collection has nonetheless taken place historically, the species commands high prices in the international pet trade, and the species is confined to an accessible area, and a future impact from collection remains plausible.

Phyllurus caudiannulatus (ringed thin-tail gecko) is listed in the Endangered category of the threatened species list under the Environment Protection and Biodiversity Conservation Act 1999 (Cwth) (EPBC Act) effective from 16 July 2024 (DCCEEW 2024).

***Phyllurus caudiannulatus* in international trade**

The proposal states that illegal trade of 27 ringed thin-tail gecko specimens was reported from 2008-2018, ranging in value from 50 to 500 Euros each (USFWS 2024). This is a misinterpretation, since those animals are not wild-caught, which would in fact be illegal. The LEMIS database has a standard entry as “wild caught” if it is not clear which of the different “captive bred” categories had been met by which animal, see Challender *et al.* (2022) and Weissgold (2024). Captive bred *P. caudiannulatus* are still to be found on pet exporter/importer price lists all over the world, and there is nothing illegal about it.

The given sales price is perfectly plausible, since this is the usual price asked for juveniles resp. adults of similar species as well. Currently (i.e. in summer 2025) only two *P. caudiannulatus* advertisements could be found: a wanted ad for a new male to a reproductive female, and an adult female at a moderate price. Even if analysing past advertisements and the entries in the social media, there is no evidence for an increasing demand for this species to be found.

This species is already listed on CITES Appendix III since 2022, which means that the legal international trade can now be followed in the CITES Trade Database. Since being listed, only two captive-bred live *P. caudiannulatus* were exported from the Czech Republic to Japan.

Ringed thin-tail geckos are already kept in Australia as pets and are known to be available in the European pet market at a substantial price. Poaching intensity is suspected to be relatively low for the ringed thin-tail gecko and is unlikely to be placing considerable pressure on wild subpopulations (C Hoskin 2023, pers. comm. 19 January in DCCEEW 2024).

Conservation Actions Needed

From DCCEEW (2024): Primary conservation objective: Ensure that the extent of occurrence and area of occupancy of ringed thin-tail geckos remains stable, and that subpopulations are secure and viable across the species’ entire range, with existing habitat protected and threats managed effectively by 2034. As an approved, updated, and detailed Conservation Advice for the species would provide sufficient direction to implement priority conservation actions, mitigate key threats, enable recovery and provide foundation for further planning, a national Recovery Plan is not required at this time.

Captive Breeding

Ringed thin-tail geckos are already kept in Australia as pets. An overview of the *Phyllurus* species and an outline on husbandry and breeding is given by Porter (1997, 1999), and in the many captive care guides available on the internet which cite this publication.

DGHT Position: Reject

Phyllurus caudiannulatus does not meet the criteria for Appendix II listing, since this CITES Appendix lists species that are not necessarily currently threatened with extinction, but may become so if trade is not closely controlled. If international trade in a species listed in Appendix III begins to negatively impact its survival, moving it to Appendix II ensures stricter regulation and potentially reduces trade volume (all text cited from official CITES documents).

In the Risk Matrix (DCCEEW 2024) direct harvesting / poaching for pet trade is classified as Minor. A transfer of this species from CITES Appendix III to Appendix II is not justified.

Additional Remarks

More information can be found in the Conservation Advice for *Phyllurus caudiannulatus* (ringed thin-tail gecko) (DCCEEW 2024). Since the species protection planning in Australia is a continuous activity, checking for updates is recommended.

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CoP20 Prop. 22: *Amblyrhynchus* ssp. Marine Iguanas – Transfer to Appendix I

Proponent is Ecuador, where the species is endemic.

The proposal is justified as (abbreviated and translated from Spanish): "Iguanas in general, apart from the impact of the El Niño phenomenon, are directly threatened by human activities in populated areas, roads and airports, where the impact of stress has increased. This threat has led to habitat degradation and marine pollution, including oil, diesel and petrol spills, such as those that occurred in 2001, when mortality exceeded 60% of the population. In addition, humans bring with them the possibility of introducing new invasive species. The presence and intensity of land-based tourism has been shown to have a significant negative effect on the health of iguanas. In addition, there is illegal international trafficking, mainly targeting hatchlings and juveniles. Ecuador has never allowed the commercial export of live specimens of *Amblyrhynchus* spp., and the removal of these species from the Galapagos Islands is prohibited. However, there is currently international trade in pets of this species, not to mention cases of smuggling with prosecutions and trials between 2010 and 2015, where the IUCN estimates that its entry into the pet trade is a cause for concern. The international trade and smuggling of iguanas involve hatchlings and juveniles that are indistinguishable between species, which is also a threat due to the decline in recruitment and viability of wild populations. *Amblyrhynchus cristatus* needs to be included in Appendix I to stop the poaching of specimens for illegal international trade and to control exports of captive-bred specimens. Furthermore, it is important that the entire genus be included in order to protect its subspecies."

Morphology and Taxonomy

The Galapagos Marine Iguana, *Amblyrhynchus cristatus*, is a unique reptile found only in the Galapagos Islands. This endemic species stands out as the world's only marine lizard. Unlike most reptiles, these iguanas are marine herbivores, diving up to 30 feet below the surface to feed on algae. Their specialized salt glands help expel excess salt through their nostrils—a distinctive adaptation for marine life. Their dark coloration allows them to rapidly absorb heat after cold ocean dives.

Amblyrhynchus cristatus has been assessed for the IUCN Red List as EN (last assessed in 2019, MacLeod *et al.* 2020a). Without significant invasive species control and enhanced protection from marine pollution, declines are projected to continue in the near future, exacerbated by increasingly frequent and severe El Nino events and human impacts that affect all populations. Wildlife trafficking is the third most profitable illegal activity in the world, and although Ecuador has never declared export of live specimens of *Amblyrhynchus cristatus* for commercial trade, they are known to exist in the pet trade. While not significantly reducing the population currently, their entry into the pet trade is of concern.

Amblyrhynchus is currently considered as a monotypic genus with several subspecies (Miralles *et al.* 2017). Recognizing the genetically divergent population clusters as subspecies also highlights several of them as management units in need of conservation efforts, such as the two subspecies endemic to San Cristóbal.

The subspecies have been assessed separately for the IUCN Red List in 2019:

• *Amblyrhynchus c. cristatus*	VU	(MacLeod *et al.* 2020b)
• *Amblyrhynchus c. godzilla*	CR	(MacLeod *et al.* 2020c)
• *Amblyrhynchus c. hayampi*	EN	(MacLeod *et al.* 2020d)
• *Amblyrhynchus c. hassi*	EN	(MacLeod *et al.* 2020e)
• *Amblyrhynchus c. jeffreysi*	EN	(MacLeod *et al.* 2020f)
• *Amblyrhynchus c. mertensi*	EN	(MacLeod *et al.* 2020g)
• *Amblyrhynchus c. nanus*	CR	(MacLeod *et al.* 2020h)

• *Amblyrhynchus c. sielmanni*	CR	(MacLeod *et al.* 2020i)
• *Amblyrhynchus c. trillmichi*	CR	(MacLeod *et al.* 2020j)
• *Amblyrhynchus c. venustissimus*	EN	(MacLeod *et al.* 2020k)
• Amblyrhynchus c. wikelskii	EN	(MacLeod et al. 2020l)

An old assessment on *A. c. albemarlensis* with status VU is still available in the IUCN Red List Database (Nelson et al. 2004). This subspecies name is a junior synonym to *A. c. cristatus*.

Population Status and Main Threats

Marine Iguana populations have been reduced by invasive alien predators such as feral cats, rats, and free-roaming pigs and dogs on five of the 13 main islands (ca 30% of the total population). These iguanas are threatened by a region-wide increase in human population and visitation that has multiplied the impacts from stress, marine pollution including oil and diesel spills, habitat degradation, and chance of further invasive species introductions and emergent diseases. Land-based tourist presence and intensity has been shown to have a significant overall negative effect on iguana health. Overall population trends are difficult to estimate without comprehensive population size monitoring data; however, the multitude of known anthropogenic threats found across the archipelago are sufficient to support an estimate of an overall population reduction of at least 30% over the last three generations. Without significant invasive species control and enhanced protection from marine pollution, declines are projected to continue in the near future, exacerbated by increasingly frequent and severe El Nino events and human impacts that affect all populations. We estimate that the per cent reduction over the past two generations and one generation into the future (ca 18–24 years) will also be at least 30%. This species qualifies for listing as Vulnerable (cited from the species IUCN Red List Assessment, MacLeod *et al.* 2020a).

***Amblyrhynchus cristatus* in international trade**

Since the species has been listed on CITES Appendix II already in 1975, their legal international trade can be followed from that year on. As stated in the Red List assessment, there was no legal export of live animals from Ecuador, but the trade database lists exports of specimens, bones, skins and so on for scientific purposes. From 2012 on, some records of live, captive bred marine iguanas can be found in that database. The international trade of live Marine iguanas documented in the CITES Trade Database seems to be based on trafficked individuals as a detailed examination of the available information revealed (Auliya *et al.* 2025).

In 2025 the notification No. 2025/063 by Ecuador, concerning „Trade in Galapagos iguanas (*Amblyrhynchus cristatus, Conolophus subcristatus, Conolophus marthae, Conolophus pallidus*)“ was published by the CITES Secretariat (MAATE 2025), because since 2022 new exports and imports for these species have been registered. The Government of Ecuador strongly requests all Parties not to issue permits or certificates for the import, export or re-export of [live animals or] specimens of these species without prior consultation with the Management Authority of Ecuador.

Conservation Actions Needed

Cited from the IUCN Red List Assessment: „Conservation and research actions recommended for the species include an improved knowledge of population size, trends, distribution, factors limiting population size, habitat trends, and invasive species management. Some populations are of particular conservation concern and further research on the impact of low effective population size is recommended. An increased understanding of the effect of widespread oceanic pollution, including oil spills and micro-plastics, on Marine Iguanas and their micro-biota (which enable effective digestion) is also needed. Improved biosecurity measures to prevent disease introductions, such as

West Nile Virus, avian malaria, and other are also recommended. Ongoing monitoring for introduced pathogens in Galapagos reptiles and other fauna is needed."

Nutritional Specialisation, Social Behaviour and Captive Breeding

Amblyrhynchus cristatus is a nutritional specialist for algae. The majority of iguanas graze intertidally on red algae (genera *Centroceras*, *Gelidium*, and *Pterocladia*), and the green algal genus *Ulva* when exposed during low tides. The largest iguanas of each colony also dive beneath the sea surface to forage on offshore algal beds (30 m offshore, 2–30 m depth). Some iguana populations have been known to supplement their algal diet with highly salty land plants, primarily Saltwort (*Batis maritima*), but also other coastal succulents such as *Sesuvium portulacastrum.*

In the wild marine Iguanas are territorial and aggressive: „Males of this lekking species defend territories during the mating season and use head-bob displays to court females. After copulating, females alter their skin colour and resemble breeding males, gaining red patches on their flanks and bright green colours along their dorsal spines. Females also alter their behaviour, elevating their posture and head-bobbing aggressively to courting males to signal that they have already copulated. After mating has finished and females move to the nesting area, they aggressively try to steal or defend nest sites from other females because high quality nesting sites are limited. Females defend nest sites for a mean of 3 days (range of 0–9 days) before and a mean of 5 days (range of 0–16 days) after egglaying" (cited from Rubenstein & Mikelski 2005). Nevertheless, some Marine iguanas could be kept in zoos for a few years, as detailed by Peaker (2019), see also Murphy (2015). For marine iguanas, the CTC Conservation Centre is the sole recorded facility, specifically noting the subspecies "*hassi*". Reports on a visit to this facility with an interview on keeping and breeding this species can be viewed from the Blog/Reptile TV page by M&S Reptilien (2024). The breeder mentions as cited from the video transcript: "Many people think they're difficult to feed. But ultimately, they're one of the easiest animals to feed that we have. Because they naturally only eat marine algae. Nowadays, you can order all the seaweed online, thanks to sushi and other things? That was my first thought too, to feed the marine Iguanas."

DGHT Position: Support

Amblyrhynchus cristatus meets the criteria for the transfer from CITES Appendix II to Appendix I. Obviously, trafficked species or perhaps their offspring, entered and still enter the international trade with the source code as being "captive bred". A transfer of this species to CITES Appendix I would help to curb the illegal trade by questioning this source code and requiring NDFs from the parties issuing the export permit for these lizards.

Additional Remarks

Populations undergo extreme fluctuations by cyclic, but unpredictably recurring, famine (El Niño) and feast (La El Niña) events. El Niño events dramatically reduce the abundance, diversity, and nutritional value of available marine algae, as the iguanas are unable to digest the algae that grow during these periods. That makes it difficult to assess the average population size and population trend. A Citizen Science Project using volunteers' ability to detect and count animals in aerial images is being developed and will greatly help to get more reliable population size assessments (Varela-Jaramillo *et al.* 2024).

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CoP20 Prop. 23: *Conolophus* ssp. Galápagos Land Iguanas – Transfer to Appendix I

Proponent is Ecuador, where the species is endemic.

The proposal is justified as (abbreviated and translated from Spanish): "Iguanas in general, apart from the impact of the El Niño phenomenon, are directly threatened by human activities in populated areas, roads and airports, where the impact of stress has increased. This threat has led to habitat degradation and marine pollution, including oil, diesel and petrol spills, such as those that occurred in 2001, when mortality exceeded 60% of the population. In addition, humans bring with them the possibility of introducing new invasive species. The presence and intensity of land-based tourism has been shown to have a significant negative effect on the health of iguanas. In addition, there is illegal international trafficking, mainly targeting hatchlings and juveniles. Ecuador has never allowed the commercial export of live specimens of *Conolophus* spp., and the removal of these species from the Galapagos Islands is prohibited. However, there is currently international trade in pets of this species, not to mention cases of smuggling with prosecutions and trials between 2010 and 2015, where the IUCN estimates that its entry into the pet trade is a cause for concern. The international trade and smuggling of iguanas involves hatchlings and juveniles that are indistinguishable between species, which is also a threat due to the decline in recruitment and viability of wild populations. It is necessary to include the entire genus *Conolophus* in Appendix I to stop the poaching of specimens for illegal international trade, as well as to control exports of captive-bred specimens whose origin is illegal. Furthermore, it is important that the entire genus be included in order to protect the two future species of *Conolophus* that are awaiting recognition as species and which, due to their tiny population and range, should be classified as endangered."

Morphology and Taxonomy

The Galapagos Land Iguana genus *Conolophus*, is endemic to the Galápagos archipelago. The number of species of this variable genus has always been disputed; the most current taxonomic surveys suggest that three species exist.

It may well turn out that the Galápagos Land Iguana, *Conolophus subcristatus,* might be a species complex. The western (Isabela and Fernandina) populations of *Conolophus subcristatus* appears to be sister to the Barrington Land Iguana (*Conolophus pallidus*; Gentile *et al*. 2009). Further analysis (Rassmann *et al*. 2004, Gentile *et al*. 2009) shows that these western populations and the central island populations of *C. subcristatus* form two separate clades, consistent with the pattern of morphological differentiation described in Snell *et al*. (1984). Tzika *et al*. (2008) suggest that some populations of *C. subcristatus* may deserve recognition as species, on Plaza Sur in particular, based on their genetic differentiation within the genus (see also Marquez B. *et al.* 2010, Gentile *et al.* 2013). However, a scientific description of these one or two new species is yet to be completed.

The Plaza Sur Iguanas are known to hybridize with *Amblyrhynchus cristatus* where they occur sympatrically (Rassmann *et al.* 1997).

Barrington Land Iguanas, *Conolophus pallidus*, appear to be sister to the clade composed of the western (Isabela and Fernandina) populations of *Conolophus subcristatus.* Molecular analysis shows extremely low genetic variation and richness compared to sampled populations of the Common Land Iguana (*Conolophus subcristatus*).

Conolophus marthae was described only in 2009. No prior reference exists in the taxonomic literature as the species was not known before its description (Gentile and Snell 2009). The description was based on morphological, genetic, and behavioural diagnostic traits. The holotype is a free-living adult male tagged with a subcutaneous electronic marker, branded, and released. The pink land iguana, *Conolophus marthae*, is syntopic with a population of *C. subcristatus* throughout its small range. No

evidence suggests that hybridization between the two species occurs at present (Di Giambattista *et al.* 2018), but potential interspecific competitive interactions may exist (Gargano *et al.* 2022). Indeed, the very limited distribution of *C. marthae* within the Island of Isabela is itself suggestive of a negative demographic interaction between this species and the more widely distributed *C. subcristatus*.

Population Status and Main Threats

The Galápagos Land Iguana, Common Land Iguana or Yellow Land Iguana, *Conolophus subcristatus* (Gray, 1831) has been assessed as VU (Vulnerable) in 2020 (Kumar *et al.* 2020).

The Barrington Land Iguana or Santa Fe Land Iguana, *Conolophus pallidus* Heller, 1903 has been assessed as VU (Vulnerable) in 2019 (Gentile & Grant 2020).

The Galapagos Pink Land Iguana or Pink Iguana, *Conolophus marthae* Gentile & Snell, 2009, has been assessed as CR (Critically Endangered) already in 2012 (Gentile 2012), see also Colosimo *et al.* (2022).

All the *Conolophus* species and their subpopulations are more or less declining due to various reasons. [Galápagos] land iguanas were never a major target for exploitation. However, once feral cats *Felis catus* and dogs *Canis familiaris* entered their domain, their survival was at risk (Cayot 2008).

For *C. subcristatus*, the predominant threat persisting over the last 100 years has been from invasive alien mammals including feral dogs, cats, pigs, goats, and donkeys (Equus asinus). Feral dogs have been the most harmful as they are capable of killing large adults and were responsible for the near extirpation of subpopulations on Santa Cruz and Isabela in the 1970s. Grazing mammals are competitors as they degrade essential vegetation, as well as trampling and destroying nests. Pigs are also known to dig up nests and consume iguana eggs. Today, feral dogs, pigs, goats, and donkeys have been greatly reduced and completely eliminated on a number of islands. However, feral cats remain a strong threat, are widespread on Isabela and Santa Cruz, and prey heavily on juveniles up to two years of age (Kumar *et al.* 2020).

C. pallidus experienced a severe genetic bottleneck in the past and now exhibit very low genetic diversity compared to other land iguana populations. Low genetic variability may have serious consequences for the fitness of the population and could reduce their ability to rapidly adapt to changing environmental conditions (including infectious disease) and demographic stability. Santa Fé island is one of the few Galápagos islands where iguanas are not threatened by invasive alien predators such as cats (*Felis catus*) and Black Rats (Rattus rattus), so these mammals are no problem there (Gentile & Grant 2020). In the Red List assessment an additional remark can be found: “During 2015–2019, 549 juvenile Espanola Tortoises (*Chelonoidis hoodensis*) were released on Santa Fe, and more releases are planned annually until 2026 (Galapagos Conservancy 2015, 2019). Tortoises compete with land iguanas for scarce food resources, such as *Opuntia*, that are stressed during periods of drought. While this introduction is meant to replace a species that went extinct more than 150 years ago, the size of that historic tortoise population is unknown“. But on the other hand, Tapia Aguilera (2024) states: „An interesting effect was the notable increase in the density of the land iguana (*Conolophus pallidus*) endemic on the island associated with the introduction of tortoises. Before the tortoises were released, there were 4.5 individual iguanas per hectare, but five years after the return of the tortoises, 6.2 iguanas per hectare were recorded. This suggests a positive effect for iguanas.“

Only a single population of about 200 adult pink iguanas, *Conolophus marthae*, exists, which was confined to the northwestern slope of Wolf Volcano on Isabela Island. Hatchlings were never encountered, and juveniles were rarely observed. Although feral cats do not pose a significant threat to the adults of most large iguana species, they actively prey on hatchlings and juveniles. For these reasons, a project for the control of these introduced mammals on Wolf Volcano is now ongoing

(Gargano *et al.* 2024). Recently, a novel herpesvirus was discovered in wild, clinically healthy, pink iguanas. Further research is needed to understand the implications of this virus in the conservation and management of one of the most endangered iguana species in the world (Nieto-Claudin *et al.* 2024).

The *Conolophus* species in international trade

Since the species has been listed on CITES Appendix II already in 1975, their legal international trade can be followed from that year on. As stated in the Red List assessment, there was no legal export of live animals from Ecuador, but the trade database lists exports of specimens, bones, skins and so on for scientific purposes. All of a sudden, 2 allegedly captive bred *Conolophus marthae* were exported from Mali to Switzerland in 2010, together with 2 *C. subcristatus*. In 2014, 4 *C. subcristatus* were exported from Switzerland to Uganda, and from 2017 on, there are many exports of captive bred *C. subcristatus* from Uganda.

The international trade of live *Conolophus* sp. as documented in the CITES Trade Database seems to be based on trafficked individuals, as a detailed examination of the available information revealed (Auliya *et al.* 2025). The smuggling still goes on, as a report by Plan V (2023) shows. Together with some Galapagos tortoises, 5 *Conolophus subcristatus*, obviously from Santa Cruz, were found, wrapped up for a long-distance transport, on a tourist vessel by a naval patrol in 2022.

In 2025 the notification No. 2025/063 by Ecuador, concerning „Trade in Galapagos iguanas (*Amblyrhynchus cristatus, Conolophus subcristatus, Conolophus marthae, Conolophus pallidus*)“ was published by the CITES Secretariat (MAATE 2025).

Conservation Actions Needed

Conolophus subcristatus has several distinct populations under different environmental conditions. The main threats are introduced mammal predators. Research on the population on Fernandina which is already free of these predators, showed a high population density. The population estimate for males on La Cumbre is six males per hectare (range 2–10). If Galápagos land iguana populations basically have an equal sex ratio, as appears to be the case on islands free of predators, a density of 12 adult Galápagos land iguanas per hectare can be assumed (Ortiz-Catedral *et al.* 2023) Ongoing efforts by the Directorate of the Galápagos National Park and Island Conservation to control or eradicate introduced predators and browsers from other islands in the archipelago will facilitate the recovery of iguana populations and assist the Directorate as it refines its conservation goals and population size targets for *C. subcristatus* across its geographic range as control and eradication efforts continue.

For *Conolophus pallidus*, no conservation actions seem to be in place. Conservation and research actions recommended for the species include further genetic analysis of the historic specimen collection of Barrington Land Iguanas from the era before the goats were on the island (Gentile & Crant 2020).

For *Conolophus marthae* there is a conservation and management plan in place (Rueda *et al.* 2023), and to guarantee the long-term survival of *C. marthae*, the Galápagos National Park Directorate is considering, along with an ongoing campaign of feral cat control, the implementation of a head-start program (Gargano *et al.* 2024). The first results of a population dynamics assessment in the area where cats had been reduced shows that the population size, which had been estimated at 150–270 adult individual, had not changed, but it provides the first clear indication that the only known *C. marthae* population actively recruits new members from younger age classes (Garizio *et al.* 2024).

Ecuador recommends ex situ breeding centres for the *Conolophus* species on the mainland (Mestanza-Ramón *et al.* 2020): “It is important to remind the control authorities, Ministry of the Environment, what is stated in their laws, such as the constitution, NPWM and OECE, whose objective and main purpose is the conservation and rehabilitation of biodiversity, but not economic interests that seek to profit from false processes of ex-situ conservation. We recommend that more attention should be given to revive the ex-situ conservation strategies in protecting the unique biodiversity of Ecuador. Finally, a challenge for Ecuador is to propose reforms to its policies and strategies on ex-situ conservation processes that will allow the prompt adoption of transparent and objective guidelines on how, which and when a species should be adopted for ex-situ conservation strategy according to the guidelines recommended by the IUCN/SSC.”

Captive Breeding

Cayot (2008) summarizes the conservation and breeding efforts for different populations of *Conolophus subcristatus*.

Historically, the Baltra iguanas were the largest in the archipelago. However, when the Hancock Expedition visited the island in 1932 and 1933, the iguanas appeared malnourished. Introduced goats had devastated the vegetation. In an attempt to help the iguanas, the scientist Cy Perkins and members of the expedition transferred 70 iguanas to North Seymour, the island to the north of Baltra where there were no land iguanas and no goats.

In a population survey in 1975 it became obvious that the populations on Isabela (Bahía Cartago) and Santa Cruz (population of Cerros Dragón and Montura) were endangered due to predation by feral dogs and cats, and the North Seymour population had a too low reproduction rate for unknown reasons, it was decided to reinforce the populations by captive bred animals. In the same year the Land Iguana Program was initiated in the Charles Darwin Research Station on the island of Santa Cruz and the first enclosures were built.

Marquez *et al.* (1991) give more details on the beginning of the Land Iguana Project. In 1976, sixty animals from Santa Cruz (population of Cerros Dragón and Montura) and forty animals from Isabela (Bahía Cartago) were brought to the breeding centre of the Charles Darwin Research Station on the island of Santa Cruz.

In 1980 the first couple from Seymour Island – the former Baltra iguanas - came into the breeding centre and produced 13 juveniles. In 1985 another 6 females and 2 males from that island joined that group so that at the time of writing, 1991, already 79 juveniles of the former Baltra iguanas up to 7 years old lived in the centre. Additionally, nests were located on North Seymour and eggs and/or hatchlings brought to the centre near the end of the incubation season, thus eliminating the need to maintain adults in captivity (Cayot 2008). The young were reared in captivity during their most vulnerable years and then released on Baltra. The first 35 young iguanas were released in June 1991. In total, 420 iguanas have been repatriated to Baltra and their survival rate appears high.

In the breeding centre within the Charles Darwin Research Station, it was difficult to keep all the adult iguanas, because of frequent fights in the few available enclosures (Marquez *et al.* 1991), therefore in 1976, 39 iguanas of the Santa Cruz group were brought to the Venecia islands, NNE from Santa Cruz Island, to reproduce in semi-captivity. Cayot (2008) mentions that they reproduced there, as soon as the soil they needed for nesting was brought to the Venecia as well, but their nutrition had to be adjusted, and the natural plant diet was supplemented with lentils, quinoa, vitamins, minerals, and other ingredients. The iguanas on Venecia breed and juveniles are then repatriated to Santa Cruz. The transfer of iguanas from Venecia to Santa Cruz continues today [2008], approximately every three years (Cayot 2008).

Recent surveys have shown that both populations, Baltra and North Seymour, are healthy and increasing. The Breeding Centre of the Charles Darwin Foundation still keeps Galápagos Land Iguanas, but more information on breeding success is not available.

Auliya *et al.* (2025) reviewed the history of keeping and breeding *Conolophus* spp. outside the Galápagos archipelago: "Zoos in the United States also had challenges caring for Galápagos land iguanas (*Conolophus subcristatus*) from 1929 to 1966, with 16 of 25 individuals perishing within days to months (land iguanas were kept by zoos in Chicago, Oklahoma, and Philadelphia). Only nine individuals survived from one to seven years. The only Barrington land iguana (*C. pallidus*) kept by the Brookfield Zoo in Chicago in 1941 died after 1.5 years. In Europe, there is a record from London Zoo for seven Galápagos land iguanas received in 1902 and from Frankfurt Zoo for three individuals in 1960, with both records lacking information over the entire period in which the animals were housed at the zoo. More individuals were reportedly held by the Zurich Zoo in the 1960s, without any indication of the number of individuals held."

The CTC Conservation Centre has published a video on keeping and breeding *Conolophus subcristatus*, see the reports on a visit to this facility on the Blog/Reptile TV page by M&S Reptilien (2024). The breeder shows a male which is ten years old, he says that the females usually lay once a year, but he has even had 2 clutches from one female in a year. Young, freshly sexually mature, females usually lay 6-8 eggs, older animals around 18-20 eggs per clutch. The iguanas are fed all kinds of greens, some of them also like to eat grasshoppers, while others don't like them at all and have no interest in insects.

DGHT Position: Support

The *Conolophus* species meet the criteria for the transfer from CITES Appendix II to Appendix I. Obviously, trafficked species or perhaps their offspring, entered and still enter the international trade with the source code as being "captive bred". A transfer of this species to CITES Appendix I would help to curb the illegal trade by questioning this source code and requiring NDFs from the parties issuing the export permit for these lizards. For Galapagos iguanas a DNA database is already existent that can support enforcement efforts (Gentile *et al.* 2013), which will benefit from international collaboration and coordination of multiple stakeholders (e.g., scientists, zoo personnel, national park officers, NGOs, and law enforcement authorities).

Additional Remarks

There are a few private protected areas where the owners obviously try to protect "their" native iguanas from feral cats and dogs. These private initiatives should be scientifically monitored and supported if necessary.

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CoP20 Prop. 24: *Bitis parviocula* and *Bitis harenna* – Include in Appendix I

To include *Bitis parviocula* and *Bitis harenna*, both endemic snakes of Ethiopia, in Appendix I in accordance with Res. Conf. 9.24 (Rev CoP17).

Proponent is Ethiopia, where both species are endemic.

The proponent states that although the Ethiopian government is doing its utmost to reverse deforestation and rehabilitate degraded forest land, deforestation remains a critical threat to biodiversity in Ethiopia, including to endemic species such as *B. parviocula* (Spawls 2021). In addition, both *B. parviocula* and *B. harenna* are striking in appearance and highly attractive to reptile pet keepers. Due to their restricted distribution and small population sizes, it is highly likely that the survival in the wild of both species is also threatened by illegal collection for the international pet market.

Morphology and Taxonomy

In the original description Böhme (1977) states for the museum specimen of *Bitis parviocula* (translated from German): "A medium-sized (750 mm) species belonging to the group *arietans* (Merrem, 1820), *gabonica* (Duméril, Bibron & Duméril, 1854), *nasicornis* (Shaw, 1802), which differs from *arietans* mainly by its body markings, reminiscent of *nasicornis*, and from *nasicornis* and *gabonica* by the absence of horn formations on the snout. It differs from all three species by its relatively smaller head, which is less distinct from the neck, with very small eyes and nostrils, and relatively short fangs".

Gower *et al.* (2016) describe *Bitis harenna* from a specimen which had been collected 1966 or 1967 in the Harenna Forest by a person from Denmark, who deposited it in the Zoological Museum, University of Copenhagen, Denmark. This is now the type specimen of *B. harenna* Gower, Wase, Spawls, Böhme, Buechley, Sykes & Colston, 2016. In 2013 a living snake of this species, obviously a male, was seen crawling on a road and photographed, but not collected, since it moved slowly off the side of the road and into undergrowth when the observers left the vehicle for closer inspection. Since the large *Bitis* species are mainly nocturnal, drift fence trap arrays were immediately installed along both sides of the road where the living snake had been photographed, and the road was travelled frequently during several months, but without success. In 2015 a second specimen, an adult female, has been collected and brought to Robe University in Ethiopia. The animal was later determined by Arthur Tiutenko as *Bitis harenna*. Tiutenko is an experienced herpetologist who has repeatedly conducted research in the Harenna Forest (see for example Tiutenko 2018). Another specimen has been photographed in 2017, which brings the number of known findings up to four: Two specimens are in museum collections, and the two others were found alive – they have been released after being photographed and measured.

The fresh brain or skin of *Bitis harenna* is said to be used as a natural medicine in southern Ethiopia against eye problems (Kebebew *et al.* 2021), but the species determination in this publication would certainly need to be verified.

B. parviocula and *B. harenna* are sister species. They can be distinguished from other *Bitis* species by the dorsal pattern, which is not comprising V-shapes, and a pale transverse stripe on the dorsum of the head substantially behind level of eyes (as far behind eyes as eyes are from snout tip). In living *B. parviocula* the ground colour is yellow, greenish, tan or brown, the dorsal pattern consists of alternate blackish hexagons and yellowish butterfly shapes. In *B. harenna*, the ground colour is black and the dorsal pattern consists of fine to broad yellowish reticulations.

Population Status and Main Threats

Since 2017 no *Bitis harenna* could be located in the wild, despite thorough searching (Tiutenko pers. comm., see also Tiutenko 2017), and *B. parviocula* has been considered as Endangered with decreasing population trend in the IUCN Red List assessment (Spawls 2021).

In their original description of *B. harenna*, Gower *et al.* (2016) state that any large snake, especially a probably venomous one, is likely to face persecution in Ethiopia. We are unable to support Nečas *et al.*'s (1993) comments about *B. parviocula* being revered and protected by local folklore, and all three specimens of this species in museum collections have been damaged and were likely killed (or at least smashed post mortem) by local people. The region as a whole is under great pressure from agriculture and increasing urbanization, exacerbated by very high human population growth.

***Bitis parviocula* in international trade**

In the IUCN Red List Assessment, Spawls (2021) states that a single shipment of 30 individuals was exported from Ethiopia to the United States in around 2005, and the species has since been bred in captivity and been sold widely on the internet. It is thought that all animals currently in the international pet trade, including those in Europe, are descendants from this original import and that the species is not collected from the wild.

Smith (2011) followed the *Bitis parviocula* trade more closely, and we could gather some additional information.

In 2001 or 2002, a few *B. parviocula* were exported from Ethiopia and bought by a well-known reptile trader in Florida who offered them for sale. It is not known what happened to these animals later.

In 2005 an Ethiopian reptile dealer exported 13 living *B. parviocula*, labelled as *Bitis arietans*, to Germany. In September 2005 one pair of them was sold at the trade fair in Hamm, the remaining animals were offered again there in December 2005, where another pair was sold, but later these animals died, probably from an infection with Paramyxovirus.

Around the turn of the year 2007/2008 at least 21 wild-caught *B. parviocula*, among them gravid females, were imported as "*Bitis arietans*" or as "*Bitis genus*" into the USA. They reproduced there, and most of the snakes were sold to private people or to zoos. In some facebook groups, US private keepers regularly show photos of obviously captive bred *B. parviocula*.

In 2008 a Swiss reptile trader travelled to Ethiopia and exported all in all about 150 *B. parviocula*. Most of these animals were sold to the USA via Switzerland, but some of these animals remained in Europe and are the founder stock of most of the European *B. parviocula*. The legality of the Ethiopian export licence and the trade name of these animals is not known for certain, but they came from the same Ethiopian dealer as the shipments before, and were probably labelled as "*Bitis arietans*" as well.

In 2014 again, about 20 *B. parviocula* were exported, this time to the Czech Republic, where private persons could acquire and breed them, but breeding attempts in Czech zoos have not been successful (see "Zootierliste", Graf *et al.* 2025).

After 2014 no more wild-caught *Bitis parviocula* could be located in trade. The text to screenshot 2 in the proposal is a misinterpretation: In May 2023, an US trader stated on Instagram that he brought "a fairly large amount" of *Bitis parviocula* from Ethiopia "into the US over recent years". In that posted screenshot the trader in fact says that the snake is called the Ethiopian mountain adder, and that he hopes that these will consistently be bred in the US (see below), but he did not say that the animals which he had brought to the US were directly coming from Ethiopia.

The advertisement photo from 2021 (page 17, screenshot 15) shows certainly not a *B. harenna* – this animal is still alive in 2025 and is in fact a captive bred, rather dark coloured female *B. parviocula*. According to the initial description, this animal differs from *B. harenna* in that it lacks narrow, cream-coloured markings on the head and back, a black median dorsal stripe extending between the nostrils on the head, predominantly black colouration, and greenish markings on the back and head.

Conservation Actions Needed

Deforestation is a real threat to both these species, as the forests of southwestern Ethiopia are subject to human encroachment for agriculture and logging and are not protected. Google satellite images indicate that the extent of the forest has declined in recent years. While *B. parviocula* may be ecologically able to survive in disturbed habitats, the needs of *B. harenna* are unknown. Both these species are large, slow-moving and venomous snakes, and will not persist in the presence of humans as a result of persecution (adapted from the IUCN Red List Assessment). Although the Ethiopian government is doing its utmost to reverse deforestation and rehabilitate degraded forest land, deforestation remains a critical threat to biodiversity in Ethiopia (cited from the proposal). Surveys are needed to determine the distribution areas of both species, these should be integrated into the national protected area network of Ethiopia, and the protection and recuperation of the natural vegetation there should be enforced. Additionally, the local population should be educated to see snakes as a helper in vermin control which must not be killed.

For the conservation of *B. harenna*, a captive breeding programme should be considered, and if living animals could still be located, they should be brought into human care to a really experienced *Bitis* breeder.

Captive Breeding

In the proposal we find the statement that it is common practice for reptile collectors to target gravid females in the wild and subsequently offer the young for sale as “captive-bred” once they are born in captivity. This might have been true for the *B. parviocula* which really came from Ethiopia, but afterwards this species has been bred in consecutive generations in private husbandry.

From the proposal: „Although Maritz *et al.* (2013) reported the birth of three litters of two female *B. parviocula* in captivity in 2013, this report lacks critical information including any information regarding the male parents and the origin of the founder stock. This casts significant doubt on whether this report is sufficiently reliable as proof of breeding in captivity.“ In fact this breeder reported to friends about 6 or 7 litters from different females, presumably of Swiss founder stock, with altogether between 50 and 100 healthy juveniles.

The proposal states that although *B. parviocula* is currently being kept in three zoos within the European Union, two zoos in the United Kingdom, ten zoos in the United States (see Graf *et al.* 2025), and presumably countless breeders and traders, there is only one reliable breeding report of *B. parviocula* in captivity, highlighting the complexity of achieving successful breeding (Kane *et al.* 2022). This one report was from London Zoo, describing the birth of one litter of 13 young in 2021. The origin of the founder animals is unknown (Kane *et al.* 2022).“

Obviously, this publication was not available in full text to the authors of this proposal. „Two *B. parviocula* were donated to ZSL London Zoo in August 2016. These snakes were reportedly F2 captive bred in the private sector and approximately one year of age at the time of arrival.“ These snakes were second generation descendants of the animals imported into Switzerland in 2008. This is quite plausible, since the gestation period is long and the female usually gives birth to her first litter at usually three to four years of age, so that the mothers of these donated animals had been born perhaps in 2010 or earlier.

Later we find in Kane *et al.* (2022) that … "the female gave birth overnight. A total of 13 young were removed from the vivarium… One young was stillborn, and four presented with deformities of variable severity, including severe scoliosis and kyphosis of the spine and externalised viscera. … The remaining eight snakes were all physically healthy. … The reproductive event described herein produced eight male and five female young. … The Pedigree of the breeding pair of *B. parviocula* from ZSL is unknown, therefore relatedness cannot be ruled out as a contributing factor to the deformities observed in some of the neonates". This is also plausible, since *Bitis* spp. are known to be sensitive to inbreeding (Egan & Grant 1993), and in the first litter of young females deformed young occur rather frequently.

The colouration of *B. parviocula* is quite variable. Even within one litter there are very differently coloured juveniles, as mentioned also in Dobiey & Vogel (2007).

Breeding of *B. parviocula* in zoos is in fact rare, and rather often the animals which had been donated to the zoos from private breeders did not survive long there, as judged from really disappointed posts in the breeder's forums on the internet and in the social media.

Private breeders are much more successful even if breeding this *Bitis* species is rather tricky. We know of more than ten breeders in Europe with actually more than 20 litters and altogether more than 300 healthy juveniles in the first, second and third breeding generation. More experienced *Bitis* spp. keepers are still raising the juveniles to later enlarge the ex-situ population. A scientifically guided European studbook to manage the genetic diversity of this captive population is being considered by these private keepers and breeders, and a publication on husbandry and captive breeding of *B. parviocula* is being compiled (Lindner *et al.* in prep.).

DGHT Position: Reject

Bitis parviocula and *B. harenna* do not meet the criteria for Appendix I listing. In this proposal, CITES Appendix I listing is justified as: "*B. parviocula* is regularly offered for sale on the pet market in Europe and the United States, strongly suggesting that poaching and smuggling of wild-caught individuals takes place regularly." The animal exchange of this species should have been better researched, since the animals in trade are in fact bred in captivity, but *B. parviocula* is rarely seen in the wild, and *B. harenna* has not been found in the wild recently despite intensive searching, implying that natural populations may have already disappeared due to killing by locals for fear of snakes.

In CITES Terminology, Appendix I includes all species threatened with extinction which are or may be affected by trade. Trade in specimens of these species must be subject to particularly strict regulation in order not to endanger further their survival and must only be authorized in exceptional circumstances. For *Bitis parviocula* and *B. harenna* this does not apply, since no wild-caught *B. parviocula* could be found in trade for more than ten years, and *B. harenna* was never seen alive outside Ethiopia.

On the other hand, a coordinated ex-situ breeding effort, including the experienced private breeders in several European countries and perhaps in the US as well, would really be necessary for species conservation, but establishing a genetically managed conservation breeding programme would be impossible if the species is to be listed on CITES Appendix I, because then the necessary animal exchange between the private breeders would be impossible.

Additional Remarks

The referenced unpublished PhD thesis by Heim, J. (in prep.): Not my Snake, not my Circus: Customary Illegality and Moral Economies in the *Bitis* Trade has been classified as a trade analysis in this proposal, but already the title of the paper suggests that trade in these animals is generally

considered illegal or criminal, which is also implied by the term 'criminogenic collectible' for rare species used in this working group (see Mackenzie *et al.* 2024). In the CITES context such biased research should better not be used to justify a listing proposal.

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CoP20 Prop. 25: *Crotalus* spp. and *Sistrurus* spp. – Include in Appendix II

Translated form the Spanish original version: "Include *Crotalus lepidus* and *Crotalus ravus* in Appendix II in accordance with Article II, subparagraphs a) and b) of the Text of the Convention and Resolution Conf. 9.24 (Rev.CoP17) in its Annex 2a, subparagraph B, and the genera *Crotalus* and *Sistrurus* in Appendix II in accordance with its Annex 2b, subparagraph A."

Proponents are the Plurinational States of Bolivia and Mexico. Responses in support of the proposal were received from Costa Rica, Honduras, and Uruguay, while the European Union and the United States provided general information and recommendations, see Annex 6 Figures 5 and 6.

The proposal is justified as (translated from Spanish): "The rattlesnake *C. ravus* is a species restricted to central Mexico, while *C. lepidus* is found from the southern United States to central Mexico; both species are associated with rocky, open areas, mainly in oak forests. Although no population data are available, both species currently appear to be abundant or are considered rare, even in Protected Natural Areas. *C. ravus* is considered Threatened and *C. lepidus* is considered Subject to Special Protection in the List of Species at Risk in Mexico, although recent assessments suggest that they could qualify as Endangered and Threatened, respectively. Both species are subject to human persecution because they are venomous, and they are under pressure from land use change, especially *C. ravus*. They are also present in legal national and international trade, mainly originating from captive breeding in low numbers. With regard to illegal trade, *C. ravus* is harvested nationally for use as pets or medicinal remedies, being the fourth most seized *Crotalus* species nationally (~10% of rattlesnake seizures), while *C. lepidus* also appears to be widely collected for the production of dried meat capsules that are exported (around 720 individuals annually, although a higher unreported magnitude is estimated) without collection or use permits. Considering the conservation status, the rarity of populations in the wild, and the high level of collection nationwide for various purposes (including international trade in derivatives), it is estimated that their extraction may have a significant impact on their populations, which, combined with national threats, may lead to the isolation or extirpation of local populations.

It is also necessary to include the genera *Crotalus* (55 species) and *Sistrurus* (3), as most specimens in international trade (extracts, derivatives, pieces of skin, clothing items) are very difficult to identify at the species level. … The inclusion of these genera in Appendix II will enable the regulation and monitoring of their international trade, facilitate the implementation of controls and reviews by Law Enforcement Authorities (reducing the need to handle venomous specimens if, for example, only two species were included), as well as the exchange of information and registration in international databases (such as the CITES Trade Database). This will particularly benefit control of species in Mexico, which has 30 endemic species, several of which are registered in international trade, without Mexico having legally exported them, and which are even found in breeding facilities in other countries"

Morphology and Taxonomy

Crotalus lepidus (Kennicott, 1861) is native to the southern U.S. and Mexico, ranging from southeastern Arizona to western Texas and south through northern and central Mexico. Three subspecies are recognized: *C. l. klauberi*, *C. l. lepidus*, and *C. l. maculosus*. Rock rattlesnakes are small- to medium-sized snakes, typically reaching 60 to 70 cm in length, though some males may exceed 80 cm. Males tend to be larger than females. The colour pattern varies greatly, but generally reflects the colour of the rock in the snake's natural environment.

Crotalus ravus Cope, 1865 usually grows to a length of 40–65 cm, but may reach more than 70 cm. They are moderately stout in build. The distinguishing characteristics include parietal scales that are highly variable in shape and particularly large, less than 3 prefoveals, 21 midbody dorsal scales, 2–4

tail bands and a relatively large rattle. This species had formerly been assigned to the genus *Sistrurus*, and later reassigned to the genus *Crotalus* (Murphy *et al.* 2002).

The genus *Crotalus* is very speciose, a popular overview was already given by Monzel (2012). Myers *et al.* (2024) give an actual overview on their phylogeny, and Heimes (2016) gives an overview of the Mexican species.

Population Status and Main Threats

On the IUCN Red List, *Crotalus lepidus* is assessed as Least Concern (Hammerson *et al.* 2007), and *C. ravus* is assessed as Least Concern as well (Canseco-Márquez & Quijano-Mendoza 2007).

There are no actual population assessments. *C. ravus* is considered Threatened and *C. lepidus* is under special protection on the List of Endangered Species in Mexico (NOM-059-SEMARNAT-2010), although recent assessments suggest that these species could qualify as Endangered and Threatened, respectively (SEMARNAT 2018, Jiménez-Velázquez pers. comm. 2025 in the proposal).

Many factors threaten rattlesnakes in Mexico, such as habitat loss, illegal collection or because they are perceived as harmful organisms (Cantú & Sánchez 2024).

Rattlesnake products are easy to find in Mexican markets, stores and online platforms selling goods for natural/health, esoteric or witchcraft purposes. You can find all kinds of stuffed rattlesnake bodies, capsules, ointments, soaps, etc. (Cantú & Sánchez 2024). In Mexico and other Latin American countries, rattlesnake meat is sold in capsule form to treat impotence and rheumatism, even to treat cancer. Rattlesnake meat is also dried, ground and sprinkled on open wounds and sores to heal them, and a rattlesnake ointment is also made and applied to aches and pains. Rattlesnake oil is used to stop gossip. Some products claim to have a permit from the Ministry of Health on their labels, but is lacking information about permit from the Ministry of Environment that is mandatory. The legal origin of the specimens, parts and/or derivatives of wildlife must be accredited with the mark showing that they have been subject to sustainable harvesting and the authorized harvesting quota, or the remittance note or invoice, in accordance with Article 51 of the General Wildlife Law (LGVS) and Articles 53 and 54 of the Regulations of the General Wildlife Law (RLGVS).

***Crotalus lepidus* and *Crotalus ravus* in international trade**

Since 2000, the use of wildlife must be done through Units for Wildlife Conservation (UMA), facilities that manage wildlife in a confined manner, outside their natural habitat (PIMVS), or with a permit for subsistence use. 24 UMAs, and 33 PIMVS are registered with the Environment Ministry of Mexico (Cantú & Sánchez 2024).

In 2022, 11 live *Crotalus ravus*, 8 *C. lepidus* and 6 *C. polysticus* have been exported to the USA. All specimens came from captive breeding facilities or PIMVS. Trade with Mexico in particular is limited for *C. ravus*, while trade in *C. lepidus* consists mainly of medical products (extracts, pills), which accounted for 99% of reported specimens.

Trade in species of the genera *Crotalus* and *Sistrurus*, including derivatives, is focused on skins. The proposal states that Mexico exported significant amounts of *Crotalus* spp. skin products to the US during 1995–1999, all specimens taken from the wild (Arroyo-Quiroz *et al.* 2007). This statement is contradictory to what is summarized in the cited publication: „Mexico … still relies on reptile skins from non-native species. In contrast, the smaller numbers of skins used from native species mainly derive from captive breeding schemes that, although biologically sustainable, provide no incentive for habitat conservation. Sustainable use of reptile skins from native species could positively encourage conservation in Mexico. However, as a megadiverse country with potential to produce wildlife,

Mexico will have to implement an appropriate regulatory framework to support local communities to promote the sustainable use of native species."

The illegal trade with live rattlesnakes and rattlesnake products has been analysed in detail by Cantú & Sánchez (2024). The most common forms of illegal international trade involve smuggling across borders. Three overland routes for wildlife trafficking that end up at the border with the USA have been identified, and the two most important are the Pacific which follows the Pan-American highway and the Gulf of Mexico. The seizure data of PROFEPA of live rattlesnakes and parts of rattlesnakes for the years 2000 to 2023, show that 679 rattlesnakes from 24 species were seized. The seized snakes could not be identified at the species level because PROFEPA inspectors cannot be experts in the identification of all the species of fauna and flora they must deal with daily, and even many of the identifications at the species level cannot be guaranteed to be all correct. The seizure of parts and derivatives from 2000-2023 demonstrates most of the seizures (1,225) were of complete bodies of desiccated carcasses or bodies that generally have the rattle attached so that anyone can identify them as belonging to a rattlesnake. This was followed by skin and leather parts (188), as well as manufactured goods (176) like boots, bags, wallets, etc. The identification of species in the parts and derivatives in the illegal trade is much more challenging than that of live specimens and thus 84% (2433) of the seizures are at genus level.

Fitzgerald *et al.* (2004) noted: "The offer for the sale of numerous reptile species endemic to Mexico by reptile dealers outside of Mexico, especially in the United States, indicates that illegal exports are taking place. Although many of these species are now bred in captivity, the original breeding stock was probably exported illegally from Mexico". This is not a valid conclusion, since many specimens of rattlesnakes have been collected and exported before any legal regulations have come into effect. Rattlesnakes are long-lived (see for example Bowler 1975), and many species have been bred over decades to the F2 and higher generations (see details in Klauber 1956 and Mertens 1964).

Conservation Actions Needed

We agree with the action plan for the conservation of the Mexican rattlesnakes (SEMARNAT 2018):

1. Promote coordination between federal, state, and municipal government agencies, as well as academia, civil society, landowners, indigenous groups, and the general public in order to achieve the objectives and goals of this programme.

2. Mitigate the impacts of human activities that affect the habitat of rattlesnakes in Mexican territory.

3. Reduce conflicts between people and rattlesnakes through prevention, training, awareness-raising, dissemination and rescue of their cultural values.

4. Generate, systematise and analyse information on rattlesnakes and their habitat in Mexico with a management approach, through the participation of all actors that generate information on Crotalus species in Mexico.

5. Define conservation and management practices that are compatible with development in the regions where the different Crotalus species are distributed.

6. Establish the necessary short-, medium- and long-term activities to be carried out for the conservation of the species and determine indicators of success.

7. Promote a culture of identity with rattlesnakes among the population by disseminating their cultural values, their importance as Mexico's natural heritage and their appropriation as a national symbol, emphasising their role as regulators of different ecosystem processes.

The rules and regulations for species conservation in Mexico are sufficient, but the Red List should be updated. CITES listing is not an instrument for species conservation within the species' natural habitat, and certainly not for stopping illegal trade or even illegal collection, since this is an enforcement problem. For dealing with confiscated, live rattlesnakes, it would be necessary to develop forensic instruments for species / subspecies / local form identification and to determine the geographic origin of illegally wild-caught animals to release them back into the wild, or to integrate them into scientifically guided ex-situ breeding projects, which should be set up for really endangered species, as suggested for Mexican turtles in Pfau *et al.* (2021).

Captive Breeding

The natural history of many Mexican rattlesnake species has been outlined by Ávila-Villegas (2017).

Outside of Mexico, many species of *Crotalus* have been successfully bred in captivity for decades, and in doing so, gained many fundamental insights, see for example Ray *et al.* (2013), Senter & Gonsalves (2022), or Rivas Mercado (2025). More studies have been evaluated in Conservation Evidence (2025).

Rattlesnake keeping and breeding became even quite popular in the US, after the book by Klauber (1956) had been published. In Europe, the book by Trutnau (2004) is still the standard reference.

Harris & Simmons (1972) are perhaps the first to refer to captive breeding in *C. lepidus*. More detailed information on keeping and breeding this species is given in Lazcano *et al.* (2007).

Within Mexico, captive breeding of different rattlesnake species is achieved in Units for Wildlife Conservation (UMA – Unidad de Manejo para la Conservación de la Vida Silvestre) or in facilities that manage wildlife in a confined manner outside their natural habitat (PIMVS – Predio Incorporado para el Manejo de Vida Silvestre Fuera de su Hábitat Natural). No details on the breeding conditions are known for PIMVS, since very few PIMVS breed and advertise their animals online. Breeding has been done for several years now and there are some morphs available, like albino specimens (Cantú & Sánchez 2024). For UMA's, some information on the educational work is given in Ávila-Villegas (2017), as well as some photos of the breeding enclosures.

DGHT Position: Reject

Crotalus parviocula and *C. lepidus* are considered Least Concern on the IUCN Red List. Live animals and products of these two species in the legal international trade come from licenced captive breeding. Rattlesnakes are used in Mexico as food, medicine, for esoteric purposes, to manufacture products from their skin, soaps, oils, jewellery, taxidermy, etc., but most exported *Crotalus* products from Mexico do not contain material from these two species. Illegal collection and live trade of these two species are a problem within Mexico, but not internationally and would therefore not be tackled by a CITES listing.

CITES Appendix II includes species not necessarily threatened with extinction, but in which [international] trade must be controlled to support a sustainable use compatible with their long-term survival. This does not apply to *Crotalus lepidus* and *C. ravus*, the criteria for an Appendix II listing are not met, neither for live animals of these two species, nor for their look-alike relatives or products derived from them.

Additional Remarks

If Mexico aims to get some more profound information of the international trade of its endemic rattlesnake species, these would be optimal candidates 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. This approach has also been recommended by the EU (see Proposal Annex 6 Figure 5).

There is clear evidence that listing all rattlesnake species for “similarity of appearance” (look-alike criterion, according to Article II, paragraph 2 (b), A of the Convention) on CITES Appendix II is not justified, since exports of live snakes or any snake products are only permitted with a proof that the animal has been captive bred in a licenced UMA or PIMVS or that it was wild-caught with a special permit. The scientific name of the species must be given on any usage or export application and is thus already known when the shipment is entering the legal international trade.

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CoP20 Prop. 26: *Kinixys homeana*, Home's Hinged-backed Tortoise – Transfer to Appendix I

Proponents are Cameroon, Guinea, Nigeria and Togo. In response to the consultation sent to range states on 10 April 2025, Nigeria officially confirmed its support for the proposal.

The proposal is justified as (translated from French): *Kinixys homeana* is classified by the IUCN as critically endangered (Luiselli *et al.* 2021a). The species is experiencing a very significant population decline across much of its range, mainly due to significant habitat loss, intensive harvesting for subsistence and traditional medicine, and exploitation for international trade. There is clear evidence that wild populations of *Kinixys homeana* are in significant decline and are disappearing throughout the species' range. Net quantities of specimens of this species were exported between 1975 and 2018. According to currently available data, a total of 114,240 live specimens were exported mainly from Benin, Ghana and Togo during this period. *Kinixys homeana* meets the criteria for inclusion in Appendix I. It is a critically endangered species that is constantly overexploited legally and illegally, requiring additional protection from legal and illegal international trade to ensure its survival."

Morphology and Taxonomy

Kinixys homeana Bell, 1827 is a terrestrial tortoise species of moderate size, with a straight carapace length (CL) that does not exceed 220 mm. The shell varies in colour from dark brown to tan, and is distinguished by a pronounced vertical drop at the posterior end. The shape of the carapace also channels rainwater towards its head for drinking. The scutes are very flat, and the vertebrals are horizontal, giving the animal a decidedly angled appearance, especially toward the back.

Kinixys homeana is a forest tortoise, with a range extending throughout the coastal regions of the Gulf of Guinea, inside the continuous Guinea-Congo West Africa rainforest region. As a general rule, it can be considered as an obligate inhabitant of the continuous rainforest region.

The rainforest species group embraces *K. erosa* and *K. homeana,* whereas all other species are placed in the savannah species group. *K. homeana* and *K. erosa* are ecologically quite similar in many respects and are also morphologically extremely similar, nonetheless they are usually syntopic even at microhabitat scale, and have a wide greatly overlapping distribution across the continent. There are considerable problems in assessing the range of *K. homeana*, given its overall morphological similarity with *K. erosa* and the potential for misidentification in the field. The nuchal scute is present and narrow and long in *K. homeana*, as opposed to *K. erosa* that lacks a nuchal scute, but there is considerable individual variation. More detailed information on morphology, taxonomy and biology can be found in Luiselli & Diagne (2013).

Population Status and Main Threats

Kinixys homeana has most recently been assessed for the IUCN Red List of Threatened Species in 2019. *Kinixys homeana* is listed as Critically Endangered under criteria A2bcd+4bcd. Populations of *Kinixys homeana* are heavily declining throughout much of its range likely due to multiple factors including habitat loss and exploitation by local people for consumption, as well as commercial collection for urban bushmeat markets and the international pet trade (Luiselli & Diagne 2013; Mifsud & Stapleton 2014). According to Luiselli *et al*. (2021a), the estimated percentage involvement of threats driving this tortoise toward extinction is 50% habitat loss, 40% local consumption as bushmeat, and 10% exploitation for the international pet trade. „Field searches and community surveys have been conducted routinely at two sites in Ghana since 2010 (Allman & Agyekumhene, unpubl. data). Snail hunters started collecting *K. homeana* because of an increase in demand for pet trade export. The snail hunters indicated a previous harvest rate of 15 tortoises per day within Pra Suhein Forest Reserve, but this had decreased to 2–3 small individuals per day by 2017, and often they did not find any at all. These animals were collected for the sole purpose of export into the pet

trade“ (cited from Luiselli *et al.* 2021a, IUCN Red List Assessment). Luiselli *et al.* (2021b) suspected a more realistic Red List status for *Kinixys homeana* (from VU to CR) and *Kinixys erosa* (from DD to CR), since they are among the species with the most drastic declines in the last two decades.

In the bushmeat trade *Kinixys homeana* still plays a major role, and there are established trafficking routes for animals for consumption between the range states of this species (see for example in Koutchoro *et al.* 2024). The species is also important in the traditional medicine: Based on the relative frequency of citation of the animals sold for traditional medicine in Ghana, this species has rank 6 in the top 10 (Ameade *et al.* 2025).

***Kinixys homeana* in international trade**

“Although there is no way to quantify proportions of animals consumed locally versus animals traded internationally as pets, as fewer than 115,000 animals were officially exported range-wide over 45 years (about 2700/year), … suggesting that bushmeat consumption use (plus any unrecorded illegal exports) is ten times as large as live pet exports. The exported animals have variously been declared as originating from the wild, from ranching operations, or captive breeding facilities; however, documentation that ranching or captive breeding facilities operate effectively remains unavailable. Mirroring patterns seen in other legal and illegal wildlife trade, some (or most) of these specimens are likely taken from other countries and exported through Togo, Ghana and Benin“ (cited from Luiselli *et al.* 2021a, IUCN Red List Assessment).

From 2018 to 2023 which is the last record available in the CITES Trade Database, 1390 wild-caught tortoises, which were labelled as originating from Ghana, have been reported by the importers, but the quantity reported by the exporters is much lower, only 970 tortoises. In 2019, 30 “ranched” tortoises have been exported from Ghana to the US. Since there are several active facebook groups on *Kinixys* keeping and breeding in the US, it was possible to follow some of these tortoises – they were adult and in really bad condition on arrival, which is not consistent with the source code as being “hatched and grown up under acceptable conditions in human care”. In 2021, 25 “farmed” tortoises have been imported to Japan from Togo. There is no further record on these animals, but they had also likely been wild caught and mislabelled for the trade database.

The species has repeatedly been under review of significant trade. There is, for example, a recommendation from the CITES secretariat in the CITES Review of Significant Trade Management System to Togo with the deadline 31-Aug-2014: „The Management Authority should provide available information … on the control measures to differentiate between ranched, captive produced, and wild-caught specimens to ensure that the authorized exports of ranched and captive produced specimens are not augmented by mis-declared wild specimens“, and, based on this, another recommendation with the deadline 02-Jun-2016: “Conduct a national status assessment, including an evaluation of threats to the species; and advise the Secretariat of the details and any management measures in place (highlighting where new management measures have been introduced to take into account any new information available on the status of the species in Togo). Both recommendations have not been implemented. Togo continued to export several hundreds of *K. homeana*, with source codes as wild-caught, ranched and farmed until today.

Smuggling seems to occur as well, but there is considerable difficulty in species identification and imposing appropriate penalties, see for example this confiscation (La Repubblica 2019):

Due tartarughe a rischio estinzione in valigia, denunciato un uomo all'aeroporto di Capodichino

I due esemplari di "testudo marginata" erano stati introdotti senza documentazione da un 38enne ivoriano

This adult pair of *Kinixys homeana* (probably originating from Ghana where the flight had started), were identified as the much less expensive *Testudo marginata*, and "The offender, a 38-year-old Ivorian citizen, was reported to the authorities but is free on bail."

Conservation Actions Needed

Kinixys homeana has been listed in CITES Appendix II with all Testudinidae since 1977, which restricts legal international export of specimens, theoretically limiting the type and quantity of specimens permitted for export to levels that are not detrimental to the continued survival of wild populations, although within-country collection and use may remain unregulated. Technically, the volume of domestic use must be taken into account when determining total allowable use, and export can only occur as part of a sustainable overall exploitation level. But this is too rarely implemented, including in the case of *K. homeana*. At the national and subnational level, it is necessary to include this species among the protected fauna in all the countries of occurrence, including effective enforcement of such protection. At present, it appears that there is virtually no country that can reliably preserve this species (cited from Luiselli *et al.* 2021a, IUCN Red List Assessment).

In their „One Health Approach" for freshwater turtle and tortoise conservation in West Africa, Luiselli *et al.* (2021b) rate the exploitation for local consumption as the second largest threat to the persistence of tortoises and freshwater turtles in West Africa. Nowadays, due to this over-collection, it has become increasingly difficult to find large adult forest tortoises in the wild, resulting in grave demographic consequences given that larger females produce larger clutches in this genus (Akani *et al.* 2004). To minimize overhunting of turtles and tortoises, as well as of other bushmeat, alternative sources of protein should be made available to target communities (Wicander & Coad 2018). Sustainable approaches vary in their economic output but can be as simple as providing locals with goats as an easy-to-keep alternate protein source or sustainable farming options (e.g. mushroom farming for ex-poachers of *Kinixys* species).

Captive Breeding

Kinixys homeana has been bred in zoos and by private keepers in Europe since about 1990. One female will lay usually one clutch of 2–4 eggs per year, sometimes a second clutch can be laid bringing the maximum number of eggs per year to 6 (Farkas & Sátorhelyi 2006). Raising healthy juveniles is not really easy (Voss 2024), and most breeders keep their animals separate and bring them together only for a short time for mating, since they can be rather aggressive towards each other. The first

publication on an F2 generation breeding in private husbandry dates back to 2012 (Zoran 2012). In 2014 the *Kinixys* Conservation Blueprint has been published in the USA (Mifsud 2014), and since then several breeders have cooperated in breeding *K. homeana*. Nevertheless, captive breeding is not really productive, there are just enough hatchlings to meet the demand of very engaged hobbyists. There is no evidence that this species has repeatedly been bred in a zoo, and certainly there is no productive farm or captive breeding facility for this species in any country of origin.

DGHT Position: Reject

Kinixys homeana does not meet the criteria for Appendix I listing. In the Red List assessment there is a clear statement "According to a suite of field surveys, long-term capture-mark-recapture studies on single populations, examination of bushmeat markets, and interviews with local hunters and sellers, in Cote d'Ivoire, Ghana, Togo, Nigeria, and Cameroon, there is clear evidence that the wild populations of *K. homeana* are heavily declining and collapsing throughout the species' range, with cases of extirpation even inside protected areas". This is in accordance with the Appendix I listing criterion (iii): There is an observed, inferred, or projected marked decline in the population size in the wild."

But: Any species qualifies for inclusion in Appendix I if it is or may be affected by trade, which is in the CITES context that „there is demonstrable potential international demand for the species that may be detrimental to the survival of the species in the wild" which is not the case for *K. homeana*.

In a simple NDF (Shirley 2023), Ghana states that: „Since 2000, a total of 22,772 live specimens of this species have been traded from Ghana, which is one of the major exporting countries, ranging from 0 to 3,395 individuals per year and averaging 1,751 annually (CITES Trade Database). We classified this as Low because of the fairly large annual heterogeneity and because numbers in recent years have been less than 600 individuals annually. Most specimens are of wild origin, though several producers in Ghana report ranching this species or even captive breeding – the extent to which this is true is not verified. These figures do not include the extensive offtake for domestic consumption as wildmeat or the domestic pet trade."

There is no evidence that the international demand for wild-caught *K. homeana* may be detrimental for the survival of the species in the wild. The transfer of this species from CITES Appendix II to Appendix I is not justified.

Additional Remarks

Obviously, the proportion of the sexes in wild populations is often biased towards males, and there are also more males than females among the exported tortoises, but since adult females are heavier than the males, they are preferred for domestic consumption, which could aggravate the decline of the species if the protection against collection is not better enforced and the local people have no other income than the bushmeat trade and no access to alternative sources of protein.

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CoP20 Prop. 27: *Pelophylax epeiroticus*, *P. ridibundus* and *P. shqipericus* in CITES Appendix II

Proponents are the European Union, Israel and North Macedonia. In response to the consultation sent to range states on 10 April 2025, Nigeria officially confirmed its support for the proposal.

A consultation was distributed by the European Union to all other range States in November 2024 and April 2025. Most parties support the proposal, have no objection, or do not indicate a position. Only Kazachstan does not support inclusion in Appendix II; noted that *P. ridibundus* is widespread and there is no regulation of trade or specific national management measures in place.

The proposal is justified as (abbreviated): "*Pelophylax* is a taxonomically complex genus of medium-sized Palearctic water frogs distributed across Eurasia and northern Africa. Three species of the genus, namely *P. epeiroticus*, *P. ridibundus* and *P. shqipericus* are targeted in international trade for human consumption as frogs' legs, primarily to the European market, and overexploitation is a significant threat. Trade volumes for *Pelophylax* species are uncertain, and there are no species-specific Harmonised System tariff codes (HS Codes) for any commercial forms of the species. However, national commodity tariff codes are available that indicate that the amount of material traded (primarily as fresh/chilled/frozen frogs' legs, as well as live specimens) internationally is considerable. Biological invasion of the *P. ridibundus* species complex has been observed; the controlled trade of live specimens of *Pelophylax* species through international regulations could also limit the introduction and spread of exotic and invasive lineages, thereby reducing the potential to threaten native frog species. Based on a high level of international trade, unfavourable conservation status and declining population trends, *P. epeiroticus*, *P. ridibundus* and *P. shqipericus* meet the criteria for inclusion in Appendix II of CITES, in accordance with Article II, paragraph 2 (a) of the Convention, satisfying Criteria B of Annex 2 a of Resolution Conf. 9.24 (Rev. CoP17).

The genus is susceptible to high morphological polymorphism and interspecific hybridisation. A fertile hybrid of *P. ridibundus* and *P. lessonae* (*P. kl. esculentus*) is also found in international trade. While *P. lessonae* and *P. ridibundus* are significantly morphologically different, hybrids have been noted to possess a combination of parental traits, thus making identification on a morphological basis challenging. Thus, it is necessary to include *P. lessonae* in Appendix II in accordance with Article II, paragraph 2 (b) of the Convention, satisfying Criterion A of Annex 2b of Resolution Conf. 9.24 (Rev. CoP17)."

Morphology and Taxonomy

This proposal follows the nomenclature outlined in the American Museum of Natural History's Amphibian Species of the World Online Reference (Frost 2025), which follows the revised taxonomy outlined by Dufresnes *et al.* (2024), and thus recognises thirteen species in the genus *Pelophylax*. An extract from Frost (2025; version 6.2, 16 May 2025) with edits from the Nomenclature Specialist for the Animals Committee is proposed as the CITES Nomenclature Standard Reference for the genus and species of *Pelophylax*, provided in Annex 1. The adoption of this proposal would include adoption of the Checklist in Annex 1 as the Nomenclature Standard Reference for these taxa.

Population Status and Main Threats for the species to be listed on CITES Appendix II

Pelophylax epeiroticus has been assessed as Near Threatened under criteria B1ab(iii) in 2023 (Mizsei *et al.* 2024b). *Pelophylax ridibundus* is listed as Least Concern (IUCN SSC Amphibian Specialist Group 2023). *Pelophylax lessonae* is listed as Least Concern (Andreone *et al.* 2024). *Pelophylax shqipericus* is listed as Vulnerable under criteria B1ab(iii,v) in 2023 (Mizsei *et al.* 2024a). This species is endemic to the Balkan Peninsula, with a restricted distribution in coastal parts of Albania and southern Montenegro. It is assessed as Vulnerable because its extent of occurrence (EOO) is 10,387 km^2, its distribution is severely fragmented as a result of wetland habitat fragmentation, and there is

continuing decline in the extent and quality of its habitat due to drainage of wetland habitats and aquatic pollution of waterways caused by agrochemical and industrial (including mining) contaminants. Occurrence of *Batrachochytrium dendrobatidis* (chytrid fungus) in Lake Skadar is another important threatening factor for this species, although it seems that it does not have a high impact on wild populations (Vojar *et al*. 2017). In the northern parts of its range (e.g., Lake Skadar) this species is significantly threatened by over-collection for commercial purposes for human consumption (Gratwicke *et al.* 2010). An additional threat could be the accidental introduction of the commercially transported non-native water frog *Aquarana catesbeianus*, which may be competing with this species (J. Crnobrnja-Isailović pers. comm. September 2019). The species is collected for the food industry and by local people, even during the breeding season, for consumption in restaurants (abbreviated citation from the IUCN Red List assessment).

***Pelophylax* spp. in international trade**

The following are directly taken from Proposal 27 and included here for further information: *P. epeiroticus*, *P. ridibundus*, and *P. shqipericus* (as well as the hybrid *P. ridibundus* x *P. lessonae*, *P. kl. esculentus*) are the only species of the genus being traded internationally for commercial purposes based on available information (Dubey *et al*. 2025). While other species of the genus *Pelophylax* not included in this proposal may have overlapping ranges in these regions, no information could be located to confirm that any of these species are in international trade. Trade volumes for *Pelophylax* species are uncertain, and there are no species-specific Harmonised System tariff codes (HS Codes) for trade in any commercial forms. However, national commodity tariff codes are available from some trading countries. Available estimates indicate that international trade in live frogs and frogs' legs is considerable. The following data refer specifically to imports of these products from range States of the four *Pelophylax* species in this proposal, noting that it is not possible to distinguish whether the exporting country is also the country of origin for either the commodity or raw product or whether the products are specifically *Pelophylax*, given that the trade in live frogs or frogs' legs was also not reported at the species or genus level.

The quantities given in the proposal are considerable: The EU Combined Nomenclature system provides a commodity code for frogs' legs (CN code 0208 90 70), for which data are reported in the Eurostat Comext database. According to data for the period 2015-2024, total global imports into the EU of frogs' legs comprised 1623 tonnes from five range States, with Türkiye (75%) and Albania (23%) comprising the vast majority of trade. Trade data for whole and/or live frogs could not be obtained from the Eurostat Comext database due to the absence of a related commodity code. Probably not all the frogs or frogs' legs imported into the EU were *Pelophylax* spp. Imports of frogs consists of both frozen frogs' legs, as well as live individuals to be processed for consumption in Switzerland. Dubey *et al.* (2025) tried to determine the species, but „Out of 34 samples, we retrieved eight distinct lineages attributed to five species from four genera, namely *Hoplobatrachus rugulosus* from Vietnam, *Fejervarya cancrivora* from Indonesia (invasive on several Pacific islands), two phylogeographic lineages of *Limnonectes macrodon* from Western and Central Java, *L. kadarsani* from eastern Indonesia, and three phylogeographic lineages of *Pelophylax ridibundus* from northern and central southern Turkey (invasive in Western Europe, see also Denoël & Dufresnes 2025).

Pelophylax shqipericus is the only species of *Pelophylax* included in the EU Wildlife Trade Regulations (it was added to Annex D in 2009). This listing applies to live specimens and whole, or substantially whole, dead specimens only. Separate import data for these frogs could not be found. Since no frog of the Ranidae family has been listed on any reported CITES Appendix, no data can be found in the CITES Trade database, except for *Lithobates catesbeianus* exports, mainly from the US – some live bullfrogs were last imported into the EU in 2008, but after 2012 there were no more entries.

Obviously, some *Pelophylax* spp. are in the pet trade or the live animal trade (Tedds 2024, Papežík *et al.* 2024). This is not limited to the *Pelophylax* species which are now proposed for listing on CITES Appendix II, see for example the *P. saharicus* in southern France or the *Pelophylax* species complex populations elsewhere in western Europe (Doniol-Valcroze *et al.* 2021, Dufresnes *et al.* 2024).

Conservation Actions Needed

The Actual or potential trade impacts are summarized in chapter 6.5 of the proposal. The legal instruments for species conservation and management are summarized in chapter 7 and detailed in Annex 3, the species management measures for the countries of origin are given in chapter 8.1 and the actual population monitoring projects are shown in chapter 8.2. The DGHT has no further requirements at present.

Captive Breeding

Barrio & Simón (2020) state that "Frog farming, or raniculture, encompasses activities related to frog production is part of the aquaculture industry. The objectives of raniculture can be commercial, such as human feeding (frog legs), animal feeding, by-products (skin...), substances for the pharmaceutical industry, individuals for research, or non-commercial, like repopulation with threatened species. … In contrast with other farmed species, frog farming demands little in terms of water and housing space, and thus is a good alternative for rural areas and developing countries. … There are many species suitable for frog farming, such as the genus *Pelophylax* in Europe and North Africa."

In chapter 8.4 of the proposal (Captive breeding and artificial propagation), a detailed review of the commercial farms for the three *Pelophylax* species in the countries of origin of the exported frogs are given. Details on frog hunting and the frog breeding farms and methods in Türkiye can be concluded from Şereflisan & Alkaya (2016), Şimşek *et al.* (2022), and Tatlı & Altunışık (2024) for example. Obviously, the frog farms in Türkiye are rather extensive, but the frogs live under really crowded conditions. The adult frogs eat mostly cultured live fly larvae, supplemented by some pelleted food twice a week in some farms (Çağiltay *et al.* 2014). A survey of the bacteria in frog bodies, food and water in a more intensive frog farm revealed the presence of opportunistic pathogenic bacteria, which had previously been reported as disease agents for frogs, but some are also zoonotic and can pose risk for even human health (Dökene & Özer 2019).

Since they produce frogs for the French food market only, the methods of breeding in the currently three French frog farms had not been assessed in the proposal. There are actually at least three commercial frog breeding farms, the first one was founded in 2010 in Pierrelatte. There the frogs are bred and reared in glasshouses. The frogs being produced there are *Pelophylax ridibundus*, breed line RIVAN92, which had been bred and selected for accepting food pellets directly after metamorphosis. The joint association SMEL (Synergie Mer et Littoral) had bred these frogs, and now they initiated the program KERMIT for the "raniculture", to develop production guidelines for the big and small French frog farms (SMEL 2025).

In northern Africa, frogs are also collected for local consumption and export, and the first breeding attempts were unsuccessful. But since these frogs are valuable export goods, research on the environmental conditions in harvested ponds have been intensified and the first attempts of commercial breeding can be seen, at least in Tunisia (Bellakhal 2012, Bellakhal *et al.* 2014, Bellakhal *et al.* 2017, Bensakhri *et al.* 2022, Bellakhal 2024). The main problem in farming *Pelophylax saharicus* was teaching the young frogs to accept food pellets, which was done by admixing live, wriggling fly larvae in decreasing quantities for the first two months. Obviously, frogs or frogs' legs are exported in quantities from North Africa at least into France, as the most famous frog farmer regretted in an interview (Sciences et Avenir avec AFP 2020). Import data on frogs or frogs' legs into the EU could not

be found, but obviously some live frogs escaped in the region of Marseille and have become established there (Doniol-Valcroze *et al.* 2021).

DGHT Position: Support

Pelophylax epeiroticus, *P. ridibundus* and *P. shqipericus* meet the criteria for Appendix II listing. A better regulation of the international trade with *Pelophylax* spp. and their hybrids is obviously necessary to prevent the wild populations in the exporting countries from overcollection and to reduce the probability of spreading diseases or hybridisation with the native frogs in the importing countries. Listing these four *Pelophylax* species (live animals as well as all the products) on CITES Appendix II is supported.

As already suggested in the proposal, the identification at the point of harvest would aid traceability of these species in trade. At the point of harvest, species of the genus *Pelophylax* can be identified to the species-level, allowing for species-specific management and monitoring, and the issuance of appropriate permits before products enter the international market. It would thus be important for countries of export to verify the species, origin and source of individuals destined for international trade. Nevertheless, Resolution Conf. 10.17 (Rev. CoP14) on Animal hybrids acts as a safeguard to ensure that any hybrids of species included in Appendix II shall be treated as specimens of species included in Appendix II, and are thus subject to the provisions of the Convention just as if they were full species.

If more data on commercial import of *Pelophylax saharicus* were available, the inclusion of this species into CITES Appendix II should also be considered.

Additional Remarks

Some *Pelophylax* species are already classified as neozoa or as invasive species with a strong hybridogenetic potential when escaping into waters with native *Pelophylax* populations. Besides this, they might carry pathogens which could affect the native amphibians if imported animals escape into the wild or if strict wastewater hygiene is not applied when preparing dishes from fresh or thawed frogs' legs. Close monitoring of the live animal and the frog's legs trade is recommended also for this reason.

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