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

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Periodic review of animal species included in the CITES Appendices

REVIEW OF *CROCODILURUS AMAZONICUS*

This document has been submitted by the United States of America[*].

Review of *Crocodilurus amazonicus* (Spix, 1825) in the periodic review of species included in the CITES Appendices Resolution Conf. 11.1 (Rev. CoP15) and Resolution Conf. 14.8

INTRODUCTION

At the 22nd meeting of the Animals Committee (Lima, July 2006), the United States of America, although not a range state, commited to evaluate *Crocodilurus amazonicus* as part of the Periodic review of the species included in the CITES Appendices.

Information was requested in 2010 of the five Range States of the species on the following factors: Species characteristics (Distribution, Habitat), Status and trends (Habitat trends, Population size, Population structure, Population trends, Geographic trends), Threats, Utilization and trade (National utilization, Legal trade, Illegal trade, Actual or potential trade impacts), Legal instruments (National, International), and Species management (Management measures, Population monitoring, Control measures [International & Domestic], Captive breeding and artificial propagation, Habitat conservation, Safeguards). Responses with country-specific information were received from Brazil, Peru, Colombia, and France on behalf of French Guiana. Peru, Colombia, and France on behalf of French Guiana cited a general lack of information about the species. The Bolivarian Republic of Venezuela did not respond.

A draft proposal to delist the species was compiled and submitted to the five Range States in April 2011. This draft proposal consisted of information gathered by the United States, as well as an integration of information provided by the Range States. Brazil and France on behalf of French Guiana responded to the draft proposal and recommended that the species be retained in CITES Appendix II. Both cited concerns about potential trade issues were the species to be deleted from Appendix II, as well as a general lack of knowledge about the species. Colombia submitted additional information. Peru supported the draft proposal to delist the species, but expressed concerns about customs officials and potential identification issues with similar species. Venezuela did not respond. Given the concerns expressed by these Range States, we have reconsidered our initial recommendation and now propose that *Crocodilurus amazonicus* be retained in CITES Appendix II.

[*] *The geographical designations employed in this document do not imply the expression of any opinion whatsoever on the part of the CITES Secretariat or the United Nations Environment Programme concerning the legal status of any country, territory, or area, or concerning the delimitation of its frontiers or boundaries. The responsibility for the contents of the document rests exclusively with its author.*

DRAFT PROPOSAL TO AMEND THE APPENDICES
(in accordance with Annex 6 to Resolution Conf. 9.24 (Rev. CoP15), as amended)

A. Proposal

To retain *Crocodilurus amazonicus* (crocodile tegu, formerly *C. lacertinus*) in CITES Appendix II.

B. Proponent

Switzerland as the Depositary Government on behalf of the Animals Committee (prepared by the United States of America)

C. Supporting statement

1. Taxonomy

1.1	Class	Reptilia
1.2	Order	Sauria
1.3	Family	Teiidae
1.4	Genus, species or subspecies including author and year	*Crocodilurus amazonicus* (Spix, 1825)
1.5	Scientific synonyms	*Crocodilurus lacertinus* auctorum (nec Daudin, 1892); *Crocodilurus ocellatus* Spix, 1825; *Tupinambis lacertinus* Daudin 1802:85; *Thorictis lacertinus* Daudin 1802 (For additional information, see: Franzen and Glaw 2007:245; Hoogmoed and Gruber 1983:392—393; Massary and Hoogmoed 2001).
1.6	Common names (including, where appropriate, trade names)	Crocodile Tegu, Dragon Lizard, Jacarerana Lizard ("similar to a caiman"), Crocodile lézardet, Drago lacertino, Dragon Lizard, Dragon Lizardet, Krokodilschwanzechse, Krokodilstaarthagedis, krokodilsvansödla, Krokotiilinhäntäteiju, Téju-Crocodile (UNEP-WCMC 2010b)
1.7	Code numbers	[none; UNEP-WCMC 2010b]

2. Overview

Crocodilurus amazonicus has a wide geographic distribution (five Parties/Range States in the Amazon and Orinoco Basins of South America). From a biological perspective, this rare and poorly-known lizard is locally threatened in some areas by deforestation and urban expansion, but these factors are not considered by species experts to be a major or widespread threat (Martins 2009). This taxon is not thought to be undergoing a population decline, nor – were the species to be delisted from the CITES Appendix II -- is any significant decline anticipated as a result of current or future trade or habitat loss or conversion. While *C. amazonicus* is not affected by trade, potential look-alike issues have been raised with other taxa. During the period 1975-2009, a total of 17 specimens of *C. amazonicus* was reported in international trade per CITES (UNEP-WCMC 2010c,d). Recent trade of *Dracaena*, a similar CITES Appendix II-listed taxon of reptiles from South America was also minimal (2000-2009 total = 2321 items [annual mean ≈ 232 items]). Trade in *Varanus* spp., another similar lizard from Asia and Africa, however, is substantial. While a case could be made to delist the species from the CITES Appendices, given that the species is not affected by trade and the absence of significant conservation threats, four Range States (Brazil, Peru, Colombia, and France on behalf of French Guiana) have expressed identification concerns and recommended or suggested that the species be retained on Appendix II in order to enhance domestic enforcement, as well as to monitor the impact of potential trade on that taxon and other similar species.

3. Species characteristics

3.1 Distribution

The currently known range of *C. amazonicus* encompasses the northern Amazon Basin and the upper Orinoco Basin in five countries of South America: Brazil, Peru, Colombia, Venezuela, and French Guiana (Acosta-Galvis et al. 2010; Ávila-Pires 1995:535—540; Ayala and Castro [undated]; Bartlett and Bartlett 2003; Dixon 1979:238; Donoso-Barros 1968:118; Hoogmoed 1979:258 & 278; Martins 2006:171: Hoogmoed and Lescure 1975:157—158; Señaris and Rivas 2006a, 2006b; and Vitt et al. 2008:134). The species may also occur in Guyana or Surinam (Dewynter et al. 2008:20). The distribution of *C. amazonicus* is widespread, but neither continuous nor fragmented (Ávila-Pires 2005:34; Ávila-Pires et al. 2009); rather, the species occurs in forested areas along water courses that increase or decrease in extent in accordance with the flooding regime of the region.

3.2 Habitat

Crocodilurus amazonicus inhabits the margins of rivers, creeks, and lakes (Bauer and Jackman 2008:583; Martins 2006; Pianka and Vitt 2003; Rudas-Ll. and Prieto-C. 1998). These areas are widespread and occur at an elevation of 0—90 m in the aquatic and rainforest portions of the Amazon and Orinoco Basins (Hoogmoed 1979:278). These waters typically are still or slow-moving and generally are located in igapó forest (flooded by nutrient-poor black water) or várzea forest (flooded by nutrient-rich white water; Martins 2006:172; Neckel-Oliveira and Gordo 2004:172). For additional information about lizard species composition and distribution by site and habitat type across the Amazon Basin, see Vitt (1996).

3.3 Biological characteristics

Crocodilurus amazonicus is a relatively large, semi-aquatic lizard that is ecologically restricted to the courses of the main rivers of the Amazon and Orinoco Basins, especially in areas characterized as igapó or várzea (Ávila-Pires 1995:539 & 605; Crump 1971:20). Except for two recent ecological studies, little is known about the natural history of the species.

In a recent study in Brazil, about 80% of the observations were of specimens swimming in the water or resting or walking on the ground (Mesquita et al. 2006:223). Specimens are frequently observed sunning themselves on branches overhanging the water, about 1.5 m above its surface (Ávila-Pires 1995:539). When disturbed, *C. amazonicus* will dive from the branch into the water and swim to safety, often taking refuge in shoreline burrows (Hoogmoed and Lescure 158; Krause 1985; Lamar et al. 2002). No *C. amazonicus* has been observed in areas of deep water in Brazil (Martins 2006:172). Typically terrestrial, *C. amazonicus* may become more arboreal during seasonal floods and the associated high water (Martins 2006:174). *Crocodilurus amazonicus*, like other teiids, runs efficiently and at fast speeds (Urban 1965:529).

Little is known about reproduction (Lamar et al. 2002). In Brazil, clutch size based on egg counts was 5.5 ± 0.71 eggs per nest (range 5-6; n = 2 nests; Mesquita et al. 2006:224). Reproductively active females in Brazil were encountered during the wet season (March) as well as the dry season (July), suggesting an extended reproductive period. At another site in Brazil, however, three adult females collected in November 1995 were not reproductive (Martins 2006:173). Five juveniles collected at the same site and time, however, exhibited umbilical scars indicating that they were born in the previous weeks, at the onset of low waters (Martins 2006:173-174).

Crocodilurus amazonicus is diurnal and most likely to be encountered during the hottest hours of the afternoon, during 1200-1500 h (ca. 80% of observations; Mesquita et al. 2006:223). The species is heliothermic (gaining heat from the sun) and exhibited body temperatures (cloaca; n = 30 individuals) of 31.23 ± 1.89 °C while air and substrate temperatures were 27-30 °C (Mesquita et al. 2006:223). Keratophagy (consumption of the whole or part of a reptile's own shed skin or that of a conspecific) has been reported for this species (Mitchell et al. 2006:46). This behavior may provide ecological, nutritional, survival, and evolutionary benefits to the species.

Additional information about other life history characteristics of *C. amazonicus* (e.g., recruitment, survival rate, migration, sex ratio, regeneration or reproductive strategies) is unavailable.

3.4 Morphological characteristics

Crocodilurus amazonicus is a large, semi-aquatic lizard with a cylindrical body, compressed tail with a double and prominent dorsal crest, well-developed limbs, pentadactyl, and all digits clawed (Ávila-Pires 1995:535-539; Vitt et al. 2008:134). Adults are predominantly brown or dark olive-brown in color, while juveniles have black

flanks and limbs with large orange spots (Ávila-Pires 1995:535 & 538). The skull of *C. amazonicus* has the generalized teiid form and is similar to other taxa in the Family Teiidae (Evers Junior and Soares 2007:47). The dentition type is insectivore pleurodont (Vanzolini and Valencia 1965; cited by Martins 2006:171). Cranial and post-cranial elements of *C. amazonicus* were described in the context of an analysis of 1530 pieces of Squamata remains from 14 late Quaternary fossil sites in central Brazil (Camolez and Zaher 2010).

An adult male had a snout-vent length of 236 mm and a tail length of 357 mm, while two juveniles, respectively, had snout-vent lengths of 92 and 77 mm and tail lengths of 99 and 146 mm (Hoogmoed and Gruber 1983:393). Another adult measured 192 mm snout-vent length, 802 mm total length, and 198.9 g body mass (Klein et al. 2005:2). In a recent study in Brazil, snout-vent lengths of individuals categorized as juveniles measured 74-101 mm, while subadults and adults measured 158-218 mm (Martins 2006:173). A long, laterally compressed tail, as well as a relatively long neck, facilitates swimming as a predator avoidance measure. Sexual dimorphism has not been reported for the species, but at several sites in Brazil, males had relatively longer bodies and tails than females did (Mesquita et al. 2006:224). For additional information body size and length-weight allometries, see Meiri (2008, 2010).

Based on an analysis of molecular (DNA) and morphological data among the 10 genera of Teiidae, *Dracaena*, *Tupinambis*, and *Crocodilurus* formed a well-supported monophyletic group in all analyses (Giugliano et al. 2007:173). These taxa have 38, 36, and 34 chromosomes (diploid number [2n]), respectively (Gorman 1970:233). *Crocodilurus amazonicus*, however, differs in that it has 22 microchromosomes (along with 12 macrochromosomes), while Tupinambis has 24-26 microchromosomes depending on the species (Santos et al. 2008:261).

Veronese and Krause (1997) characterized the pre-sacral and sacral skeletons of about 30 taxa of teiid lizards and identified differences in the total number of vertebrae and some aspects of the ribs, especially their insertion and presence. For additional details about the morphology of this species, see Ávila-Pires (1995:535—539). For a key to the genera of lizards and amphisbaenians, including *C. amazonicus*, see: Ávila-Pires (1995:15—24); Peters and Donoso-Barros (1970:1—3, 102); or Vitt et al. (2008). For a photograph of the holotype of *C. amazonicus*, see SysTax (2010). For color photographs of live adult and juvenile specimens, as well as additional information about crocodile tegu morphology, see Vitt et al. (2008:134-135).

Crocodilurus amazonicus is somewhat similar in size, shape, and color to *Dracaena guianensis* (CITES Appendix II) and four species of *Neusticurus* (not listed in the CITES appendices). They differ primarily in color and external morphology (see below).

3.5 Role of the species in its ecosystem

The role of *C. amazonicus* in its ecosystems is poorly known. This species, however, is an infrequent nest predator of the turtle *Podocnemis erythrocephala* (2 of 117 nests damaged or destroyed; Batistella and Vogt 2008:14—16). In Colombia, *C. amazonicus* is also known to consume eggs and hatchlings of the turtle *Peltocephalus dumerilianus* (Rudas_L. and Prieto-C. 1998). Diet in the wild is poorly known, but stomach content analyses suggest a diet of anurans and arthropods (Costa et al. 2005; Lamar et al. 2002). During a recent study in Brazil, 85 prey items were identified in 26 stomachs (Martins 2006:173). Arthropods (insects, crustaceans, and spiders) were the main diet components (69% of total prey volume), but vertebrates, fish, and frogs (31% of total prey volume) were also consumed by this species. Although the food niche of *C. amazonicus* in the wild is relatively wide, the species feeds primarily upon aquatic prey, and perhaps is the only Neotropical lizard for which fish are an important dietary component (Martins 2006:174). During another recent study in Brazil, the diet consisted mainly of hemipterans, gastropods, and spiders (n = 23 prey categories; n = 57 stomachs analyzed). Crocodile tegus in captivity are fed meat-mixture, fruits, and vegetables (Honegger 1969:27). Captive *C. amazonicus* also readily consume turtles (Ayala and Castro [no date]; cited by Government of Colombia, in litt., May 13, 2011). Growth under captive conditions can be rapid; three juveniles that measured 80-100 mm snout-vent length in November 1995 attained measurements of 180-230 mm in about 2 years (Martins 2006:175).

Information about other behavioral or ecological aspects of *C. amazonicus*, for example, potential predators or inter-specific interactions, is not available.

4. Status and trends

4.1 Habitat trends

Information about specific habitat trends with regard to *C. amazonicus* is not readily available or quantitative. In Brazil, however, *C. amazonicus* generally occurs in many preserved areas that are otherwise undisturbed (e.g., the entire Jaú river basin [Martins 2006]). Elsewhere, in Colombia, habitat change is minimal given that many sites are protected areas or sparsely populated regions at great distances from population centers (Armenteras and Ortiz Pérez 2003). We suspect that *C. amazonicus* habitat in the remaining Range States likewise is experiencing minimal degradation due to human activities and that *C. amazonicus* population trends in those areas are essentially unchanged over the recent past.

4.2 Population size

Population size estimates are not readily available for this species because survey results are generally presented as "presence-absence" data that do not allow one to estimate a total population size or population density. Martins (2006:172), however, provided frequency of occurrence values for three field trips in Brazil during 1995: (i) 6 individuals observed during 23.5 hours of survey time; (ii) 0 individuals observed during 41.5 hours of survey time; and (iii) 55 individuals observed during 76.6 hours of survey time (see text for additional survey details). It was not clear, though, whether these low estimates were due to a naturally small population size or if they reflected an inability of the observer to detect *C. amazonicus*. Crypsis (the ability of an organism to blend in with its environment) has been suggested as an effective predator avoidance strategy for this species and may help explain the low frequency of occurrence values (Mesquita et al. 2006:226). In the western portion of its range, *C. amazonicus* is confined to small local populations (W. Lamar, pers. comm., 2010; cited by Martins 2009). Results for other studies along large rivers of Amazonia suggest that this species is locally common in areas of seasonally flooded forests (Martins 2009).

4.3 Population structure

Population structure characterizations are not readily available for this species.

4.4 Population trends

Population trend information is not readily available for this species. Quantative and qualitative population estimates are available for a few studies, but those results generally reflect only a single study or set of observations. After a review of published and unpublished information, however, a group of species experts concluded that *C. amazonicus* was not thought to be undergoing a population decline (Martins 2009).

4.5 Geographic trends

Geographic trend characterizations are not readily available for this species. After a review of published and unpublished information, however, a group of species experts did not identify any negative geographic trends for crocodile tegu (Martins 2009).

5. Threats

Based on an analysis of the conservation status of *C. amazonicus*, as well as the associated threats (i.e., deforestation and urban expansion), this species was categorized at "Least Concern" on the IUCN Red List of Threatened Species (Martins 2009; ver. 3.1). Other than generic estimates of deforestation and urban expansion as threats in areas suspected to be occupied by this species, threat estimates are not readily available for *C. amazonicus*. Furthermore, except for an illegal shipment of one foot from ZW and an illegal shipment of one skin from PG, both in 1996 (UNEP-WCMC 2010c,d), none of the Range States has released records of seized shipments of specimens intended for international trade. [We note that ZW (Zimbabwe) and PG (Papua New Guinea) are not Range States and it therefore appears that these trade data may have been reported in error.] However, it should be noted that such information is not required for inclusion in a country's CITES Annual Report. Information regarding possible widespread domestic uses by local people is not indicated by available information. Other threats to *C. amazonicus* (for example, effects of competition or hybridization) have not been reported in the scientific literature. For other species, such as the dwarf caiman (*Paleosuchus palpebrosus*) or black caiman (*Melanocuchus niger*) in Colombia, mining, artisanal fishing, and timber havest along river banks have been identified as important conservation threats (Armenteras et al. 2002; Castaño-Mora 2002; Rueda-Almonacid et al. 2007:399—400 and 410). Given that *C. amazonicus* and dwarf

and black caimans overlap geographically in many areas, *C. amazonicus* may also be negatively impacted by these threats.

6. Utilization and trade

6.1 National utilization

Crocodilurus amazonicus, given its relatively large size among lizards, in some areas is harvested for its skin and may be regularly eaten by local people (Bauer and Jackman 2008:585). Utilization levels, however, are not readily available in the scientific literature.

In Brazil, hunting of the species is not authorized (Government of Brazil, February 9, 2011, in litt.). The capture of wild specimens for scientific purposes or for rearing in captivity requires a specific authorization from the Government of Brazil. At present, there are only a few records of zoos rearing *C. amazonicus* in captivity. No authorization has been issued for the commercial exploitation of this species. In Peru, the take or harvest of wildlife requires a government permit, as well as an approved management plan. The Government of Peru does not have any record suggesting the widespread take or harvest of wild crocodile tegu specimens in that country. In Colombia, limited and infrequent subsistence and local commercial uses have been reported among some rural populations in the eastern portion of the country (Mancera & Reyes 2008; Vargas 2000; Government of Colombia, November 18, 2010, in litt.). *Crocodilurus amazonicus* are captured along the edges of rivers and streams by hand or by using nets and bow and arrow. In French Guiana/France, *C. amazonicus* is a fully protected species, so that the trade or the use of the wild specimens is strictly prohibited in French Guiana/France and the trade of the captive ones is highly regulated (see "*Arrêté du 24 juillet 2006*" published in the *Journal officiel de la République française*; Government of France, October 6, 2010, in litt.). Information about national utilization in Venezuela was not readily available.

According to ISIS (2011), *C. amazonicus* has not been listed in the ISIS Species Holdings directory where zoos frequently list their specimens.

6.2 Legal trade

During the period 1975-2009, a total of 17 specimens was reported in international trade per CITES (UNEP-WCMC 2010c,d):

Bodies = 3
Feet = 1
Leather products = 1
Live = 4
Skins = 1
Specimens = 7
Total = 17 items

Based on an analysis of the data, the following conclusions and generalizations are offered:

– The level of international trade is minimal;
– While the sample size is extremely small, a broad array of items is reported and includes live animals, scientific specimens, and products that are for primarily noncommercial purposes.
– Most of these specimens are of wild origin.
– Removal of CITES protection while maintaining existing domestic regulations in the Range States is not expected to affect the nature or extent of the trade in this species.

The relative importance of this trade in relation to legal offtake is minimal. Removal of this species from CITES Appendix II is not expected to affect the nature of the trade in *C. amazonicus*, while retention in Appendix II would allow continued monitoring of any trade.

6.3 Parts and derivatives in trade

During the period 1975-2009, a total of 17 specimens of *C. amazonicus* was reported in international trade per the WCMC CITES Trade Database (UNEP-WCMC 2010c,d):

– 1980: 2 live animals from US to IT
– 1994: 1 body from BR to NL

– 1995: 3 specimens from BR to NL
– 1996: 1 body from BR to NL
– 1996: 1 foot from ZW to NZ
– 1996: 1 skin from PG to NZ
– 1998: 2 live animals from US to CA
– 1999: 1 body from BR to US
– 1999: 3 specimens from BR to US
– 2002: 1 leather product from AU to JP
– 2002: 1 specimen from BR to US

We note that ZW (Zimbabwe), PG (Papua New Guinea), and AU (Australia) are not Range States and therefore it appears that these trade data may have been reported in error.

For comparative purposes, recent trade of a similar CITES Appendix II-listed species (*Dracaena guianensis*) was minimal (2000-2009 total = 2320 items traded, primarily leather goods/products re-exported from Italy [ca. 1600 items] and live animals exported from Peru [ca. 700 items]; total annual mean exported/re-exported ≈ 232 items; UNEP-WCMC 2010e).

6.4 Illegal trade

An illegal shipment of one foot exported from ZW to NZ and an illegal shipment of one skin exported from PG to NZ, both in 1996 are reported in theWCMC CITES Trade Database. None of the Range States has reported seized shipments of specimens intended for international trade or widespread domestic uses (legal or illegal) by local people (Government of Brazil, February 9, 2011, in litt.; Government of Colombia, November 18, 2010, in litt.; Government of Peru, August 2, 2010, in litt.).

Given that illegal trade is not normally reported by CITES Parties (but Brazil, Colombia, and Peru in litt. report no seizures, see above), the relative importance of these illegal shipments in relation to any legal or other illegal offtake probably is minimal. Removal of CITES protection would not expected to affect the nature or extent of the trade in *C. amazonicus*, while retention in Appendix II would allow continued monitoring of any trade.

6.5 Actual or potential trade impacts

It appears that removal of CITES protection would not have any conservation impact on this species and would not be expected to affect the nature of the trade. Current overall use of *C. amazonicus* is minimal and future exploitation is not expected to increase dramatically, if at all, given access difficulties to those areas where the species occurs, as well as the apparent lack of any commercial incentives to engage in international trade in this species. Retention of CITES protection, however, would allow the Range States and other Parties to monitor trade in *C. amazonicus*.

7. Legal instruments

7.1 National

In French Guiana, this lizard is a fully protected species. Therefore, the trade or the use of wild specimens is strictly prohibited in French Guiana/France and the trade of the captive specimens is highly regulated (see "*Arrêté du 24 juillet 2006*" published in the *Journal Officiel de la République Française*; Government of France, October 6, 2010, in litt.).

Elsewhere, the species and its habitat are generically protected in the context of general wildlife and protected area regulations: In Brazil, national legislation generically protects native wild fauna, threatened or not with extinction, by prohibiting the hunting of animals for commercial purposes, except for the harvest of fish or aquatic invertebrates. In rare cases, Brazilian permits may be issued for the capture of wild animals (e.g., research for scientific purposes or captive rearing for commercial purposes via farming or ranching). The maintenance of wild animals in captivity requires a specific authorization by the Government of Brazil. There is no legislation in Brazil that specifically prohibits the take of *C. amazonicus* in the wild, nor is this species specifically listed in the official list of the Brazilian fauna species threatened of extinction. Only a few permits have been issued to zoos to rear or breed this species in captivity and IBAMA (*Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis*; Brazilian Institute of Environment and Renewable Natural Resources) has no records of apprehensions made in Brazilian territory of illegally commercialized specimens of this species.

In Peru, wild plants and animals are generically protected by national laws and implementing regulations [*Ley Forestal y de Fauna Silvestre (Ley N° 27308)* and *Reglamento (Decreto Supremo N° 014-2001- AG)*]. *Crocodilurus amazonicus*, however, is not specifically included in the national list of threatened or endangered species (*Decreto Supremo N° 034-2004-AG*).

In Colombia, *C. amazonicus* is generically protected by several national wildlife and natural resource conservation laws and implementing regulations, including: *Ley 23 de 1973; Decreto Ley 2811 de 1974; Decreto 1608 de 1978, Reglamentario de la ley 23/73* and *Decreto 2811/74; Ley 17 de 1981; Ley 84 de 1989; Ley 99 de 1993*; and several others. These laws and regulations give broad powers to wildlife enforcement officials in Colombia (for additional details, see: Rivera 2005 and MINAMBIENTE 2010).

Information about Venezuela was not available.

7.2 International

Crocodilurus amazonicus was listed in CITES Appendix II in 1977 (UNEP-WCMC 2010a). The reporting Range States indicated that there are several international agreements generically promoting wildlife management and natural resource conservation in the Amazon and Orinoco Basins, yet did not cite any specific international legal instruments directly relating to this species.

8. Species management

8.1 Management measures

While all five Range States practice wildlife management and natural resource conservation, *C. amazonicus* is not the subject of any specific management program or activity by any Range State.

8.2 Population monitoring

Crocodilurus amazonicus is not the subject of any specific population monitoring program or activity by any Range State.

8.3 Control measures

8.3.1 International

Parts, products, and derivatives of *C. amazonicus* are subject to standard revenue controls by customs officials, while live specimens are subject to zoosanitary and animal transportation provisions.

8.3.2 Domestic

In Brazil, it is illegal to hunt *C. amazonicus*. The capture of wild *C. amazonicus* specimens for scientific purposes or for rearing in captivity requires a specific authorization from the Government of Brazil. The species is not the subject of any specific harvest management program or enforcement in Brazil.

In Peru, the take or harvest of wildlife requires a government permit, as well as an approved management plan. The Government of Peru does not have any record suggesting the widespread take or harvest of wild crocodile tegu specimens in that country.

In Colombia, the harvest of *C. amazonicus* is not strictly controlled. Rather, the possession and transportation of these specimens are highly controlled via a combination of actions by enforcement organizations and documentation requirements. Possession and transportation requirements are regulated by regional and national *Comités Interinstitucionales Contra la Tenencia y Comercio Ilegal de Fauna Silvestre* (CITECIF; Inter-agency Committees Against the Illegal Possession and Trade in Wildlife) that are made up of the police, military, government representatives, and other relevant enforcement agencies. Shipments of specimens transported within Colombia must be accompanied by a national safe conduct pass (SUN; *Salvoconducto Único Nacional; Resolución Número 0438 de 2001 el Ministerio del Medio Ambiente*). Criminal penalties can be applied to violators of these requirements.

Information about domestic harvest control measures for Venezuela and French Guiana/France was not available.

8.4 Captive breeding and artificial propagation

For Brazil (except for a few zoos), Peru, and Colombia, there are no records that document any government-approved, captive-rearing or captive-breeding operations for *C. amazonicus* in those countries. Information was not available for Venezuela or French Guiana/France.

8.5 Habitat conservation

The occurrence of *C. amazonicus* in protected areas in Brazil and elsewhere may facilitate its conservation while nearby unprotected areas are subjected to extensive logging (Martins 2006:175). The large forest reserves in Brazilian Amazonian represent more than 200,000 km^2 of protected areas available and occupied by the the species (Martins 2009). While specific information with regard to *C. amazonicus* is lacking, these reserves, in general, appear to be adequate to conserve viable populations of the majority of species of squamates (Silva, Jr., and Sites, Jr. 1995:890).

In Peru, there are no protected areas within the range of *C. amazonicus*. The only potential protected area is the Ampiyacu Apayacu Regional Conservation Area proposed by the Regional Government of Loreto.

In Colombia there are 11 protected areas (total surface area = 7,190.854 ha) within the geographic distribution of *C. amazonicus*. These protected areas help conserve a wide variety of ecosystems that are important for this species. Of the 11 sites, however, there are documented reports only for El Tuparro National Park (Orinoco Basin) and Amacayacu National Park (Amazon Basin; Ayala and Castro [undated]; cited by Government of Colombia, in litt., May 13, 2011).

Information was not available for Venezuela or French Guiana/France.

8.6 Safeguards

Safeguards in the form of national laws and regulations regarding wildlife conservation are already in place in Brazil, Peru, Colombia, and French Guiana/France for *C. amazonicus*. Furthermore, there is no evidence of an unsatisfied or unreported demand for subsistence uses or commercial trade in this species. Information about domestic laws and regulations other than CITES legislation was not available for Venezuela.

9. Information on similar species

Crocodilurus amazonicus is somewhat similar in size, shape, and color to *Dracaena guianensis* (CITES Appendix II) and four species of *Neusticurus* (not listed in the CITES appendices). These species differ with regard to the numbers and sizes of scales and tubercules on the skin, as well as minor variations in coloration by sex and age class. For color photographs of the three taxa, see Vitt et al. (2008). For identification keys, see Ávila-Pires (1995:15—24) and Peters and Donoso-Barros 1970:1—12).

According to Uetz and Hallermann (2011), *Crocodilurus ocellatus* Spix 1825 is in fact a young *Crocodilurus amazonicus*.

10. Consultations

Range State consultation letters (dated June 16, 2010) were sent to the following Parties: Brazil, Peru, Colombia, Venezuela (Bolivarian Republic of), and France on behalf of French Guiana. The following responses were received:

– Brazil: Alexandre de Assis Hudson, Hugo Bonfim de Arruda Pinto and Octávio Mendes Wolney Valente; octavio.valente@ibama.gov.br; Brazilian Institute of Environment and Renewable Natural Resources – IBAMA (dated February 9, 2011); alexandre.hudson@icmbio.gov.br and hugo.pinto@icmbio.gov.br; Institute Chico Mendes of Biodiversity Conservation – ICMBio
– Peru: Miriam Cerdán (Directora General de Diversidad Biológica del Ministerio del Ambiente) (dated August 2, 2010, and May 16, 2011)
– Colombia: María Piedad Baptiste E. (Autoridad científica), Programa Biología de la Conservación y Uso de la Biodiversidad, Instituto de Investigación de Recursos Biológicos Alexander von Humboldt (dated November 18, 2010)
– Venezuela (Bolivarian Republic of): Did not respond.
– French Guiana/France: Dr. Geneviève HUMBERT, Autorité scientifique CITES France (dated October 6, 2010)

A revised proposal based on Range State comments and additional information was submitted to the Range States on April 6, 2011. Brazil responded on April 15, 2011, while France on behalf of French Guiana responded on May 2, 2011. Both Range States recommended that the species be retained on Appendix II. Colombia responded with additional information (May 13, 2011; Brigitte LG Baptiste, Directora General, Instituto de Investigación de Recursos Biológicos Alexander von Humboldt). Peru (May 16, 2011) responded in support of the initial proposal to delist the species, but again expressed potential identification problems by customs officials. As of May 19, 2011, Venezuela had not submitted comments on the revised proposal.

11. Additional remarks

None.

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Range State Responses *In litt*.

Government of Brazil (dated February 9, 2011 [comments]; April 15, 2011 [comments])

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Brigitte LG Baptiste (Directora General, Instituto de Investigación de Recursos Biológicos Alexander von Humboldt; May 13, 2011 [comments])

Government of Venezuela

(did not respond)

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