Review of Significant Trade: Species selected by the CITES Animals Committee following CoP14

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Contents

***Hippopotamus amphibius* Linnaeus, 1758: Benin, Burkina Faso, Cameroon, Central African Republic, Chad, Côte d'Ivoire, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Mali, Mozambique, Niger, Nigeria, Senegal, Somalia, South Africa, Sudan, Swaziland.**

Hippopotamidae, Hippopotamus

Selection for Review of Significant Trade

Hippopotamus amphibius was selected at the 23rd meeting of the Animals Committee on the basis of trade data provided in document AC23 Doc. 8.5, and noting that populations were declining and trade levels were considerable and increasing (AC23 Summary Record; AC24 Doc. 7.4 Rev. 1). Several range States were removed from the review with justification provided in document AC24 Doc. 7.4. Where the basis for removal was no anticipated trade, it was noted that should trade occur, these range States should be re-evaluated (AC24 WG1 Doc. 1).

A. Summary

Overview of *Hippopotamus amphibius* recommendations.

Range State	Provisional category	Summary
Benin	Least Concern	Restricted in Benin to the north and south-west. The IUCN Red List assessment (2008) suggests the population of 300-500 individuals is declining, yet another author states the population may be higher. Main threats are hunting and human-hippo conflict rather than international trade, however some illegal hunting and domestic trade persists. Nationally protected. On the basis of low levels of international trade reported 1998-2007 originating in Benin (70 teeth and four trophies since 2001), categorised as Least Concern.
Burkina Faso	Least Concern	Restricted distribution in Burkina Faso. The IUCN Red List assessment (2008) suggests the population size is 500-1000 and declining, although more recent estimates provided by the CITES Authorities suggest the population numbers over 1600 and is increasing. Main threats were identified as hunting, habitat loss and human-hippo conflict. It is a protected species and no trade is permitted. On the basis of very low levels of international trade, categorised as Least Concern.
Cameroon	Possible Concern	Widespread in Cameroon, with estimated population size of around 500-1500 individuals occurring at low densities. Little information available on status, and reportedly of conservation concern in Cameroon. Human conflict as a result of crop-raiding appears the main threat. Moderate levels of trade, with teeth and trophies the main terms traded; with importers declaring over five times the numbers of teeth imported than Cameroon reported exported 1999-2008. Legally protected, but other management measures unknown. No information on the basis for non-detriment findings provided, and impact of trade levels unknown, therefore categorised as Possible Concern.

Range State	Provisional category	Summary
Central African Republic	Least Concern	Restricted in distribution and undergoing population decline, with an estimated population size of 850 individuals. Poaching for meat, teeth and hides even within national parks are considered major threats. Some concerns relating to enforcement efforts noted, and no other management measures known. Fully protected species in CAR. Very low levels of trade reported, with only two trophies and one carving reported exported since 1998, all for non-commercial purposes, therefore effects of international trade likely to be negligible and categorised as Least Concern.
Chad	Least Concern	Restricted distribution and population size unknown. Legal protection reported to be partial, but no other management measures known. No reported trade from the country except one tooth reported by an importer in 1991, therefore effects of international trade likely to be negligible and categorised as Least Concern.
Côte d'Ivoire	Least Concern	Restricted mainly to the north. Population size of 300-400 individuals but with a declining trend. Protected within national parks, but level of enforcement described by one author as "poor". Hunting, poaching and habitat destruction are reportedly the main threats. Very low levels of international trade, with no exports reported by Côte d'Ivoire and importers reporting specimens only of pre-convention origin. Effects of international trade likely to be negligible and categorised as Least Concern.
Equatorial Guinea	Least Concern	Restricted distribution in the country, with estimated population size only around 100 individuals. Main threats are disturbance from fishing and timber extraction activities. Not known to occur in protected areas and no other management measures known. However, no international trade reported. The requirements of Article IV do not currently appear to be applicable, therefore categorised as Least Concern.
Eritrea	Least Concern	Virtually no information on the distribution, conservation status and management of the species in the country known. No international trade reported by the exporter or importers. The requirements of Article IV do not currently appear to be applicable, therefore categorised as Least Concern.
Ethiopia	Least Concern	Mainly occurs within the west of the country, and is reported to be widespread. The population is thought to be stable at around 5,000 individuals. The major threats are poaching for ivory, hide and bushmeat. Illegal local trade in carvings exists. The species is protected in the country. International trade levels are fairly low and trade remains within published quotas. On this basis, categorised as Least Concern.
Gabon	Least Concern	Widespread but occurring at low density and with a total population size of only 250 individuals. Occurs within national parks but level of enforcement was reported by one author as "poor". Very low levels of international trade, with only two teeth reported exported by Gabon. Effects of international trade likely to be negligible and therefore categorised as Least Concern.
Gambia	Least Concern	Restricted distribution to the Gambia River. Very small population of around 40 individuals. Fully protected, but main threats are habitat loss and human-hippo conflict as a result of crop damage. Virtually no international trade; no direct exports reported by Gambia or importers since the species listing in the CITES Appendices. The requirements of Article IV do not currently appear to be applicable, therefore categorised as Least Concern.

Range State	Provisional category	Summary
Mali	Possible Concern	Restricted in distribution, occurring at low density and declining population of 500-1000 individuals. Desertification was thought to be the main threat to the species. Reportedly partially protected in the country and known to occur in one protected area, but no other management measures known. Whilst export levels fairly low, 100kg of teeth from Mali were reported imported in 2004. No information on the basis for non-detriment findings provided, and impact of trade levels unknown, therefore categorised as Possible Concern.
Mozambique	Possible Concern	Widespread and locally abundant with an estimated population size of 18,000 individuals, however whilst stable/increasing in a few areas, thought to be declining overall. Poaching and drought are the main threats. High levels of trade, with consistent exports of 50-90 trophies annually in recent years. Occurs in a number of protected areas yet level of protection unknown and management measures including a detailed basis for non-detriment findings are unknown. On this basis, categorised as Possible Concern.
Niger	Least Concern	Restricted in distribution, mainly to the south-west, with declining population of around 100 individuals. Wide range of threats includes hunting, persecution resulting from crop damage and depletion of water from the main river inhabited. Fully protected and occurs within a least one national park, yet enforcement reportedly "fair" and unknown whether other official management measures are in place. Very low international trade levels, with no trade reported since 2001, and on this basis, categorised as Least Concern.
Nigeria	Least Concern	Restricted in distribution, occurring at low density with a declining population of around 300 individuals. Main threats are poaching, persecution resulting from agricultural damage and habitat loss. Some confiscated/seized items were reported by importers. Otherwise, very low levels of international trade (only four items reported by importers), with none reported since 2005 and no exports reported by Nigeria, and on this basis, categorised as Least Concern.
Senegal	Least Concern	Confined to one protected area, the Niokolo-Koba National Park, where it is locally abundant. Population estimated at 500 individuals but declining. Main threat is hunting for ivory. Management measures are unknown, however no trade is permitted. No reported international trade, except one seized/confiscated tooth reported by an importer, and on this basis, categorised as Least Concern.
Somalia	Least Concern	Restricted distribution with remnant population of less than 50 individuals, which is in decline. Hunted for medicine, food and ivory for carving. Protection and management measures are unknown. No reported international trade, except three seized/confiscated tusks reported by an importer, and on this basis, categorised as Least Concern.

Range State	Provisional category	Summary
South Africa	Possible Concern	Restricted mainly to the north-east, where it occurs as a relatively stable population of 3,000-5,000 individuals. The major stronghold in the Kruger National Park is regularly monitored. Regionally classified within the South African Red Data Book as "Least Concern". Poaching and killing in retaliation for crop damage are the major threats. Reported international trade is high, with the main items traded trophies, teeth, carvings, skin, plus other derivatives. Reported exports appear to be an over-estimate because re-exports are thought to be included in direct exports. Importer data is also far higher than data reported by South Africa (e.g. for tusks). It is unclear how non-detriment findings take place for specimens lacking origin details. On this basis, categorised as Possible Concern.
Sudan	Least Concern	Restricted distribution but locally abundant with estimated population of 3000-6000 individuals. Occurs within numerous protected areas. The status of the population is unknown. Main threats are hunting for meat and skins, habitat loss and persecution. Exports for commercial purposes are not permitted and Sudan has reported only two carvings exported since the species listing in CITES. On the basis of very low levels of international trade, categorised as Least Concern. Whilst not related to implementation of Article IV, persistence of illegal domestic hunting for meat appears to remain a problem.
Swaziland	Possible Concern	Restricted distribution, occurring at low density with small population size of approximately 100-120 individuals. Population trend is unknown. Main threat is human-hippo conflict as a result of damage to crops and aggression. Legal protection reported to be good. Traded locally for meat, hides and ivory carvings. All hunting and trade reported to be regulated. However, reported exports are relatively high considering population size, although are exclusively live animals for the purposes of re-introduction, and on this basis categorised as Possible Concern.

B. Species overview

Biology: Common hippos are found in all types of water habitats from rivers and lakes to muddy wallows and even coastal seawater (Eltringham, 1999). They remain in water during the day and emerge at night to graze on land up to several kilometers from day-time territories (Eltringham, 1999). The species is physiologically dependent on water because its skin is extremely sensitive to direct sunlight exposure (Eltringham, 1993).

Key ecological requirements are access to permanent water in the dry season, sufficiently large aquatic bodies to accommodate groups, and adequate grassland grazing within a few kilometers of day resting sites (Eltringham, 1993; Lewison and Oliver, 2008). Preferred habitats are deep permanent water bodies adjacent to reedbeds and grassland (Nowak, 1991). Hippos are highly gregarious and habitats must accommodate a territorial male, groups of females and other submissive males (Eltringham, 1993).

Average age at sexual maturity was reported as around seven to eight years for males, and between seven and eleven years for females (Eltringham, 1999) based on studies in Uganda, Zambia and South Africa (Laws and Clough, 1966; Sayer and Rakha, 1974; Smuts and Whyte, 1981; Suzuki and Imae, 1996). Lewison and Oliver (2008) reported age at sexual maturity as nine to eleven for males and seven to nine for females. Generally a single calf is produced every other year. The gestation period is 227 to 240 days (Nowak, 1991). Average longevity is around 41 years (Grzimek, 1975 cited in Nowark, 2001). The length of dry

seasons across the range was considered a factor affecting breeding (Eltringham, 1999); calves are mainly born in the rainy season (Kingdon, 1979).

Taxonomic note: Grubb (1993) recognised five hippo subspecies based on Lydekker (1915), but noted that it was not possible to determine whether the diagnostic skull characters were any more than peculiarities of particular specimens. Recent mtDNA analysis does support two distinct subspecies *H. a. kiboko* and *H. a. capensis* based on sampling in east and southern Africa (Okello *et al.,* 2005). It appears that West African populations have not been sampled for genetic divergence.

General distribution and status: The species has a wide range across sub-Saharan Africa. However, there are considerable regional differences in population size and distribution (Eltringham, 1993). Lewison and Oliver (2008) provided the most recent review of the status of the species throughout its range, estimating a total global population of 125,000-148,000 individuals. Eastern African countries reportedly contain the largest populations and form the stronghold for the species (with around 70,000 individuals), Southern African populations may contain around 80,000 individuals in total, and much smaller populations occur across 19 countries in West Africa, which contains an estimated 7,000 individuals (Lewison and Oliver, 2008).

West African populations were reported to be fragmented, in decline, have poor overall conservation status and to be at highest risk (Eltringham, (1993). However, this region contains less prime habitat for the species, being originally rainforest and with no existing reservoir of hippos to colonize newly converted grasslands (Eltringham, 1999). Populations were thought to be declining in half of all the 29 range States for the species and stable in seven, and only increasing in Zambia and possibly Uganda (Lewison & Oliver, 2008). The distribution of the population was reported to be restricted in 26 range States, at low density in eighteen, and widespread only in ten countries (Lewison and Oliver, 2008).

The species was classified by the IUCN as Vulnerable based on a population decline of 7-20% within ten years as a result of exploitation and habitat loss, and a projected population reduction of over 30% over three generations (30 years) with the likely continuation of these threats (Lewison and Oliver, 2008). Models predicted that combined habitat loss and moderate levels of mortality from hunting (1%) lead to a relatively high probability of population decline even in locally abundant populations (Lewison, 2007).

Overview of trade and management in the species: *H. amphibius* was listed in CITES Appendix III (Ghana) on 26/02/76 and in Appendix II on 16/02/95. International trade predominantly involves ivory (canine and incisor teeth, often reported as tusks) for use in carvings (Weiler *et al.,* 1994) although trade also includes trophies, feet, skulls, bones, skin and leather items. It is assumed that twelve teeth represent one individual. Lower canine tusks are as large as many elephant tusks and may be more desirable in some cases as they do not yellow with age (Nowak, 1991). The main range States involved in the export of tusks/teeth are the United Republic of Tanzania, Zambia, Zimbabwe, Malawi and South Africa. With the exception of South Africa, all of these major exporters were removed from the process on the basis of information provided to the Secretariat (AC24 Summary Report). The majority of trade in the species since listing in Appendix II has been in wild-sourced specimens.

C. Country reviews

BENIN

Provisional category: Species of Least Concern

Distribution in range State: The CITES Scientific Authority of Benin reported that the species was found in the wetlands of the Mono/Couffo departments of south-west Benin, the Pendjari Biosphere Reserve and the classified forest of Higher Ouémé and Dali in the north of Benin (latitudes 9 ° 11 ' and 9° 4 ' North and longitudes 1° 58 ' and 2° 28 ') (Ahononga *in litt*. to UNEP-WCMC, 2010). Other protected areas within the range included the "W" National Park (shared with Niger and Burkina Faso), Djona Hunting Reserve, and forest reserves of Wari Maro and Mt. Koufee (Lewison and Oliver, 2008). It was considered to be mainly confined to protected areas, and known to move between Benin and neighboring countries (Eltringham, 1999).

Population trends and status: Concern for the conservation status of the species in Benin was noted on the basis of a restricted distribution, occurrence at low density, a decreasing population trend and a population size of approximately 300-500 individuals (Lewison and Oliver, 2008). Amoussou *in litt.* to UNEP-WCMC (2010) considered the species threatened in the free areas and forest reserves of the country.

The Pendjari Lake system within the Boucle de la Pendjari National Park was considered the most significant habitat (Eltringham, 1999). Surveys in the 1970s and 1980s reported by Eltringham (1999) showed a decline in the hippo population on the Pendjari River and lagoons, from over 500 in 1970 (Green, 1997) to 441 in 1987, mostly occurring in Benin (J.A.Walsh, *in litt* cited in Eltringham, 1999). Verschuren *et al*. (1989) surveyed 280 individuals in Pendjari National Park in 1987, which also included Burkina Faso.

The Mono River between Benin and Togo supported a small but stable population of 53 hippos in 1986 (Eltringham, 1993). The population in the Mono River basin was reported to be fragmented into small isolated groups in the communes of Aplahoué, Djakotomey, Lokossa, Athiémé and of Grand-Popo (Amoussou *et al.,* 2006a). Field observations of the Mono basin were conducted from 2005 by Amoussou *et al.* (2006a) with 80 individuals observed. It was recommended that larger inventories within the Mono basin in consultation with the Togolese authorities would be beneficial, as few of the habitats were occupied permanently and population fluctuations could be attributed to migration (Amoussou *et al.,* 2006a). In the Mono and Couffo departments, small groups were observed in lakes and ponds at densities of 0.06 individuals/km^2, with a density of 7.5 individuals/km^2 in Lake Doukon Amoussou *et al.* (2006b).

In the Pendjari National Park, counts by the Ecological Monitoring Service at 13 floodplain pools and main channels of the Pendjari River in 2007 recorded a population of 1010 hippopotamuses (Amoussou *in litt*. to UNEP-WCMC, 2010). The population reportedly had more than tripled from 298 individuals in 2001, attributed to conservation and anti-poaching efforts (Amoussou *in litt*. to UNEP-WCMC, 2010). Total country estimates are provided in Table 1.

Table 1. Distribution and abundance of *Hippopotamus amphibius* in Benin (Source: Amoussou, 2007; Tehou, 2007 cited in Amoussou, *in litt.* to UNEP-WCMC (2010)).

Departments	Communes	Localities	Rivers/Areas	Effective
Atlantique	Toffo	Kpomè	Lake Hlan	1
Collines	Dassa Zoumè	Bétécoucou	River Ouémé	15
	Savè	Gobè	Barrage sucrerie Savè	1
		Okpa	Confluent Ouémé	migrateur

Departments	Communes	Localities	Rivers/Areas	Effective
			/Okpara	
		Igbodja, Djabata	River Okpara	migrateur
Borgou	Bétérou,	Sinahou	River Ouémé	15
	Monou	FC Ouémé Supérieur	River Ouémé	2
	N'Dali	Affon Borgou	River Ouémé	7
Atacora	Tanguiéta	Sépounga, Tiélé	River Ouémé	migrateur
	Porga	Pendjari	Parc National Pendjari (en 2007)	1010
Alibori	Gogounou	Dougoulaye	Rivière Sota	18
	Karimama	Kompa, Monsey Bello	River Niger	
	Malanville	Kombo tora Molla	River Niger	12
	Parc W		Mékrou, mares	Missing data
Mono/Couffo	Aplahoué	Djiffri	Mono	2
	Djakotomey	Zoko	Mono	2
		Adjamè/Kpoba	Mono	30
	Grand Popo		Mono	8
	Dogbo	Medehounta/Dévé	Affluents du fleuve Mono	2
	Lokossa	Doukonta	Mono	2
Plateau	Kétou	Adakplamè	Fleuve Ouémé	1
TOTAL				1128

The CITES Scientific Authority of Benin provided an estimate of 298 individuals in the north of the country (Sinsin cited by Gautier, 2002[1], cited by Ahononga *in litt.* to UNEP-WCMC, 2010), 41-107 individuals in the south of Benin (Guédou, 1999[1] cited by Ahononga *in litt.* to UNEP-WCMC, 2010; Ago, 2001[1] cited by Ahononga *in litt.* to UNEP-WCMC, 2010) and 32 individuals in the classified forests of Higher Ouémé and Dali (Kpétéré, 2009[1] cited by Ahononga *in litt.* to UNEP-WCMC, 2010). These figures provide an estimate within the range of 371-437 individuals, considerably less than the figures provided in Table 1.

Threats: Hunting for meat, particularly along the Pendjari and Sota Rivers, was identified as the main threat (Eltringham, 1999). Poaching was reported to be occurring in protected and non-protected areas (Amoussou *in litt.* to UNEP-WCMC, 2010). Human-hippo conflict was reported in south-west Benin in 2004 (Lewison and Oliver, 2008). Habitat fragmentation as a result of uncontrolled human development was identified as a threat in the Mono and Couffo departments (Amoussou *et al.*, 2006b). In the Mono River basin, it was reported that damage to crops on farms and plantations proximal to the wetlands inhabited by hippos had intensified since 1990 (Amoussou *et al.*, 2006a).

Key threats to the species in Benin were identified by Ahononga *in litt.* to UNEP-WCMC (2010) as illicit hunting by local populations for subsistence purposes and for trade in products, poisoning and eutrophication of hippo habitat, disturbance by fishing and loss of grazing grounds by bush fires and logging. Ahononga *in litt.* to UNEP-WCMC (2010) reported there was little pressure on the hippopotamuses within the classified forests of Ouémé Supérieur and Dali, yet anthropogenic pressure on the species in the wetlands of the Mono/Cuffo regions in south-west Benin was strong.

Trade: According to the data in the CITES Trade Database for the years 1999-2008, Benin reported the export of two hunting trophies of *H. amphibius,* all as purpose H (hunting

[1] Full reference not provided

trophies) (Table 2). No direct exports for the species have been reported by Benin since 2001, although the country did not submit an annual report in 2003 or 2006. Figures reported by importers were higher; 11 trophies (purpose H) and 70 wild sourced teeth for both purpose P (personal) and H. Trade originating in Benin was reported by importers in each year 2002-2007. Indirect exports of *H. amphibius* originating in Benin included 300 carvings imported to the United States from Hong Kong, Special Administrative Region, and are summarized in Table 3.

Table 2. Direct exports of *Hippopotamus amphibius* from Benin, 1999-2008. All trade was wild sourced. (No trade reported in 2008)

Term	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	Total
teeth	Exporter										
	Importer				12		27		31		70
trophies	Exporter			2							2
	Importer	2	2	3		1		1		2	11

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Table 3. Indirect exports of *Hippopotamus amphibius* originating in Benin, 1999-2008. All trade was wild sourced (No trade reported 2005-2008).

Exporter	Importer	Term	Reported by	1999	2000	2001	2002	2003	2004	Total
France	Brazil	skulls	Exporter						1	1
			Importer							
	Czech Republic	trophies	Exporter		2					2
			Importer			1				1
Hong Kong, SAR	United States of America	carvings	Exporter							
			Importer	300						300
South Africa	United States of America	trophies	Exporter						1	1
			Importer							

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Benin has not published any export quotas for *H. amphibius.*

Under European Union stricter domestic measures, imports of wild specimens of this species into the EU from Benin were legally suspended from 22/12/1997 to 10/09/1999.

No specific information on the extent of any illegal international trade in *H. amphibius* in Benin was located.

Management: A monitoring programme for the Pendjari National Park was reported to be in place (Amoussou *in litt*. to UNEP-WCMC, 2010). Ahononga *in litt*. to UNEP-WCMC (2010) reported the species to be protected in Benin, meaning that harvest and trade of wild specimens is prohibited. The species was reported to occur in a number of national parks and reserves, as indicated above. NGO ecotourism campaigns in the Mono/Couffo Departments have reportedly led to mitigation of human-hippo conflict by providing local incomes which had reportedly resulted in an increase in hippo populations (Amoussou, 2002, cited in Ahononga *in litt.* to UNEP-WCMC, 2010), however no specific details were provided. Lewison and Oliver (2008) considered legal protection in Benin to be partial, with the level of enforcement of protection described as poor/fair.

BURKINA FASO

Provisional category: Species of Least Concern

Distribution in range State: According to IUCN/SSC investigations in 1989, the species occurs in the west of Burkina Faso in isolated parts and bordering Mali and Côte d'Ivoire, as well as in the south-east near the borders with Niger and Benin (Eltringham, 1999). It was reported to occur in "W" National Park (shared with Benin and Niger), the Reserve Total de l'Arly, the river systems of Volta Noire/Grand Balè and Comoe/Leraba, as well as the Biosphere Reserve lake Mare aux Hippopotames (Eltringham, 1999). Lewison and Oliver (2008) also reported the species to be present in Deux Bales Forest and Soula Lake (Lewison and Oliver, 2008). The CITES Management and Scientific Authorities of Burkina Faso (Dibloni and Belemsobgo, *in litt.* to UNEP-WCMC, 2010) reported that the species occurs in the following water bodies: W-Arly-Pendjari Biosphere Reserve, Mare aux Hippopotames, Lakes Bagré and Tingréla, rivers of Comoé, Léraba, Sourou, and plains of Banzon and Bougouriba.

Population trends and status: A population of over 1600 individuals was estimated based only on areas rigorously inventoried (Table 4) according to the CITES MA/SA of Burkina Faso (Dibloni and Belemsobgo *in litt.* to UNEP-WCMC, 2010). Recent surveys were completed in Lake Bagré, Lake Mare aux Hippopotames and on the Comoé-Léraba rivers (Kuéla, 2002; UCF/Houet, 2004; Saley, 2005; Dibloni, 2008; Dibloni *et al*., 2009 cited by the the CITES MA/SA of Burkina Faso (Dibloni and Belemsobgo *in litt.* to UNEP-WCMC, 2010). Surveys of the rivers of Arly-Pendjari and Sourou valley took place by Nandnaba (1995), Stopped *et al.* (2003), and Traoré (2005), cited by the CITES MA/SA of Burkina Faso (Dibloni and Belemsobgo *in litt.* to UNEP-WCMC, 2010). Population estimates for these areas are provided in Table 4.

Table 4. Estimate of the populations of *Hippopotamus amphibius* within Burkina Faso (Source: Dibloni and Belemsobgo *in litt.* to UNEP-WCMC, 2010).

Reserves	Year	Effective Population*	Estimated population in 2009
Mare aux Hippopotames	2008	42	48
Arly National Park	2003	13	19
Rivière Pendjari	2003	617	895
Rivière Sourou	1995	208	426
Rivière Bagré	2005	65	89
Comoé-Léraba	2006	20	26
Bougouriba	2009	5	5
Ranch de Singou	2009	100	108
Rivière Douboudo (Ouamou)			50
Total		**1070**	**1666**

*It is unclear what "effective population" refers to

The annual population was estimated to be increasing by 7.6% (Saley, 2005; Dibloni, 2010 in Dibloni and Belemsobgo *in litt.* to UNEP-WCMC, 2010), which was attributed to protection laws (Dibloni and Belemsobgo *in litt.* to UNEP-WCMC, 2010).

Previous surveys were summarized by Eltringham (1999), who reported that the majority of hippos in Burkina Faso were confined to national parks, with the Comoe River being the most important region for the species. Whilst information was described as 'scrappy' (Eltringham, 1999), a summary of previous surveys are provided in Table 5. A total estimated population in 1993 was 403 individuals (Eltingham, 1993). This excluded the trans-boundary migratory animals within the "W" National Park. A national wildlife inventory carried out in 1982 (Bousquet, 1982 cited in Dibloni and Belemsobgo *in litt.* to UNEP-WCMC, 2010) estimated the national population at nearly 500 individuals.

The need for additional resources to complete a comprehensive national inventory was

identified by the CITES Authorities of Burkina Faso (Dibloni and Belemsobgo *in litt.* to UNEP-WCMC, 2010).

Table 5. *Hippopotamus amphibius* survey results within Burkina Faso (various sources).

Location	Survey results	Year	Source
Proximal to the Arly Reserve	80 individuals in 1000 km^2	1973-4	Green, 1979, cited in Eltringham, 1993
Pendjari/Mèkrou river systems	221 individuals in 100km surveyed	1981	Bousquet and Szaniawski, 1981, cited in Eltringham, 1993
Comoe and Leraba	Estimated 68 individuals	1981	C. A. Spinage *in litt.*, cited in Eltringham, 1999
Mare aux Hippopotames Lake	45 individuals	1981	C. A. Spinage *in litt.*, cited in Eltringham, 1999
Comoe River on the border with Cote d'Ivoire	720 individuals; thought to be stable	1989	Eltringham, 1999
Pendjari River system bordering Benin	Approx. 280	1987	Verschuren *et al.*, 1989

Lewison and Oliver (2008) noted concern for the conservation status of the species in Burkina Faso on the basis of its restricted distribution, occurrence at low density, decreasing population trend and population size of approximately 500-1000 individuals.

Threats: Killing for food was reported despite full species protection since 1980 (Eltringham, 1999). Human-hippo conflict was also reported (Dibloni and Belemsobgo *in litt.* to UNEP-WCMC, 2010; Lewison and Oliver, 2008). In the Sorou valley, eight hippopotamus were reported dead in a five day period (Traoré, 2005, cited in Dibloni and Belemsobgo *in litt.* to UNEP-WCMC, 2010).

Habitat loss was a threat identified by the CITES Authorities in Burkina Faso (Dibloni and Belemsobgo *in litt.* to UNEP-WCMC, 2010). It was reported that whilst agricultural irrigation projects had taken account of hippopotamuses in the case of Lake Bagré by creation of a refuge zone, those in the Sourou valley and Banzon plains had not, leading to uncontrolled installation of farms (Traoré, 2005 cited in Dibloni and Belemsobgo *in litt.* to UNEP-WCMC, 2010). This development was considered to have encroached on, and significantly reduced hippopotamus habitat (Dibloni and Belemsobgo *in litt.* to UNEP-WCMC, 2010). Other threats were reported as silting of the riverbed resulting in rising waters in the rainy season, inaccessibility to pasture for grazing, a high human population in proximal to the river and land clearance, and high fishing effort (Dibloni and Belemsobgo *in litt.* to UNEP-WCMC, 2010).

Hippo mortality was also observed following the installation of motorised irrigation systems (Dibloni and Belemsobgo *in litt.* to UNEP-WCMC, 2010).

Trade: According to data in the CITES Trade Database, for the years 1999-2008, Burkina Faso reported the export of only two teeth of *H. amphibius*, both of wild origin as hunting trophies in 2006. The only other trade record for all years was one seized/confiscated skull originating in Burkina Faso, reported by an importer in 1987. There were no reported indirect exports of *H. amphibius* originating in Burkina Faso, which has not published any export quotas for the species.

The CITES Authorities of Burkina Faso reported that there was no legal trade in *H. amphibius* in the country, nor were there any statistics available on illegal trade (Dibloni and Belemsobgo *in litt.* to UNEP-WCMC, 2010). However, local trade was reported to exist where water resources are shared with neighbouring countries close to the W-Arly-Penjari River complex and the need for protection in all these range States was highlighted (Dibloni and Belemsobgo *in litt.* to UNEP-WCMC, 2010).

Management: Dibloni and Belemsobgo *in litt.* to UNEP-WCMC, (2010) described the legal protection of *H. amphibius:* it was protected by law for five years from 1973 (Law 73/AN of November 29, 1973), which was renewed for a further five years from 1979 (Law 5/79/AN of June 6, 1979); since 1985, it has been listed as a threatened species and fully protected (RaaboN°0021/CNR/PRES of December 2, 1985); according to decree N°96-061/PRES/PM/MEE/MATS/MEFP/MCIA/MTT of March 11, 1996 regulating the exploitation of wildlife in Burkina Faso, there is no legal trade in this species.

Lewison and Oliver (2008) considered legal protection to be partial in Burkina Faso, with the level of enforcement of legal protection described as "poor".

CAMEROON

Provisional category: Species of Possible Concern

Distribution in range State: Reported to occur in four national parks in the north of Cameroon: Bénoué, Bouba Ndijida, Faro and Kalamaloué, in addition to Lake Maga on the Logone River floodplain, and in the south-west in and around Koroup National Park (Eltringham, 1999). Lewison and Oliver (2008) also reported the species to occur on Lake Lagdo and in Pangar-Djérem National Park in the north-west. *H. amphibius* was reported to occur in the Mbam-Djerem National Park in Central Cameroon (Nchanji and Fotso, 2006).

Population trends and status: Lewison and Oliver (2008) stated that the species was widespread in Cameroon although it was reported to occur at low density. The population size was estimated at 500-1500 individuals, but the population trend was unknown and concern for the conservation status of the species in the country was noted (Lewison and Oliver, 2008).

In Koroup National Park, signs of the species were reportedly common around the confluence of the Miri and Bake Rivers, although there were few direct sightings, and it was thought unlikely the species occurs in the Bake River further upstream than Bajo, despite some traces at Bakut (Eltringham, 1993; Lewison and Oliver, 2008). Eltringham (1999) reported that hippos within the Koroup National Park "probably do not exceed a few dozen". Elkin (*in litt*., cited in Eltringham, 1999) reported at least 40 hippos around Bourmi on Lake Maga. Nchanji and Fotso (2006) recorded 18 hippo in April 2001 and 79 in May-June 2001 on the River Djerem in Mbam-Djerem National Park.

Threats: Human-hippo conflict is likely to be a threat in Cameroon. Elkin (*in litt*., cited in Eltringham, 1999) noted animosity towards hippos as result of crop-raiding.

Trade: According to data in the CITES Trade database, for the years 1999-2009, Cameroon reported exporting a number of derivatives of *H. amphibius* (Table 6). The main trade terms reported exported of wild origin were trophies (64) and teeth (30), (Table 6). However, importers reported corresponding imports totaling of 164 teeth. In the previous ten years (1989-1998), Cameroon reported exports of 21 trophies yet importers reported 92 trophies imported from Cameroon. Indirect trade originating in Cameroon occurred at very low levels, with only 10 teeth re-exported in 1992, all of which were wild origin.

Two skulls, two teeth and one trophy were reported by importers as seized/confiscated items originating in Cameroon (Table 6). No other specific information on any illegal international trade in *H. amphibius* was located.

Cameroon has not published any export quotas for the species.

Table 6. Direct exports of *Hippopotamus amphibius* from Cameroon, 1999-2008.

Source	Term	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
I	teeth	Exporter											
		Importer	2										2
	trophies	Exporter											
		Importer				1							1
W	carvings	Exporter											
		Importer					1						1
	skins	Exporter											
		Importer		1			1						2
	skulls	Exporter											
		Importer	1		1								2
	small leather products	Exporter											
		Importer			1								1
	tails	Exporter											
		Importer			1		1		1			1	4
	teeth	Exporter	2		28								30
		Importer	12	4	23		14		2	44		65	164
	trophies	Exporter	12	10	8	12		5	9	8			64
		Importer	6	5	6	2	11		4	3	3	4	44
	tusks	Exporter											
		Importer	10										10

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Management: Legal protection was reported to be 'total', and the level of enforcement of legal protection was considered to be 'fair' (Lewison and Oliver, 2008), however it is unclear if the species is totally protected in the country given that recent trade has been reported. Increased law enforcement in the Mbam-Djerem National Park was noted by Nchanji and Fotso (2006).

CENTRAL AFRICAN REPUBLIC

Provisional category: Species of Least Concern

Distribution in range State: Eltingham (1999) reported that the species occurred throughout the country, except in the extreme north. Lewison and Oliver (2008) reported the occurrence of the species in the following areas: national parks of Andre Felix, Bamimgui-Bangoran and Monovo-Gounda-Saint Floris, Forest Reserves of Yata-Ngaya, Gribingui and Koukourou, and the Lobaye River.

Population trends and status: Reported to be locally abundant but restricted in distribution in the Central African Republic (CAR), with an estimated population size of 850 individuals (Lewison and Oliver, 2008). A severe decline of 75% in six years (1983-1989) was estimated by Fay (*in litt*. cited in Eltringham, 1999). The current population trend in the country is declining and its conservation status was noted as of concern (Lewison and Oliver, 2008).

Eltringham (1993) reported an unknown but probable population of 20-30 hippopotamuses in the Bamimgui-Bangoran National Park. No more than 100 individuals remained in the Monovo-Gounda-Saint Floris National Park in 1980 (Barber *et al.*, 1980, cited in Eltringham, 1999).

Threats: Poaching for meat, teeth and hides were reported to be the main threats, even within national parks (Eltringham, 1999). The CITES Management Authority of CAR (J. Mamang-Kanga *pers. comm*. to UNEP-WCMC, 2010) reported that poaching remained a threat. J. Mamang-Kanga *pers. comm*. to UNEP-WCMC, (2010) noted that the area with the greatest concentration of *H. amphibius* was for some time occupied by an armed rebellion

which had presently laid down arms.

Trade: According to data in the CITES Trade database, for the years 1999-2008, the Central African Republic reported the export of one trophy and one carving of *H. amphibius* with no source reported (Table 8). All were for personal purposes or hunting trophies. However, CAR did not submit annual reports for 2003, 2004 or 2008. Importers reported four wild-sourced skins and three teeth (no reported source) imported, which do not appear to have been reported by the origin country. The only reported indirect export of *H. amphibius* originating in Central African Republic since 1999 was a re-export of one pre-convention skull via France in 2000.

Central African Republic has not published any export quotas for *H. amphibius*. No specific information on the extent of any illegal international trade in *H. amphibius* in CAR was located.

Table 7. Direct exports of *Hippopotamus amphibius* from Central African Republic, 1999-2008. (No trade reported in years not shown).

Source	Term	Reported by	2006	2007	Total
W	skins	Exporter			
		Importer	4		4
(no source reported)	carvings	Exporter		1	1
		Importer			
	trophies	Exporter		1	1
		Importer			

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Under European Union stricter domestic measures, imports of wild specimens of this species into the EU from CAR were legally suspended from 22/12/1997 to 10/09/1999.

Management: Legal protection was reported by Eltringham (1999) to be total, but the level of enforcement was considered negligible, except in the Ozanga-Ndoki and Manova-Gounda-Saint Floris National Parks. The CITES Management Authority of CAR (J. Mamang-Kanga *pers. comm.* to UNEP-WCMC, 2010) reported that the species is fully protected and cannot be sold under the Code of Protection of Wildlife (July 1984) which regulates hunting in the country and provides the provisions for prosecution of poachers.

CHAD

Provisional category: Species of Least Concern

Taxonomic Note: A proposed distinct West African subspecies *H. a. tscadensis* occurring in Chad and Niger has not been confirmed (Grubb, 1993; Wilson and Reeder, 2005), although the subspecies was previously categorised by the IUCN as globally Vulnerable (Baillie and Groombridge, 1996).

Distribution in range State: *H. amphibius* was reported to be restricted in distribution within Chad, and was known to occur within the Zakouma National Park, Lake Iro, Lake Tchad, Chari River, Manda National Park, Binder Lere Forest Reserve and the Loogone River (Lewison and Oliver, 2008).

Population trends and status: The species was reportedly common in the vicinity of Lake Chad during the 1950s (Sidney, 1965, cited in Eltringham, 1993). Lewison and Oliver (2008) report the population was stable in Chad, however no population size was available.

Threats: The main threats to the species in range State are unknown.

Trade: Chad reported no direct exports of *H. amphibius* 1976-2009 (no annual report was submitted for 2005). One importer reported a tooth imported from Chad in 1991 (no source reported, purpose hunting trophies). There were no reported indirect exports of *H. amphibius* originating in Chad.

Chad has not published any export quotas for this species.

Under European Union stricter domestic measures, imports of wild specimens of this species into the EU from Chad were legally suspended from 22/12/1997 to 10/09/1999.

Management: Legal protection was reported to be partial within Chad and the level of enforcement of legal protection was considered good (Lewison and Oliver, 2008).

CÔTE D'IVOIRE

Provisional category: Species of Least Concern

Distribution in range State: The species has a restricted distribution in Côte d'Ivoire mainly occurring in the north, with occurrence recorded on the rivers of White Bandama, Bandama, Bou, Comoè (on the Burkina Faso border), Marahoué, Nzi, and Sassandra (on the Guinea border) as well as coastal lagoons (Eltringham, 1999). It was reported to occur in all the major rivers draining into the Atlantic Ocean (Sassandra, Bandama and Comoé Rivers) as well as some of the upper stretches of rivers draining into the Niger River system (Roth *et al*., 2004). Lewison and Oliver (2008) noted occurrence of the species in the National Parks of Marahoué, Comoè and Mont Sangbé, as well as the Sassandra River mouth, close to Sassandra town.

Population trends and status: *H. amphibius* was recorded in the Comoé National Park in small numbers in 1968, with counts along the Comoé River of around 2 individuals per km^2 resulting in an estimate of 450 hippos within the park (Geerling and Bokdam, 1973). The total population was estimated at around 1100 animals in 1978-1984, of which at least 70% concentrated in the dry season in the Upper Comoé, Leraba and Iringou rivers (Roth *et al.,* 2004). Eltringham (1999) stated the White Bandama River system was the most important area for the species, yet it remained unprotected and numbers were reportedly declining. Hippopotamuses were sighted on several occasions and frequently heard in the Marahouè River within the Parc National de la Marahouè in central Côte d'Ivoire during a rapid assessment in 1998 (Schulenberg *et al.,* 1999). Roth *et al*., (2004) reported that the species was only abundant in the Upper Comoé. Low densities were observed in the Comoé National Park (also a Biosphere Reserve) within the Comoe, Kongo and Iringou rivers by Fischer and Linsenmair (2001).

Concern for the conservation status of the species in Côte d'Ivoire was expressed by several authors (Eltringham, 1999; Lewison and Oliver, 2008). The species was reported to have a restricted distribution, occur at low density, number approximately 300-400 individuals and have a decreasing population trend (Lewison and Oliver, 2008).

Threats: Unregulated hunting and poaching were reported to be the main threats to the species in Côte d'Ivoire (Lewison and Oliver, 2008). Hoppe-Dominik (1999, cited in Roth *et al.* 2004) considered both poaching and habitat destruction major threats. Fischer and Linsenmair (2001) reported that specialist hippo hunters entered the Comoé National Park and killed at least seven individuals in the south of the park within several weeks in 1998.

Trade: According to the data in the CITES Trade Database, for the years 1999-2008, Côte d'Ivoire did not report any exports of *H. amphibius*. However, importers reported a very low number of specimens imported originating in Côte d'Ivoire; five bone pieces all with pre-Convention origin. There were no reported indirect exports of *H. amphibius* originating in

Côte d'Ivoire.

Côte d'Ivoire has not published any export quotas for *H. amphibius.* No specific information on any illegal international trade in *H. amphibius* from Côte d'Ivoire was located.

Under European Union stricter domestic measures, imports of wild specimens of this species into the EU from Côte d'Ivoire were legally suspended from 22/12/1997 to 10/09/1999.

Management: Eltringham, (1999) reported that the species was protected within national parks within Côte d'Ivoire. Lewison and Oliver (2008) stated that legal protection for *H. amphibius* was unknown, but the level of enforcement of legal protection within the country was reported to be "poor".

EQUATORIAL GUINEA

Provisional category: Species of Least Concern

Distribution in range State: The CITES Management Authority of Equatorial Guinea **(**Engonga Osono *pers. comm*. to UNEP-WCMC, 2010) reported that the species occured only in the continental part of the country. Lewison and Oliver (2008) considered the species to be restricted in distribution.

Population trends and status: The species occurs at low density, has an unknown population trend and an estimated population size of only 100 individuals (Lewison and Oliver, 2008). A few individuals are found on the Campo River (Eltringham, 1993; Lewison and Oliver, 2008). The CITES Management Authority of Equatorial Guinea **(**Engonga Osono *pers. comm*. to UNEP-WCMC, 2010) reported the size of the population to be very reduced since the 1980s, when an individual of this species was found in the opening of the Ecucu River, but to date it has not been seen again. The species was considered threatened in Equatorial Guinea (Engonga Osono *pers. comm*. to UNEP-WCMC, 2010).

Threats: Eltringham (1999) reported that *H. amphibius* was not hunted in Equatorial Guinea and the main threats to the species were disturbance from timber and fishing activities.

Trade: According to the CITES Trade database, no direct or indirect exports of *H. amphibius* from Equatorial Guinea have been reported. The CITES Management Authority of Equatorial Guinea reported there was no trade data for either legal exports or illegal trade within the country (Engonga Osono *pers. comm*. to UNEP-WCMC, 2010).

Under European Union stricter domestic measures, imports of wild specimens of this species into the EU from Equatorial Guinea were legally suspended from 22/12/1997 to 10/09/1999.

Management: Legal protection of the species was reported to be total, yet the level of enforcement of legal protection was considered poor and the species was not known to occur within any protected areas within Equatorial Guinea (Lewison and Oliver, 2008). The CITES MA of Equatorial Guinea (Engonga Osono *pers. comm*. to UNEP-WCMC, 2010) reported that there were no specific regulations concerning the extraction *H. amphibius* from the wild.

There is apparently no population monitoring in Equatorial Guinea, and survey data appears to be lacking. An inventory of the species was requested by the CITES MA (Engonga Osono *pers. comm*. to UNEP-WCMC, 2010). There is no basis for any non-detriment finding in Equatorial Guinea (Engonga Osono *pers. comm*. to UNEP-WCMC, 2010).

ERITREA

Provisional category: Species of Least Concern

Distribution in range State: The species was reported to occur in the north of Eritrea (Wilson and Reeder, 2005; Lewison and Oliver, 2008). The proposal to list *H. amphibius* in Appendix II to CITES (CoP9 Prop. 18) did not report Eritrea as a range State. Eltringham (1993; 1999) did not refer to occurrence in Eritrea.

Population trends and status: No information was located.

Threats: No information was located.

Trade: According to the CITES Trade database, no direct or indirect exports of *H. amphibius* from Eritrea have been reported.

Under European Union stricter domestic measures, imports of wild specimens of this species into the EU from Eritrea were legally suspended from 22/12/1997 to 10/09/1999.

Management: No information was located.

ETHIOPIA

Provisional category: Species of Possible Concern

Distribution in range State: The Ethiopian Wildlife Conservation Authority (CITES National Authorities) reported that *H. amphibius* was largely confined to the western part of the country (Wakjira *in litt.* to UNEP-WCMC, 2010). In the north-west, some populations were reported to occur in Lake Tana, and also the Blue Nile River and Tekeze River (Wakjira *in litt.* to UNEP-WCMC, 2010). In the Great Rift Valley, the species was reported to occur in the Awash River, and also Lakes Afambo, Zeway, Awasa, Abaya and Chamo (Wakjira *in litt.* to UNEP-WCMC, 2010). A few hippos were reported to occur in the dry south-east confined to the Webi, Shebeli and Ganale Rivers, with the Setit River the northern limit (Lewison and Oliver, 2008).

Population trends and status: The species was reported to be widespread and locally abundant in Ethiopia, with a stable population of 5,000 individuals (Lewison and Oliver, 2008). Several authors reported *H. amphibius* was abundant between altitudes of 200 and 2000m, and considered the main strongholds to be the Omo, Awash and Great Abbi (Blue Nile) Rivers (Eltringham, 1999; Eltringham, 2003; Lewison and Oliver, 2008). Eltringham (1999) suggested numbers appeared stable and considered a figure of 5,000 individuals to be conservative, however it was recognized that little information on conservation status in the country was available. The CITES Authorities of Ethiopia reported that populations were reported to be "significant" in the Dati swamp and the rivers of Birbir, Didessa and Dabus, with a sizeable population in the Great Rift Valley lakes and rivers, and considerable populations in the Omo River and Boyo wetland (Wakjira *in litt.* to UNEP-WCMC, 2010).

The CITES Authorities of Ethiopia confirmed there was no adequate country-wide information on population size available (Wakjira *in litt.* to UNEP-WCMC, 2010). Based on available survey information as well as local, secondary information, the CITES Authorities of Ethiopia (Wakjira *in litt.* to UNEP-WCMC, 2010) estimated the population to be roughly 4500-6000 individuals based on the following information:

- A total count in Dati Controlled Hunting Area indicating the presence of about 674 hippopotamuses conducted by Ethiopian Wildlife Conservation Authority

(EWCA) in 2008;
- Records of about eight schools of hippos, each comprising about 15 individuals on average, encountered on Lake Chamo in 2004 by a team of EWCA and Southern Region wildlife experts while conducting a crocodile census;
- Local information reporting the presence of a significant number of hippo populations in Boyo wetland around Hadiya zone in southern Ethiopia.
- Reports of Lake Afambo in Afar region supporting a large number of hippos (Fanuel Kebede pers. comm. with EWCA, 2010).

The Ethiopian CITES Authorities (Wakjira *in litt.* to UNEP-WCMC, 2010) suggested that the population was stable in the country based on the IUCN assessment and the estimated population size and distributional range.

Threats: Eltringham (1999) stated that whilst hunting occurred in certain areas in Ethiopia, it was not thought to be a substantial threat. The CITES Authorities of Ethiopia (Wakjira *in litt.* to UNEP-WCMC, 2010) reported that the major threats were poaching for ivory, hide and bushmeat, with off-take for meat concentrated around Lake Chamo, where Zeise tribes kill hippos for subsistence purposes. The main threat in the western part of the country was identified as killing for the trade in hides for locally sold products, and for ivory to be sold for carving in markets in Addis Ababa in central Ethiopia (Wakjira *in litt.* to UNEP-WCMC, 2010).

Additional threats identified included habitat disturbance from riverbank cultivation and conflict with farmers (mainly around the Dabus, Omo and Awash Rivers and the Boyo wetland) and with fishermen (due to damage of fishing nets and interference with fishing activities) around Lakes Tana, Awasa, Zeway and Chamo (Wakjira *in litt.* to UNEP-WCMC, 2010). Habitats adjacent to big towns were noted to be vulnerable to water pollution due to eutrophication and toxic effluents, including Lakes Awasa, Tana, Chamo and Abaya which are inhabited by hippos (Wakjira *in litt.* to UNEP-WCMC, 2010).

Trade: According to data in the CITES Trade database, for the years 1999-2008, Ethiopia reported exporting only two wild-sourced trophies (Table 8). Importers reported slightly higher figures, of four trophies, four carvings and nine teeth (Table 8). Nine teeth and two tusks were authorized for export, according to Table 9, however no annual report has been submitted by Ethiopia for 2008. Otherwise, authorized exports of *H. amphibius* products do appear to correspond almost exactly with trade data reported by importers. A small number of indirect exports with origin Ethiopia are summarized in Table 10.

The CITES Authorities of Ethiopia (Wakjira *in litt.* to UNEP-WCMCWakjira, 2010) reported that the species was mainly utilized through trophy hunting, although confiscated products may also be sold locally by EWCA which may either be consumed locally or exported. Ethiopia has published export quotas for the species (Table 11). Trade appears to have remained within quotas set.

Thirteen seized/confiscated derivatives of *H. amphibius* originating in Ethiopia were reported by importers (Table 10). The CITES Authorities of Ethiopia (Wakjira *in litt.* to UNEP-WCMC, 2010) reported evidence of illegal trade in ivory (teeth) and leather products, mainly for the commercial sale of souvenir items to tourists in Addis Ababa. The Ethiopian Wildlife Conservation Authority (EWCA) confiscated approximately 10.8 kg of hippo teeth in December 2009 in Addis Ababa (Wakjira *in litt.* to UNEP-WCMC, 2010).

Table 8. Direct exports of *Hippopotamus amphibius* from Ethiopia, 1999-2008.

Source	Term	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
I	carvings	Exporter											
		Importer				10		1				2	13
	large leather products	Exporter											
		Importer										2	2
	small leather products	Exporter											
		Importer										2	2
	tusks	Exporter											
		Importer						3				2	5
W	carvings	Exporter											
		Importer	4										4
	teeth	Exporter											
		Importer										9	9
	trophies	Exporter									2		2
		Importer	1								2	1	4

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Table 9. Authorised exports of *Hippopotamus amphibius* from Ethiopia 1986-2008 (Source: Ethiopian CITES Authorities (Wakjira *in litt.* to UNEP-WCMC, 2010)).

Year	CITES App.	Terms						
		Trophies	Leathers	Carvings	Teeth	Tusks	Ivory	Remarks
1986	III	4	-	-	-	-	-	-
1988	III	-	-	-	-	2	-	-
1990	III	1	-	-	-	-	-	-
1993	III	6	-	-	2	1	-	1 bone
1997	II	2	-	-	-	-		-
1998	II	1	-	-	-	2	30	-
1999	II	1	-	4	-	-		-
2002	II	-	-	10	-	-		-
2003	II	1	-	-	-	-	-	unspecified
2004	II	-	-	1	-	3	-	-
2007	II	4	-	-	-	-		-
2008	II	-	4	2	9	2		-
2009	II	-	-	-	-	-	-	not finalized

Table 10. Indirect exports of *Hippopotamus amphibius* originating in Ethiopia, 1999-2008. (No trade reported prior to 2003).

Exporter	Importer	Source	Term	Reported by	2003	2004	2005	2006	2007	2008	Total
France	Switzerland	O	carvings	Exporter		1					1
				Importer							
Germany	Russian Federation	W	teeth	Exporter						9	9
				Importer							
	United States of America	I	small leather products	Exporter							
				Importer						13	13
Switzerland	France	O	carvings	Exporter							
				Importer		1					1

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Table 11. Export quotas for *Hippopotamus amphibius* published by Ethiopia (2001-2009).

Year	Raw ivory (kg)	Worked ivory (kg)	Trophies
2001	-	-	10
2002	-	-	10
2003	69.1	-	-
2004	40	35	10
2005	40*	35	10
2006	40	35	10
2007	40	35	10
2008	40	-	10
2009	40	-	10

* Reported by the CITES Authorities of Ethiopia to be confiscated raw ivory (Wakjira, 2010).

Under European Union stricter domestic measures, imports of wild specimens of this species into the EU from Ethiopia were legally suspended from 22/12/1997 to 10/09/1999.

Management: *H. amphibius* occurs in the Awash National Park (Ethiopian Institute of Biodiversity Conservation, 2010). According to the CITES Authorities of Ethiopia, it is protected under Ethiopian law (Wildlife Proclamation No. 541/2007) and "killing is, therefore, not permitted in any way both inside and outside protected areas" (Wakjira *in litt.* to UNEP-WCMC, 2010). The level of enforcement of legal protection within Ethiopia was reported to be unknown (Lewison and Oliver, 2008).

Efforts to control illegal trade were reported by the CITES Authorities of Ethiopia, (Wakjira *in litt.* to UNEP-WCMC, 2010) and included capacity building for anti-poaching staff to conduct regular patrols and operations, and increased cooperation of custom officers, policemen and the media to intercept illegal wildlife traffic. Wakjira *in litt.* to UNEP-WCMC (2010) concluded that if these efforts continued to progress, illegal trade of hippo products would not remain a serious threat.

The CITES Authorities reported that trophy hunting was permitted on the basis of a quota system set by wildlife experts, considering the existence of a viable population, healthy age structure and sex ratio (Wakjira *in litt.* to UNEP-WCMC, 2010).

GABON

Provisional category: Species of Least Concern

Distribution in range State: The species does not have an extensive range in Gabon as the country has high forest cover, but it was reported to occur along much of the coastline and up to the Ogooué River for a considerable distance inland to Lopè Reserve (Eltringham, 1999). It was also reported to occur in the National Parks of Wanga-Wongue, Loango and Moukalaba-Doudou (Lewison and Oliver, 2008).

Population trends and status: Prins and Reitsma (1989) observed animals near the village of Settè Cama and estimated the density of the hippopotamus population to be 0.03 individuals per km^2 based on surveys of tracks in lowland rainforest in south-west Gabon in 1988. There are no recent population estimates based on surveys but the species was reported to be widespread and abundant in places (Lewison and Oliver, 2008). *H. amphibius* was considered to occur only at low density in Gabon, and the population size was estimated at 250 individuals, which was thought to be in decline (Lewison and Oliver, 2008).

Threats: Eltringham (1999) reported that hippos were poached for meat in Gabon, with a few killed in self-defense by fishermen.

Trade: According to data in the CITES Trade database, for the years 1999-2009, Gabon reported the export of only two teeth of wild origin, in 2005. The import does not appear to

have been reported by an importer. There were no reported indirect exports of *H. amphibius* originating in Gabon.

Gabon has not published any export quotas for the species.

Management: Occurs within three national parks (Wanga-Wongue, Loango and Moukalaba-Doudou) as outlined above. Eltringham (1999) noted that most animals occur within protected areas. Legal protection was reported to be total, but the level of enforcement of legal protection was considered "poor" (Lewison and Oliver 2008).

GAMBIA

Provisional category: Species of Least Concern

Distribution in range State: Reported to have a very restricted distribution in the Gambia, occurring only in the freshwater stretch of the Gambia River adjacent to rice fields in the east within the Gambia River National Park (Eltringham, 1999; Lewison & Oliver, 2008). The Gambian CITES Authorities reported the species was most commonly seen in Central River Region and Upper River Region (furthest inland), although it was noted that the species may be found in other regions (Lower River Region and North Bank Region) where brackish and low saline waters are available during the rainy season (Dumbuya *in litt*. to UNEP-WCMC, 2010). Some hippos were reported to occur on the tiny Baboon Island National Park (Eltringham, 1999).

Population trends and status: Lewison and Oliver (2008) noted concern for the conservation status of the species in the Gambia on the basis of a restricted distribution, occurrence at low density, a population of only 40 individuals and a probable decreasing population trend.

Clarke (1953) found eight hippos in seven weeks in 1948 on the Gambia River and its localities, concluding the species had probably declined considerably following strong hunting pressure, with 53 animals reported shot by a single hunter in 1947. The species was reportedly classified as endangered in the country (Camara, 1994 cited in CoP9 Prop.18). Counts made by K.Pak (*in litt*, cited in Eltringham, 1999) in 1987/1988 estimated the population size to be 19-40 individuals. Eltringham (1993; 1999) considered the status of the small population in the Gambia to be of serious cause for concern since the viability of *H. amphibius* populations numbering less than 500 was questionable.

The CITES Authorities in the Gambia (Dumbuya *in litt*. to UNEP-WCMC, 2010) did not provide a current population estimate, but noted that "the population size has reduced drastically due to killings by farmers during the conflict with rice cultivation."

Threats: Habitat loss and crop damage leading to retaliation killings were identified as the major threats to the species in the country by the CITES Authorities of the Gambia (Dumbuya *in litt*. to UNEP-WCMC, 2010). Ten individuals were reported killed between 1984 and 1994 as a result of human-hippo conflict (Camara, 1994, cited in CoP9 Prop.18). The species is not traditionally hunted in the Gambia (Eltringham, 1999).

Trade: According to data in the CITES Trade database, no direct exports of *H. amphibius* from the Gambia were reported for the years 1976-2009. The only reported global trade in *H. amphibius* originating in the Gambia referred to one wild-sourced tooth re-exported from New Caledonia to France in 2006.

Gambia has not published any export quotas for *H. amphibius*.

Under European Union stricter domestic measures, imports of wild specimens of this species into the EU from Gambia have been legally suspended since 22/12/1997, with the last suspension confirmed on 21/05/2009 under Commission Regulation (EC) 359/2009.

Management: The CITES Authorities in the Gambia reported that the species was fully protected (Dumbuya *in litt*. to UNEP-WCMC, 2010). The level of protection for the species was reported to be "good", with the level of legal enforcement reported as "fair" (Lewison & Oliver, 2008).

The CITES Authorities of the Gambia (Dumbuya *in litt*. to UNEP-WCMC, 2010) stated that the Control of Hunting and Harvesting Act regulated wildlife harvesting, trade and protection in the country. According to the Act, biological resources are protected, although hunting or harvesting of species outside protected areas may be permitted where open seasons have been declared and valid hunting/harvesting licenses have been issued. Dumbuya *in litt.* to UNEP-WCMC (2010) also reported that the basis for non-detriment findings was population monitoring and information gathered from farmers and local communities peripheral to the range of hippos. No further details were provided.

MALI

Provisional category: Species of Least Concern

Distribution in range State: Eltringham (1999) reported that distribution in Mali was restricted to a number of rivers in the south-west of the country including the Niger River near Bamako, in addition to the Bagoè, Bani, Banifing IV, and Baoulè (Walsh *in litt.*, cited in Eltringham, 1999), plus Lake Fishpool south of Gao. Lewison and Oliver (2008) reported occurrence in the Boucle du Baoulè National Park, Faleme River, Bafing River, Bakoye River, Segou region (central Mali), near Bourem Inali, Gao Region (Ansongo) (East Mali) and Guichini area.

Population trends and status: *H. amphibius* was recorded throughout the length of the Niger River and many of its tributaries in 1972-4 (Sayer, 1977). It was reported to be widespread in small numbers, common in the Baoulè National Park and frequently seen in the Niger River around the capital, Bamako (Sayer, 1977). Eltringham (1999) reported counts of ten individuals on River Bagoè and 50+ on the River Baoulè (Walsh *in litt.)* but very few numbers elsewhere. Concern for the conservation status of the species in Mali was expressed by Lewison and Oliver (2008) on the basis of a restricted distribution, occurrence at low density, decreasing population trend and estimated population size of 500-1000 individuals.

Threats: The main threat to the species was identified as the general desertification of Mali (Eltringham, 1999).

Trade: According to data in the CITES Trade database, for the years 1999-2008, Mali reported the export of five teeth and one trophy, all of wild origin (Table 12). Importers reported the import of 100 kg of teeth. The trophy was exported for the purpose of circuses or travelling exhibitions and the teeth reported in number were exported for personal purposes. The 100 kg of teeth were reported imported by South Africa in 2004 for commercial purposes.

Table 12. Direct exports of *Hippopotamus amphibius* from Mali, 1999-2008. (No trade reported 1999-2003).

Source	Term	Reported by	2004	2005	2006	2007	2008	Total
W	teeth	Exporter	5					5
		Importer						
	teeth (kg)	Exporter						
		Importer	100					100
	trophies	Exporter					1	1
		Importer						1

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

There were no reported indirect exports of *H. amphibius* originating in Mali 1999-2008. No other specific information on any illegal international trade in *H. amphibius* was located.

Mali has not published any export quotas for *H. amphibius.*

Management: Known to occur in the Boucle du Baoulè National Park (Eltringham, 1999). Legal protection was reported to be partial, but the level of enforcement of legal protection was unknown (Lewison and Oliver 2008).

MOZAMBIQUE

Provisional category: Species of Possible Concern

Distribution in range State: *H. amphibius* was reported to be widespread in Mozambique and present on most river systems, particularly the Rovuma and Lugenda in the north, the Zambezi and Pungue in the centre and the Save River in the south, and was reported as "common" in the rivers running into the sea near Maputo (Eltringham, 1999, based on Tello *in litt.).* The CITES Management Authority (Mahanjane *in litt*. to UNEP-WCMC, 2010) reported that the species occured in >25 rivers within the country including lakes and ponds, six national parks, seven game reserves, 15 concession hunting areas and 17 game farms. A few hippo were reported to have survived on the Ilha Mariana wetland in the floodplain of the Incomati River (Tinley *et al.,* 1976).

Population trends and status: Tinley *et al*. (1976) reported that *H. amphibius* was abundant in the Parque Nacional da Gorongosa at the southern limit of the Great Rift Valley, the coastal Reserva Especial do Maputo contained "fair" numbers, and the Reserva Especial de Protecçâo dos Bufalos de Marromeu in the southern section of the Zambezi river delta contained "pleasing" numbers.

L. Tello (cited in Eltringham 1999; Lewison and Oliver, 2008) estimated the population size in Mozambique in 1986 to be 16,000-20,500, with most animals (10,000-12,000) occurring in the Zambezi Wildlife Utilization Area, which includes the Marromeu Reserve and four safari hunting blocks and is contiguous with Gorongosa. Numbers were reported to have increased by 20% since 1974 in this area but elsewhere they had declined, except in Tete Province, whose population was between 1,500 and 2,500 and stable (Eltringham 1993; Lewison and Oliver, 2008).

A substantial population was reported to exist in an artificial lake on the Zambezi created by the Cabora Basa Dam (Eltringham, 1999). Lewison and Oliver (2008) considered Gorongosa to have the only sizable population of about 2,000. Overall the population was considered locally abundant, with an estimated population size of 18,000 individuals, but concern for the conservation status of the species was noted on the basis of a declining population trend (Lewison and Oliver, 2008).

The CITES MA of Mozambique reported that a national wildlife survey completed in 2008 covering 80% of Mozambique estimated 8,388 herds with limits of 3,896-12,879 (Mahanjane *in litt*. to UNEP-WCMC, 2010). Clarification on exactly what these figures represent was sought, but no further details were provided.

Threats: Eltringham (1999) attributed declines in some regions to poaching or drought. Human-hippo conflict is a major threat. From July 2006-September 2008, twelve people were killed and ten were injured by hippos, with 60 animals killed (Dunham *et al.,* 2010). Attacks were concentrated in the districts bordering Lake Cabora and the Zambezi River, but attacks were noted as less widespread than crop damage, which was mainly reported to occur along the Zambezi, Save and Limpopo Rivers in the south (Dunham *et al.,* 2010). The CITES MA of

Mozambique (Mahanjane *in litt.* to UNEP-WCMC, 2010) reported that 57 hippo were killed as Problem Animal Control in 2008, as were 33 in 2009, with 164 killed by sport hunting in 2008 and 310 in 2009.

Trade: According to data in the CITES Trade database, for the years 1999-2008, Mozambique reported the export of 412 trophies, 186 teeth, 16 feet, 14 skins, 9 skulls six skins, and three carvings, all of wild origin (Table 13). Trade in trophies of wild origin was fairly consistent 2004-2008, with 50-90 trophies exported annually. Over twice the number of teeth of wild origin were reported by importers than reported by Mozambique (Table 13). Three seized/confiscated carvings originating in Mozambique were reported by an importer in 2004 (Table 13). No additional information on any illegal international trade in *H. amphibius* was located.

Indirect exports originating in Mozambique are summarized in Table 18 on page 39.

Mozambique has not published any export quotas for this species but has established an internal system of annual quotas (Mahanjane, 2010). Further details were not provided.

Table 13. Direct exports of *Hippopotamus amphibius* from Mozambique, 1999-2008.

Source	Term	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
C	teeth	Exporter											
		Importer					16						16
I	carvings	Exporter											
		Importer						3					3
W	carvings	Exporter									3		3
		Importer											
	feet	Exporter	16										16
		Importer		12	16		4		4	18			54
	genitalia	Exporter											
		Importer			1								1
	ivory pieces	Exporter											
		Importer							12				12
	skin pieces	Exporter											
		Importer								5			5
	skins	Exporter	6										6
		Importer	2	1	5					11	1		20
	skulls	Exporter	9										9
		Importer	2	4	5					2			13
	teeth	Exporter	67		108				11				186
		Importer	11	42	120	37	4	25	8	188	12	12	459
	trophies	Exporter	5	31	7	26	20	50	90	65	67	51	412
		Importer	1	7	6	3	11	38	48	24	52	32	222
	tusks	Exporter											

Source	Term	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
		Importer			6					8	24		38

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Management: Protected in several national parks and reserves in Mozambique including the National Parks of Gorongosa and Limpopo and the Gile, Maputo, Marromeu and Niassa game reserves (Lewison and Oliver, 2008). Hippos were specifically protected in the Fauna Protection Areas of the Troco do Rio Pungue, Troco do Rio Limpopo and Area de Marracuene on the Incomati River (Tinley *et al*., 1976). It was reported that hippo could be taken from the Zimave National Park (Tinley *et al*., 1976).

The CITES MA of Mozambique reported that the basis of non-detriment findings for exports was reported to be the national surveys undertaken in 2008 (Mahanjane *in litt*. to UNEP-WCMC, 2010).

Legal protection was reported to be partial, but the level of enforcement of legal protection was not known (Lewsion and Oliver 2008). Eltringham (1999) reported that the national park structure had been under some stress, and noted difficulties in enforcement of the law.

NIGER

Provisional category: Species of Least Concern

Taxonomic note: A proposed distinct West African subspecies *H. a. tscadensis* occurring in Chad and Niger has not been confirmed (Grubb, 1993; Wilson and Reeder, 2005), although the subspecies was previously categorised by the IUCN as globally Vulnerable (Baillie and Groombridge, 1996).

Distribution in range State: Reported to have a restricted distribution within Niger (Lewison and Oliver, 2008). Occurrence was confirmed on the River Niger, with 80% of individuals found between the villages of Ayerou and Firgourn in the south-west of the country (Newby, *in litt*. cited in Eltringham, 1999).

Population trends and status: Eltringham (1993) reported that the combined population of Common Hippos in Niger and Nigeria numbered at least 400 individuals. The Director of Wildlife, Fishing and Pisciculture in Niger estimated the hippo population to number 100-150 individuals within the country in 1990 (Report of the 14th meeting of the US/CITES Scientific Task Force, June 27, 1990, cited in CoP9 Prop.18).

The population of the "W" National Park was reported by Jones (1973) as depleted but viable. A decade later, it was reported that despite being once common in the River Niger and Mekrou rivers within the park, the species had been reduced to less than ten individuals in the portion of the Niger River bordering the park as a result of hunting (Grettenberger, 1984). Despite being locally abundant, Lewison and Oliver (2008) noted concern for the conservation status of the species in Niger on the basis of the total population estimate of only 100 individuals and a decreasing population trend.

Threats: Hunting for meat, crop damage leading to human-hippo conflict, and declining water levels in the River Niger were reported as the main threats to the species in Niger (Eltringham, 1999).

Trade: According to data in the CITES Trade database, for the years 1976-2009, the only reported direct export from Niger was one wild-sourced live specimen exported from Niger to Nigeria in 2001 for educational purposes. Nigeria did not report this transaction. There were no reported indirect exports of *H. amphibius* originating in Niger.

Niger has not published any export quotas for *H. amphibius*.

Under European Union stricter domestic measures, imports of wild specimens of this species into the EU from Niger have been legally suspended since 22/12/1997, with the last suspension confirmed on 21/05/2009 under Commission Regulation (EC) 359/2009.

Management: The species was reported to occur in the "W" National Park (Lewison and Oliver, 2008). Legal protection was reported to be total, but the level of enforcement of legal protection was considered only fair (Lewison and Oliver 2008). Political pressure to deal with crop-raiding animals reportedly led to reduced effectiveness of protection measures (Eltringham, 1999). Two to three hippos were reportedly killed annually in retaliation for crop damage and as a result, a community project to mitigate human-hippo conflict was established in the Namaro Rural Municipality under the Global Environment Facility to raise public awareness, develop ecotourism set aside several islands in the Niger River for the species conservation (GEF Small Grants Programme, 2008).

NIGERIA

Provisional category: Species of Least Concern

Distribution in range State: Happold (1987) reported that the distribution of *H. amphibius* in Nigeria was widespread but localized, and included the Amar, Benue-Pai river region, Ibi, Kainji Lake, Kainji Lake National Park, Kambari Game Reserve, Katsina Ala River, Lake Chad, and the Game Reserves of Pandam and Yankari. Eltringham (1999) considered the species widely distributed throughout Nigeria, and confirmed the occurrence in the Kainji Lake National Park and game reserves of Gashasa-Gumti, Hadeji Wetlands, Kwiambana and Yankari, as well as the Benue River. Lewison and Oliver (2008) suggested the species has a restricted distribution in Nigeria, and also noted occurrence in the Sambisa Game Reserve.

Population trends and status: Happold (1987) reported up to 200 individuals in the Yankari Game Reserve in 1987, but noted local extinction and depletion of the population in Nigeria. Eltringham (1999) estimated a maximum population of 200 individuals based on several surveys (Sikes, 1974; F.O. Marshall, 1985; Amubode, *in litt.*; A.A. Green, *in litt.*). It was reported that no more than 100 occurred at that time in Yankari Game Reserve, and a maximum of 56 were present in the Lake Kainji National Park, the only area where hippos were reported to be increasing.

Lewison and Oliver (2008) noted concern for the conservation status of *H. amphibius* in Nigeria on the basis that the species occurs at low density, has an estimated population size of 300 individuals, and is considered declining in the country.

Threats: The main threats to the species were identified by Eltringham (1999) as poaching for meat and habitat loss. Whilst protected in national parks, hippos occurring elsewhere were reportedly persecuted for food and as agricultural pests (Eltringham, 1999).

Trade: According to data in the CITES Trade database, for the years 1976-2009, Nigeria did not report any direct exports of *H. amphibius*. However, in the ten years 1999-2008, importers reported three teeth of wild origin as direct imports from Nigeria, with no trade since 2005. There were no reported indirect exports of *H. amphibius* originating in Nigeria. During 1999-2008, seven derivatives of *H. amphibius* were reported as sized/confiscated items originating in Nigeria. No other specific information on any illegal international trade in the species was located.

Under European Union stricter domestic measures, imports of wild specimens of this species into the EU from Nigeria have been legally suspended since 22/12/1997, with the last suspension confirmed on 21/05/2009 under Commission Regulation (EC) 359/2009.

Management: Legal protection was reported to be partial, and the level of enforcement of legal protection was considered fair (Lewsion and Oliver 2008).

SENEGAL

Provisional category: Species of Least Concern

Distribution in range State: Eltringham (1999) reported that the species was restricted in distribution, occurring in the east and south of Senegal. The CITES Management Authority of Senegal *in litt* to UNEP-WCMC (2010) stated that the species was confined to the watercourses of the Niokolo-Koba National Park, which has experienced a drastic fall in natural water levels following accumulated drought.

Population trends and status: The majority of the population was reported to occur on the upper reaches of the Gambia River and its tributaries in the Niokolo-Koba National Park, with a few hippos living in the estuary of the river in Basse-Casamance National Park (Eltringham, 1999). The species was considered to be common in most of the rivers in the east and south of Senegal and to be locally abundant (Eltringham, 1993; Lewison and Oliver, 2008). In the ten years prior to 1989, the population was reported to have declined by a rate of 6.5% to around 500 individuals (A. R. Dupey *in litt*., cited in Eltringham, 1999). Lewison and Oliver (2008) also estimated the population at around 500 individuals, but considered that the population was still in decline in Senegal.

Threats: The main threat to the species in Senegal was reported to be hunting for ivory (Eltringham, 1999).

Trade: According to data in the CITES Trade database, for the years 1999-2008, there were no reported direct or indirect exports of *H. amphibius* originating in Senegal. One seized/confiscated tooth originating in Senegal was reported by an importer in 2000.

The CITES Management Authority of Senegal *in litt* to UNEP-WCMC (2010) confirmed that no trade in *H. amphibius* was permitted. Senegal has not published any export quotas for the species.

Under European Union stricter domestic measures, imports of wild specimens of this species into the EU from Senegal were legally suspended from 22/12/1997 to 10/09/1999.

Management: The species was reported to be fully protected (under Enforcement Decree No. 86.844 of 14 July 1986, of Law No. 86.04 of 24 January 1986 relating to hunting and protection of wildlife in Senegal), prohibiting hunting and capture, except for scientific purposes (CITES MA of Senegal *in litt* to UNEP-WCMC, 2010).

Legal protection was reported to be total within the country, but the level of enforcement of legal protection was considered "poor" (Lewison and Oliver 2008). Eltringham (1999) suggested the possible exception to poor overall enforcement was the Niokolo-Koba National Park.

SOMALIA

Provisional category: Species of Least Concern

Distribution in range State: *H. amphibius* was reported to be restricted in distribution in Somalia, and known to occur in the Juba and Shebeli (also called Shabelle) Rivers (Lewison and Oliver, 2008).

Population trends and status: Very few animals were reported to occur in Somalia, although some small groups were reported on the lower Shebeli River and along the Juba River, where they were considered more numerous (Eltringham 1993;

Lewison and Oliver, 2008). Amir (2006) reported that the species may have disappeared from the northern section of the Shebelle River. The species was reported to occur at low density within the country, with remnant populations close to extinction, have a very small overall estimated population size of less than 50 individuals, and a population in decline (Lewison and Oliver, 2008). Reported to be "Vulnerable" in Somalia (Amir, 2006).

Threats: Illegal hunting for local trade, mainly for medicinal purposes and for meat at times of drought, as well as ivory for carving (Amir, 2006).

Trade: According to data in the CITES Trade database, for the years 1999-2008, there were no reported direct or indirect exports of *H. amphibius* originating in Somalia, however Somalia has not submitted any annual reports. Three seized/confiscated tusks originating in Somalia were reported by an importer in 2006.

Management: Occurs in a number of protected areas as outlined above**.** Legal protection was reported to be unknown and the level of enforcement of legal protection was considered poor (Lewison and Oliver 2008).

SOUTH AFRICA

Provisional category: Species of Possible Concern

Distribution in range State: Reported to be restricted in distribution, with the species confined to the north-east of the country, mainly in the Limpopo, Mpumalanga and North West provinces and the northern tip of KwaZulu-Natal (Lewison and Oliver 2008). The majority of individuals occur within the Kruger National Park in perennial rivers, dams and larger pools of seasonal rivers, with most of the remainder in KwaZulu occurring within the eastern and northern regions of the province (Eltringham, 1993). Over 80% of *H. amphibius* within Kruger National Park were reported to occur in three major rivers; the Letaba, Olifants and Sabie (Viljoen and Biggs, 1998). Some hippos have been translocated from Kruger to other South African parks (Eltringham, 1999). CITES Management Authorities of South Africa reported that no wild hippopotamuses occur in the Northern Cape Province (D. Paulse *pers. comm.* to UNEP-WCMC, 2010), Western Cape (D. Hignett *pers. comm.* to S. Meintjes, CITES MA of South Africa, 2010) or in the Free State Province (Mongake *in litt.* to UNEP-WCMC, 2010).

Population trends and status: Lewsion and Oliver (2008) concluded there were no immediate concerns with the conservation status of *H. amphibius* in South Africa on the basis that the species was locally abundant and the population was relatively large (estimated population size of 3000-5000) and stable.

Eltringham (1993) estimated a country-wide figure approaching 5,000 individuals based on counts in Kruger National Park of 2,761 in 1989, plus 1,423 averaged counts for Natal and Kwazulu in 1982-1986. Viljoen and Biggs (1998) monitored *H. amphibius* population trends on the Sabie, Olifants and Letaba Rivers in the Kruger National Park by annual aerial surveys during 1984-1994 and found relatively stable numbers of around 2000 individuals were maintained, although drought conditions affecting river flow affected population trends. Despite fluctuations, populations in Kruger were reported to be more or less stable (Eltringham, 1999). East of the central Kruger National Park, 305 and 34 individuals were counted on the Olifants and Blyde Rivers respectively by Viljoen (1980). A population decline of 12.6% to 672 was reported by Viljoen (1995) on the Sabie River from July 1991 to October 1992 during drought conditions.

The CITES Manaagement Authority of South Africa reported that regular aerial surveys have been conducted in Kruger National Park by the South African National Parks Authority (SANParks), as summarized in Table 14 (Meintjes *in litt* to UNEP-WCMC,2010).

The population of *H. amphibious* in the Crocodile, Sabi and Letaba Rivers in 2009 was reported to have increased compared to the late 1980s, with numbers remaining stable in the Olifants River (Meintjes *in litt* to UNEP-WCMC, 2010).

Table 14. Summary of *Hippopotamus amphibius* totals in Kruger National Park (Source: SANParks, cited by the CITES Management Authority of South Africa, Meintjes *in litt* to UNEP-WCMC, 2010).

River	YEAR*								
	1988	**1989**	**2000**	**2001**	**2002**	**2004**	**2005**	**2008**	**2009**
Crocodile	371	371	347		711		735	1133	
Sabi	675	586	830		957		1051		1138
*Olifants***	*850*	*738*	*898*	*890*		*847*	*864*		*836*
*Letaba***	*726*	*758*	*698*	*897*		*828*			*1119*

*More counts were done between 1990 and 2000, but 1988 and 1989 were selected to reflect earlier totals.
**Olifants and Letaba Rivers are not in the Mpumalanga Province, but are close enough to affect hippo numbers.

The CITES MA of South Africa (Meintjes *in litt* to UNEP-WCMC, 2010) provided census data from five Lowveld Rivers, some of which occur in the Kruger National park, as summarised in Table 15. It was reported that census data indicate that all hippo populations in the Lowveld Rivers are showing positive population growth in spite of removals in the Crocodile and Sabie Rivers and upstream movements from the Kruger National Park (Meintjes *in litt* to UNEP-WCMC, 2010). The exceptions were noted as the Komati and Blyde Rivers, as populations can easily move to the bigger rivers in close proximity i.e. the Crocodile and Olifants Rivers respectively (Meintjes *in litt* to UNEP-WCMC, 2010).

Table 15. Summary of *Hippopotamus amphibius* totals in some Lowveld rivers (Source: CITES Management Authority of South Africa, Meintjes *in litt* to UNEP-WCMC 2010).

	RIVER				
Jurisdiction	**Crocodile**	**Sabi**	**Komati**	**Olifants**	**Blyde**
Kruger National Park	1133	1138	0	836	
Mpumalanga Tourism and Parks Agency	112	57	20	21	7
SabiSand		170			
APNR*				243	
Limpopo Province				146	10
TOTAL	**1245**	**1365**	**20**	**1246**	**17**

*APNR = Associated Private Nature Reserves (Timbavati, Klaserie, Umbabat, Balule), situated in the Olifants catchment. 243 hippos were recorded in these reserves during aerial census counts.

As reported by the CITES MA of South Africa (Meintjes *in litt* to UNEP-WCMC, 2010) in KwaZulu-Natal Province in 2009, eight hippo sub-populations existed in protected areas, with a total estimated population size of 1454 individuals, as well as 18 sub-populations on private and communal lands in the north east Zululand region totalling 192 individuals. Populations in KwaZulu-Natal's protected areas were reported to have remained stable over the last six years, whereas the small population on private lands had appeared to increase, from 67 individuals in 2004 (Meintjes *in litt* to UNEP-WCMC, 2010).

The population was classified as "Least Concern" under the South African Red Data Book of Mammals in 2004 (CITES MA of South Africa, Meintjes *in litt* to UNEP-WCMC, 2010). The population within the main national parks was reported to be stable, with some fluctuation in times of drought, and the overall population was reportedly showing an increasing growth trend (CITES MA of South Africa, Meintjes *in litt* to UNEP-WCMC, 2010).

In the Limpopo province, the CITES MA of South Africa (M. Von Wielligh *pers. comm.* to

UNEP-WCMC, 2010) stated that, the species roamed freely within rivers and animals also migrated to the province from neighbouring Botswana and Zimbabwe, although no provincial population figures were available.

Threats: Lewison and Oliver (2008) reported that poaching and drought-related conflicts had occurred around Kruger National Park in 2002. The CITES MA of South Africa (Meintjes *in litt* to UNEP-WCMC, 2010) stated that in Mpumalanga and KwaZulu-Natal, hippos were attracted to sugar cane fields near the major rivers outside of protected areas and around 30-40 were killed annually following conflicts or by local hunters. The CITES MA of South Africa (M. Von Wielligh *pers. comm*. to UNEP-WCMC, 2010) identified the main threats to the species within the Limpopo province as extreme droughts and killings in response to crop damage and the threat to human lives; however it was noted that killing was infrequent and was not thought to impact on populations.

Trade: According to data in the CITES Trade database, for the years 1999-2009, South Africa's exports were predominantly of wild-sourced specimens of *H. amphibius* and included: 468 trophies, 27 tusks (plus 20 kg of tusks), 89 live specimens, 106 carvings, 182 feet, 173 small leather products, 166 large leather products, 305 skins plus 45,460 ft^2 and 675 m^2 of skins, 76 skulls, 894 teeth, plus other parts and derivatives or alternative units, as summarized in Table 16. Full details of the reported direct trade from South Africa as reported by South Africa and importers per year is provided in Table 19 on page 42. Small numbers of live specimens and derivatives were exported with source code C or F (produced in captivity).

Notably, importers reported over ten times the number of tusks imported as did South Africa (Table 16)

Indirect exports of *H. amphibius* originating in South Africa are summarized in Table 20 on page 46 (1999-2008).

South Africa has not published any export quotas for the species.

Table 16. Summary of direct exports of *Hippopotamus amphibius* from South Africa, 1999-2008.

Source	Term	Reported by South Africa	Reported by Importers
C	carvings	7	
	live	34	1
	teeth (kg)		60
	teeth		5
	trophies		2
F	skulls	2	
	teeth	1	1
	trophies	2	1
I	carvings		3
	feet		4
	ivory carvings		3
	ivory pieces		4
	large leather products		6
	skins		1
	skulls		1
	tails		1
	teeth		66

Source	Term	Reported by South Africa	Reported by Importers
	trophies		1
	tusks		42
O	bones		2
	carvings	5	
	teeth	6	
R	teeth (kg)		25
	trophies		1
U	ivory carvings		2
	tusks		30
W	bodies	1	
	bone carvings		2
	bones	1	
	carvings	106	45
	feet	182	30
	horns		9
	ivory carvings	2	275
	large leather products	166	9
	live	89	137
	skin pieces	20	366
	skins ($ft^{2)}$	45460	1289.2
	skins ($m^{2)}$	675	7240.14
	skins	305	244
	skulls	76	37
	small leather products	173	55
	specimens	1	5
	tails	9	5
	teeth (kg)	176.25	326
	teeth (sets)	1	
	teeth	894	796
	trophies	468	385
	tusks (kg)	20	201
	tusks	27	279

No parts and derivatives have been confiscated in the past three years in Free State Province according to the CITES MA of South Africa (Mongake *in litt.* to UNEP-WCMC, 2010). A total of 132 parts/derivatives of *H. amphibius* (mostly teeth and tusks) that originated in South Africa were seized/confiscated by importers between 1999 and 2008 (Table 16).

The CITES MA of South Africa, (D. Paulse *pers. comm*. to UNEP-WCMC, 2010) reported that there is no trade within the Northern Cape Province, or exports from it.

Management: The majority of the population is found within protected areas, according to the CITES MA of South Africa (Meintjes *in litt* to UNEP-WCMC, 2010). The species is protected under the National Threatened or Protected Species Regulations, No 152 (2007) (M. Von Wielligh, *pers. comm*. to UNEP-WCMC, 2010). Legal protection was reported to be total, regulations were reportedly strictly enforced and the level of enforcement of legal

protection was described as excellent (Lewison and Oliver 2008). However, a major concern identified by the CITES Management Authority of South Africa in Limpopo was the inability to effectively manage illegal off-take due to a lack of adequate resources (Figure 1) (M. Von Wielligh *pers. comm*. to UNEP-WCMC, 2010).

Population monitoring appears to be frequent in the Kruger National Park, where major populations occur. The CITES MA of South Africa reported that outside the Kruger National Park, the Mpumalanga Tourism and Parks Agency (MTPA) is responsible for *H. amphibius* populations, including censuses, removal of problem animals following human-hippo conflict, and captures for relocation to address increasing hippo numbers (Meintjes *in litt* to UNEP-WCMC, 2010).

In Free State Province, *H. amphibius* is listed as a protected species under Schedule 1 of the Nature Conservation Ordinance 8 (1969). The CITES MA of South Africa confirmed that permits are a prerequisite to hunt or trade in the species (Mongake *in litt.* to UNEP-WCMC, 2010) and that ten individuals occured within an unspecified protected area within Free State Province (W. Böing, *pers. comm*. to UNEP-WCMC, 2010). In the province of Limpopo, the CITES MA of South Africa reported that the species occurred in four (unspecified) provincial nature reserves in addition to 19 registered game farms (M. Von Wielligh *pers. comm*. to UNEP-WCMC, 2010).

The CITES MA of South Africa (Meintjes *in litt* to UNEP-WCMC, 2010) reported that approximately 50 hippos were hunted by tourists annually within South Africa. In Limpopo province, 33 hunting permits were issued for *H. amphibius* in 2009 (M. Von Wielligh *pers. comm*. to UNEP-WCMC, 2010). The CITES Management Authority in Limpopo confirmed that "about 32 hippo sport hunted trophies" were exported in 2009 and five hunting trophies were imported from other range States, but it was not possible to determine the number of exports that originated in Limpopo, as tusks from other range States imported in previous years were not marked with the origin country (M. Von Wielligh *pers. comm*. to UNEP-WCMC, 2010). M. Von Wielligh (*pers. comm*. to UNEP-WCMC 2010) suggested marking of *H. amphibius* tusks as an approach to improve tracking of tusks.

The CITES MA of South Africa (Meintjes *in litt* to UNEP-WCMC, 2010) reported that the data within the CITES Trade Database for exports of tusks from South Africa are likely to be an overestimate, as tusks which originate from other range States such as Zambia are sold in South African curio shops, which are often reported as exports rather than re-exports based on the permit application received.

In Limpopo province, the basis for non-detriment findings was provided (Figure 1), which was reported to show positive aspects of the species distribution, management and utilization.

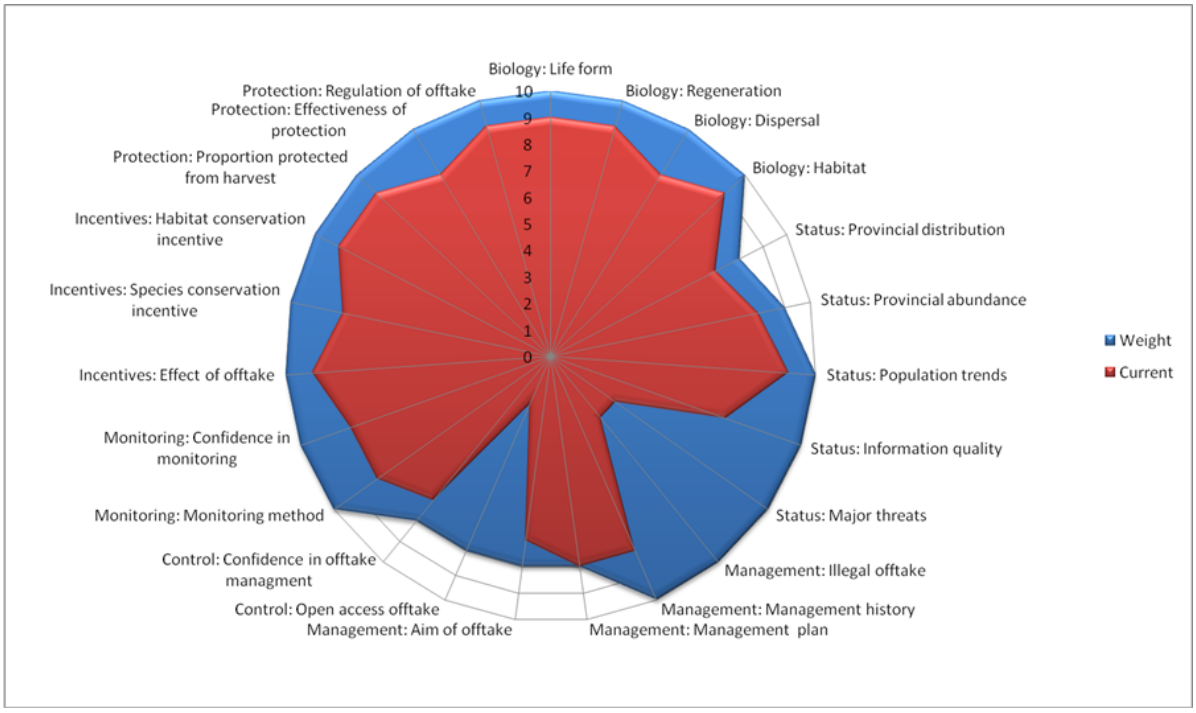

Figure 1. Non-detriment finding for *H. amphibius* for Limpopo Province (source: CITES Management Authority of South Africa, M. Von Wielligh *pers. comm*. to UNEP-WCMC, 2010).

SUDAN

Provisional category: Species of Least Concern

Distribution in range State: Lewison and Oliver (2008) reported the species has a restricted distribution in Sudan. The Sudanese CITES MA/SA (Adieng Ding *in litt.* to UNEP-WCMC, 2010) noted it was found in most protected areas (Boma, Southern, Nimule, Badingolo) and the game reserves of Zeraf, Fanyikang and Shame, in addition to other large and small rivers throughout the whole of Sudan. The species was found on the River Nile and in the Sudd area, as well as other large rivers flowing into the Nile according to the CITES Authorities of Sudan (Adieng Ding *in litt.* to UNEP-WCMC, 2010). Lewison and Oliver (2008) also reported occurrence in Mongalla and Juba Game Reserves and in southern Sudan on the Sobat and Jur, south of Malakal.

Population trends and status: Lewison and Oliver (2008) reported no immediate concerns with conservation status in Sudan on the basis that the species was considered locally abundant, was reported to occur "in good numbers in most places", and had an estimated population size of 3,000-6000 individuals. However, the population trend was unknown (Lewison and Oliver, 2008). Eltringham (1999) reported that the species was probably still very common in Southern Sudan. The CITES Authorities of Sudan (Adieng Ding *in litt.* to UNEP-WCMC, 2010) reported that no recent studies had been undertaken and the current population size was unknown because of the country's long civil war.

Threats: The three main threats identified by the CITES Authorities of Sudan (Adieng Ding *in litt.* to UNEP-WCMC, 2010) were illegal hunting for meat and skins, habitat loss and human-hippo conflict. Hunting for meat was considered to be the most serious threat in Sudan (Eltringham, 1999; Adieng Ding *in litt.* to UNEP-WCMC, 2010).

Trade: According to data in the CITES Trade database, for the years 1999-2008, Sudan reported direct exports of only two wild-sourced carvings in 2004. It is possible that these

were reported by an importer, also in 2004 as source O (Pre-Convention). There were no reported indirect exports of *H. amphibius* originating in Sudan over the same period.

The CITES Authorities of Sudan (Adieng Ding *in litt.* to UNEP-WCMC,2010) reported there to be no legal export of *H. amphibius* from Sudan for commercial purposes, although local trade in skins is regulated by the local wildlife management authorities (2010). The extent of the illegal trade in meat and skins is unknown (Adieng Ding *in litt.* to UNEP-WCMC, 2010).

Management: The species occurs within a number of national parks as outlined above. It was noted by the CITES Authorities of Sudan to be specially protected by wildlife law and regulations (Adieng Ding, *in litt.* to UNEP-WCMC 2010). They also identified a need to investigate the scale of illegal trade of the species within the country (Adieng Ding *in litt.* to UNEP-WCMC, 2010). Legal protection was reported to be total and the level of enforcement of legal protection was fair (Lewison and Oliver 2008).

SWAZILAND

Provisional category: Species of Least Concern

Distribution in range State: Reported to have a restricted distribution within Swaziland (Lewison and Oliver, 2008). The CITES Management of Swaziland (Big Game Parks *in litt*. to UNEP-WCMC, 2010) reported that hippopotamuses were "largely confined to the water bodies of the lowveld and some bodies in the middleveld. Most of the lowveld rivers have small populations of resident hippos as do some of the larger water impoundments. In the middleveld they are restricted to Mlilwane Wildlife Sanctuary and the surrounds."

Population trends and status: Lewison and Oliver (2008) noted concern for the conservation status of the species in Swaziland, which was reported to occur at low density and have an unknown population size and trend. The CITES Management Authority (Big Game Parks *in litt.* to UNEP-WCMC, 2010) reported that the population had increased from less than ten animals in the 1970s to a current figure of ±100 to 120 (further clarification on this figure was not provided). Increases were attributed to an increase in availability of habitat in free range area, agricultural dams and protected areas, and immigration from South Africa.

Threats: The main threats to the species as reported by the CITES Management Authority of Swaziland were human-hippo conflict arising from crop damage, competition for cattle grazing, and aggression towards humans which have resulted in retaliation killings (Big Game Parks *in litt*. to UNEP-WCMC, 2010). Problem marauding animals were reported to be captured and removed alive (Big Game Parks *in litt*. to UNEP-WCMC, 2010). Hunting for meat was noted as "occasional" and loss of habitat through siltation of rivers, over-grazing by cattle and expansion of agriculture and development were also considered threats (Big Game Parks *in litt*. to UNEP-WCMC, 2010).

Trade: According to data in the CITES Trade database, for the years 1999-2008, Swaziland reported the export of 25 live *H. amphibius* (Table 17), for the purposes of breeding or reintroduction to the wild. No indirect exports originating in Swaziland were reported.

Table 17. Direct exports of *Hippopotamus amphibius* from Swaziland, 1999-2008. All trade was source W. (No trade reported between 1999-2001).

Term	Reported by	2002	2003	2004	2005	2006	2007	2008	Total
live	Exporter	1			19	2	3		25
	Importer	1			9	2			12

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

The CITES Management Authority of Swaziland reporred that *H. amphibius* were used in the country for "sjamboks" (whips from hide), meat, fat for cultural purposes and tusks for sale

as ivory carvings (Big Game Parks *in litt*. to UNEP-WCMC, 2010).

The CITES Management Authority (Big Game Parks *in litt*. to UNEP-WCMC, 2010) reported that no hippos had been exported from Swaziland since 2007, and in this period (presumably since 2007) no cases of smuggling of tusks had been recorded, but one case of poaching was recorded, resulting in three convictions.

Management: The species is known to occur in one protected area, Mlilwane Wildlife Sanctuary (as noted above). The CITES Management Authority (Big Game Parks *in litt*. to UNEP-WCMC, 2010) reported that: "All hunting, trade, possession, keeping, capture, transport, etc of hippos is regulated by permits issued under the Game Act by Big Game Parks, representatives of the King's Office. Minimum sentences are prescribed for contravention of Section 8 of the Game Act (Royal Game) of 1 year or E4000 fine, and replacement of the animal poached failing which an additional mandatory 1 year imprisonment is added. This law applies to animals both within the protected areas and those beyond protected areas".

It was reported by the CITES MA of Swaziland that increases in population size were also attributable to increased law enforcement effort and an increase in the penalties to the Game Act (Big Game Parks *in litt*. to UNEP-WCMC, 2010). Legal protection was reported to be total and the level of enforcement of legal protection was good (Lewison and Oliver 2008).

The basis for a non-detriment finding in Swaziland was reported by the CITES MA (Big Game Parks *in litt*. to UNEP-WCMC, 2010): "Swaziland's hippo populations and their impacts are well known. Any removals for export are limited to a level below the expected annual recruitment rate for the species. In most cases, exports are confined to animals which are in conflict with humans and their economic activities".

D. Problems identified that are not related to the implementation of Article IV, paragraphs 2 (a), 3 or 6 (a)

Illegal hunting or illegal domestic trade was an apparent problem in Benin, Ethiopia, Somalia, Sudan and South Africa. It was noted that in Ethiopia, many items for sale were for the tourist market.

South Africa referred to difficulty in tracing the origin of hippo parts/derivatives that are imported into the country. South Africa suggested that tusks should be marked prior to export in order to aid identification and clarify origin.

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Table 18. Indirect exports of *Hippopotamus amphibius* originating in Mozambique, 1999-2008.

Exporter	Importer	Source	Term	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
Botswana	United States of America	W	skulls	Exporter											
				Importer								1	1		2
			teeth	Exporter											
				Importer								12			12
			trophies	Exporter											
				Importer								4	7	2	13
Namibia	Portugal	W	trophies	Exporter								1			1
				Importer											
Portugal	Canada	W	teeth	Exporter											
				Importer							5				5
			trophies	Exporter							1				1
				Importer											
South Africa	Argentina	W	trophies	Exporter								2			2
				Importer											
	Belgium	W	feet	Exporter								4			4
				Importer											
			tails	Exporter								1			1
				Importer											
			teeth	Exporter								11			11
				Importer											
	Brazil	W	trophies	Exporter				1							1
				Importer											
	Canada	W	bodies	Exporter											
				Importer		1									1
			skins	Exporter		1									1
				Importer											
			skulls	Exporter		1									1
				Importer		1									1
	Chile	W	trophies	Exporter										1	1
				Importer											
	Germany	W	skins	Exporter		1									1
				Importer			1								1

Exporter	Importer	Source	Term	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
			skulls	Exporter		1									1
				Importer			1								1
	Hungary	W	trophies	Exporter				1							1
				Importer											
	Italy	W	trophies	Exporter										1	1
				Importer											
	Mexico	W	trophies	Exporter										1	1
				Importer										1	1
	Morocco	W	teeth	Exporter						36					36
				Importer											
	Namibia	W	feet	Exporter		4									4
				Importer											
			skulls	Exporter		1									1
				Importer											
			teeth	Exporter		12									12
				Importer											
			trophies	Exporter		1									1
				Importer											
	New Zealand	W	trophies	Exporter									1		1
				Importer											
	Singapore	W	trophies	Exporter											
				Importer					20						20
	Spain	W	trophies	Exporter						4				3	7
				Importer							1				1
	United States of America	W	feet	Exporter		4									4
				Importer								2		12	14
			large leather products	Exporter								2		7	9
				Importer											
			skin pieces	Exporter											
				Importer								5			5
			skins	Exporter	1	1						5			7
				Importer											
			skulls	Exporter	1	1						1			3

Exporter	Importer	Source	Term	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
				Importer										2	2
			small leather products	Exporter											
				Importer										5	5
			tails	Exporter											
				Importer										1	1
			teeth	Exporter	11							16			27
				Importer								28			28
			trophies	Exporter		1		5	6	4	7		4	7	34
				Importer	1		1	1	3	1	1	6	4	9	27
			tusks	Exporter											
				Importer										34	34
Spain	South Africa	W	teeth	Exporter									12		12
				Importer									12		12
Tanzania, United Republic of	United States of America	W	trophies	Exporter											
				Importer	1										1
Zimbabwe	France	W	teeth	Exporter											
				Importer	12										12
			trophies	Exporter					1						1
				Importer											
	South Africa	W	feet	Exporter											
				Importer								4			4
			skins	Exporter											
				Importer								1			1
			skulls	Exporter											
				Importer		1						1			2
			teeth	Exporter											
				Importer		12									12
			trophies	Exporter			1								1
				Importer		1						1			2
			tusks	Exporter											
				Importer								12			12
	Spain	W	teeth	Exporter											

Exporter	Importer	Source	Term	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
				Importer									12		12
			trophies	Exporter											
				Importer	2			1			2	6	4	1	16
	United States of America	I	trophies	Exporter											
				Importer										1	1
		U	trophies	Exporter											
				Importer											1
		W	feet	Exporter											
				Importer			2								2
			trophies	Exporter			4		2						6
				Importer	1	1	5	2	3	1		1	2	1	17

Table 19. Direct exports of *Hippopotamus amphibius* originating in South Africa, 1999-2008.

Source	Term	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
C	carvings	Exporter	1						6				7
		Importer											
	live	Exporter						11	11			12	34
		Importer				1							1
	teeth (kg)	Exporter											
		Importer						60					60
	teeth	Exporter											
		Importer						5					5
	trophies	Exporter											
		Importer									2		2
F	skulls	Exporter			2								2
		Importer											
	teeth	Exporter	1										1
		Importer					1						1
	trophies	Exporter	1	1									2

Source	Term	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
		Importer		1									1
I	carvings	Exporter											
		Importer			2						1		3
	feet	Exporter											
		Importer										4	4
	ivory carvings	Exporter											
		Importer								3			3
	ivory pieces	Exporter											
		Importer	4										4
	large leather products	Exporter											
		Importer	2									4	6
	skins	Exporter											
		Importer					1						1
	skulls	Exporter											
		Importer										1	1
	tails	Exporter											
		Importer										1	1
	teeth	Exporter											
		Importer	3		3			21	15			24	66
	trophies	Exporter											
		Importer										1	1
	tusks	Exporter											
		Importer	3		39								42
O	bones	Exporter											
		Importer			2								2
	carvings	Exporter			3					2			5
		Importer											

Source	Term	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
	teeth	Exporter							2		4		6
		Importer											
R	teeth (kg)	Exporter											
		Importer			25								25
	trophies	Exporter											
		Importer					1						1
U	ivory carvings	Exporter											
		Importer							2				2
	tusks	Exporter											
		Importer	30										30
W	bodies	Exporter										1	1
		Importer											
	bone carvings	Exporter											
		Importer		2									2
	bones	Exporter							1				1
		Importer											
	carvings	Exporter	5	2	5	5	10		9	10	18	42	106
		Importer	17			22	1	4	1				45
	feet	Exporter	14	50	34			3		72	2	7	182
		Importer							1	8	12	9	30
	horns	Exporter											
		Importer					9						9
	ivory carvings	Exporter			2								2
		Importer		11	38		104	3	6	41	72		275
	large leather products	Exporter	2				120			10	5	29	166
		Importer			2							7	9
	live	Exporter						13	37	19		20	89

Source	Term	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
		Importer					5	11	44	25		52	137
	skin pieces	Exporter	5	2	1					7		5	20
		Importer			3	35	120	20		168	20		366
	skins (ft^2)	Exporter				500	1710		40100	150	3000		45460
		Importer			10	30	100	1000			149.2		1289.2
	skins (m^2)	Exporter					650				25		675
		Importer					4200	3006.51	8.63		25		7240.14
	skins	Exporter	6	9	6	27			20	237			305
		Importer	8	2	4					228	2		244
	skulls	Exporter	6	16	11		3	6	7	21	2	4	76
		Importer	2	3	4		4	6	8			10	37
	small leather products	Exporter		3	1	30	1	77		30	25	6	173
		Importer	31		4					20			55
	specimens	Exporter					1						1
		Importer							2		1	2	5
	tails	Exporter	2	2						5			9
		Importer						1	1	1		2	5
	teeth (kg)	Exporter			30	100	16.25					30	176.25
		Importer			20		90	96			20	100	326
	teeth (sets)	Exporter	1										1
		Importer											
	teeth	Exporter	41	137	32	88	41	37	91	380	34	13	894
		Importer	65	77	48	201	57	78	140	66	40	24	796
	trophies	Exporter	4	18	4	33	48	49	39	123	71	79	468
		Importer	8	29	35	27	41	34	45	59	62	45	385
	tusks (kg)	Exporter	20										20
		Importer					41		30		50	80	201

Source	Term	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
	tusks	Exporter	16		11								27
		Importer	4	42	35	52	65		12	6		63	279

Table 20. Indirect exports of *Hippopotamus amphibius* originating in South Africa, 1999-2008.

Exporter	Importer	Source	Term	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
Finland	Russian Federation	W	trophies	Exporter									1	2	3
				Importer											
France	Switzerland	W	carvings	Exporter		3	10								13
				Importer		4									4
			teeth	Exporter		4									4
				Importer			10								10
Germany	South Africa	O	live	Exporter							1				1
				Importer						2					2
Hong Kong, SAR	France	W	carvings	Exporter											
				Importer	116		289	226							631
	Japan	W	carvings (kg)	Exporter											
				Importer		75.76	40.6	14.1							130.46
			carvings	Exporter											
				Importer	101										101
			live	Exporter											
				Importer						6					6
			small leather products	Exporter											
				Importer						8	34				42
	Singapore	W	teeth (kg)	Exporter											
				Importer					6						6
	South Africa	W	skins (m^2)	Exporter						6.5					6.5

Exporter	Importer	Source	Term	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
				Importer											
	Spain	W	carvings	Exporter											
				Importer	160										160
	United States of America	W	ivory carvings (kg)	Exporter											
				Importer				13							13
			carvings	Exporter											
				Importer	396										396
			ivory carvings (kg)	Exporter											
				Importer		132	159		25						316
			teeth	Exporter											
				Importer					145		16	2			163
			tusks	Exporter											
				Importer	124										124
Italy	Japan	W	small leather products	Exporter						1	7				8
				Importer							7				7
	Russian Federation	W	small leather products	Exporter							2	1			3
				Importer											
	Thailand	W	small leather products	Exporter								6			6
				Importer											
	United States of America	U	skins	Exporter			1								1
				Importer											
		W	small leather products	Exporter											
				Importer										6	6
Japan	Hong Kong, SAR	W	skins (m^2)	Exporter						0.3					0.3
				Importer											

Exporter	Importer	Source	Term	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
	South Africa	W	skins (ft²)	Exporter											
				Importer					70						70
			skins (m²)	Exporter					218.42						218.42
				Importer					218.42						218.42
	Thailand	W	large leather products	Exporter											
				Importer							1				1
			small leather products	Exporter							7				7
				Importer							6				6
Namibia	Austria	W	teeth	Exporter				12							12
				Importer											
Switzerland	Belgium	W	skins (ft²)	Exporter								10			10
				Importer											
			skin pieces	Exporter											
				Importer						1					1
			skins	Exporter											
				Importer								1			1
	Oman	W	small leather products	Exporter					1				6	4	11
				Importer											
	Portugal	W	teeth	Exporter							11				11
				Importer											
Thailand	Italy	W	large leather products	Exporter							1				1
				Importer											
			small leather products	Exporter							6				6
				Importer							7				7
United Arab Emirates	South Africa	W	teeth	Exporter							23				23
				Importer											
United States of	Canada	W	trophies	Exporter					1						1

Exporter	Importer	Source	Term	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
America				Importer											
	France	W	specimens	Exporter							5				5
				Importer											
	Japan	W	shoes	Exporter			6							32	38
				Importer											
			small leather products	Exporter										9	9
				Importer			6								6
			specimens	Exporter	40										40
				Importer											
	Mexico	W	teeth	Exporter										2	2
				Importer											
			trophies	Exporter										2	2
				Importer											
	Switzerland	W	skin pieces	Exporter								29			29
				Importer											
Zambia	United States of America	W	trophies	Exporter											
				Importer			1				1	6	1	1	10
Zimbabwe	Switzerland	W	teeth	Exporter											
				Importer		11									11
	United States of America	W	teeth (kg)	Exporter											
				Importer								10			10
			ivory carvings	Exporter											
				Importer				6							6
			teeth	Exporter											
				Importer			3								3
			trophies	Exporter											

Exporter	Importer	Source	Term	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
				Importer				1	1	2			1	1	6
			tusks	Exporter											
				Importer			1	2							3

Brookesia decaryi Angel, 1939: Madagascar

Chamaeleonidae, Spiny Leaf Chameleon

Selection for Review of Significant Trade

Brookesia decaryi was selected for review at the 23rd meeting of the Animals Committee on the basis of trade data provided in document AC23 Doc.8.5. The response to the Secretariats' request for information on implementation of Article IV from Madagascar stated that the species was protected under national legislation and that taking of the species from the wild was regulated on the basis of permits (AC24 Doc 7.4 Rev. 1).

A. Summary

Provisional category	Summary
Least Concern	*B. decaryi* has a restricted distribution, known mainly from the Ankarafantsika National Park in northwestern Madagascar. No published information on the population size and status could be located, and the species has not yet been assessed by IUCN. International trade in live specimens and habitat loss appear to be the main threats. Collection from the wild must be authorized by the relevant CITES authorities. Moderate levels of international trade originating in Madagascar were reported by importers in 2003-2004, following listing on Appendix II in 2003. However, only one specimen was reported in trade since 2004, by an importer for scientific purposes. On this basis, categorised as Least Concern.

B. Species overview

Biology: *B. decaryi* was described as a chameleon species of 63-80 cm length with a coloration that can be interpreted as leaf mimicry (Glaw and Vences, 2007). Henkel and Schmidt (2000) considered it to be one of the largest ground chameleons. The species was reported to occur in arid deciduous dry forest habitats (Raxworthy and Nussbaum, 1995; Glaw and Vences, 2007). *Brookesia* species were reportedly known to be restricted to discrete altitudinal zones within a range of 0-2050 m and to occur mostly in primary forest (Carpenter and Robson, 2005).

This diurnal species was reported to be ground dwelling during the day and perching on low vegetation at night (Razafimahatratra *et al.,* 2008). During winter *B. decaryi* was found to burrow itself into leaf litter and roots and hibernate for a period of at least three months (Henkel and Schmidt, 2000).

According to Glaw and Vences (2007) clutch sizes ranged between 2-5 eggs, but successful incubation in captivity was unknown. The reproduction rate of *Brookesia* species was considered to be low, with 2-8 eggs per year, depending on the species (SSN, 2002). Razafimahatratra *et al.* (2008) considered the ecological and behavioural characteristics of the *Brookesia* species to have been poorly studied. The species is endemic to Madagascar (Glaw and Vences 1994).

Taxonomic note: Raxworthy and Nussbaum (1995) considered *Brookesia* to be a poorly studied genus. Carpenter and Robson (2005) considered that unresolved taxonomic issues could lead to *Brookesia* species being misdescribed.

C. Country review

MADAGASCAR

Distribution in range State: According to Raxworthy and Nussbaum (1995), most *Brookesia* species had very small distribution ranges and *B. decaryi* was reportedly only known from Ankarafantsika National Park in northwestern Madagascar (Glaw and Vences, 1994; Henkel and Schmidt, 2000; Townsend *et al.,* 2009). However, according to Jenkins (2010) "it could conceivably occur outside of the park boundary […]". Razafimahatratra (*pers. comm.* to UNEP-WCMC, 2010) reported that the species occured in Ankarafantsika National Park, as well as in Bongolava forest (north of Ankarafastika National Park).

Henkel and Schmidt (2000) reported Ankarafantsika to be a very small relict of the dry deciduous forests once typical in Madagascar. Nevertheless, the park was considered one of the largest and last remaining sections of such forest in Madagascar (Schutt, 2008) and comprised an area of 135,000 ha (Madagascar National Parks, 2010).

The species was considered to be abundant in the valleys and lower parts of the mountain sides in Tsimaloto, where the habitat was relatively intact, but rare in secondary and degraded forests in Antsiloky; both sites were within the boundaries of Ankarafantsika National Park (Ramanamanjato and Rabibisoa, 2002).

Population trends and status: The species has not yet been assessed by IUCN and there appears to be no published data on the population size and trend for this species. Raxworthy (*pers. comm*. to UNEP-WCMC, 2010) reported that the population in the Anakarafantsika Reserve was likely to be declining due to forest loss through recent fires. However, on the basis that densities are likely to exceed 10 individuals per ha, the population was estimated to considerably exceed 10,000 individuals in the Ankarafantsika Reserve (as defined by the old boundaries which cover 65,000 ha) (Raxworthy *pers. comm*. to UNEP-WCMC, 2010).

Razafimahatratra (*pers. comm*. to UNEP-WCMC, 2010) reported that the density varied depending on the season and ranged from 76 to 85 individuals/ha during the rainy season (December to March) to almost no individuals found during dry season (June to October). Densities were also noted to vary with locality, with individuals found only in the humid areas Razafimahatratra (*pers. comm*. to UNEP-WCMC, 2010).

The species' abundance appeared to be linked to the significant seasonal changes in climate and vegetation in its habitat (Carpenter, 2003; in Carpenter and Robson, 2005). Brady and Griffiths (2003) noted that the species was abundant during the summer; however the authors pointed out that Rabearivony (1999; in Brady and Griffiths, 2003) did not locate any specimens during mid-July and August.

Concern for the conservation status and impact of international trade on *Brookesia* species in Madagascar was noted on the basis of their restricted distribution, degraded habitat, low reproduction rate and assumed declining wild population (SSN, 2002).

Threats: The IUCN/SSC Trade Specialist Group (1993) described this species as easily recognizable and considered it most at risk from the impacts of trade due to its restricted range and easy accessibility. The main threats to *Brookesia* species were reported to be habitat loss and trade (Carpenter and Robson, 2005; CITES Scientific Authority of Madagascar *in litt.* to UNEP-WCMC, 2010). While the major threat to the dry, deciduous forests in general was stated to be destruction and fragmentation through both accidental and intentional burning (Hogan, 2008), it is not clear how such anthropogenic pressure affects the National Park where the species occurs. It was suggested that there may be some illegal harvesting within the Natinal Park (Razafimahatratra *pers. comm*. to UNEP-WCMC,

2010). Raxworthy (*pers. comm.* to UNEP-WCMC, 2010) suggested the Ankarafantsika Reserve is probably the source of the specimens found in the pet trade.

Confusion appeared to exist concerning the relationship *Brookesia* species have with their environment, which, according to Carpenter and Robson (2005), had led to contradictory statements on whether or not the species is able to adjust to environmental changes.

Many Malagasy people reportedly regarded chameleons as ugly porters of bad luck (Burger and Prince, 1996; in Nilsson, 2005), however according to Nilson (2005) some Malagasy, aware of the fascination with which chameleons were held by tourists, apparently captured them and offered them for viewing or sale.

Trade: *B. decaryi* was listed in CITES Appendix II on 13/02/2003. It had previously been included in Annex D of EU Regulation 338/97, with trade levels into the European Union (EU) monitored since 01/06/1997.

Madagascar published a zero quota for this species both in 2005 and 2006. However, according to the CITES Management Authority of Madagascar (*in litt.* to CITES Secretariat, 2008) internal (unpublished) quotas were set in previous years (Table 1). Whilst exports in 2002 and 2003 remained within these quotas, exports were higher than the unofficial quota in 2004, according to importers (Table 1).

The majority of trade in the species since listing in Appendix II has been in wild-sourced live specimens. According to the data in the CITES Trade database for the years 1999-2008, Madagascar reported the export of 856 live specimens of wild origin (Table 2). Figures reported by importers were lower; 499 live wild specimens, all for commercial purposes. However, importers also reported the trade of 20 ranched specimens in 2002, which was not confirmed by Madagascar. Trade originating in Madagascar was reported by importers in each year 1999-2004 and one specimen was reportedly imported for scientific purposes in 2008. Indirect exports of *B. decaryi* originating in Madagascar included 38 live chameleons for commercial purposes and 19 specimens for scientific purposes, all of wild origin, as reported by the re-exporters (Table 3).

No direct exports for the species have been reported by Madagascar in their annual reports since 2005, which was further confirmed by the CITES Scientific Authority of Madagascar (*in litt.* to UNEP-WCMC, 2010).

The CITES Scientific Authority of Madagascar (*in litt.* to UNEP-WCMC, 2010) reported that commercial statistics from the Direction Général des Forêts, Nanisana showed that a total of 1662 specimens of *B. decaryi* were exported from Madagascar in 2000-2004. These figures are substantially higher than those reported in Madagascar's annual reports to CITES, however include trade data prior to the species listing on Appendix II in 2003.

Similarly, some importer trade data in Table 2 was collated for 1999-2002 on the basis of the species' listing on Annex D of EU Regulation 338/97. Carpenter and Robson (2005) reported imports of 214 specimens of this species to the United States of America between 1996-2001 (as reported by the US Law Enforcement Management Information System) while Madagascar (as reported by the Ministère des Eaux et Forêts) reported 457 specimens exported to the US in 2001.

Table 1. Quotas for live wild-sourced *Brookesia decaryi* originating in Madagascar, and associated global exports as reported by Madagascar and the importing countries 1999-2008.

Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
Exporter				291	415	150					856
Importer	13	27	12	62	140	255					509

Quota*	323	402	326	415	150	0**	0**	

* Unpublished quotas 2000-2004 set by Madagascar (CITES Management Authority of Madagascar *in litt.* to CITES Secretariat, 2008); **Published quotas (www.cites.org)
Trade data source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Table 2. Direct exports of *Brookesia decaryi* from Madagascar, 1999-2008.

Source	Term	Purpose	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
R	live	T	Exporter											
			Importer				20							20
W	bodies	S	Exporter						3					3
			Importer											
	live	S	Exporter											
			Importer						10					10
		T	Exporter				291	415	150					856
			Importer	13	27	12	62	140	245					499
	specimens	S	Exporter											
			Importer										1	1
-	live	-	Exporter											
			Importer	66		6								72

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Table 3. Indirect exports of *Brookesia decaryi* originating in Madagascar, 1999-2008. All trade was in wild-sourced specimens.

Exporter	Importer	Term	Purpose	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
Thailand	Japan	live	T	Exporter							10				10
				Importer							10				10
United States of America	Germany	live	T	Exporter				6							6
				Importer											
	Italy	specimens	S	Exporter				19							19
				Importer											
	Japan	live	T	Exporter						22					22
				Importer											

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Under EU stricter domestic measures, imports of wild specimens of this species into the EU from Madagascar have been restricted since 15/01/2004, and legally suspended since 03/09/2008, with the last suspension confirmed on 21/05/2009 under Commission Regulation (EC) 359/2009.

A review of the national wildlife trade policy in Madagascar (Rabesihanaka *et al.*, 2008) stated that "some species are illegally traded in large numbers despite the measures adopted for their protection". However the authors (Rabesihanaka *et al.*, 2008) did not specify whether *B. decaryi* was found in illegal trade.

Management: The relevant legislation in Madagascar governing international wildlife trade as described by the CITES Scientific Authority for Madagascar (*in litt.* to UNEP-WCMC, 2010) include:

- **Ordinance 75-014** of 5 August 1975 on the ratification of the Convention;
- **Decree No. 6833/2001** of 28 June 2001 fixing the fees for permits and hunting permits, collection and export of specimens of flora and fauna;

- **Ministerial Order No. 3032/2003** of 13 February 2003, establishing fixed roles and responsibilities for the Scientific Authority of CITES in Madagascar;
- **Act No. 2005-018** of 17 October 2005 on International Trade and Endangered Species of Wild Fauna and Flora;
- **Decree No. 2006-097** of 31 January 2006 laying down detailed rules for implementing the Act No. 2005-018 of 17 October 2005;
- **Decree No. 2006-098** of 31 January 2006 concerning the publication of the revised Appendices to CITES;
- **Decree No. 2006-400** from 13 June 2006 on the classification of species of wildlife. The wildlife species of Madagascar are classified into three categories: protected (Category 1), harmful (Category 2) and game (Category 3).

The species was listed in Category 1, Class 2 in the Malagasy wildlife legislation (Decree No. 2006–400, June 2006), meaning that collection from the wild required authorization by the relevant in-country CITES authorities (CITES Management Authority of Madagascar *in litt.* to CITES Secretariat, 2008; Jenkins, 2010).

B. decaryi reportedly only occurred in one National Park in Madagascar (Glaw and Vences, 1994; Henkel and Schmidt, 2000; Townsend et al., 2009).The sale of wild animals from the protected areas was criminalized by the Law No. 2001-005 of 11 February 2001 (Rabesihanaka *et al.,* 2008). Ramilison and Rabibisoa (1998; in Carpenter and Robson, 2005), however, found that many *Brookesia* species were harvested within protected areas. The collecting of specimens using 'light' is forbidden (Décret No. 61-093, February 1961), therefore searching for roosting chameleons at night using torches, for the purpose of commercial exploitation, was stated to be illegal (Brady and Griffiths, 1999).

Madagascar's National Park management system, where 50% of tourist entrance fees are redistributed locally (Swanson, 1997; Madagascar National Parks, 2010), was reported to have an important impact on local attitudes to protected areas (Carpenter *et al.*, undated).

With regards to the national quotas set by the Management Authority as described in Act No. 2005-018, Rabesihanaka *et al.* (2008) stated that quotas are allocated to CITES-listed species and that "The CITES committees meet regularly to exchange information on progress of action plan and implementation of CITES in general. Annually, the authority of science and environmental NGOs are involved in a large meeting to share recent data to set annual quotas for wildlife species listed in Appendix II".

The CITES Scientific Authority of Madagascar (*in litt.* to UNEP-WCMC, 2010) stated that the basis for 'non-detriment' findings (NDFs) included the following criteria:

- the distribution or the area of occurrence of the species concerned;
- the fragmentation of habitat or of the area of occurrence that is also at the origin of the fragmentation of the population;
- the type and condition of the habitat of the species (e.g. primary, secondary or anthropogenic, i.e. habitat most affected by human activities);
- the abundance of the species and of the population.

The CITES wildlife trade policy review of Madagascar was published in 2008, providing an evaluation of CITES implementation in Madagascar (Rabesihanaka *et al.,* 2008). The authors of the review noted that the "Malagasy wildlife trade policy is generally relevant to and consistent with other existing policies, but the resources available for its implementation do not match its ambitions, which is currently undermining its efficiency". As part of the review, Rabesihanaka *et al.* (2008) identified a number of weaknesses in CITES implementation in Madagascar, including a lack of finances, equipment and government

support; a shortage of manpower to tackle illegal trade and a lack of communication between the different enforcement authorities and the Scientific Authority on the identification of species.

USAID (2008) noted that major constraints in the effort to conserve Madagascar's biodiversity were "Corruption and inadequate government management of natural resources, and enforcement of CITES and other legal controls that affect the environment."

To adhere to international CITES standards and support appropriate management decisions, the Government of Madagascar identified a need to develop and clarify national policies on the following CITES topics:

- Objectives for CITES management in Madagascar;
- Decentralization of enforcement;
- Sharing commercial receipts received with local communities where species or products are harvested;
- Management policies for areas where imported species are held; and
- Developing/establishing criteria for allocation of quotas and permits (USAID, 2008).

The CITES Management Authority of Madagascar confirmed that there is no action plans currently in place for *Brookesia decaryi* (Rabesihanaka *pers. comm*. to UNEP-WCMC, 2010). According to the Malagasy CITES Scientific Authority (*in litt.* to UNEP-WCMC, 2010) an inventory of reptiles in Madagascar was intended to be conducted in 2010-2011.

D. Problems identified that are not related to the implementation of Article IV, paras 2 (a), 3 or 6 (a)

None identified.

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Chamaeleo africanus Laurenti, 1768: Niger

Chamaeleonidae, African Chameleon, Sahel chameleon, Basilisk chameleon

Selection for Review of Significant Trade

Chamaeleo africanus was selected following the 14th Conference of the Parties (CoP14) at the 23rd meeting of the Animals Committee (AC23), on the basis of trade data provided in AC23 Doc 8.5. Large discrepancies between quotas set and exports realized were noted for the population of Niger (AC23 Summary Record, AC24 Doc 7.4 Rev 1). Niger failed to respond to a request for information on the implementation of Article IV, sent by the CITES Secretariat in May 2008 (AC24 Doc 7.4 Rev. 1).

A. Summary

Provisional category	Summary
Possible Concern	Virtually no information on the distribution, conservation status or management of the species in the country was located. Trade has not been reported since 2006, however international trade levels were moderate during the years 1999-2008. No information on the basis for non-detriment findings have been provided. The impact of trade levels is unknown, therefore categorised as Possible Concern.

B. Species overview

Biology: *Chamaeleo africanus* is a medium-sized chameleon reaching approximately 35 cm in length (Martin, 1992; Necas, 2004 cited in Gomboc, 2005); it is distinguished from *C. chamaeleon* by the absence of occipital lobes on head sides and the presence of tarsal spur in males (Schleich *et al.*, 1996). It inhabits coastal plains and dry savannas, living in trees, bushes and grasses (Junius-Bourdain, 2006).

C. Country review

NIGER

Distribution in range state: *C. africanus* has a wide range across northern Africa from Mali to the Red Sea in Sudan, Ethiopia, Djibouti and Somalia, and northwards along the Nile Valley into Egypt (Klaver and Böhme 1997; Sindaco and Jeremcenko, 2008).

The species occurrence in Niger was reported by Klaver and Böhme (1997) and Sindaco and Jeremcenko (2008), and Brito *et al.* (2008) recorded a specimen during their 2004 expedition across North and West Africa, 20 km west of the town of Birni N'Konin, on the Niger/Nigeria border.

Population trends and status: No information on the population size or trends was located. *C. africanus* was not included in the IUCN Red List (IUCN, 2010).

Threats: Little information was located regarding threats to *C. africanus* in Niger. *C. africanus* was reported to be used in traditional medicine in Niger, collected from the wild from natural forests and other wooded land, for domestic use (Hamissou, 2000).

Trade: *C. africanus* was listed in CITES Appendix II on 04/02/1977. According to data in the CITES Trade database, for the years 1999-2008, Niger reported exports of 4,290 live wild-sourced *C. africanus*, compared with 2,644 live wild-sourced specimens reported by the importers (Table 1). An increase in exports was apparent in 2006. Niger has not submitted any annual reports since 2006.

Niger published annual export quotas of 15,000 live wild specimens in 2004, which was decreased to 10,000 specimens in 2005, and to 3,000 specimens thereafter. According to both exporter and importer reported quantities, trade has remained within quota.

Table 1. Direct exports and quotas of live *Chamaeleo africanus* from Niger, 1999-2008. All units were unspecified.

Term	Purpose	Source	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
bodies	Z	W	Exporter					2						2
			Importer											
live	T	C	Exporter			10								10
			Importer											
		W	Exporter			500		1030	700	150	1910			4290
			Importer				100	88	300	246	1910			2644
specimens	S	W	Exporter											
			Importer					3						3

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

The only indirect trade in *C. africanus* originating in Niger 1999-2008 was the re-export of 246 live wild-sourced specimens via the United States of America to Hong Kong in 2006.

No evidence was found for illegal trade of *C. africanus* in Niger.

Management: No information on management plans or monitoring systems were identified for *C. africanus* in Niger.

There are numerous protected areas in Niger, covering 6.6% of the national territory (CBD, 2010). However, it was not possible to confirm the species' occurrence within these protected areas.

No legal protection was identified for *C. africanus* in Niger. It is not included in the schedules of *Loi No. 98-07 fixant le régime de la chasse et de la protection de la faune* 29 April 1998 (République du Niger, 1998), which defines the system of hunting and wildlife protection in Niger and lists protected animal species.

Attempts have been made to breed *C. africanus* in captivity, using wild specimens taken from Greece (Gomboc, 2005).

D. Problems identified that are not related to the implementation of Article IV, paragraphs 2 (a), 3 or 6 (a)

None identified.

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Chamaeleo feae (Boulenger, 1906): Equatorial Guinea

Chamaeleonidae, Fe's chameleon.

Selection for Review of Significant Trade

Chamaeleo feae was selected following the 14th Conference of the Parties (CoP14) at the 23rd meeting of the Animals Committee (AC23), on the basis of trade data provided in document AC23 Doc. 8.5, and noting that export figures for the endemic species had increased. Equatorial Guinea failed to respond to a request for information on the implementation of Article IV, sent by the CITES Secretariat in May 2008 (AC24 Doc 7.4 Rev. 1).

A. Summary

Provisional category	Summary
Possible Concern	Endemic to Bioko island of Equatorial Guinea. One author suggested the population density was high and the population stable. However, little survey data is available, the species is not legally protected, and no management measures appear to be in place. Whilst Equatorial Guinea have not reported any exports of the species, imports have reported imports from the country in seven of the ten years 1999-2008. International trade levels are moderate, and the basis for non-detriment findings is unclear; therefore the species is categorised as Possible Concern.

B. Species overview

Biology: *Chamaeleo feae* is a medium-sized chameleon of around 20-21 cm total length (Schmidt *et al*., 2009, cited in Andre, 2010). A species of trees and bushes (Junius-Bourdain, 2006), its preferred habitat seems to be the edges of secondary forest, but also elephant grass and gaps in primary forest (T. Butynski, *pers. comm*. to UNEP-WCMC, 2010). The species was described as a typical coal-forest chameleon, living at altitudes of 1300-1600 m, where the habitat is relatively cool and moist (Schmidt *et al*., 2009, cited in Andre, 2010). *C. feae* have been observed to leave sleeping sites (the ends of fine vines and branches, blades of elephant grass and fern fronds that hang out over gaps at 1-4 m above the ground) at first light to forage mainly at a higher level, but also readily coming to the ground to forage and move between sites (T. Butynski, *pers. comm*. to UNEP-WCMC, 2010).

C. Country review

EQUATORIAL GUINEA

Distribution in Range State: The species is endemic Bioko (also known as Fernando Po), an island of about 2000 km² located in the Gulf of Guinea (Martin, 1992). It was reported to occur over much of Bioko, mainly from 1,000 m to 2,000 m above sea level (T. Butynski, *pers. comm*. to UNEP-WCMC, 2010).

Population trends and status: Butynski (*pers. comm*. to UNEP-WCMC, 2010) reported that *C. feae* appeared to be the most common and widespread chameleon on Bioko. During nocturnal searches for chameleons, Butynski (*pers. comm*. to UNEP-WCMC, 2010) reported finding one or two *C. feae* per hour (on average and in good habitat at Moka, 1,370 m a.s.l.), and surmised that there were at least 50 individuals/ha in the most suitable habitat, or perhaps >100 individuals/ha. He concluded that "There must be many hundreds of thousands of this species on Bioko" (Butynski, *pers. comm*. to UNEP-WCMC, 2010). Butynski (*pers. comm*. to UNEP-WCMC, 2010) considered that numbers were probably stable and

perhaps even increasing, as forest gaps and secondary forests are created. The species is not included in the IUCN Red List (IUCN, 2010).

Threats: Butynski (*pers. comm*. to UNEP-WCMC, 2010) considered that *C. feae* were unlikely to be under any threat. He noted that a small number of specimens were harvested for medicinal purposes, however this was considered unlikely to have an impact on the conservation status of the species.

Fa (1992) reported that the biggest threats to wildlife in Equatorial Guinea were the uncontrolled use of natural resources and the clearing of land for agriculture.

As a result of expanding human populations, Bioko's lowland forest was noted as fragmented and degraded everywhere except for the southern third of the island, which has suffered very little damage (Toham *et al*., 2006). Although the majority of the lowland forest except in the extreme south of the island has been converted to cocoa plantations, in many areas most of the original canopy trees have been maintained to provide shade (Sunderland and Tanyi Tako, 1999). The montane forest was reported to have experienced relatively little physical disturbance aside from some coco-yam cultivation in the immediate vicinity of settlements (Sunderland and Tanyi Tako, 1999). However, current rates of loss of all natural habitats were reported to be low (Sunderland and Tanyi Tako, 1999) and commercial logging, which took place in the lowland forest of the southern half of the island during the early 1990s, was reported to have ceased (Sunderland and Tanyi Tako, 1999). The impact of habitat loss/alteration on the overall population of *C. feae* is not known.

Trade: *C. feae* was listed in CITES Appendix II on 04/02/1977. According to the data in the CITES Trade Database for the years 1999-2008, Equatorial Guinea has not reported any exports of the species (Table 1). For years 2005-2008, Equatorial Guinea has submitted a statement of "no trade" to CITES. However, importers reported a total of 4101 live wild-sourced animals originating in Equatorial Guinea, all for commercial purposes (Table 1). Reported imports were approximately 300-500 individuals per year, except for a peak in 2005-6 when imports were considerably higher. The majority of imports were reported by the United States of America, with Japan and Mexico importing the remainder. No trade in *C. feae* from Equatorial Guinea was reported prior to 2001.

Small numbers of live, wild-sourced *C. feae* originating in Equatorial Guinea were re-exported via the United States of America in 2005, 2006 and 2007.

Table 1. Direct exports of *Chamaeleo feae* from Equatorial Guinea, 1999-2008. All trade was in live wild-sourced specimens traded for commercial purposes.

Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
Exporter											
Importer			416		386	483	1110	895	380	431	4101

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Equatorial Guinea has not published any export quotas for this species.

Imports of wild specimens of this species into the European Union have been restricted since 05/02/2001, and legally suspended since 29/10/2001 under a number of Commission Regulations, with the last suspension confirmed on 21/05/2009 under Commission Regulation (EC) 359/2009.

No reports of illegal trade in *C. feae* were located.

Management: *C. feae* was not included in the list of protected fauna in Equatorial Guinea under Law Nº 8/1988 (República de Guinea Ecuatorial, 1988), and the CITES Management/Scientific Authority of Equatorial Guinea (S.F. Engonga Osono, *in litt*. to

UNEP-WCMC, 2010) confirmed that there was no legal protection for *C. feae* in Equatorial Guinea. The montane forest of Bioko is protected by the Pico de Basilé National Park and the Caldera de Luba Scientific Reserve (UNEP-WCMC, 2010), but the occurrence of *C. feae* within them is unconfirmed.

The CITES Management/Scientific Authority of Equatorial Guinea confirmed that there were no management plans for *C. feae* in Equatorial Guinea (S.F. Engonga Osono, *in litt.* to UNEP-WCMC, 2010).

D. Problems identified that are not related to the implementation of Article IV, paragraphs 2 (a), 3 or 6 (a)

None identified.

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Cordylus mossambicus FitzSimons, 1958: Mozambique

Cordylidae, Gorongosa Girdled Lizard

Selection for Review of Significant Trade

Cordylus mossambicus was selected following the 14th Conference of the Parties (CoP14) at the 23rd meeting of the Animals Committee (AC23), on the basis of trade data provided in document AC23 Doc. 8.5, and noting that the species had a restricted distribution, a high quota level and apparent quota excesses. Data were requested concerning this endemic species of Mozambique to determine the basis for the quota setting (AC23 Summary Record, AC24 Doc 7.4 Rev 1). Mozambique failed to respond to a request for information on the implementation of Article IV, sent by the CITES Secretariat in May 2008 (AC24 Doc 7.4 Rev 1).

A. Summary

Provisional category	Summary
Possible Concern	Virtually no information on the distribution, population size, conservation status or management of the species in Mozambique was located. Habitat loss was identified as a minor threat. Whilst international trade levels have recently declined, trade has been moderate over the past ten years, quotas have been exceeded and export quotas for 2009-2010 are high. The basis for a non-detriment finding is unclear, therefore categorised as Possible Concern.

B. Species overview

Biology: *Cordylus mossambicus* is a large lizard endemic to Mozambique, with a snout-vent length of 75-100 mm, or up to 112 mm for females (Branch, 1998). The species lives in cracked boulders in montane grassland or well-wooded lower slopes, preferring large rock outcrops in mesic savannah (Branch, 1998). No information was located on the reproductive biology of the species; however all members of the genus *Cordylus* are viviparous, giving birth to a few (1-6) large babies each year (Branch, 1998). Sexual maturity in *Cordylus* species is reached in 2-4 years and they are long lived (up to 25 years in captivity) (Branch, 1998).

C. Country review

MOZAMBIQUE

Distribution: According to the CITES standard reference for the Genus *Cordylus*, *C. mossambicus* was reported to occur from Gorongosa mountain in central Mozambique southwest to the lower slopes of the Chimanimani Mountains in Sofala province on the Zimbabwe border (Broadley, 2006). However, coordinates given for a specimen collected by Stanley *et al.* (2010) were further north in the country, near to the town of Guro, indicating that the range may in fact be larger than recognized by Broadley (2006). The CITES Management Authority of Mozambique (S.B. Mahanjane, *in litt.* to UNEP-WCMC, 2010) reported the species occurrence "all over the country".

Population trends and status: No information on population status or trends was located. The species was not included in the IUCN Red List (IUCN, 2010).

Threats: *C. mossambicus* was reported to be threatened by habitat destruction on a minor scale (S.B. Mahanjane, *in litt.* to UNEP-WCMC, 2010).

Trade: *C. mossambicus* was listed in CITES Appendix II on 06/06/81. According to the data in the CITES Trade Database 1999-2008, Mozambique reported exports of 8,591 live wild-sourced specimens (Table 1). Importer data was however considerably less, totalling 1,194 specimens. With the exception of four animals exported to South Africa for scientific purposes, all other exports were for commercial purposes. The majority of exports (66% as reported by Mozambique) were to the United States of America.

Mozambique published annual export quotas of 500 live wild-sourced specimens 2003-2008, which increased to 1,500 in 2009 and 2010. Export quotas appear to have been exceeded in the years 2003 (by over 1000 specimens), 2004 and 2007, according to figures reported by Mozambique, and in 2003, according to figures reported by the importers (Table 1).

Table 1. Direct exports of live *Cordylus mossambicus* from Mozambique, 1999-2008.

Source	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
C	Exporter											
	Importer									72		72
W	Exporter	1178	1325	1174	1470	1504	690	370	150	600	130	8591
	Importer				300	743	50		41	40	20	1194

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Relatively small numbers of live, wild-sourced *C. mossambicus* originating in Mozambique were re-exported via the United States of America, Indonesia and Canada 1999-2008 (Table 2).

Table 2. Indirect exports of *Cordylus mossambicus* originating in Mozambique, 1999-2008. All trade was in live wild-sourced specimens for commercial purposes. (No trade reported 1999-2001 or 2007-2008).

Exporter (origin)	Reported by	2002	2003	2004	2005	2006	Total
Canada (Mozambique)	Exporter	14					14
	Importer						
Indonesia (Mozambique)	Exporter		60				60
	Importer		60				60
United States of America (Mozambique)	Exporter		88				88
	Importer		15			13	28

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Imports of wild specimens of this species into the European Union have been restricted since 22/12/2004, and legally suspended since 10/05/2006 under a number of Commission Regulations, with the last suspension confirmed on 21/5/2009 under Commission Regulation (EC) 359/2009.

Management: No information on management plans or monitoring systems were located for *C. mossambicus* in Mozambique.

It is not known whether the species occurs in any protected areas. *C. mossambicus* was notably absent from a list of lizards recorded in the Gorongosa National Park since 2004 (Parque Nacional da Gorongosa, 2010).

The CITES Management Authority of Mozambique (S.B. Mahanjane, *in litt.* to UNEP-WCMC, 2010) reported that harvesting of *C. mossambicus* was regulated through the Forestry and Wildlife Act nº 10/99, of 7 July and its Regulation Decree nº 12/2002, of 6 June. This Act categorises wildlife exploitation into three modalities (simple hunting permit, sport hunting and commercial hunting) and stipulates that there shall be annual quotas for animals to be hunted (Government of Mozambique, 1999).

D. Problems identified that are not related to the implementation of Article IV, paragraphs 2 (a), 3 or 6 (a)

None identified.

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Uroplatus spp. in Madagascar

Selection for Review of Significant Trade

The genus was selected following the 14th Conference of the Parties at the 23rd meeting of the Animals Committee meeting on the basis of trade data provided in document AC23 Doc. 8.5. In response to the CITES Secretariat's request for information on the implementation of Article IV from Madagascar, the only range State for *Uroplatus* spp. (AC24 Doc. 7.4 Rev. 1), the CITES Management Authority of Madagascar provided information on species' distribution and quotas for *Uroplatus* spp. for the period 2000 – 2007, and indicated that an urgent study was required for these species (Le Directeur de la Valorisation des Ressources Naturelles, 2008).

A. Summary

Overview of *Uroplatus* species recommendations

Species	Provisional category	Summary
Uroplatus alluaudi	Least Concern	Rare with a very restricted and fragmented distribution. Receives the highest level of protection of all *Uroplatus* species under a national law in Madagascar, which prohibits hunting, capture and trade in the species. Illegal harvest within protected areas reported to be a problem. Madagascar published a zero quota for the species in 2005-2006, and has not set any quotas for the species subsequently. No commercial trade has been reported since the species listing in Appendix II in 2005. On this basis, categorised as Least Concern.
Uroplatus ebenaui	Possible Concern	Very localised and fragmented distribution in the northwest and extreme north. Reported to be rare, with surveys suggesting a low population density in the wild. Population size and trend unknown. Illegal harvest within protected areas reported to be a problem. Quotas were reduced from 2,000 live, wild specimens in 2009 to 250 in 2010. However, on the basis of relatively high levels of international trade reported, and no clear basis for a non-detriment finding at the species level, impacts of trade are unknown and therefore categorised as Possible Concern.
Uroplatus fimbriatus	Possible Concern	Range is medium-scale, but distribution is fragmented and restricted to specific and vulnerable habitat, (low altitude rain forest) in eastern Madagascar. Population densities appear to vary with location, but population size and trend unknown. Quotas were reduced from 2,000 live, wild specimens in 2009 to 312 in 2010. However, on the basis of relatively high levels of international trade reported and no clear basis for a non-detriment finding at the species level, impacts of trade are unknown and therefore categorised as Possible Concern.
Uroplatus giganteus	Least Concern	Highly restricted range in the north of Madagascar. Newly described in 2006, and no information on population size or trend known. No commercial international trade reported since the species was described, and no harvest or export quotas established. On the basis of no anticipated international trade, categorised as Least Concern.
Uroplatus guentheri	Possible Concern	Range is very restricted to certain forest zones and is highly fragmented. Population size and trend unknown, but one author suggests the population is declining. The export quota was increased from 100 live, wild specimens in 2009 to 125 in 2010. On the basis of moderate levels of international trade reported and no clear basis for a non-detriment finding at the species level, impacts of current and anticipated trade levels are unknown, and therefore categorised as Possible Concern.

Species	Provisional category	Summary
Uroplatus henkeli	Possible Concern	Range is very localised to the north west and extreme north. Restricted to small altitudinal range, and distribution is highly fragmented. Population densities appear to vary with location (described as common to infrequent) but population size and trend unknown. Illegal harvest within protected areas reported to be a problem. The export quota was decreased from 200 live, wild specimens in 2009 to 125 in 2010. On the basis of moderate levels of international trade reported and no clear basis for a non-detriment finding at the species level, impacts of current and anticipated trade levels are unknown, and therefore categorised as Possible Concern.
Uroplatus lineatus	Possible Concern	Distribution is very localised and fragmented. Mainly occurs in the east within very specific and vulnerable habitat (low altitude rain forest). Population size and trend unknown, although the species appears to be locally rare to quite common, with one author suggesting the population may be declining. Relatively high levels of international trade were reported by Madagascar since 2002, although the export quota was decreased substantially from 1,000 live, wild specimens in 2009 to 63 in 2010. However, no clear basis for a non-detriment finding at the species level has been provided for even low numbers in trade, and on this basis, categorised as Possible Concern.
Uroplatus malahelo	Least Concern	Range is very restricted and fragmented, with distribution only in the south. Population size and trend unknown, although the species appears to be rare. One author suggests the population is declining. Only ten specimens have been recorded in international trade. Madagascar published a zero quota for the species in 2005-2006, and has not set any quotas for the species subsequently. No trade reported since that the species listing in Appendix II in 2005. On this basis, categorised as Least Concern.
Uroplatus malama	Possible Concern	Range is very restricted and fragmented. Mainly occurs in the southeast, where the species rainforest habitat has considerably declined. Population size and trend unknown, although the species appears to be rare. One author considered the species was likely to be declining. International trade levels comparatively low, although the highest reported level of exports (of 68 live, wild specimens) was reported in 2008. An export quota of 100 individuals was published for 2005-2009, but no quota was published in 2010. However, no clear basis for a non-detriment finding at the species level has been provided for even low numbers in trade, and impacts of trade unknown. On this basis, categorised as Possible Concern.
Uroplatus phantasticus	Possible Concern	Range is described as fairly fragmented. Population size and trend unknown, although reportedly occurs at low density. Relatively high levels of international trade were reported by Madagascar since 2002. An export quota of 2,000 individuals was published for 2005-2009, but no quota was published in 2010. However, no clear basis for a non-detriment finding at the species level has been provided, and impacts of trade unknown. On this basis, categorised as Possible Concern.

Species	Provisional category	Summary
Uroplatus pietschmanni	Possible Concern	Range is very restricted and fragmented, occurring at only two locations in central eastern Madagascar. Population size and trend unknown, although reportedly occurs at low density. One author suggested the population may be declining. Moderate levels of international trade reported since 2005. An export quota of 500 live, wild specimens was published for 2005-2009, but no quota was published in 2010. However, no clear basis for a non-detriment finding at the species level has been provided, and impacts of trade unknown. On this basis, categorised as Possible Concern.
Uroplatus sikorae	Possible Concern	More widely distributed than most *Uroplatus* spp., but still fragmented. Population size and trend unknown, and although noted as having a low population density, several authors describe the species as common. Moderate to high levels of international trade reported since 2005. An export quota of 2,000 specimens may be sustainable; however, no clear basis for a non-detriment finding at the species level has been provided, therefore categorised as Possible Concern.

B. Overview of *Uroplatus* spp. in Madagascar

Taxonomic note: The genus *Uroplatus* includes 12 described species of nocturnal gecko (Glaw *et al.* 2006), all of which are endemic to Madagascar. However, the CITES Scientific Authority of Madagascar (*in litt.* to UNEP-WCMC, 2010) identified 13 species as occurring in the country.

No standard reference has been adopted for *Uroplatus* spp. by the Conference of the Parties (CoP) to CITES. The only *Uroplatus* species with a standard reference adopted by the CoP is *Uroplatus giganteus* (Glaw *et al.*, 2006). The CITES Scientific Authority of Madagascar (*in litt.* to UNEP-WCMC, 2010) stated that there are 13 species of *Uroplatus*, although the Checklist of CITES species (UNEP-WCMC, 2008) only recognises 12 species, with *Uroplatus sameiti* not recognised within the latter as a separate species from *Uroplatus sikorae*.

The CITES SA for Madagascar (*in litt.* to UNEP-WCMC, 2010) suggested that *Uroplatus sikorae* and *Uroplatus sameiti* should be considered separate species as *U. sameiti* inhabits forests at low altitudes, whereas *U. sikorae* occupies medium altitude forests. According to Glaw and Vences (2007), "*U. s. sameiti* was recently considered as full species. The whole complex of *U. sikorae / U. henkeli* is in need of taxonomic revision and probably contains numerous new, undescribed species." Pearson *et al.* (2007) and Greenbaum *et al.* (2007) also consider *U. sameiti* to be a separate species. Raxworthy *et al.* (2008) recognised *U. sameiti* as a full species, as well as eight additional species not yet fully described or formally recognised within the CITES Checklist, but did not recognize *Uroplatus giganteus* as a species.

This report, however, includes an assessment of only the 12 species of *Uroplatus* recognised within the Checklist of CITES species (UNEP-WCMC, 2008).

Biology: Commonly referred to as "flat-tailed geckos" or "leaf-tailed geckos", *Uroplatus* spp. are highly-specialized, arboreal species typically found in rainy and dry forests (Glaw and Vences, 1994; Andreone and Aprea, 2006; Glaw and Vences, 2007). They are described as having a large, triangular head and a short, flattened tail and the genus is characterized by "small but very numerous teeth, structure of the feet, and the lack of preanal or femoral pores" (Glaw and Vences, 2007). *Uroplatus* geckos are oviparous, insectivorous species that act as regulators of populations within the ecosystem (CoP13 Inf. 32). Females lay clutches of two spherical eggs in the substrate of the forest floor

(CoP13 Prop. 27). According to Russell (1996, cited in Spiess 2010), in genaral for all *Uroplatus* species, breeding occurs from spring to summer in the wild, with eggs deposited on the forest floor in late summer. In captivity, clutches range from two to four eggs, with several clutches possible during the year (Spiess, 2010).

Distribution in range State: *Uroplatus* spp. are distributed throughout all regions of Madagascar with the exception of the very highest montane regions above 2400 m altitude and the most arid southern spiny forest (Raxworthy *et al.,* 2008). They are described as having secretive habits and cryptic morphology and colouration (Andreone and Aprea 2006). It is rare to find more than one individual per person-hour of searching leading to the conclusion that *Uroplatus* species appear to occur at low densities in the wild (CoP13 Inf. 55).

The monophyletic genus is "inferred to have poor dispersal ability, as supported by its endemism to Madagascar, localized regional endemism within Madagascar, and habits" (Raxworthy *et al.,* 2008). According to the information provided in document CoP13 Inf. 55, *Uroplatus alluaudi, U. malama, U. malahelo,* [and] *U. pietschmanni* were reported to have very restricted distributions, and were easily confused with other species (*U. ebenaui, U. guentheri, U. sikorae*).

Population trends and status: No species within the genus *Uroplatus* is currently listed within the IUCN Red List of Threatened Species (IUCN, 2010); however, at the time of writing (August 2010), *Uroplatus* was being reviewed for potential inclusion within the Red List (Jenkins *in litt.* to UNEP-WCMC, 2010).

According to the CITES listing proposal for the genus, "Some species are rare and have a very restricted range, such as *Uroplatus alluaudi, U. malama* and *U. malahelo.* Others have a fairly wide range, but occur in very specific and vulnerable habitat, namely low altitude rain forest, such as *U. fimbriatus* and *U. lineatus.* There are also species which are known only in certain forest zones and whose populations are highly fragmented, as is the case for *U. guentheri* and *U. phantasticus.* The preliminary results of ecological and biological studies currently underway suggest that leaf-tailed geckos have a remarkable degree of ecological specificity. That would in turn imply an extreme sensitivity to any change in their environment, including a change in population numbers" (CoP13 Prop. 27).

The CITES Scientific Authority of Madagascar (*in litt.* to UNEP-WCMC, 2010) noted that there were gaps in the scientific information available, particularly for newly described species such as *Uroplatus malahelo* (Raxworthy & Nussbaum, 1994), *U. malama* (Raxworthy & Nussbaum, 1995), *U. pietschmanni* (Böhler & Schöneck, 2004) and *U. giganteus* (Glaw et al., 2006). It was noted that publications of recent studies conducted in 2008-2010 are expected soon, however these have mainly focussed on the ecology and genetics of species as opposed to population size (CITES SA of Madagascar *in litt.* to UNEP-WCMC, 2010). Generally, specific information on the size and trends of populations appear to be lacking. The CITES MA of Madagascar noted that population estimates require regular monitoring and that researchers would be encouraged to conduct follow-up studies of species populations, especially for commercially-exploited species (Rabesihanaka *in litt.* to UNEP-WCMC, 2010b). It was also noted that a general inventory of reptiles of Madagascar will be conducted in 2010-2011.

Threats: Habitat degradation and trade are the primary threats to *Uroplatus* spp. As forest-dwelling species, the entire genus is threatened by habitat loss and deforestation (Henkel and Schmidt, 2000; CITES Scientific Authority Madagascar, 2010). Rabesihanaka *et al.* (2008) considered that deforestation and bush fires were a much greater threat to biodiversity than wildlife trade. According to the technical comments submitted by the Madagascan CITES

SA and MA in document CoP13 Inf. 32 "Many [*Uroplatus*] species are under increasing pressure from continuing degradation and fragmentation of forests and other wildlife habitat (8.6% deforestation from 1990-2000 Steininger *et al.,* 2003 and approximately 40% forest loss since 1950 Alnutt *et al*. 2004) in Madagascar so a diversity of different measures are needed to protect those that are also under threat from wildlife trade".

Forest cover was reported to have decreased in Madagascar by almost 40% from the 1950s to *c.* 2000, with a reduction in 'core forest' > 1 km from a non-forest edge of almost 80%, which was considered to threaten thousands of species with extinction (Harper *et al.,* 2007). Greatest losses were reported to have occurred in the humid and dry forests (losses of 43% and 41%, respectively), with spiny forest area decreasing by 28% (Harper *et al*., 2007). Remaining forests were noted to be increasingly patchy. The U.S. Agency for International Development (USAID) estimated reductions in total forest cover from 10,668,800 ha in 1990 to 9,216,617 ha in 2005, representing a loss of 13.6% during that period (USAID, 2008).

J. Lavranos (Madagascar CITES MA *in litt.* to UNEP-WCMC, 2010) reported that many National Parks had over the past two years been invaded by tree-fellers and charcoal burners. These parks were reportedly intact until relatively recently, except for some peripheral damage (J. Lavranos *pers. comm.* to UNEP-WCMC, 2010).

Jenkins (*in litt.* to UNEP-WCMC, 2010) acknowledged that, as forest species, leaf-tailed geckos were threatened by deforestation but noted that whilst collection pressure may also be a threat, evidence was lacking.

According to the CITES listing proposal, increasing demand for the exotic pet trade was implicated as a major threat to *Uroplatu*s spp., with the Government of Madagascar reporting that "The impact of this harvesting from the wild for commercial purposes, although inadequately studied and frequently underestimated, is doubtless considerable and might lead to the species rapidly becoming locally extinct unless appropriate measures are taken in time" (CoP13 Prop. 27).

Illegal collection of *Uroplatus* geckos within protected areas was also reported as a threat by Raxworthy, cited in document CoP13 Inf. 55, who noted that at least one reserve where commercial collecting had taken place had already depleted populations in a strict nature reserve (Lokobe, Nosy Be). It was also reported that Montagne d'Ambre National Park had been targeted for commercial collecting of *U. ebenaui* and *U. alluaudi* and other suspected collecting areas included Marojejy, Anjanaharibe-Sud, Mananara-Nord, Ambatovaky, Betampona, Mantadia, Ranomafana, Ankarafantsika and Bemaraha (Raxworthy, cited in document CoP13 Inf. 55). As collection naturally concentrated on easy access sites, yields were considered unlikely to be sustainable for any *Uroplatus* species, which occur naturally at low density populations (Raxworthy, cited in document CoP13 Inf. 55). Wild harvest around Andasibe was also through to be negatively impacting populations (Raxworthy, *pers. comm*. to UNEP-WCMC, 2010) although it is not clear if this was occurring within Andasibe National Park.

According to an assessment on the environmental threats in Madagascar by USAID, "illegal exploitation of natural resources continues to be an overarching concern, and one that could reduce the impact of efforts to help conserve Madagascar's biodiversity. Illegal exploitation has come increasingly under attack as unregulated and illegal exploitation of wildlife, forest products, precious minerals, and fisheries has expanded. Corruption and inadequate government management of natural resources, and enforcement of CITES and other legal controls that affect the environment are the major constraints in the attainment of expected results at the field level"(USAID, 2008). In an evaluation of the national policy in wildlife trade in Madagascar, Rabesihanaka *et al.* (2008) stated that, "Due to manpower shortages,

smuggling and illegal trade persist on the trade scene both nationally and internationally. Indeed, crimes of wildlife trade, illegal mines of precious woods, still exist".

Ineich (2010) suggested that "egg laying site availability could be the main limiting factor for most arboreal gecko population dynamics."

Overview of trade and management in the genus

Trade: *Uroplatus* species were listed in CITES Appendix II on 12/01/2005. However, trade in *Uroplatus* has been reported by some importers since 1997 and by Madagascar since 2002. According to information provided in document CoP13 Inf. 55, there was great demand for the most rarely collected species – especially *U. alluaudi, U. malama, U. malahelo,* and *U. guentheri.* Despite high global demand, exports of small numbers of these species until 2003 were reported, reflecting the difficulty in collecting them (CoP13 Inf. 55).

Direct trade from Madagascar for the ten-year period 1999-2008, as recorded within the CITES Trade Database, is provided in Table 1. The trade was predominantly in live animals, although trade in specimens was reported since 2000 and bodies since 2003. The vast majority of recorded trade originated from the wild. It is likely, however, that trade reported without a source specified and as seizures/confiscations (source 'I') is also wild-sourced. The United States was the largest importer of live *Uroplatus* geckos, with 59% of the total as reported by importers and 57% of the total as reported by Madagascar. Indirect trade in live, wild-sourced *Uroplatus* spp. known to originate in Madagascar and for live specimens with origin "unknown" have also been reported in trade at low levels since 2001, with 405 live specimens reported imported and 408 live specimens reported exported (see Table 12, page 104).

Table 1. Direct exports of all species of *Uroplatus* from Madagascar, 1999-2008

Source	Term	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
W*	bodies	Importers							6	4	8		18
		Exporter					91		16	4	8	10	129
	live	Importers	282	152	1667	293	670	1866	6621	4640	4297	4266	24754
		Exporter				6802	8460	4750	5648	7951	5876	7517	47004
	specimens	Importers		7	5			15	56	106		15	204
		Exporter											
	specimens (g)	Importers											
		Exporter					8.004		0.056	0.102	0.005		8.167
I	bodies	Importers								15			15
		Exporter											
	live	Importers			1		15		20	19	10		65
		Exporter											

*Wild-sourced includes some trade reported without a source specified between 1999 and 2005.

Source: CITES Trade Database; UNEP-World Conservation Monitoring Centre, Cambridge, UK

When the trends in trade in live animals are analysed, the trade reported by importers peaked in 2005 following the species listing in Appendix II, at 6,621 specimens, but has since decreased. Trade levels reported by Madagascar were more variable but showed an increase between 2004 and 2006 and again in 2008 to 7,517 individuals exported (Figure 1). Importer data prior to 2005 was compiled primarily from European Union reported imports only, as the species was listed in Annex D of the EU Wildlife Trade Regulations from 1997 (EC Reg.

No. 338/97). Imports by the United States were also reported in 2004, prior to the species listing.

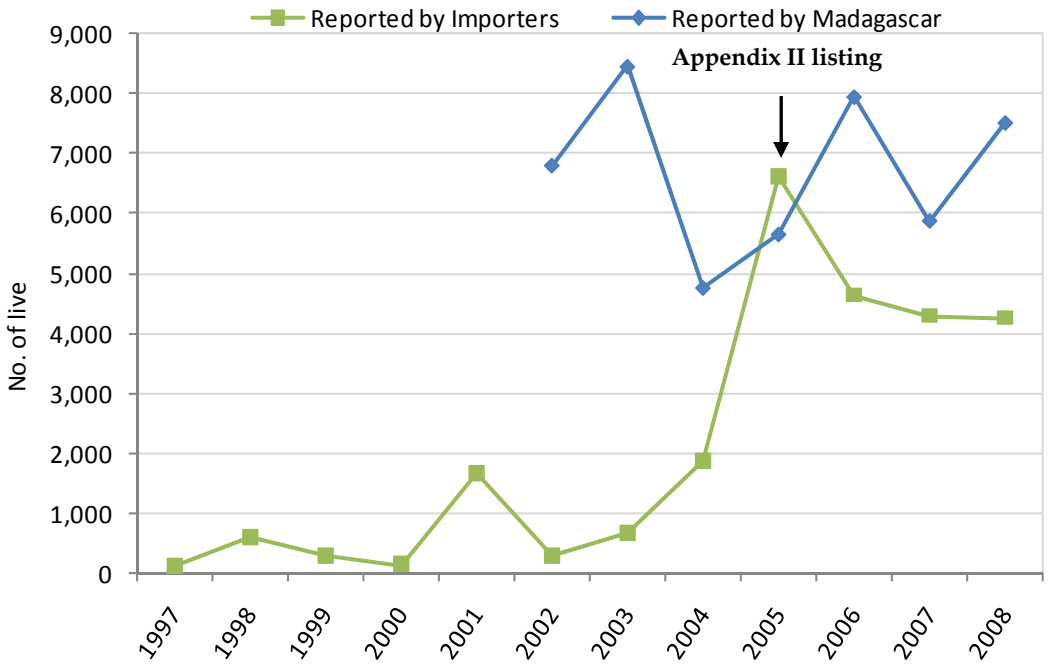

Figure 1. Direct exports of live specimens of all species of *Uroplatus* from Madagascar as reported by both Madagascar and by importers, 1997-2008 (includes wild-sourced and trade reported without a source specified).

According to information provided by the CITES Scientific Authority of Madagascar (2010), the trade in *Uroplatus* spp. was 46% higher than the figures recorded within the CITES Trade Database (for direct trade in live specimens and bodies) for the period 2000-2008 (Table 2). Thus, while the export of 47,133 *Uroplatus* spp. was reported by Madagascar in their annual reports to CITES between 2000 and 2008, 68,610 specimens may have been exported over this period. This discrepancy is likely due to the fact that the genus was not listed in the CITES Appendices until 2005 and Madagascar did not report on trade in *Uroplatus* spp. in their annual reports until 2002. The most highly traded species were *U. phantasticus, U. sikorae, U. fimbriatus,* and *U. ebenaui* (Table 2).

Table 2. Comparison of direct trade data in *Uroplatus* spp. between 2000 and 2008

Species	CITES Trade Database	*Madagascar CITES SA	% by which SA data is > than CITES data
Uroplatus alluaudi	11	65	491%
Uroplatus ebenaui	8,231	11,631	41%
Uroplatus fimbriatus	8,845	12,807	45%
Uroplatus giganteus	2	-	n/a
Uroplatus guentheri	424	529	25%
Uroplatus henkeli	2,746	5,856	113%
Uroplatus lineatus	5,015	7,310	46%
Uroplatus malahelo	10	40	300%
Uroplatus malama	174	251	44%
Uroplatus phantasticus	10,225	15,456	51%
Uroplatus pietschmanni	1,400	1,483	6%

Species	CITES Trade Database	*Madagascar CITES SA	% by which SA data is > than CITES data
Uroplatus sikorae	9,359	13,182	41%
Uroplatus spp.	691	-	n/a
Total	**47,133**	**68,610**	**46%**

*Source of Madagascar CITES SA data: Direction Général des Forêts, Nanisana (CITES Scientific Authority of Madagascar*in litt.* to UNEP-WCMC, 2010).

A CITES wildlife trade policy review for Madagascar highlighted the uniqueness of Madagascan wildlife and its appeal to traders: "It is important to remember that the rarity, specificity, endemism and particularity of the island's biodiversity prompt ever greater interest among collectors"(Rabesihanaka *et al.,* 2008).

Management: Madagascar ratified CITES in 1975. Following a period of political instability in 2002, the CITES Management Authority introduced a six-month moratorium on all international trade in native species of fauna and flora (Rabesihanaka *et al.,* 2008). In accordance with the recommendations of the CITES Animals and Plants Committees, a Review of Significant Trade was conducted at the country level in Madagascar which resulted in the creation of a CITES Action Plan for the reform of Madagascar's wildlife export and the establishment of an operational Scientific Authority (Rabesihanaka *et al.,* 2008). Concurrentlly, Madagascar adopted a specific law on wildlife trade (Law 2005-018 of 17 October 2005 and its implementing decree 2006-098 of 31 January 2006).

The relevant legislation governing international wildlife trade as described by the CITES Scientific Authority for Madagascar (*in litt.* to UNEP-WCMC, 2010) include:

- **Ordinance 75-014** of 5 August 1975 on the ratification of the Convention;
- **Decree No. 6833/2001** of 28 June 2001 fixing the fees for permits and hunting permits, collection and export of specimens of flora and fauna;
- **Ministerial Order No. 3032/2003** of 13 February 2003, establishing fixed roles and responsibilities for the Scientific Authority of CITES in Madagascar;
- **Act No. 2005-018** of 17 October 2005 on International Trade and Endangered Species of Wild Fauna and Flora;
- **Decree No. 2006-097** of 31 January 2006 laying down detailed rules for implementing the Act No. 2005-018 of 17 October 2005;
- **Decree No. 2006-098** of 31 January 2006 concerning the publication of the revised Appendices to CITES;
- **Decree No. 2006-400** from 13 June 2006 on the classification of species of wildlife. The wildlife species of Madagascar are classified into three categories: protected (Category 1), harmful (Category 2) and game (Category 3).

All *Uroplatus* species are protected under national legislation (Law No. 2005-018) and are classified as Category 1 (protected) species under Decree No. 2006-400. *Uroplatus alluaudi* is afforded the highest level of protection - Category 1 Class 1, which strictly prohibits the hunting, capture, detention and commercial trade of the species. All other *Uroplatus* species are protected under Category 1 Class 2 which means authorisation from the relevant in-country CITES authorities is required for the hunting or capture of the species from the wild. According to Rabesihanaka *et al.* (2008) "The classification of each species is in conformity with the status accorded to it by CITES and IUCN."

With regards to the national quotas set by the Management Authority as described in Act No. 2005-018, Rabesihanaka *et al.* (2008) stated that quotas are allocated to CITES-listed

species and that "The CITES committees meet regularly to exchange information on progress of action plan and implementation of CITES in general. Annually, the authority of science and environmental NGOs are involved in a large meeting to share recent data to set annual quotas for wildlife species listed in Appendix II". The CITES Management Authority confirmed that there are no action plans currently in place for *Uroplatus* species (Rabesihanaka *pers. comm.* to UNEP-WCMC, 2010a).

According to Le Directeur de la Valorisation des Ressources Naturelles (2008), the Management Authority set harvest quotas for *Uroplatus* spp. over the period 2000-2007. CITES export quotas were also published for several species since the listing of the genus in 2005. Details of harvest and export quotas are provided individually for each species *infra.* within their respective sections.

The CITES Scientific Authority of Madagascar (*in litt.* to UNEP-WCMC, 2010) stated that the basis for 'non-detriment' findings (NDFs) included the following criteria:

- the distribution or the area of occurrence of the species concerned;
- the fragmentation of habitat or of the area of occurrence that is also at the origin of the fragmentation of the population;
- the type and condition of the habitat of the species (e.g. primary, secondary or anthropogenic, i.e. habitat most affected by human activities);
- the abundance of the species and of the population.

Jenkins (*in litt.* to UNEP-WCMC, 2010) reported that he did not know the basis on which the non-detriment findings were made, but stated that "The Malagasy CITES authorities use a formula to generate the annual quota for the *Uroplatus* species that are traded. In the last meeting [he] attended in Madagascar (12/09) on this subject, concern was raised about *U. pietchsmanni*. There was a NDF training meeting in Antananarivo this year, and [he] hope[s] it will lead to a clearer presentation of NDF for Malagasy animal species" (Jenkins *in litt.* to UNEP-WCMC, 2010).

The CITES wildlife trade policy review of Madagascar was published in 2008, providing an evaluation of CITES implementation in Madagascar (Rabesihanaka *et al.,* 2008). The authors of the review noted that the "Malagasy wildlife trade policy is generally relevant to and consistent with other existing policies, but the resources available for its implementation do not match its ambitions, which is currently undermining its efficiency". As part of the review, Rabesihanaka *et al.* (2008) identified a number of weaknesses in CITES implementation in Madagascar, including a lack of finances, equipment and government support; a shortage of manpower to tackle illegal trade and a lack of communication between the different enforcement authorities and the Scientific Authority on the identification of species.

USAID (2008) noted that major constraints in the effort to conserve Madagascar's biodiversity were "Corruption and inadequate government management of natural resources, and enforcement of CITES and other legal controls that affect the environment."

To adhere to international CITES standards and support appropriate management decisions, the Government of Madagascar identified a need to develop and clarify national policies on the following CITES topics:

- Objectives for CITES management in Madagascar;
- Decentralization of enforcement;
- Sharing commercial receipts received with local communities where species or products are harvested;
- Management policies for areas where imported species are held; and

- Developing/establishing criteria for allocation of quotas and permits (USAID, 2008).

Several *Uroplatus* species also benefit from the protection they receive by occurring within protected areas. The sale of wild animals from the protected areas was criminalized by the Law No. 2001-005 of 11 February 2001 (Rabesihanaka *et al.,* 2008).

C. Species Reviews

Uroplatus alluaudi (Mocquard, 1894): Madagascar

Gekkonidae, Northern Flat-tailed Gecko

Summary

Provisional category	Summary
Least Concern	Rare with a very restricted and fragmented distribution. Receives the highest level of protection of all *Uroplatus* species under a national law in Madagascar, which prohibits hunting, capture and trade in the species. Illegal harvest within protected areas reported to be a problem. Madagascar published a zero quota for the species in 2005-2006, and has not set any quotas for the species subsequently. No commercial trade has been reported since the species listing in Appendix II in 2005. On this basis, categorised as Least Concern.

Biology: *Uroplatus alluaudi* is a medium-sized leaf-tailed gecko with a snout-vent length (SVL) of between 69-79 mm (Glaw and Vences, 2007). The species is found in dense transition forest at medium altitude associated with the sub-humid microclimate (CoP13 Prop. 27). It is described as arboreal, and can occur in anthropogenically disturbed habitat (D'Cruze *et al.,* 2008). It was thought to occur high in the canopy (Raxworthy *pers. comm.* to UNEP-WCMC, 2010). The species can be confused with *U. guentheri* (CoP13 Inf. 32).

Distribution in range State: Endemic to Madagascar. Prior to 2006, the species was only known from its type locality and was believed to have a range restricted to the isolated northern rainforest of Montagne d'Ambre (Glaw and Vences, 1994; Raxworthy and Nussbaum, 1994; Rabesihanaka *in litt.* to UNEP-WCMC, 2010b). Andreone and Aprea (2006) recorded the presence of the species in north-eastern Madagascar (Besariaka Forest), considerably enlarging the species' distribution range (Figure 2), however Raxworthy (*pers. comm.* to UNEP-WCMC, 2010) indicated there was some doubt over the provenance of this specimen.

Figure 2. Location of the Besariaka Forest (where the second individual or *U. alluaudi* was found) and of other forest sites around Andapa, NE Madagascar. The two points on the smaller map of Madagascar refer to Montagne d'Ambre (1) and Berariaka (2), the two sites where individual specimens have been found (Source: Andreone and Aprea, 2006).

Andreone and Aprea (2006) suggested that the new finding "indicates that the species, although likely restricted to northern Madagascar, is not a Montagne d'Ambre endemic. Besariaka is about 180 km south of Montagne d'Ambre…Evidently, *U. alluaudi* is not a common species, although it is likely that its secretive habits plays an important role in the fact that only a few individuals have been collected until now". Andreone and Aprea (2006) suggested that, on the basis of the current distribution, it is likely that the species might be also present in the regions between Montagne d'Ambre and Besariaka, such as the Special Reserve Anjanaharibe-Sud, Ambolokopatrika, and Marojejy.

The species was also recorded to occur in Forêt d'Ambre Special Reserve north of Montagne d'Ambre National Park (D'Cruze *et al.,* 2008).

Confirmed distribution data provided by the CITES Management Authority of Madagascar only lists Montagne d'Ambre National Park (Rabesihanaka *in litt.* to UNEP-WCMC, 2010b). The species habitat within the national park was described as limited to understory in shaded low-altitude forest (CoP13 Inf. 32).

Population trends and status: The species is not currently listed within the IUCN Red List (IUCN, 2010); however, at the time of writing (August 2010), *Uroplatus* species were being reviewed for potential inclusion (Jenkins *in litt.* to UNEP-WCMC, 2010). Population status and trends of *U. alluaudi* are unknown, however, the species was described as rare with a very restricted and fragmented range (CoP13 Prop. 27; CoP13 Inf. 32). Prior to 2004, at least two systematic searches were carried out, which resulted in only one specimen found (CoP13 Prop. 27). Since then, one additional specimen has been found (Andreone and Aprea, 2006).

Glaw and Vences (2007) characterized the species as "Regularly found in a relatively dry part of primary mid-altitude rainforest in Montagne d'Ambre. Two specimens were observed on relatively large trees, c. 2-3 m above the ground." D'Cruze *et al.* (2008) classified the species as a rare, regional endemic that is only found in the north of Madagascar, noting that it has a restricted altitudinal distribution within the Montagne d'Ambre and Forêt d'Ambre of between 750-950 m.

Raxworthy (*pers. comm.* to UNEP-WCMC, 2010) considered that the population in the Montagne d'Ambre National Park was likely to be stable, and based on known distribution estimated the population to exceed 1000 individuals.

Threats: Demand for the rarer *Uroplatus* species including *U. alluaudi* for the pet trade was considered a threat (CoP13 Prop. 27; Andreone and Aprea, 2006; Andreone *et al.,* 2006). Illegal harvesting which also took place within protected areas was reportedly the principal threat to this species (CoP13 Prop. 27). The technical comments submitted by the Scientific Authority and Management Authority of Madagascar (2004) in support of the listing proposal (CoP13 Inf. 32) cited illegal collection, particularly of eggs as they are easy to find, as one pressure on the species from trade. Andreone and Aprea (2006) reported that within the National Park of Montagne d'Ambre, a certain number of *U. alluaudi* specimens were possibly captured and exported for the pet-trade. Raxworthy (*pers. comm*. to UNEP-WCMC, 2010) also suggested the Montagne d'Ambre National Park is the likely to be source of the specimens found in the pet trade.

The CITES listing proposal (CoP13 Prop. 27) did not cite habitat destruction as a crucial problem for the species. However, since the distribution is now believed to extend to

Besariaka forest, loss of forests may also be a contributing factor in the species decline. The habitat conditions within the Besariaka forest were noted to be highly degraded (Andreone and Aprea, 2006).

Trade: According to trade data submitted by the CITES Scientific Authority of Madagascar (*in litt.* to UNEP-WCMC, 2010), 65 individuals were exported between 2000 and 2008, but no commercial trade was reported after 2002 since the species listing in Appendix II. These figures are higher than the trade recorded within the CITES Trade Database as reported by Madagascar, which consisted of ten live specimens exported in 2002, but also one body reported exported in 2007. All specimens were reported to originate from the wild. The body was exported for scientific purposes to Germany. Madagascar published a zero quota for the species in 2005-2006, but has not set any quotas for the species subsequently. Similarly, no harvest quotas were published for this species after 2004 (Le Directeur de la Valorisation des Ressources Naturelles, 2008). Illegal offtake in nature reserves was reported to be an apparent problem (Andreone and Aprea, 2006).

Management: All *Uroplatus* species are protected under national legislation in Madagascar (Decree No. 2006-400 of 13 June 2006). *Uroplatus alluaudi*, uniquely within the genus, is afforded the highest level of national protection - Category 1 Class 1, which strictly prohibits the hunting, capture, detention and commercial trade of the species.

Since the species occurs in the Montagne d'Ambre National Park and within Forêt d'Ambre Special Reserve, some protection for the species is offered, but as mentioned *infra*. collection of the species from within the National Park is thought to have occurred in the past (Andreone and Aprea, 2006). The species may also occur in other protected areas, but this is unconfirmed.

No information on population monitoring or management of the species was located.

Uroplatus ebenaui (Boettger, 1879): Madagascar

Gekkonidae, Nosy Bé Flat-tailed Gecko

Summary

Provisional category	Summary
Possible Concern	Very localised and fragmented distribution in the northwest and extreme north. Reported to be rare, with surveys suggesting a low population density in the wild. Population size and trend unknown. Illegal harvest within protected areas reported to be a problem. Quotas were reduced from 2,000 live, wild specimens in 2009 to 250 in 2010. However, on the basis of relatively high levels of international trade reported, and no clear basis for a non-detriment finding at the species level, impacts of trade are unknown and therefore categorised as Possible Concern.

Biology: This arboreal gecko is active at night on branches or leaves 1-2 m above the ground (Glaw and Vences, 2007). It inhabits continuous rainforest (Henkel and Schmidt, 2000). Eggs are spherical with a diameter of 9-9.5 mm and juveniles hatch after 60-70 days (Glaw and Vences, 2007). Snout-vent length is between 41-66 mm (Glaw and Vences, 2007). It is described as similar to *U. phantasticus*, except with a shorter tail (Glaw and Vences, 2007).

Taxonomic note: According to Glaw and Vences (2007), "genetic and morphological data clearly indicate that *U. ebenaui* is a complex of numerous species (type locality is Nosy Be). Specimens from Montagne d'Ambre differ from typical *ebenaui* by being slightly larger and having relatively longer tails…Another form occurs at high altitude of the Marojejy massif (ca. 1600 m elevation) where it lives on low scrub close to the treeline". Raxworthy *et al.* (2008) also suggested that the clade referred to as the 'ebenaui group' contained seven new undescribed species in addition to *U. ebenaui, U. phantasticus,* and *U. malama*.

Distribution in range State: Endemic to Madagascar. The range was described as medium-scale but very fragmented, being known exclusively in the north-west and extreme north of Madagascar (CoP13 Prop. 27). Previously, *Uroplatus ebenaui* had only been found to occur on Nosy Bé islands and in northern Madagascar where it was reported to inhabit continuous rainforest (Henkel and Schmidt, 2000). It is now thought to occur in the following locations in northern and central Madagascar: Ambolokopatrika, Anjanaharibe-Sud, Antsahamanara, Benavony, Berara forest, Fierenana, Lokobe, Manarikoba forest (Tsaratanana), Manongarivo, Marojejy, Montagne d'Ambre, Montagne des Français, Nosy Bé, Tsararano and Tsingy de Bemaraha (Glaw and Vences, 2007; Rabesihanaka *in litt.* to UNEP-WCMC, 2010b). The listing proposal also stated that the species occurred in Ankarafantsika National Park (CoP13 Prop. 27).

Raxworthy *et. al.* (2008) characterised the species as occurring in the Sambirano, West-North, and West Ambongo phytobiogeographic areas.

Within the Montagne d'Ambre and Forêt d'Ambre, the altitudinal distribution of the species was reported as between 400-1,200 m (D'Cruze *et al.*, 2008).

Population trends and status: D'Cruze *et al.* (2008), in an assessment of the Forét d'Ambre Special Reserve, classified the species as a rare endemic. No specific information was located on population size. It was thought that the species was not very frequent as evidenced by the fact that "in seven days of intensive searching no more than six specimens were found in

the areas where this species is encountered. This situation suggests a low population density in the wild"(CoP13 Prop. 27). The species is not currently listed within the IUCN Red List (IUCN, 2010); however, at the time of writing (August 2010), the *Uroplatus* species were being reviewed for potential inclusion (Jenkins *in litt.* to UNEP-WCMC, 2010).

Threats: Harvesting for commercial international trade was cited as a threat to this species (CoP13 Prop. 27). It was reported that exhaustive or repetitive harvesting in the same places created the risk of local extinction in the near future (CoP13 Prop. 27). Raxworthy (cited in document CoP13 Inf. 55) stated that illegal collection of *U. ebenaui* within Montagne d'Ambre National Park was reported to be occur.

Trade: According to data provided by the CITES Scientific Authority of Madagascar (*in litt.* to UNEP-WCMC, 2010), 11,631 live specimens of *U. ebenaui* were exported between 2000 and 2008.

Direct trade from Madagascar between 1999-2008 recorded within the CITES Trade Database is provided in Table 5. Madagascar reported the export of 5,213 live, wild specimens during 2005-2008, with importers reporting 3,622 live, wild specimens over these four years (Table 4), virtually all for commercial purposes. With the exception of four bodies and six live animals reported as "seized or confiscated" in 2006, all trade was reported as either wild-sourced or was reported without specifying a source. No trade has been reported without specifying source since the species was listed in Appendix II in 2005. Harvest quotas of 695; 1,532 and 2,311 were set in 2005, 2006 and 2007, respectively (Le Directeur de la Valorisation des Ressources Naturelles, 2008). Between 2005 and 2009 Madagascar published an export quota of 2,000 live specimens. Trade appears to have been maintained within quota (Table 3). In 2010, the quota was reduced to 250 live specimens.

Table 3. Direct exports of *wild-sourced *Uroplatus ebenaui* from Madagascar, 1999-2008. The species was listed in Appendix II on 12/01/2005.

Term	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
bodies	Importer							1	4			5
	Exporter					17		1				18
live	Importer	24	24	260	51	157	201	1127	808	916	771	4339
	Exporter				1075	1085	840	861	1553	1281	1518	8213
specimens	Importer			3					34			37
	Exporter											
specimens (g)	Importer											
	Exporter					2.001			0.001			2.002

*Wild-sourced includes some trade importer-reported trade without a source specified for 1999-2005.
Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Under European Union stricter domestic measures, imports of wild specimens of this species into the EU have been restricted since 20/12/2005, and legally suspended since 03/09/2008, with the last suspension confirmed on 21/05/2009 under Commission Regulation (EC) 359/2009.

Illegal offtake in nature reserves was reported to be an apparent problem according to Raxworthy (cited in document CoP13 Inf. 55 2004).

Management: All *Uroplatus* species are protected under national legislation in Madagascar (Decree No. 2006-400 of 13 June 2006). This species is included as a Category 1 Class 2 species, meaning that authorisation is required for hunting or capture from the wild.

The species occurs in at least five protected areas (Montagne d'Ambre, Marojejy and Ankarafantsika National Parks and Forêt d'Ambre, Anjanaharibe-Sud and Manongarivo Special Reserves) where harvesting of specimens for commercial purposes is prohibited (CoP13 Prop. 27). The species also occurs in three "Strict Nature Reserves": Lokobe on Nosy Bé, Tsaratanana and Tsingy de Bemaraha, a UNESCO World Heritage Site. These sites offer some additional protection for the species.

No information on population monitoring or management for the species was located.

Uroplatus fimbriatus (Schneider, 1792): Madagascar

Gekkonidae, Common Flat-tailed Gecko

Summary

Provisional category	Summary
Possible Concern	Range is medium-scale, but distribution is fragmented and restricted to specific and vulnerable habitat, (low altitude rain forest) in eastern Madagascar. Population densities appear to vary with location, but population size and trend unknown. Quotas were reduced from 2,000 live, wild specimens in 2009 to 312 in 2010. However, on the basis of relatively high levels of international trade reported and no clear basis for a non-detriment finding at the species level, impacts of trade are unknown and therefore categorised as Possible Concern.

Biology: Like all *Uroplatus* geckos, the species is arboreal, oviparous, and insectivorous. It prefers the littoral rain forest in the eastern part of Madagascar (CoP13 Prop. 27). After *U. giganteus*, *U. fimbriatus* is the second largest *Uroplatus* species, with a snout-vent length (SVL) of between 153-177 mm for males and 150-186 mm for females (Glaw and Vences, 2007). Clutch sizes are typically two eggs, with reproduction occurring in the rainy season (January and February) (CoP13 Prop. 27).

Distribution in range State: Endemic to Madagascar, with distribution described as fairly fragmented (CoP13 Prop. 27). Glaw and Vences (2007) describe *U. fimbriatus* as living in "in primary low-altitude rainforest. It was reported to be found throughout the tropical rainforests of eastern Madagascar and on the islands of Nosy Boraha and Nosy Mangabe (Henkel and Schmidt, 2000). According to Glaw and Vences (2007), the species occurred in the following locations in eastern Madagascar: Ambahaka forest, Ambatond'Radama, Analamazaotra, Anandrivola, Andekaleka, Ankarampotsy, Ankopakopaka forest, Antsihanaka, Eminiminy, Fandrarazana, Fito, Ikongo, Mananjary, Maroantsetra, Marojejy, Nosy Boraha, Nosy Mangabe, Ranomafana, near Ifanadiana, Sahambendrana, Tampolo, Toamasina, Vohipeno, and Vondrozo. The CITES Management Authority of Madagascar confirmed occurrence at these localities, except for "near Ifanadiana", and also included Montagne d'Ambre within the species distribution (Rabesihanaka *in litt.* to UNEP-WCMC, 2010b), the latter was also recorded by Raxworthy and Nussbaum (1994).

Population trends and status: A week-long intensive survey found only six specimens suggesting a low population density in the wild (CoP13 Prop. 27). Additional surveys found the species at densities of 13-50 individuals/ha according to the CITES Management and Scientific Authorities for Madagascar (CoP13 Inf. 32).

Glaw and Vences (2007) noted that a very high population density can be found on the island Nosy Mangabe.

The species is not currently listed within the IUCN Red List (IUCN, 2010); however, at the time of writing (August 2010), the *Uroplatus* species were being reviewed for potential inclusion (Jenkins *in litt.* to UNEP-WCMC, 2010).

Threats: The species is not able to frequent degraded growth areas and is therefore vulnerable to habitat degradation (CoP13 Prop. 27). Harvesting for commercial purposes was also identified as a potential threat (CoP13 Prop. 27).

Trade: According to data provided by the Scientific Authority of Madagascar (2010), 12,807 live specimens were exported by Madagascar between 2000 and 2008.

The majority of trade in *U. fimbriatus* recorded within the CITES Trade Database for the period 1999-2008 was in live specimens, with minimal numbers of bodies and specimens also traded (Table 4). With the exception of five live confiscated/seized animals reported by importers in 2005, all reported trade over the period 1999-2008 was in wild-sourced specimens or did not specify a source. Since listing on Appendix II, Madagascar reported the export of 5,518 live, wild specimens (2005-2008), with importers reporting 3,790 live specimens over these four years (Table 4), virtually all for commercial purposes.

Harvest quotas of 877; 1,670 and 2,281 were set in 2005, 2006 and 2007, respectively, (Le Directeur de la Valorisation des Ressources Naturelles, 2008). For the years 2005 through 2009 an export quota of 2,000 live specimens was published by Madagascar. Trade appears to have been maintained within quota (Table 4). In 2010, the quota was reduced to 312 live specimens.

Table 4. Direct exports of *Uroplatus fimbriatus* from Madagascar, 1999-2008. The species was listed in Appendix II on 12/01/2005.

Term	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
bodies	Importer							2				2
	Exporter					10		12				22
live	Importer	50	20	271	26	170	241	1317	833	822	818	4568
	Exporter				1047	1282	976	1133	1681	1267	1437	8823
specimens	Importer						6	51	9		2	68
	Exporter											
specimens (mg)	Importer											
	Exporter					2		51				53

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Under European Union stricter domestic measures, imports of wild specimens of this species into the EU have been restricted since 20/12/2005, and legally suspended since 03/09/2008, with the last suspension confirmed on 21/05/2009 under Commission Regulation (EC) 359/2009.

Management: All *Uroplatus* species are protected under national legislation in Madagascar (Decree No. 2006-400 of 13 June 2006). This species included as a Category 1 Class 2 species, meaning that authorisation is required for hunting or capture from the wild.

As noted above, the species was recorded as occurring in four National Parks (Analamazaotra, Marojejy, Ranomafana and Montagne d'Ambre) which offer some protection for the species.

No additional information on population monitoring or management for the species was located.

Uroplatus giganteus (Glaw, Kosuch, Henkel, Sound & Böhme, 2006): Madagascar

Gekkonidae

Summary

Provisional category	Summary
Least Concern	Highly restricted range in the north of Madagascar. Newly described in 2006, and no information on population size or trend known. No commercial international trade reported since the species was described, and no harvest or export quotas established. On the basis of no anticipated international trade, categorised as Least Concern.

Biology: *Uroplatus giganteus* was first described as a distinct species from *U. fimbriatus* in 2006 by Glaw *et al.* (2006) due to its larger size, colouration of iris, head and back, and strong genetic differentiation. *U. giganteus* is the largest *Uroplatus* species, with a snout-vent length (SVL) of between 188-198 mm for males and 182-200 mm for females (Glaw and Vences, 2007). Glaw *et al*. (2006) reported the species was the second largest living gecko in the world. It was reported to be "active at night on stems of small to large trees at heights of ca. 2-4 m above the ground" (Glaw and Vences, 2007).

Taxonomic note: Raxworthy *et al.* (2008), questioned whether *U. giganteus* should be considered a separate species, noting "we consider the recent description of *Uroplatus giganteus* by Glaw et al. (2006) based on four specimens from Montagne d'Ambre, as premature because of the limited sampling of *U. fimbriatus* localities that were included in that description."

Distribution in range State: Endemic to Madagascar. According to the CITES Management Authority of Madagascar, the species occurs north of the Masoala peninsula in the northeast, up to the Montagne d'Ambre in the northern tip of Madagascar (Rabesihanaka *in litt.* to UNEP-WCMC, 2010b). Glaw and Vences (2007) listed the species as occurring in Montagne d'Ambre and Marojejy National Parks in the northern tip of Madagascar, but noted that the identity of the population from Marojejy needed further study.

Glaw *et al.* (2006) stated that "if *U. giganteus* is indeed endemic to the low and mid-altitude forest of Montagne d'Ambre its area of occupancy (which is defined by IUCN as the area within the extent of occurrence which is occupied by a taxon) would be very small for this large species (less than 150 km^2)."

The species occurs in primary mid-altitude rainforest of Montagne d'Ambre (650-850 m elevation) (Glaw and Vences, 2007). D'Cruze *et al.* (2008), described the species as occurring within a restricted altitudinal distribution of 400-850 m within Montagne d'Ambre National Park, Fontenay Nature Park and Forêt d'Ambre Special Reserve. The species is not currently listed within the IUCN Red List (IUCN, 2010); however, at the time of writing (August 2010), the *Uroplatus* species were being reviewed for potential inclusion (Jenkins *in litt.* to UNEP-WCMC, 2010).

Population trends and status: Glaw *et al.* (2006) stated that the species might be seriously threatened. D'Cruze *et al.* (2008) classified the species as an infrequently occurring species that is regionally endemic to the north of Madagascar.

Threats: Glaw *et al.* (2006) cited the species' relatively small area of occupancy and island-like distribution as potential threats to the long-term survival of the species, but noted that the importance of the pet trade was unknown.

D'Cruze *et al.* (2008) also considered the species to be of serious conservation risk as a result of its limited distribution.

Trade: As this species was only formally recognized in 2006, there is very little trade data available. The only recorded trade is the export of two wild-sourced bodies from Madagascar to Germany for scientific purposes in 2007.

No harvest quotas have been set for this species (Le Directeur de la Valorisation des Ressources Naturelles, 2008), and no export quotas have been published.

Glaw *et al.* (2006) stated that "Until a few years ago, *U. giganteus* was regularly offered by the international pet trade. Since commercial collecting in nature reserves is prohibited in Madagascar we can only speculate that these specimens either came from unknown and unprotected localities or that they were collected illegally in the National Park. In any case, the trade of this species was apparently stopped after the inclusion of *Uroplatus* in CITES."

Management: All *Uroplatus* species are protected under national legislation. *U. giganteus* is included as a Category 1 Class 2 species, meaning that authorisation is required for hunting or capture from the wild. Within the Montagne d'Ambre National Park and the Forêt d'Ambre Special Reserve *U. giganteus* may benefit from protection, and the species may also occur in Marojejy National Park.

No additional information on population monitoring or management plan for the species was located.

Uroplatus guentheri (Mocquard, 1908): Madagascar

Gekkonidae, Günther's Flat-tailed Gecko

Summary

Provisional category	Summary
Possible Concern	Range is very restricted to certain forest zones and is highly fragmented. Population size and trend unknown, but one author suggests the population is declining. The export quota was increased from 100 live, wild specimens in 2009 to 125 in 2010. On the basis of moderate levels of international trade reported and no clear basis for a non-detriment finding at the species level, impacts of current and anticipated trade levels are unknown, and therefore categorised as Possible Concern.

Biology: The species inhabits "deciduous dry forest on bushes and low in trees, mainly 1.5-3 m above the ground" (Glaw and Vences, 2007). However, Raxworthy (*pers. comm.* to UNEP-WCMC, 2010) indicated it occured high in the canopy and was difficult to detect. The species is described as having a snout-vent length of between 72-79 mm (Glaw and Vences, 2007). In document CoP13 Inf. 32, the CITES Scientific and Management Authority of Madagascar stated that there may be a risk of confusion between this species and the rarer *U. alluaudi.*

Distribution in range State: Endemic to Madagascar. *Uroplatus guentheri* occurs primarily in northwestern Madagascar in the area around Ankarafantsika, although it has also been found in the vicinity of Morondava in the west of Madagascar (Henkel and Schmidt, 2000). Raxworthy (*pers. comm*. to UNEP-WCMC, 2010) described the species distribution as extending across mid-western Madagascar, including several reserves.

The CITES Management Authority (Rabesihanaka *in litt.* to UNEP-WCMC, 2010b) and Glaw and Vences (2007) listed the following locations for the species' distribution: Ankarafantsika, Kirindy, Morondava, and Tsingy de Bemaraha. Its range was described as very restricted and fragmented (CoP13 Inf. 32).

Population trends and status: No published information on population status and trends was located. The species is not currently listed within the IUCN Red List (IUCN, 2010); however, at the time of writing (August 2010), the *Uroplatus* species were being reviewed for potential inclusion (Jenkins *in litt.* to UNEP-WCMC, 2010).

Based on known distribution, and with no information on density, Raxworthy (*pers. comm.* to UNEP-WCMC, 2010) estimated that the population may exceed 10,000 individuals but considered that the population was likely to be declining.

Threats: Raxworthy (*pers. comm*. to UNEP-WCMC, 2010) considered that forest loss due to clearing for agriculture and accidental burning were a threat to the species. Demand for the rarer *Uroplatus* species including *U. guentheri* for the pet trade was also considered a threat (CoP13 Prop. 27). Raxworthy (*pers. comm*. to UNEP-WCMC, 2010) considered that wild harvesting may be inefficient as the species is arboreal, and may not have a high impact on local populations.

Trade: According to data provided by the Scientific Authority of Madagascar (*in litt.* to UNEP-WCMC, 2010), 529 live specimens were exported by Madagascar between 2000 and 2008.

According to the data within the CITES Trade Database, since listing on Appendix II,

Madagascar reported the export of 293 live, wild specimens *U. guentheri* (2005-2008), with importers reporting 106 live, wild specimens over these four years (Table 7), virtually all for commercial purposes. Trade in this species was exclusively in wild-sourced live animals since 2005.

Harvest quotas of 111, 45 and 77 were set in 2005, 2006 and 2007, respectively (Le Directeur de la Valorisation des Ressources Naturelles, 2008). Over the period 2005-2009, Madagascar published an export quota of 100 live specimens for this species. According to exporter-reported data, the quota was exceeded by 11 live specimens in 2005, unless these individuals were exported prior to 12/01/05 when the Appendix II listing came into force (Table 5). In 2010, the quota was increased to 125 live animals.

Table 5. Direct exports of *Uroplatus guentheri* from Madagascar, 1999-2008. The species was listed in Appendix II on 12/01/2005.

Term	Reported by	1999	2001	2002	2003	2004	2005	2006	2007	2008	Total
bodies	Importer										
	Exporter				3						3
live	Importer	4	7		13	24	70	9	21	6	154
	Exporter			37	51	40	111	65	41	76	421
specimens	Importer							2		2	4
	Exporter										
specimens (g)	Importer										
	Exporter							0.004	0.005		0.009

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Under European Union stricter domestic measures, imports of wild specimens of this species into the EU have been restricted since 23/01/2006, and legally suspended since 03/09/2008, with the last suspension confirmed on 21/05/2009 under Commission Regulation (EC) 359/2009.

Management: All *Uroplatus* species are protected under national legislation in Madagascar (Decree No. 2006-400 of 13 June 2006). This species included as a Category 1 Class 2 species, meaning that authorisation is required for hunting or capture from the wild.

As noted above, the species occurs in Ankarafantsika National Park and Tsingy de Bemaraha, a Strict Nature Reserve and UNESCO World Heritage Site. Raxworthy (*pers. comm*. to UNEP-WCMC, 2010) considered Bemaraha to be well protected.

No additional information on population monitoring or management for the species was located.

Uroplatus henkeli (Böhme & Ibisch, 1990): Madagascar

Gekkonidae, Henkel's Flat-tailed Gecko

Summary

Provisional category	Summary
Possible Concern	Range is very localised to the north west and extreme north. Restricted to small altitudinal range, and distribution is highly fragmented. Population densities appear to vary with location (described as common to infrequent) but population size and trend unknown. Illegal harvest within protected areas reported to be a problem. The export quota was decreased from 200 live, wild specimens in 2009 to 125 in 2010. On the basis of moderate levels of international trade reported and no clear basis for a non-detriment finding at the species level, impacts of current and anticipated trade levels are unknown, and therefore categorised as Possible Concern.

Biology: This nocturnal gecko is found in primary low-altitude rainforest, deciduous dry forest and, occasionally, in bamboo forest (Glaw and Vences, 2007). *Uroplatus henkeli* has a snout-vent length of 120-160 mm and is similar to *U. fimbriatus*, but can be distinguished from *fimbriatus* due to its smaller size, iris colouration and other physical attributes (Glaw and Vences, 2007).

Distribution in range State: Endemic to Madagascar. The species' range is described as medium-scale, but very fragmented being present only in the north-west and extreme north of Madagascar (CoP13 Prop. 27). Previously, *Uroplatus henkeli* was only known to occur within the Lokobe Forest on the islands of Nosy Bé (Henkel and Schmidt, 2000) but is now considered more extensive. The distribution was thought to include the following locations in western Madagascar: Ankarafantsika, Ankarana, Benavony, Berara forest, Lokobe, Manogarivo, Nosy Bé, Tsingy de Bemaraha, Mariarano, and Daraina (Glaw and Vences, 2007; Rabesihanaka *in litt.* to UNEP-WCMC, 2010b). The species was also cited as occurring in Tsaratanana Strict Nature Reserve (CoP13 Prop. 27).

Glaw and Vences (2007) described the species as occurring in the rainforest of the Sambirano region, the deciduous dry forest of the west and occasionally in Lokobe.

D'Cruze *et al.* (2008), described the species as occurring within a restricted altitudinal distribution of 400-650 m within Fontenay and the Forêt d'Ambre Special Reserve.

The species is not currently listed within the IUCN Red List (IUCN, 2010); however, at the time of writing (August 2010), the *Uroplatus* species were being reviewed for potential inclusion (Jenkins *in litt.* to UNEP-WCMC, 2010).

Population trends and status: D'Cruze *et al.* (2008) classified the species as a relatively common species. However, overall, the species was described as "not very frequent in the areas where it is found. Seven days of intensive searching unearthed no more than four specimens in any of the regions where this species has been encountered, suggesting a low population density in the wild" (CoP13 Prop. 27).

Threats: Harvesting for commercial purposes was described as a threat to the species (CoP13 Prop. 27). Specifically, it was noted that "given the low abundance of the species in the wild, exhaustive or repetitive harvesting in the same places entails a risk of its becoming locally extinct in the near future"(CoP13 Prop. 27).

Raxworthy (cited in document CoP13 Inf. 55), stated that he was aware that commercial

collecting of *U. henkeli* over several years had already depleted populations in a strict nature reserve (Lokobe, Nosy Be).

Trade: According to data provided by the Scientific Authority of Madagascar (*in litt.* to UNEP-WCMC, 2010), 5,856 live specimens were exported by Madagascar between 2000 and 2008.

Since listing on Appendix II, Madagascar reported the export of 625 live, wild specimens (2005-2008), with importers reporting 349 live, wild specimens over these four years (Table 8), all of which were for commercial purposes.

The majority of trade in *U. henkeli* has been reported as live animals, with smaller quantities of bodies and scientific specimens also recorded. The highest recorded trade in this species was in 2003 when Madagascar reported exporting 1,111 live, wild specimens.

Harvest quotas of 558, 178, and 213 were set in 2005, 2006 and 2007, respectively (Le Directeur de la Valorisation des Ressources Naturelles, 2008). Over the period 2005-2009, Madagascar published an export quota of 200 live specimens for this species. Trade appears to have been maintained within quota (Table 6). In 2010, the quota was reduced to 125 live animals.

Table 6. Direct exports of *Uroplatus henkeli* from Madagascar, 1999-2008. The species was listed in Appendix II on 12/01/2005.

Term	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
bodies	Importer								4	5		9
	Exporter					2						2
live	Importer	34	22	234	29	68	173	118	81	79	71	909
	Exporter				956	1111	52	164	178	107	176	2744
specimens (g)	Importer											
	Exporter					4			0.002			4.002

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Under European Union stricter domestic measures, imports of wild specimens of this species into the EU have been restricted since 20/12/2005, and legally suspended since 03/09/2008, with the last suspension confirmed on 21/05/2009 under Commission Regulation (EC) 359/2009.

Illegal offtake in nature reserves was reported to be an apparent problem according to Raxworthy (cited in Document CoP13 Inf. 55).

Management: All *Uroplatus* species are protected under national legislation in Madagascar (Decree No. 2006-400 of 13 June 2006). This species included as a Category 1 Class 2 species, meaning that authorisation is required for hunting or capture from the wild.

The species was believed to occur in several protected areas (Ankarafantsika National Park, Ankarana National Park, Forêt d'Ambre Special Reserve, Manongarivo Special Reserve, Tsaratanana Strict Nature Reserve and Tsingy de Bemaraha Strict Nature Reserve) where harvesting of specimens for commercial purposes is prohibited (CoP13 Prop. 27). Tsingy de Bemaraha is also a UNESCO World Heritage Site.

No additional information on population monitoring or management for the species was located.

Uroplatus lineatus (Duméril & Bibron, 1836): Madagascar

Gekkonidae, Lined Flat-tailed Gecko

Summary

Provisional category	Summary
Possible Concern	Distribution is very localised and fragmented. Mainly occurs in the east within very specific and vulnerable habitat (low altitude rain forest). Population size and trend unknown, although the species appears to be locally rare to quite common, with one author suggesting the population may be declining. Relatively high levels of international trade were reported by Madagascar since 2002, although the export quota was decreased substantially from 1,000 live, wild specimens in 2009 to 63 in 2010. However, no clear basis for a non-detriment finding at the species level has been provided for even low numbers in trade, and on this basis, categorised as Possible Concern.

Biology: Very little is known about the biology of this species (Henkel and Schmidt, 2000). It is reported to be a unique species in morphology and colouration (Glaw and Vences, 2007). The species is described as having a snout-vent length of between 108-139 mm (Glaw and Vences, 2007).

Distribution in range State: Endemic to Madagascar. Reported to be found in primary rainforest of the east coast of Madagascar at low altitude, often in bamboo forests (Glaw and Vences, 2007). The species' distribution is described as very localised and fragmented within a very specific and vulnerable habitat, namely low altitude rain forest (CoP13 Inf. 32). Raxworthy (*pers. comm.* to UNEP-WCMC, 2010) considered that the species was restricted to northeast Madagascar.

According to Henkel and Schmidt (2000), this species "appears to be very rare since only individual specimens have been found on the island of Nosy Boraha and in eastern Madagascar". On the basis of reports by local Malagasy people, the species was also thought to occur in yellow bamboo forests (Henkel and Schmidt, 2000).

Glaw and Vences (2007) listed the following locations in the northeast of Madagascar for the distribution of the species: Fito, Mangabe, Maroantsetra, Marojejy, Nosy Boraha, and Toamasina. The CITES Management Authority confirmed all of these locations with the exception of Nosy Boraha, but also included Betampona, Brickaville, and Bezavona within the species' distribution (Rabesihanaka *in litt.* to UNEP-WCMC, 2010b).

Population trends and status: Information on the species population status was sparse and variable. An intensive seven day search only unearthed one specimen, suggesting a low population density in the wild (CoP13 Prop. 27). However, Raxworthy (*pers. comm.* to UNEP-WCMC, 2010) considered that the species could be quite common in some areas, but the population was likely to be declining. Based on known distribution, and with no information on density, Raxworthy (*pers. comm.* to UNEP-WCMC, 2010) estimated that the population may exceed 10,000 individuals. The species is not currently listed within the IUCN Red List (IUCN, 2010); however, at the time of writing (August 2010), the *Uroplatus* species were being reviewed for potential inclusion (*in litt.* to UNEP-WCMC, 2010).

Threats: Harvesting for commercial purposes was reported to constitute a threat to the species given its low prevalence in the wild (CoP13 Prop. 27). Raxworthy (*pers. comm*. to UNEP-WCMC, 2010) indicated that wild harvest was likely to be based in unprotected

forests near Tomasina, and also considered that forest loss due to clearing for tavy agriculture (slash and burn) was a further threat to the species.

Trade: According to data provided by the Scientific Authority of Madagascar (2010), 7,310 live specimens were exported by Madagascar between 2000 and 2008.

On the basis of data held by the CITES Trade Database, since listing on Appendix II, Madagascar reported the export of 2,678 live, wild specimens (2005-2008), with importers reporting 2,319 live specimens over these four years (Table 9), virtually all for commercial purposes.

Aside from a small quantity of specimens reported by importers for scientific purposes, all trade in *U. lineatus* has been reported as live animals. With the exception of five live animals reported as seized or confiscated in 2005, all trade was reported as either originating from the wild or, for some trade prior to CITES listing, was reported without a source specified.

Harvest quotas of 802 and 1,097 were set in 2006 and 2007, respectively (Le Directeur de la Valorisation des Ressources Naturelles, 2008). Over the period 2005-2009, Madagascar set an export quota of 1000 live specimens for this species. Trade appears to have been maintained within quota (Table 7). In 2010, the quota was reduced to 63 live animals.

Table 7. Direct exports of *Uroplatus lineatus* from Madagascar, 1999-2008. The species was listed in Appendix II on 12/01/2005.

Term	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
live	Importer	43	18	345	26	62	84	991	518	342	468	2897
	Exporter				856	729	752	632	762	546	738	5015
specimens	Importer						6		16		1	23
	Exporter											

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Under European Union stricter domestic measures, imports of wild specimens of this species into the EU have been restricted since 20/12/2005, and legally suspended since 03/09/2008, with the last suspension confirmed on 21/05/2009 under Commission Regulation (EC) 359/2009.

Management: All *Uroplatus* species are protected under national legislation in Madagascar (Decree No. 2006-400 of 13 June 2006). This species included as a Category 1 Class 2 species, meaning that authorisation is required for hunting or capture from the wild.

The species may be afforded some degree of protection as it occurs in Marojejy, a national park in the northeast of Madagascar, and Betampona, a strict Natural Reserve located on the east coast.

No additional information on population monitoring or management for the species was located.

Uroplatus malahelo (Nussbaum & Raxworthy, 1994): Madagascar

Gekkonidae

Summary

Provisional category	Summary
Least Concern	Range is very restricted and fragmented, with distribution only in the south. Population size and trend unknown, although the species appears to be rare. One author suggests the population is declining. Only ten specimens have been recorded in international trade. Madagascar published a zero quota for the species in 2005-2006, and has not set any quotas for the species subsequently. No trade reported since that the species listing in Appendix II in 2005. On this basis, categorised as Least Concern.

Biology: The type specimens were found during the day in refuges (under bark) about 1 m high in trees in primary rainforest (Glaw and Vences, 2007). The species is described as having a snout-vent length of between 73-79 mm (Glaw and Vences, 2007).

Distribution in range State: Endemic to Madagascar. The species was noted to have a very restricted range (CoP13 Prop. 27). Distribution was reported to extend across the southern interior of Madagascar, at small isolated sites (Raxworthy, *pers. comm.* to UNEP-WCMC, 2010). It was reported to occur in the south of Madagascar in the following localities: Montagne d'Ambatotsirongorongo, Analavelona, Imotra, Kalambatritra, Malahelo, and Sakaraha (Nussbaum and Raxworthy, 1994; Glaw and Vences, 2007; Rabesihanaka *in litt.* to UNEP-WCMC, 2010b).

Population trends and status: The species was described as rare (CoP13 Prop. 27). Raxworthy (*pers. comm.* to UNEP-WCMC, 2010) considered that the population was likely to be declining slightly. Based on known distribution, and with no information on density, Raxworthy (*pers. comm.* to UNEP-WCMC, 2010) estimated that the population may exceed 1,000 individuals.

U. malahelo was described as a species in 1994, so it has been noted that there are gaps in the scientific literature relating to this species (Nussbaum and Raxworthy, 1994; CITES Scientific Authority of Madagascar *in litt.* to UNEP-WCMC, 2010). It is not currently listed within the IUCN Red List (IUCN, 2010); however, at the time of writing (August 2010), the *Uroplatus* species were being reviewed for potential inclusion (Jenkins *in litt.* to UNEP-WCMC, 2010).

Threats: As for the entire genus, habitat loss and trade are the main threats to the species. Raxworthy (*pers. comm.* to UNEP-WCMC, 2010) indicated that forest loss as a result of clearing for agriculture and accidental burning was a threat. Malahelo Forest, the southernmost patch of rainforest in Madagascar where the species occurs was described as thoroughly degraded due to harvesting and land clearing for grazing (Nussbaum and Raxworthy, 1994). Demand for the rarer *Uroplatus* species including *U. malahelo* for the pet trade was also reported to be a threat (CoP13 Prop. 27). Raxworthy (*pers. comm.* to UNEP-WCMC, 2010) considered that should wild harvest be occurring, it was probably concentrated around Fort Dauphin.

Trade: According to data provided by the Scientific Authority of Madagascar (*in litt.* to UNEP-WCMC, 2010), 40 live specimens were exported by Madagascar between 2000 and 2008. The only trade recorded within the CITES Trade Database is the export of ten live, wild-sourced animals by Madagascar in 2002. No exports have taken place since the species listing on Appendix II, as reported by Madagascar or importers. A zero quota for live

animals was published for this species in 2005 and 2006, and no export quotas have been published since. No harvest quotas have been published since 2004 (Le Directeur de la Valorisation des Ressources Naturelles, 2008).

Management: All *Uroplatus* species are protected under national legislation in Madagascar (Decree No. 2006-400 of 13 June 2006). This species included as a Category 1 Class 2 species, meaning that authorisation is required for hunting or capture from the wild.

The species occurs in Kalambatritra Special Reserve in the south east of Madagascar, which may offer the species some degree of protection. No additional information on population monitoring or management plan for the species was located.

Uroplatus malama (Nussbaum & Raxworthy, 1995): Madagascar

Gekkonidae

Summary

Provisional category	Summary
Possible Concern	Range is very restricted and fragmented. Mainly occurs in the southeast, where the species rainforest habitat has considerably declined. Population size and trend unknown, although the species appears to be rare. One author considered the species was likely to be declining. International trade levels comparatively low, although the highest reported level of exports (of 68 live, wild specimens) was reported in 2008. An export quota of 100 individuals was published for 2005-2009, but no quota was published in 2010. However, no clear basis for a non-detriment finding at the species level has been provided for even low numbers in trade, and impacts of trade unknown. On this basis, categorised as Possible Concern.

Biology: The type specimen was collected at night in primary, undisturbed slope rainforest at 750 m on a branch about 2 m above the ground (Glaw and Vences, 2007). It was reported to be an arboreal species (Raxworthy *pers. comm.* to UNEP-WCMC, 2010). Snout-vent length of the male holotype was 71 mm (Glaw and Vences, 2007). It is described as similar to *U. ebenaui* and *U. phantasticus* except that the latter two species have spines on the head and body (Glaw and Vences, 2007).

Distribution in range State: Endemic to Madagascar. The species was noted to have a very restricted range (CoP13 Prop. 27). Its distribution was reported to include the following locations in southeastern Madagascar: Ampamakiesiny, Ivohibe, Montagne d'Anosy (Anosy mountain chain) and Kalambatritra (Glaw and Vences, 2007; Rabesihanaka *in litt.* to UNEP-WCMC, 2010b). Raxworthy (*pers. comm.* to UNEP-WCMC, 2010) also reported occurrence in the Andohehela Reserve.

Population trends and status: The species was described as rare (CoP13 Prop. 27). Raxworthy (*pers. comm.* to UNEP-WCMC, 2010) considered that the population was likely to be declining slightly. Based on known distribution, and with no information on density, Raxworthy (*pers. comm.* to UNEP-WCMC, 2010) estimated that the population may exceed 1,000 individuals. *U. malama* was described as a species in 1995, so it has been noted that there are gaps in the scientific literature relating to this species (Nussbaum and Raxworthy, 1995; CITES Scientific Authority of Madagascar *in litt.* to UNEP-WCMC, 2010). The species is not currently listed within the IUCN Red List (IUCN, 2010); however, at the time of writing (August 2010), the *Uroplatus* species were being reviewed for potential inclusion (Jenkins *in litt.* to UNEP-WCMC, 2010).

Threats: As for the entire genus, habitat loss and trade are the main threats to the species. Nussbaum and Raxworthy (1995) stated that since "only a single specimen of *U. malama* has been found, its population status is of concern, especially so because rainforest in southeastern Madagascar is rapidly declining."Demand for the rarer *Uroplatus* species including *U. malama* for the pet trade was also considered a threat (CoP13 Prop. 27).

Trade: According to data provided by the Scientific Authority of Madagascar (*in litt.* to UNEP-WCMC, 2010), 251 live specimens were exported by Madagascar between 2000 and 2008.

On the basis of data held within the CITES Trade Database, Madagascar reported the export

of 174 live, wild specimens since the genus was listed in Appendix II in 2005 (Table 9). No trade was reported prior to 2005. All trade was in wild-sourced live specimens exported directly from Madagascar. Harvest quotas of 20, 49, and 81 were set in 2005, 2006 and 2007, respectively (Le Directeur de la Valorisation des Ressources Naturelles, 2008). An export quota of 100 live animals per year was in place between 2005 and 2009. Trade appears to have been maintained within quota (Table 8). No export quota was published for this species in 2010.

Table 8. Direct exports of *Uroplatus malama* from Madagascar, 2004-2008. The species was listed in Appendix II on 12/01/2005.

Term	Reported by	2004	2005	2006	2007	2008	Total
live	Importer			11	39	3	53
	Exporter		20	45	41	68	174

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Under European Union stricter domestic measures, imports of wild specimens of this species into the EU have been restricted since 23/01/2006, and legally suspended since 03/09/2008, with the last suspension confirmed on 21/05/2009 under Commission Regulation (EC) 359/2009.

Management: All *Uroplatus* species are protected under national legislation in Madagascar (Decree No. 2006-400 of 13 June 2006). This species included as a Category 1 Class 2 species, meaning that authorisation is required for hunting or capture from the wild.

The species reportedly occurs in Ivohibe and Kalambatritra Special Reserves, which may offer the species some protection.

No additional information on population monitoring or management for the species was located.

Uroplatus phantasticus (Boulenger, 1888): Madagascar

Gekkonidae

Summary

Species	Provisional category	Summary
Uroplatus phantasticus	Possible Concern	Range is described as fairly fragmented. Population size and trend unknown, although reportedly occurs at low density. Relatively high levels of international trade were reported by Madagascar since 2002. An export quota of 2,000 individuals was published for 2005-2009, but no quota was published in 2010. However, no clear basis for a non-detriment finding at the species level has been provided, and impacts of trade unknown. On this basis, categorised as Possible Concern.

Biology: *Uroplatus phantasticus* is described as an oviparous, arboreal tropical rainforest species with a snout-vent length of 55-66 mm which is active at night on branches 0.5-2 m above the ground (Glaw and Vences, 2007). A female can lay up to six clutches (with two eggs each) in one year, and eggs in captivity hatched after 75-100 days (Glaw and Vences, 2007).

Taxonomic note: Glaw and Vences (2007) noted that *U. phantasticus* may be a composite of several species, with two forms appearing to occur in the Fierenana region, of which one was distinctly larger.

Distribution in range State: Endemic to Madagascar. The distribution was described as fairly fragmented (CoP13 Prop. 27). This species was reported to occur only in the higher altitude rain forest regions (Henkel and Schmidt, 2000) and was noted to prefer the rainforest in eastern Madagascar (CoP13 Prop.27).

U. phantasticus was reported to occur in the following localities: Ambahaka forest, Analamazaotra, Andasibe, Andevoranto, Andrangoloaka, Ankeniheny, Ankopakopaka forest, Fierenana, Fito, Fort Carnot, Ikongo, Ivohibe, Manjakandriana, Mantadia, and Ranomafana (Glaw and Vences, 2007; Rabesihanaka *in litt.* to UNEP-WCMC, 2010b).

The species was also reported to occur in three protected areas in the north-east of Madagascar (Tsaratanana Strict Nature Reserve, Marojejy National Park, and Anjanaharibe Special Reserve) (CoP13 Prop. 27).

Population trends and status: No information on population status or trends were located. The species was reportedly not very frequent within its range, as seven days of extensive searching unearthed no more than five specimens in any of the regions where this species has been encountered, suggesting a low population density in the wild (CoP13 Prop. 27). The species is not currently listed within the IUCN Red List (IUCN, 2010); however, at the time of writing (August 2010), the *Uroplatus* species were being reviewed for potential inclusion (Jenkins *in litt.* to UNEP-WCMC, 2010).

Threats: The species was reported to be vulnerable to habitat degradation as it is incapable of colonizing a degraded growth area (CoP13 Prop. 27). Commercial harvesting of the species was also cited as a threat to the species at the time of listing. It was noted that "given the low abundance of the species in the wild, exhaustive or repetitive harvesting in the same places entails a risk of its becoming locally extinct in the near future" (CoP13 Prop. 27).

Trade: According to data provided by the Scientific Authority of Madagascar (*in litt.* to

UNEP-WCMC, 2010), 15,456 live specimens were exported by Madagascar between 2000 and 2008 (compared to 10,209 reported within the CITES Trade Database), representing the highest level of trade of all the *Uroplatus* species.

Since listing on Appendix II, Madagascar reported the export of 5,619 live wild specimens (2005-2008), with importers reporting 4,460 live, wild specimens over these four years (Table 9), virtually all for commercial purposes. Fifteen live specimens have been reported seized/confiscated by importers since the listing of the genus in Appendix II in 2005.

Harvest quotas of 1,108, 1,726 and 2,229 were set in 2005, 2006 and 2007, respectively (Le Directeur de la Valorisation des Ressources Naturelles, 2008). An export quota of 2000 live animals per year was in place between 2005 and 2009. Trade appears to have been maintained within quota (Table 9). No export quota was published for this species in 2010.

Table 9. Direct exports of *Uroplatus phantasticus* from Madagascar, 1999-2008. The species was listed in Appendix II on 12/01/2005.

Source	Term	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
W*	bodies	Importer											
		Exporter					16						16
	live	Importer	77	38	295	113	60	286	1571	1015	958	916	5329
		Exporter				1466	2024	1100	1258	1596	1229	1536	10209
	specimens	Importer						2		6		5	13
		Exporter					1						1
I	bodies	Importer								2			2
		Exporter											
	live	Importer			1		15		5		10		31
		Exporter											

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK
*Wild-sourced trade includes trade reported without a source specified between 1999-2005 in this table.

Under European Union stricter domestic measures, imports of wild specimens of this species into the EU have been restricted since 20/12/2005, and legally suspended since 03/09/2008, with the last suspension confirmed on 21/05/2009 under Commission Regulation (EC) 359/2009.

Management: All *Uroplatus* species are protected under national legislation in Madagascar (Decree No. 2006-400 of 13 June 2006). This species included as a Category 1 Class 2 species, meaning that authorisation is required for hunting or capture from the wild.

The species was reported to occur in at least six protected areas (Mantadia, Marojejy, and Ranomafana National Parks, Tsaratanana Strict Nature Reservce, and Anjanaharibe and Ivohibe Special Reserves), which are likely to offer it some degree of protection.

No additional information on population monitoring or management for the species was located.

Uroplatus pietschmanni (Böhle and Schönecker, 2003): Madagascar

Gekkonidae

Summary

Provisional category	Summary
Possible Concern	Range is very restricted and fragmented, occurring at only two locations in central eastern Madagascar. Population size and trend unknown, although reportedly occurs at low density. One author suggested the population may be declining. Moderate levels of international trade reported since 2005. An export quota of 500 live, wild specimens was published for 2005-2009, but no quota was published in 2010. However, no clear basis for a non-detriment finding at the species level has been provided, and impacts of trade unknown. On this basis, categorised as Possible Concern.

Biology: *Uroplatus pietschmanni* was reported to occur in primary rainforest of the east coast at mid-altitude, generally inhabiting the high up branches of large trees (often with a diameter of more than 80 cm) (Glaw and Vences, 2007). The species was reported to be morphologically unique (Glaw and Vences (2007), but was described by the CITES Management and Scientific Authority of Madagascar as similar enough to *Uroplatus sikorae* to risk confusion (CoP 13 Inf. 32). The snout-vent length of the male holotype was 81 mm (Glaw and Vences, 2007).

Distribution in range State: Endemic to Madagascar. The species was reported to have a very restricted and fragmented distribution with only two known locations of occurrence in central eastern Madagascar: "near Fierenana" and Ambohitantely Special Reserve (Glaw and Vences, 2007; Rabesihanaka *in litt.* to UNEP-WCMC, 2010b) (Figure 3).

Figure 3. The only known localities for the sister species *Uroplatus pietschmanni* and *Uroplatus alluaudi* Source: (Raxworthy *et al.*, 2008)

Population trends and status: Raxworthy (*pers. comm.* to UNEP-WCMC, 2010) considered that the population was likely to be declining. The species was reported to be not very frequent in the regions where it has been found; and in seven days of extensive searching

no more than five specimens were reported, suggesting a low population density in the wild (CoP13 Prop. 27). Without complete knowledge of distribution, and with no information on density, Raxworthy (*pers. comm.* to UNEP-WCMC, 2010) estimated that the population may exceed 1,000 individuals. The species is not currently listed within the IUCN Red List (IUCN, 2010); however, at the time of writing (August 2010), the *Uroplatus* species were being reviewed for potential inclusion (Jenkins *in litt.* to UNEP-WCMC, 2010).

Threats: The species was considered to be threatened by forest loss due to tavy cultivation (slash and burn), and the development of the Ambatovy mining project (Raxworthy, *pers. comm*. to UNEP-WCMC, 2010).

Trade: According to data provided by the Scientific Authority of Madagascar (*in litt.* to UNEP-WCMC, 2010), 1,483 live specimens were exported by Madagascar between 2000 and 2008. This is roughly equivalent to the export data recorded within the CITES Trade Database (Table 12).

All CITES reported trade in *Uroplatus pietschmanni* has been in wild-sourced live animals. As the species was only formally recognized in 2003 (Böhle *et al.,* 2003), no trade was reported prior to 2004. However, it is possible that the species may have been traded prior to 2004, under the lookalike species, *U. sikorae.* These species were noted to closely resemble each other (CoP13 Prop. 27).

Harvest quotas of 260, 506 and 478 were set in 2005, 2006 and 2007, respectively (Le Directeur de la Valorisation des Ressources Naturelles, 2008). An export quota of 500 live animals per year was in place between 2005 and 2009. Trade appears to have been maintained within quota (Table 10). No export quota was published for this species for 2010.

Table 10. Direct exports of wild-sourced *Uroplatus pietschmanni* from Madagascar, 2004-2008. The species was listed in Appendix II on 12/01/2005. (No trade was reported prior to 2004).

Term	Reported by	2004	2005	2006	2007	2008	Total
live	Importer		20	119	254	248	641
	Exporter	30	262	492	262	354	1400

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Under European Union stricter domestic measures, imports of wild specimens of this species into the EU have been restricted since 20/12/2005, and legally suspended since 03/09/2008, with the last suspension confirmed on 21/05/2009 under Commission Regulation (EC) 359/2009.

Management: All *Uroplatus* species are protected under national legislation in Madagascar (Decree No. 2006-400 of 13 June 2006). This species included as a Category 1 Class 2 species, meaning that authorisation is required for hunting or capture from the wild.

The species occurs in Ambohitantely Special Reserve, which may offer the species some protection.

There is no known population monitoring or management plan for the species at present.

Uroplatus sikorae (Boettger, 1913): Madagascar

Gekkonidae, Southern Flat-tailed Gecko

Summary

Provisional category	Summary
Possible Concern	More widely distributed than most *Uroplatus* spp., but still fragmented. Population size and trend unknown, and although noted as having a low population density, several authors describe the species as common. Moderate to high levels of international trade reported since 2005. An export quota of 2,000 specimens may be sustainable; however, no clear basis for a non-detriment finding at the species level has been provided, therefore categorised as Possible Concern.

Biology: *U. sikorae* was reported to be found in primary rainforest in eastern Madagascar, often sympatrically with *U. fimbriatus* or *U. giganteus*. It was described as being "often active on branches at night, but also found on tree trunks" (Glaw and Vences, 2007). The species lives in arm-thick branches in the tropical rain forest at altitudes above 1,000 m (Henkel and Schmidt, 2000). Snout-vent length was noted to be between 86-123 mm (Glaw and Vences, 2007).

Taxonomic note: The sub-species *Uroplatus sikorae sameiti* was elevated to the full species (*U. sameiti*) by Pearson *et al.* (2007) and was recognized by Greenbaum *et al.* (2007) and Raxworthy *et al.* (2008). The CITES Scientific Authority (2010) also recognized *U. sameiti* as a separate species, stating that *U. sameiti* occured in forests at low altitudes on the east coast of Madagascar, whereas *U. sikorae* occured in forests at medium altitudes. According to Glaw and Vences (2007), "*U. s. sameiti* was recently considered as full species. The whole complex of *U. sikorae / U. henkeli* is in need of taxonomic revision and probably contains numerous new, undescribed species." There is no CITES standard reference for *Uroplatus* spp., but the species *U. sameiti* is not included within the Checklist of CITES species (UNEP-WCMC, 2008).

Distribution in range State: Endemic to Madagascar. The species was reported to occur in the following locations in eastern Madagascar: Ambolokopatrika, Andasibe, Andrangoloaka, Anjanaharibe-Sud, Antsahamanara, Eminiminy, Ivohibe, Kianjavato, Malahelo, Manantantely, Manarikoba forest, Manongarivo, Marojejy, Montagne d'Ambre, Montagne des Français, Nosy Boraha, Ranomafana, Sainte Luce, Tampolo, and Tsararano (Glaw and Vences, 2007; Rabesihanaka *in litt.* to UNEP-WCMC, 2010b). Within Montagne d'Ambre and Forêt d'Ambre, D'Cruze *et al.* (2008) described *Uroplatus sikorae* as having an altitudinal distribution of 650-1,000 m.

Uroplatus sikorae sameiti have been found in trees within enclosed rainforests within the north and northeastern Madagascar (Henkel and Schmidt, 2000).

Raxworthy *et. al.* (2008) characterised *Uroplatus sikorae sikorae* as occurring in the following phytobiogeographic areas: Centre-North, Centre-South and Centre-Centre and *Uroplatus sikorae sameiti* (referred to as *Uroplatus sameiti*) as occurring in the following phytobiogeographic areas: East-North; East-Central; East-South and Centre-Centre. Tissue samples were collected from nine locations for *U. s. sikorae* (Ankitsika, Betaolona, Bezavona, Lohanandroranga, Marojejy, Montagne d'Ambre, Salafaina, Sorata, Tsaratanana Reserve) and five locations for *U. s. sameiti (*Analalava, Andakibe, Ambodiriana, Betampona, and Zahamena) (Raxworthy *et al.,* 2008)

Population trends and status: *U. sikorae* was found at densities of 13-50 individuals/ha according to the CITES Management and Scientific Authorities for Madagascar (CoP13 Inf. 32).It was described as having a low population density in the wild with a fairly fragmented distribution (CoP13 Prop. 27).

D'Cruze *et al.* (2008), classified the species as a relatively common species endemic to Madagascar. It was also described as "common at Montagne d'Ambre" (Glaw and Vences, 2007).

The species is not currently listed within the IUCN Red List (IUCN, 2010); however, at the time of writing (August 2010), the *Uroplatus* species were being reviewed for potential inclusion (Jenkins *in litt.* to UNEP-WCMC, 2010).

Threats: Harvesting for commercial purposes was cited as a threat to the species (CoP13 Prop. 27).

Trade: According to data provided by the Scientific Authority of Madagascar (2010), 13,182 live specimens were exported by Madagascar between 2000 and 2008. This was the second highest level of exports amongst *Uroplatus* geckos.

Direct trade recorded within the CITES Trade Database as either wild-sourced or without a source specified is provided in Table 11. Trade was primarily in wild-sourced, however two specimens and 133 live specimens were reported without a source specified between 1999 and 2005. In addition, five live and nine bodies were also seized or confiscated in 2005 and 2006, respectively. Reported exports increased by 46% to 1,614 live, wild geckos between 2007 and 2008, the highest level on record. Harvest quotas of 981; 1,628 and 2,207 were set in 2005, 2006 and 2007, respectively (Le Directeur de la Valorisation des Ressources Naturelles, 2008). Between 2005 and 2010, Madagascar set an export quota of 2,000 live animals per year. Trade appears to have been maintained within quota for the period 2005-2008.

Table 11. Direct exports of *Uroplatus sikorae* from Madagascar, 1999-2008.

Term	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
bodies	Importer							3				3
	Exporter					19		3				22
live	Importer	46	30	219	38	138	167	1215	973	866	965	4657
	Exporter				1345	1824	764	1120	1568	1102	1614	9337
specimens	Importer			2			1	5	37		2	47
	Exporter											
specimens (g)	Importer											
	Exporter					1		0.005				1.005

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Under European Union stricter domestic measures, imports of wild specimens of this species into the EU have been restricted since 20/12/2005, and legally suspended since 03/09/2008, with the last suspension confirmed on 21/05/2009 under Commission Regulation (EC) 359/2009.

Management: All *Uroplatus* species are protected under national legislation in Madagascar (Decree No. 2006-400 of 13 June 2006). This species included as a Category 1 Class 2 species,

meaning that authorisation is required for hunting or capture from the wild.

The species was recorded as occurring in several protected areas (Montagne d'Ambre, Marojejy, Ranomafana and Zahamena National Parks, Tsaratanana Strict Nature Reserve and Anjanaharibe, Anjanaharibe-Sud, Ivohibe and Manongarivo Special Reserves) which may offer some protection for the species (Raxworthy and Nussbaum, 1994; Rabesihanaka *in litt.* to UNEP-WCMC, 2010b). There is no known population monitoring or management plan for the species at present.

D. Problems identified that are not related to the implementation of Article IV, paras 2 (a), 3 or 6 (a)

Illegal offtake in nature reserves was reported to be an apparent problem for *Uroplatus alluaudi, U. ebenaui*, and *U. henkeli.*

There may be potential lookalike issues between species (especially *Uroplatus alluaudi* and *U. guentheri; U. sikorae* and *U. pietschmanni*) (CoP13 Inf. 32).

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Table 12. Indirect trade in live *Uroplatus* spp. with origins in Madagascar or reported as origin "Unknown", 2001-2008 (no indirect trade was reported prior to 2001).

Source	Re-exporter (Origin)	Taxon	Reported by	2001	2002	2004	2005	2006	2007	2008	Total
W	Canada (Madagascar)	*Uroplatus ebenaui*	Importer				21				**21**
			Exporter				20				**20**
		Uroplatus fimbriatus	Importer				32		20		**52**
			Exporter				31		26		**57**
		Uroplatus lineatus	Importer				14				**14**
			Exporter				16	2			**18**
		Uroplatus phantasticus	Importer		6		63	26	26		**121**
			Exporter				73	38	36		**147**
		Uroplatus pietschmanni	Importer							2	**2**
			Exporter								
		Uroplatus sikorae	Importer				29	2	26		**57**
			Exporter				33	20	26		**79**
		Uroplatus spp.	Importer				6				**6**
			Exporter				2	6			**8**
	Germany (Madagascar)	*Uroplatus lineatus*	Importer								
			Exporter				4				**4**
	United States of America (Madagascar)	*Uroplatus fimbriatus*	Importer						10	6	**16**
			Exporter			22			7	6	**35**
		Uroplatus henkeli	Importer								
			Exporter			2					**2**
		Uroplatus lineatus	Importer								
			Exporter			14		2			**16**
		Uroplatus phantasticus	Importer	4					24	11	**39**
			Exporter						6	6	**12**
		Uroplatus sikorae	Importer						24	6	**30**
			Exporter			1		2	6	1	**10**
U	Canada (Unknown)	*Uroplatus ebenaui*	Importer		6						**6**
			Exporter								
		Uroplatus fimbriatus	Importer		6						**6**

Source	Re-exporter (Origin)	Taxon	Reported by	2001	2002	2004	2005	2006	2007	2008	Total
			Exporter								
		Uroplatus lineatus	Importer		6						**6**
			Exporter								
		Uroplatus sikorae	Importer		6						**6**
			Exporter								
	United States of America (Unknown)	*Uroplatus ebenaui*	Importer			2					**2**
			Exporter								
		Uroplatus fimbriatus	Importer			1					**1**
			Exporter								
		Uroplatus henkeli	Importer			6					**6**
			Exporter								
		Uroplatus lineatus	Importer			2					**2**
			Exporter								
		Uroplatus phantasticus	Importer			3					**3**
			Exporter								
		Uroplatus sikorae	Importer			9					**9**
			Exporter								
Total as reported by Importers				**4**	**30**	**23**	**165**	**28**	**130**	**25**	**405**
Total as reported by Re-exporters						**39**	**179**	**70**	**107**	**13**	**408**

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Gongylophis muelleri Boulenger, 1892: Ghana

Boidae, Müller's sand boa, West African sand boa

Selection for Review of Significant Trade

Gongylophis muelleri was selected following the 14th Conference of the Parties (CoP14) at the 23rd meeting of the Animals Committee (AC23), on the basis of trade data provided in AC23 Doc. 8.5. It was decided that only Ghana would be contacted (AC23 Summary record). Ghana then remained in the Review of Significant Trade process as it failed to respond to a request for information on the implementation of Article IV, sent by the CITES Secretariat in May 2008 (AC24 Doc 7.4 Rev 1).

A. Summary

Provisional category	Summary
Possible Concern	Virtually no information concerning the distribution and conservation status of *G. muelleri* in Ghana is available. The species is not legally protected, and there appear to be no management measures in place in Ghana. International trade levels since 2001 have been moderate. No information on the basis for non-detriment findings provided, and impact of trade levels unknown, therefore categorised as Possible Concern.

B. Species overview

Biology: *Gongylophis muelleri* is a small species of Boidae (Bartlett, 2005). They can reach a maximum length of 70-80 cm (Cansdale, 1973; Trape and Mané, 2006, Chippaux, 2006), with females generally measuring 50-64 cm and males typically 10-12 cm shorter (Bartlett, 2005). *G. muelleri* is an oviparous species, with the female retaining the eggs until embryonic development is well advanced (Bartlett, 2005). It lacks an egg-tooth and the incubation period for *G. muelleri* eggs is around 14 days (Staub and Emberton, 2002; Lynch and Wagner, 2010).

G. muelleri is a nocturnal burrowing snake of the desert edge (Cansdale, 1973; Trape and Mané, 2006). It is particularly well-adapted to life in the sand, although it is not restricted to sand (Trape and Mané, 2006). Slow-moving, it hunts small rodents by remaining partly buried. In less sandy areas, *G. muelleri* can be found in the shallow tunnels of gerbils (Cansdale, 1973; Trape and Mané, 2006).

C. Country review

GHANA

Distribution in range States: *G. muelleri* is a north African species distributed from Mauritania and Senegal in the west to Sudan in the east (Trape and Mané, 2006, Chippaux, 2006). The occurrence of the species in Ghana was reported by McDiarmid *et al.* (1999). Cansdale (1973) reported the species occurrence in northern Ghana but considered it to be absent from the dry coastal belt of Ghana. No further information on the distribution of *G. muelleri* in Ghana was located.

Population trends and status: No information was located on population trends or status. *G. muelleri* is not included in the IUCN Red List (IUCN, 2010).

Threats: No information was located on threats specific to *G. muelleri* in Ghana; however the hunting and trade of wild animals in Ghana was thought to threaten the biodiversity of the country generally, with the majority of traders and hunters reported to be operating illegally and with impunity (Odonkor *et al.*, 2007).

Trade: *G. muelleri* was listed in CITES Appendix II on 04/02/1977. Ghana has not published any export quotas for *G. muelleri*. According to the data in the CITES Trade Database for the years 1999-2008, Ghana reported the export of 4617 live wild-caught specimens and 65 live ranched specimens (Table 1). Importer reported data suggested that exports from Ghana were higher; this may be explained by the fact that Ghana did not submit an annual report for 2006 or 2008. No trade was reported before 2001 (Table 1). All trade was in live specimens for commercial purposes, with the exception of 15 specimens confiscated/seized by the UK in 2003. The majority of exports were imported to the United States of America.

Table 1. Direct exports of *Gongylophis muelleri* from Ghana, 1999-2008. All trade was in live specimens, primarily for commercial purposes.

Source	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
I	Exporter											
	Importer					15						15
R	Exporter							65				65
	Importer					42		65		25	20	152
W	Exporter				365	564	580	2151		957		4617
	Importer			98	107	269	420	1260	1318	1217	947	5636

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Small numbers of live, wild-sourced *G. muelleri* originating in Ghana were re-exported via the United States of America, Canada and Germany (Table 2).

Table 2. Indirect exports of *Gongylophis muelleri* originating in Ghana, 1999-2008. All trade was in live wild-sourced specimens for commercial purposes. (No trade reported 1999-2005).

Exporter (origin)	Reported by	2006	2007	2008	Total
Canada (Ghana)	Exporter				
	Importer		10	6	16
Germany (Ghana)	Exporter			4	4
	Importer			4	4
United States of America (Ghana)	Exporter	1	6		7
	Importer	1	18		19

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

The species is a relatively recent arrival in the pet trade in America, appearing around 2003 (Bartlett, 2005). Sand boas were recommended as pets due to being simple to care for, small, slow moving and easy to handle (Jones, 2004). *G. muelleri* was recommended as an excellent pet snake due to its hardiness and docility (PetClub UK, 2010).

Management: No information on management plans or monitoring systems were identified for *G. muelleri* in Ghana.

Mole National Park falls within the distribution range of *G. muelleri*, however it was not possible to confirm occurrence of *G. muelleri* within this protected area.

No legal protection was identified for *G. muelleri* in Ghana. It is not listed in the schedules of wholly or partly protected species in the Wildlife Conservation Regulations, 1971 (L.I. 685), or subsequent amendments.

D. Problems identified that are not related to the implementation of Article IV, paragraphs 2 (a), 3 or 6 (a)

None identified.

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Heosemys annandalii (Boulenger, 1903): Brunei Darussalam, Cambodia, Lao People's Democratic Republic, Viet Nam

Geoemydidae. Yellow-headed Temple Turtle

Selection for Review of Significant Trade

Heosemys annandalii was selected following the 14th Conference of the Parties (CoP14) at the 23rd meeting of the Animals Committee on the basis of trade data provided in document AC23 Doc. 8.5, and noting that there were large export numbers and the species was considered Endangered due to trade (AC23 Summary Report; AC24 Doc. 7.4 Rev. 1). Malaysia was excluded from the review following its confirmation of a zero export quota (AC23 Summary Report; AC24 Doc. 7.4. Rev. 1). Brunei Darussalam, Cambodia, Lao People's Democratic Republic (hereafter referred to as Lao PDR) and Viet Nam remained in the Review of Significant Trade process as they failed to respond to a request for information from the CITES Secretariat, sent in May 2008 (AC24 Doc. 7.4. Rev. 1).

A. Summary

Overview of *Heosemys annandalii* recommendations.

Range State	Provisional category	Summary
Brunei Darussalam	Least Concern	On the basis that there was no evidence to suggest that Brunei Darussalam is a range State (indeed the island of Borneo is outside the known distribution range of the species) and there has been no reported international trade, categorised as Least Concern.
Cambodia	Least Concern	Restricted distribution in southern Cambodia with populations reported to be declining (although a fairly secure population reported around Tonle Sap Lake). Threatened by overharvesting for domestic consumption and illegal international trade, and the conversion of wetland habitat. Does not appear to be protected by national legislation. However, virtually no reported international trade (other than two scientific specimens), and on this basis, categorised as Least Concern.
Lao PDR	Possible Concern	Restricted distribution in southern Lao PDR, with populations thought to have declined. Threatened by overharvesting for domestic consumption and domestic/international trade. Listed as a 'managed species' in national legislation since 2003, meaning no commercial trade is permitted. No international trade reported by Lao PDR (first annual report was submitted in 2006), however Viet Nam reported the import of 1000 live, wild-sourced individuals (Purpose T) from Lao PDR in 2005. Management measures, including the basis for making non-detriment findings, and the impact of trade on wild populations, are not known, and on this basis, categorised as Possible Concern.
Viet Nam	Least Concern	Reported to occur in southern Viet Nam, where one source considered populations to be 'nearing extinction'. Threatened by habitat loss and overharvesting for domestic consumption and illegal trade. However, national legislation restricts its use for commercial purposes and virtually no reported international trade (other than a small number of scientific specimens), hence categorised as Least Concern.

B. Species overview

Biology: *Heosemys annandalii* is a large turtle inhabiting lakes, rivers, lowland wetlands, inundated fields, wet forests and swamps, where it maintains a herbivorous diet of aquatic and land plants, fruits and flowers (Touch *et al*., 2000; Moll and Moll, 2004; Bonin et al., 2006; Emmett, 2009). Nesting occurs from December to January, with an average of four eggs constituting a clutch (Bonin *et al*., 2006). Platt *et al.* (2008) reported that according to local fishermen, females reached sexual maturity upon attaining a body mass of around 4 kg.

Taxonomic note: Following the adoption of Fritz and Havaš (2007) as the CITES standard nomenclatural reference for turtles and tortoises at the 14th Meeting of the Conference of the Parties (CoP14 Doc. 8.5), the accepted scientific name of this species was changed from *Hieremys annandalii* to *Heosemys annandalii*. However, many of the literature sources referred to the species as *Hieremys annandalii* (e.g. Iverson, 1992; Moll and Moll, 2004; Stuart and Platt, 2004; Bonin *et al*., 2006; Davidson, 2006; Auliya, 2007).

General distribution and status: *H. annandalii* was reported to have a fragmented distribution in northern Peninsular Malaysia, Thailand, Lao PDR, Cambodia, Viet Nam (Iverson, 1992; Bonin *et al*., 2006; Fritz and Havaš, 2007; Auliya, 2007), and possibly southern Myanmar (Iverson, 1992; Auliya, 2007). Of eight representative rivers in the Oriental Region, *H. annandalii* was reported to occur in the rivers Chao Phraya and Mekong (Moll and Moll, 2004).

In 2000, *H. annandalii* was assigned the global threat status of Endangered "due to trade exploitation in Cambodia, Lao and Viet Nam" (Asian Turtle Trade Working Group, 2000). Minh Le (2007) reported that the overexploitation of turtle populations in Asia was largely driven by the increasing demand for turtles in China, where they are used for food and for their medicinal properties.

Touch *et al*. (2000) noted that the species' preference for lowland wetlands put it in close contact with human habitation, hence levels of exploitation were likely to be higher than for other *Heosemys* species, and Bonin *et al*. (2006) noted that the fragmented range suggested that the species' distribution had already been reduced.

Overview of trade and management in the species: *H. annandalii* was listed in CITES Appendix II on 13/02/03. According to the CITES Trade Database, the majority of exports of *H. annandalii* involved live, wild-sourced individuals, primarily from Malaysia. Malaysia has published a zero export quota for this species since 2007, applicable only to Peninsular Malaysia since 2008.

Stuart and Platt (2004) reported that the Chelonians of Cambodia, Lao PDR and Viet Nam were "currently threatened by widespread and intensive exploitation for food and traditional Chinese medicine." Whilst there is some local consumption and domestic trade, most turtles were reported to be exported internationally, mainly to wildlife markets in southern China (van Dijk *et al*., 2000; Stuart *et al.,* 2000; Stuart and Platt, 2004).

H. annandalii is not native to China but was among the species recorded in Yuehe Pet Market in Guangzhou, China, 2006-2008 (51-100 individuals recorded during seven surveys) (Gong *et al.,* 2009), where the authors estimated that 50% of the CITES Appendix I and II listed species and around 20% of individuals were traded illegally. As the Chinese CITES Authorities have not permitted commercial importation of chelonians except for some common species since 2003, Gong *et al*. (2009) speculated that most of the non-native Appendix I and II species traded in large numbers in these markets were wild-caught individuals entering Chinese wildlife markets illegally.

C. Country reviews

BRUNEI DARUSSALAM

Provisional category: Species of Least Concern

Distribution in range State: *H. annandalii* was not included in the list of reptiles of Brunei provided in Das (2007), nor was it listed as a range state by Iverson (1992), Bonin *et al*. (2006), Fritz and Havaš (2007) or Auliya (2007). No evidence was found for the occurrence of this species elsewhere on the island of Borneo, so it appears that Brunei Darussalam is unlikely to be a range State.

Population trends and status: No information was located.

Threats: No information was located.

Trade: According to data in the CITES Trade Database, there has been no reported trade of *H. annandalii* from Brunei Darussalam, since its listing in the Appendices to the Convention.

Management: No information was located.

The country's Wild Life Protection Act of 1981 contains a list of protected animals on its First Schedule, for which it is forbidden to hunt, kill, capture, sell, possess or export without an appropriate licence (Government of Brunei, 1981). However, *H. annandalii* is not listed amongst these species.

CAMBODIA

Provisional category: Species of Least Concern

Distribution in range State: The species was reported to occur in southern Cambodia (Iverson, 1992; Bonin *et al.,* 2006). Stuart and Platt (2004) described seven recent distribution records 1999-2000, from Battambang Province and Siem Reap Province (northeast Cambodia), Kampong Thom Province (central Cambodia) and Phnom Penh (southern Cambodia).

Davidson (2006) provided the following account of the species status in Tonle Sap Biosphere Reserve (TSBR):

> "Considered the third most common species in the TSBR within Kompong Chhnang province, based on interview surveys there in 2000 (Holloway *et al.,* 2000), and known from the Prek Toal area (Stuart and Platt, 2004). Cambodia is probably the most important country in Indochina (including Thailand) for the conservation of this species (Touch *et al.,* 2000), and the TSBR may be the most important area for its conservation in Cambodia (Holloway *et al*. 2000). It is known to occur in Prek Toal Core Area (Stuart and Platt 2004), has been recorded in markets at Chong Kneas, Kompong Thom town (Stuart and Platt 2004), and was reported by hunters in Kompong Leng Commune, Chornouk Village and Kompong Chhnang town (all Kompong Chhnang Province)."

Population trends and status: Touch *et al.* (2000) considered Cambodia's population of *H. annandalii* to be of high importance, relative to the populations in neighbouring Thailand, Lao PDR and Viet Nam. Nevertheless, turtle populations in lowland wetland habitats throughout Cambodia were reported to be declining as a result of over-harvesting for domestic consumption and international trade (Davidson, 2006; Emmett, 2009).

In their investigation of turtle conservation and exploitation in TSBR, Platt *et al.* (2008) stated that "The overwhelming consensus among fishermen is that turtles are less abundant today, large individuals (particularly *H. annandalii* and *Cuora amboinensis*) are becoming rare, and

more effort is required to catch fewer turtles than in the past."

Emmett (2009) reported that a fairly secure population still remained around Tonle Sap Lake (the largest lake in SE Asia), as behavioural adaptations to changing seasonal water levels meant that turtles buried into the mud in the large, seasonally flooded inundation zone and lay dormant throughout the dry season, helping to protect the species from over-exploitation. However, elsewhere in Cambodia, Emmett (2009) reported that turtles still occurred in breeding populations in the coastal zone and small relict populations existed in slow-moving rivers and smaller ponds, but many wetlands were being converted to rice paddies. He cautioned that "It is likely that the species will eventually become mostly restricted to a small number of relatively large populations in Cambodia if current trends continue" (Emmett, 2009).

Threats: Turtles in Cambodia were reported to be threatened by over-harvesting, both for domestic consumption and for export to southern China and Viet Nam (both legal and illegal), for use as food and in traditional medicines (Touch *et al.,* 2000; Davidson, 2006; Platt *et al.,* 2008). Touch *et al.* (2000) estimated there to be medium levels of trade in *H. annandalii* in Cambodia (based on a tentative assessment of the relative numbers in trade), and of the 391 turtles held by fishermen and in local markets in TSBR, 4.6% were identified to be *H. annandalii* (Platt *et al.*, 2008).

Platt *et al.* (2008) reported that most of the turtles harvested from TSBR were destined for urban markets in Cambodia and international wildlife markets in Vietnam and southern China, with very few consumed locally. They observed that villagers often kept live *H. annandalii* for extended periods of time, until sold to a visiting turtle buyer, by securing them to floating dwellings using a length of cord (Platt *et al.,* 2008).

Up to 90% of villagers living around Tonle Sap were estimated to be engaged in regular turtle harvesting, with villagers regarding turtles as an important source of disposable income (Holloway *et al*., 2000; cited in Platt *et al*., 2008). Turtle harvesting was reported to be non-selective by species, with collecting conducted throughout the year (using bamboo traps or long sticks), and additional turtles caught incidentally in fishing traps (Platt *et al*., 2008). Villagers were reported to receive around US$2.50 per specimen for *H. annandalii*, which provided a significant incentive for collection/sale, given the daily wage for a laborer during the same period was about US$2.00 (Platt *et al*., 2008). There was also reported to be a demand for turtle meat in urban markets, as well as a demand for purchasing and releasing captive turtles (and other animals), which is a common practice of Buddhists across Southeast Asia (Platt *et al*., 2008).

Platt *et al*. (2008) stated that "We regard the current level of commercial turtle harvesting in TSBR as unsustainable and consider it a serious threat to the continued viability of regional populations."

Trade: According to data in the CITES Trade Database, the only reported exports of *H. annandalii* from Cambodia, since its listing in the Appendices to the Convention, were of two wild-sourced carapaces exported to the United States of America in 2004 for scientific purposes. These details were corroborated by the US Annual Report for 2004.

With regards to illegal trade, it was reported that a truck smuggling 126 rare and endangered turtles (including 95 *H. annandalii*) was intercepted in Kandal province, southern Cambodia in May 2010 (Yuthana, 2010). The head of the Forestry Administration office in Takhmao town stated that the turtles were possibly being smuggled from Thailand to Viet Nam through Cambodia (Yuthana, 2010). In 2008, there was a large seizure of turtles, snakes and tortoises from two cars believed to be taking wildlife to Viet Nam via Kandal

Province (Wildlife Alliance, 2008). The specimens, including 9 kg of *H. annandalii,* were thought to have been taken illegally from the wild in protected areas of Battambang province, northwest Cambodia (Wildlife Alliance, 2008).

Management: Emmett (2009) reported that in Tonle Sap Biosphere Reserve, conservation organizations worked in partnership with the Fisheries Administration to conduct monitoring surveys at several freshwater sanctuaries on the lake, where large numbers of juvenile and adult *H. annandalii* have been found. It was reported that conservation efforts were focused on providing villagers with incentives to release hatchlings and subadult turtles which are accidently caught in fish traps (Emmett, 2009).

Platt *et al.* (2008) advised that it would be impractical to halt the subsistence consumption of turtles in Cambodia, but efforts should be made to decommercialise the trade. They recommended that a complete ban on the extraction of turtles from the core areas of TSBR was essential for maintaining longterm sustainability of resource use.

Chapter 10 of Cambodia's Law on Forestry deals with wildlife conservation, which denotes that it is prohibited to harm, hunt, possess, transport, trade or export any species categorised as rare or endangered (Kingdom of Cambodia, 2002). However, *H. annandalii* is not listed in either of these categories. Aquatic animals (including water-breeding reptiles) are included under the regulations for fishery products in Law on Fisheries (Kingdom of Cambodia, 2007), although no individual species are mentioned specifically. Under this law, a license from the Fisheries Administration is required for all types of fishing exploitation (except subsistence fishing), and the catching, selling, buying, transporting, collecting, processing and stocking all types of endangered natural fishery products is an offence (unless they are products from aquaculture for which prior authorization is given) (Kingdom of Cambodia, 2007).

LAO PEOPLE'S DEMOCRATIC REPUBLIC

Provisional category: Species of Possible Concern

Distribution in range State: *H. annandalii* was reported to occur in southern Lao PDR (Duckworth *et al.,* 1999; Stuart and Timmins, 2000; Teynié *et al.,* 2004; Fritz and Havaš, 2007; Auliya, 2007). Stuart and Platt (2004) described two recent distribution records (1995 and 2000) for *H. annandalii* from Attapu Province and Teynie *et al*. (2004) reported the species' occurrence in the Xepian National Biodiversity Conservation Area, Champasak Province.

Population trends and status: Duckworth *et al*. (1999) classified *H. annandalii* (under its common name Yellow-headed temple turtle) as a species of 'High National Priority', which they defined as a species that can still be maintained at viable levels in Lao PDR, but only if immediate and effective action to address the threats to them is taken. They predicted the global significant of Laotian population to be 'moderate'.

Touch *et al.* (2000) reported the *H. annandalii* population in Lao PDR to be "greatly reduced" and Stuart and Timmins (2000) reported that the species was "very reduced in numbers from collection pressure."

Threats: This species was reported to be highly threatened by harvesting and trade, with habitat loss posing a minor threat (Duckworth *et al.,* 1999). Turtles in Lao PDR were reported to be heavily exploited for domestic consumption, internal trade and export to Viet Nam and on to China (for food and as a traditional medicine) (Stuart, 1998; 1999).

In Xe Pian National Protected Area (where *H. annandalii* was reported to occur), local people were reported to consume turtles and their eggs (Xe Pian National Protected Area Office,

2010). The main threats to wildlife in this area were reported to be activities of commercial wildlife traders and local consumption and trade, which have increased over the last few decades due to high rates of population growth and an expansion of the cash economy (Xe Pian National Protected Area Office, 2010).

Trade: According to data in the CITES Trade Database, there have been no reported exports of *H. annandalii* from Lao PDR, since its listing in the Appendices to the Convention. However, Viet Nam reported the import of 1,000 live, wild-sourced *H. annandalii* from Lao PDR in 2005, for commercial purposes. Lao PDR became a Party to CITES in 2004, submitting its first annual report in 2006, and therefore did not report the transaction.

Viet Nam was the only country to report any re-exports of *H. annandalii* originating in Lao PDR, which comprised 9000 live, wild-sourced *H. annandalii* re-exported to China in 2005. This transaction was not reported by China.

Management: *H. annandalii* is included in List II ('managed species') in the National Biodiversity Conservation Areas, Aquatic and Wild Life Management Regulations (Ministry of Agriculture and Forestry, 2003). Managed species are defined as those still found in substantial number in nature for which subsistence use by local populations is permitted within specified seasons. The removal of managed species between villages, districts and provinces requires authorization from various administrative authorities, hunting of managed species during the hunting restriction season is forbidden and "No commercial transactions of wild and aquatic life species described in List I or List II will be permitted" (Ministry of Agriculture and Forestry, 2003).

VIET NAM

Provisional category: Species of Least Concern

Distribution in range State: *H. annandalii* was reported to occur in southern Viet Nam (King and Burke, 1989; Iverson, 1992; Hendrie, 2000; Teynié *et al.*, 2004; Bonin *et al.*, 2006; Fritz and Havaš, 2007). The CITES Management Authority of Viet Nam (2010) reported the species to occur in Dong Nai, Kien Giang and Ca Mau provinces, southern Viet Nam; Stuart and Platt (2004) described one recent distribution record from a reptile trade shop in Kien Giang Province in 2000; and in a survey conducted Cat Tien National Park in 2004, Minh Le (2007) encountered four juveniles and three adult females (of which three were trapped in the wild, one was sold by a local trader and three were kept as pets by local people).

Population trends and status: Touch *et al.* (2000) reported that *H. annandalii* was "probably nearing extinction in Vietnam". Minh Le (2007) considered that viable populations still survived in Cat Tien National Park, despite being heavily exploited since 1989. However, he noted that these populations required protection because trade was still prevalent.

The CITES Management Authority of Viet Nam (2010) reported that no information was available on population size.

Threats: The CITES Management Authority of Viet Nam (2010) reported the following threats to *Heosemys* species in Viet Nam: i) habitat fragmentation and loss, ii) environmental/water pollution, iii) climate change, forest fire and drought, iv) illegal trade and hunting for local consumption, v) infrastructure development.

Hendrie (2000) reported the main threats to *H. annandalii* to be collection and habitat loss.

Minh Le (2007) noted that the turtle fauna in Vietnam was especially threatened because of its geographical proximity to China.

Trade: According to data in the CITES Trade Database, the only direct trade in *H. annandalii* reported by Viet Nam, since its listing in the Appendices to the Convention, was the export of two wild-sourced scientific specimens in 2006. The United States corroborated this trade and also reported the import of one wild-sourced scientific specimen in 2004 of America (Table 1).

The CITES Management Authority of Viet Nam (2010) reported that trade in this species was not allowed for commercial purposes. With regards to illegal trade they reported that between 2005 and 2009, 10 individuals had been confiscated in Phu Yen and 39.5 kg confiscated in Ha Tinh.

H. annandalii was reported to sell (illegally) for 75,000 VND/5 US$ in Cat Tien National Park (Minh Le, 2007).

Hendrie (2000) reported *H. annandalii* to be "fairly uncommon in trade seizures along northern land routes to China" and that "seizures may include specimens entering into trade from Cambodia."

Hendrie (1999) reported that a shipment containing one *H. annandalii* (5.5 kg) had been uncovered by rangers on a public bus bound for Hanoi from Quang Binh-Ha Tinh Province in November 1999. The author noted that "The presence of *Heosemys grandis* and *Hieremys annandalii* in the shipment would suggest that the turtles originated from regions far further south than Quang Binh Province, possibly having come across the border from Laos before reaching a collection point in Quang Binh."

Management: The CITES Management Authority of Viet Nam (2010) reported that it was prohibited to harvest *H. annandalii* in Protected areas, and that trade in the species was not allowed. They also noted that non-detriment findings had not been conducted so far, due to lack of funding and technical support, but that they were seeking external funding and collaboration to conduct a comprehensive survey of the three *Heosemys* species currently under review (CITES Management Authority of Viet Nam, 2010).

A new, electronic, turtle identification guide (in Vietnamese) was launched in April 2010, to strengthen law-enforcement efforts and help combat illegal trade (Hendrie *et al*., 2010).

Viet Nam recently undertook a voluntary assessment of its wildlife trade policy (with support from the CITES Secretariat), in which its wildlife legislation was reviewed (Nguyen Manh Ha *et al.,* 2007). It was reported that "Domestic wildlife exploitation and trade has been mainly regulated by Decree No.18/HĐBT (1992), based on Forest Protection and Development Law (1991), and later regulated by Decree No.32/2006/NĐ-CP (2006). The latter Decree is based on the newly amended Forest Protection and Development Law and National Action Plan on strengthening the control of wildlife trade towards 2010 (2004)." Decree No.32/2006/NĐ-CP stipulates a list of endangered forest animal and plant species (divided into two groups) as well as measures for their management and protection. This species is listed under the name *Hieremys annandalii* under category IIB (Forest animals), which consists of species "restricted from exploitation or use for commercial purposes" (Government of Viet Nam, 2006).

D. Problems identified that are not related to the implementation of Article IV, paragraphs 2 (a), 3 or 6 (a)

Illegal trade for the consumption market in SE Asia was reported to be a threat in Viet Nam, Cambodia and possibly Lao PDR (e.g. Hendrie, 1999; Hendrie, 2000; Touch *et al*., 2000; Gong *et al.,* 2009; CITES Management Authority of Viet Nam, 2010).

Resolution Conf 11.9 (Rev. CoP13) on the 'Conservation of and trade in tortoises and

freshwater turtles' urges Parties, especially range States, to undertake a number of activities including enhancing enforcement and management efforts, implementing research programmes and management strategies, enacting legislation, and increasing public awareness. Range States that authorize trade in tortoises and freshwater turtles are required to provide information on their progress towards implementing this Resolution in their periodic reporting (Res. Conf. 11.9 [Rev. CoP13]). However, the range States under review have either failed to submit recent biennial reports (Brunei Darussalam for the biennia 2005-6 and 2007-8, Cambodia for the biennia 2003-4, 2005-6 and 2007-8 and Viet Nam for the biennia 2007-8), or have failed to include information on their progress towards implementing this Resolution.

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Heosemys grandis (Gray, 1860): Brunei Darussalam, Cambodia, Lao People's Democratic Republic, Viet Nam

Geoemydidae. Giant Asian Pond Turtle, Orange-headed Temple Turtle

Selection for Review of Significant Trade

Heosemys grandis was selected following the 14th Conference of the Parties (CoP14) at the 23rd meeting of the Animals Committee on the basis of trade data provided in document AC23 Doc. 8.5, and noting that there were large export numbers and the species was considered Endangered due to trade (AC23 Summary Report; AC24 Doc. 7.4 Rev. 1). Malaysia was excluded from the review following its confirmation of a zero export quota (AC23 Summary Report; AC24 Doc. 7.4. Rev. 1). Brunei Darussalam, Cambodia, Lao People's Democratic Republic (hereafter referred to as Lao PDR) and Viet Nam remained in the Review of Significant Trade process as they failed to respond to a request for information from the CITES Secretariat, sent in May 2008 (AC24 Doc. 7.4. Rev. 1).

A. Summary

Overview of *Heosemys grandis* recommendations.

Range State	Provisional category	Summary
Brunei Darussalam	Least Concern	On the basis that there was no evidence to suggest that Brunei Darussalam is a range State (the island of Borneo is outside the known distribution range of the species) and there has been no reported international trade, categorised as Least Concern.
Cambodia	Least Concern	Reported to occur in southern Cambodia with populations reported to be widespread but declining, with few adults remaining. Threatened by overharvesting, mainly for domestic consumption and trade. Does not appear to be protected by national legislation. However, there has been no reported international trade, hence the requirements of Article IV do not currently appear to be applicable, and on this basis, categorised as Least Concern.
Lao PDR	Possible Concern	Reported to occur in central and southern Lao PDR, with little information on population status, although categorised as 'Potentially at Risk'. Threatened by overharvesting for domestic consumption and international trade. Listed as a 'managed species' in national legislation since 2003, meaning no commercial trade is permitted. The only international trade reported by Lao PDR was of ranched individuals (first annual report was submitted in 2006), however Viet Nam reported the import of 1000 live, wild-sourced individuals (Purpose T) from Lao PDR in 2005. Viet Nam also reported the re-export of live, wild-sourced individuals originating in Lao PDR in 2005 and 2008. Management measures, including the basis for making non-detriment findings, and the impact of trade on wild populations, are not known, and on this basis, categorised as Possible Concern.
Viet Nam	Least Concern	Reported to occur in central and southern Viet Nam, with little information on population status (although viable populations reported to survive in Cat Tien National Park). Threatened by habitat loss and overharvesting for domestic consumption and illegal trade. However, national legislation restricts its use for commercial purposes and virtually no reported international trade (other than a small quantity of scientific specimens), and on this basis, categorised as Least Concern.

B. Species overview

Biology: *Heosemys grandis* is one of the largest semi-aquatic turtles of Asia, reaching a weight of 12 kg and a length of 480 mm (Bonin *et al.,* 2006). It is described as a widespread, omnivorous species, found in wetland habitats (including rivers, swamps, lakes, creeks, and ponds), from the lowlands up into the mountains (Touch *et al.,* 2000; Moll and Moll, 2004; Bonin *et al.,* 2006). The species was reported to spend much time on land, hidden under vegetation (Bonin *et al.,* 2006), and to half-bury itself in muddy substrates of ponds (Davidson, 2006). Clutch sizes were reported to range from four to eight elliptical eggs, with incubation lasting 80-100 days (Bonin *et al.,* 2006).

Taxonomic note: The Giant Asian Pond Turtle was formerly classified in the genus *Hieremys* (Family: Batagurines), but recent analyses of phylogenetic relationships of the diverse and poorly understood turtle family Geoemydidae and related species indicated that *Hieremys grandis* is closely related to the *Heosemys* turtles (Family: Geoemydidae) (Spinks *et al.*, 2004; Sasaki *et al.*, 2006) and should therefore be reclassified as *Heosemys grandis* (Sasaki *et al*., 2006). Indeed, it is classified as *Heosemys grandis* in Fritz and Havaš (2007).

General distribution and status: *H. grandis* was reported to have a somewhat fragmented distribution from southern Myanmar westwards to southern Viet Nam (including Thailand, Cambodia and Lao PDR), and southwards to Peninsular Malaysia (Iverson, 1992; Bonin *et al.,* 2006; Fritz and Havaš, 2007; Auliya, 2007). Of eight representative rivers in the Oriental Region, *H. grandis* was reported to occur in the Rivers Irrawaddy, Chao Phraya, Perak and Mekong (Moll and Moll, 2004).

In 2000, *H. grandis* was assigned the global threat status of Vulnerable, with Cambodia, Lao and Viet Nam meeting the criteria due to an observed/estimated/inferred/suspected population reduction of at least 20 per cent over the last 10 years, and an observed/estimated/inferred/suspected population reduction of at least 20 per cent over the next 10 years, based on actual or potential levels of exploitation (Asian Turtle Trade Working Group, 2000).

Bonin *et al.* (2006) reported that "The status of the species is poorly known, but this turtle is often caught and consumed, and its numbers seem to be dropping."

Overview of trade and management in the species: *H. grandis* was listed in CITES Appendix II on 13/02/03. According to the CITES Trade Database, the majority of exports of *H. grandis* involved live, wild-sourced individuals, primarily from Malaysia (although Lao PDR also exported a significant number of ranched individuals in 2008). Malaysia has published a zero export quota for this species since 2007, applicable only to Peninsular Malaysia since 2008.

Bonin *et al.* (2006) reported that "In China it is currently imported extensively, its large size making it a desirable food item. In other countries it is captured and then placed in temple ponds. Between 1994 and 1999, great numbers were exported from Vietnam for sale to hobbyists."

H. grandis is not native to China but was among the species recorded in Yuehe Pet Market in Guangzhou, China, 2006-2008 (101-500 individuals recorded during seven surveys) (Gong *et al.,* 2009), where the authors estimated that "50% of the species (CITES I and II listed) and c. 20% of individuals in Yuehe Pet Market are illegally traded." As the Chinese CITES Authorities have not permitted commercial importation of chelonians except for some common species since 2003, Gong *et al.* (2009) speculated that most of the non-native Appendix I and II species traded in large numbers in these markets were wild-caught

individuals entering Chinese wildlife markets illegally.

C. Country reviews

BRUNEI DARUSSALAM

Provisional category: Species of Least Concern

Distribution in range State: *H. grandis* was not included in the list of reptiles of Brunei provided in Das (2007), nor reported to occur in this country by Fritz and Havaš (2007), Bonin *et al.* (2006), or Iverson (1992). Brunei Darussalam (and the island of Borneo in general) is outside of the known distribution range of this species (Iverson, 1992; Bonin *et al.,* 2006; Fritz and Havaš, 2007; Auliya, 2007).

Population trends and status: No information was located.

Threats: No information was located.

Trade: According to data in the CITES Trade Database, there have been no reported exports of *H. grandis* from Brunei Darussalam, since its listing in the Appendices to the Convention.

Management: No information was located.

The country's Wild Life Protection Act of 1981 contains a list of protected animals on its First Schedule, for which it is forbidden to hunt, kill, capture, sell, possess or export without an appropriate licence (Government of Brunei, 1981). However, *H. grandis* is not listed amongst these species.

CAMBODIA

Provisional category: Species of Least Concern

Distribution in range State: *H. grandis* was reported to occur in southern Cambodia (Iverson, 1992; Bonin *et al.,* 2006). Grismer *et al.* (2008) reported the species' occurrence in the Central region of the Cardamom region of southwest Cambodia, Stuart and Platt (2004) described five recent distribution records 1999-2001 from Koh Kong Province, southwest Cambodia and Davidson (2006) reported the species occurrence in Tonle Sap Biosphere Reserve (under the name Orange-headed Temple Turtle), Kompong Chhnang Province, central Cambodia, based on interview surveys conducted in 2000.

Population trends and status: Touch *et al.* (2000) estimated the Cambodian population of *H. grandis* to be of medium importance, relative to Thai, Lao and Vietnamese populations, noting that the Thai population was similar or larger than the Cambodian population, but the Cambodian population was probably larger than Lao or Vietnamese populations.

Emmett (2009) gave the following account in his recent assessment of the conservation status of turtles in Cambodia:

> ***"Heosemys grandis***: Decreasing. This species is in danger of disappearing without anyone noticing, as there has been a mistaken belief that they are fairly common. In fact, wild adults are now few and far between, having been massively over-collected for food in the last few years. Our surveys have found them to be widespread, but decreasing everywhere. They are locally consumed and their plastrons are sold for medicinal purposes, though at a relatively low price. They are fairly easy to catch, especially the large adults that can be easily seen and subsequently caught by hand as they move through shallow wetlands, their preferred habitat."

H. grandis was thought to be scarce in Tonle Sap Biosphere Reserve (Holloway *et al.,* 2000;

cited in Davidson, 2006).

Threats: Touch *et al.* (2000) reported there to be medium levels of trade in *H. grandis* in Cambodia (based on a tentative assessment of the relative numbers in trade). Emmett (2009) indicated that local consumption and internal trade were the main threats to the species.

Habitat loss may be less of a threat, as Touch *et al.* (2000) reported that the species' wetland habitat still covered extensive areas of Cambodia.

Trade: According to data in the CITES Trade Database, there has been no reported trade of *H. grandis* from Cambodia, since its listing in the Appendices to the Convention.

Management: Platt *et al.* (2008) advised that it would be impractical to halt the subsistence consumption of turtles in Cambodia, but efforts should be made to decommercialise the trade. They recommended that a complete ban on the extraction of turtles from the core areas of TSBR was essential for maintaining long term sustainability of resource use.

Chapter 10 of Cambodia's Law on Forestry deals with wildlife conservation, which denotes that it is prohibited to harm, hunt, possess, transport, trade or export any species categorised as rare or endangered (Kingdom of Cambodia, 2002). However, *H. grandis* is not listed in either of these categories. Aquatic animals (including water-breeding reptiles) are included under the regulations for fishery products in Law on Fisheries (Kingdom of Cambodia, 2007), although no individual species are mentioned specifically. Under this law, a license from the Fisheries Administration is required for all types of fishing exploitation (except subsistence fishing), and the catching, selling, buying, transporting, collecting, processing and stocking all types of endangered natural fishery products is an offence (unless they are products from aquaculture for which prior authorization is given) (Kingdom of Cambodia, 2007).

LAO PEOPLE'S DEMOCRATIC REPUBLIC

Provisional category: Species of Possible Concern

Distribution in range State: Stuart and Timmins (2000), Auliya (2007) and Fritz and Havaš (2007) reported the species' occurrence in Lao PDR. Stuart and Platt (2004) described twelve distribution records 1994-1998 from Khammouan Province, Savannakhet Province, Salavan Province and Champasak Province, in central and southern Lao PDR, and Teynié *et al.* (2004) reported the species' occurrence in the Xepian National Biodiversity Conservation Area, Champasak Province.

Population trends and status: *H. grandis* was reported to be 'Potentially At Risk' in Lao PDR (Stuart, 1999).

Threats: *H. grandis* was reported to be hunted for domestic consumption, as well as sold to traders for the Vietnamese and Chinese consumption trade (Stuart, 1999).

In Xe Pian National Protected Area (where *H. grandis* was reported to occur), local people were reported to consume turtles and their eggs (Xe Pian National Protected Area Office, 2010). The main threats to wildlife in this area were reported to be activities of commercial wildlife traders and local consumption and trade, which were noted to have increased over the last few decades due to high rates of population growth and an expansion of the cash economy (Xe Pian National Protected Area Office, 2010).

Trade: According to data in the CITES Trade Database, the only direct exports of *H. grandis* reported by Lao PDR since 2003 were 10,000 live, ranched turtles to Viet Nam in 2008. However, Viet Nam reported the import of only 6000 live, ranched turtles in 2008 and 1,000 wild-sourced turtles in 2005 (Table 1). Lao PDR became a Party to CITES in 2004, submitting

its first annual report in 2006.

Viet Nam was the only country to report any re-exports of *H. grandis* originating in Lao PDR, all of which were imported by China (Table 2).

Table 1. Direct exports of *Heosemys grandis* from Lao PDR, 2003-2008. All trade was in live specimens for commercial purposes.

Source	Reported by	2003	2004	2005	2006	2007	2008	Total
R	Exporter						10000	10000
	Importer						6000	6000
W	Exporter							
	Importer			1000				1000

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Table 2. Indirect exports of *Heosemys grandis* originating in Lao PDR, 2003-2008. All trade was in live specimens for commercial purposes.

Re-exporter (Origin)	Source	Reported by	2003	2004	2005	2006	2007	2008	Total
Viet Nam (Lao PDR)	R	Exporter						4000	4000
		Importer							
	W	Exporter			9000				9000
		Importer							

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Management: *H. grandis* is included in List II ('managed species') in the National Biodiversity Conservation Areas, Aquatic and Wild Life Management Regulations (Ministry of Agriculture and Forestry, 2003). Managed species are defined as those still found in substantial number in nature for which subsistence use by local populations is permitted within specified seasons. The removal of managed species between villages, districts and provinces requires authorization from various administrative authorities, hunting of managed species during the hunting restriction season is forbidden and "No commercial transactions of wild and aquatic life species described in List I or List II will be permitted" (Ministry of Agriculture and Forestry, 2003).

VIET NAM

Provisional category: Species of Least Concern

Distribution in range State: *H. grandis* was reported to occur in the lowlands of southern and central Viet Nam (King and Burke, 1989; Iverson, 1992; Hendrie, 2000; Bonin *et al.*, 2006; Fritz and Havaš, 2007). Minh Le (2007) reported the species' occurrence in Cat Tien National Park, southern Viet Nam: in a 2004 survey, two juveniles, two subadults and three adult females were encountered – two trapped in the wild, two sold by local traders and three were kept as pets by local people.

The CITES Management Authority of Viet Nam (2010) reported the species to occur several specific areas in Gia Lai and Dak Lak provinces and the Mekong delta river, southern Viet Nam.

Population trends and status: Minh Le (2007) considered that viable populations survived in Cat Tien National Park, despite being heavily exploited since 1989. However, he noted that these populations required protection because trade was still prevalent.

The CITES Management Authority of Viet Nam (2010) reported that no information was available on population size.

Threats: The CITES Management Authority of Viet Nam (2010) reported the following

threats to *Heosemys* species in Viet Nam: i) habitat fragmentation and loss, ii) environmental/water pollution, iii) climate change, forest fire and drought, iv) illegal trade and hunting for local consumption, v) infrastructure development.

Hendrie (2000) reported the main threats to *H. grandis* to be collection and habitat loss. He noted that whilst in the past, consumption was mainly local, most wild-caught *H. grandis* are probably now sold to traders, due to the high value of large turtles in the export trade.

Minh Le (2007) noted that the turtle fauna in Viet Nam was especially threatened because of its geographical proximity to China.

Trade: According to data in the CITES Trade Database, the only direct export of *H. grandis* reported by Viet Nam was the export of 88g of wild-sourced scientific specimens to the United States of America in 2004. However, the United States reported importing only 60g of specimens and one whole scientific specimen in that year. No re-exports of *H. grandis* originating in Viet Nam have ever been reported.

The CITES Management Authority of Viet Nam (2010) reported that trade in this species was not allowed for commercial purposes. With regards to illegal trade they reported that between 2005 and 2009, three individuals had been confiscated in Hanoi city, 39 kg in Phu yen, 70 kg in Ha Tinh and 445 kg in Ha Nam province.

H. grandis was reported to sell (illegally) for 60,000 VND/4 US$ in Cat Tien National Park (Minh Le, 2007).

Hendrie (2000) reported *H. grandis* to be a "fairly common trade species observed in seizures along the principal ground transport route to China" and that "Seizures may include specimens entering into the trade from Cambodia."

Hendrie (1999) reported that a shipment containing 14 *Heosemys grandis* (20 kg) had been uncovered by rangers on a public bus bound for Hanoi from Quang Binh-Ha Tinh Province in November 1999. The author noted that "The presence of *Heosemys grandis* and *Hieremys annandalii* in the shipment would suggest that the turtles originated from regions far further south than Quang Binh Province, possibly having come across the border from Laos before reaching a collection point in Quang Binh."

Management: The CITES Management Authority of Viet Nam (2010) reported that non-detriment findings had not been conducted so far due to lack of funding and technical support, but they noted that they were seeking external funding and collaboration to conduct a comprehensive survey of the three *Heosemys* species currently under review.

A new, electronic, turtle identification guide (in Vietnamese) was launched in April 2010, to strengthen law-enforcement efforts and help combat illegal trade (Hendrie *et al*., 2010).

Viet Nam recently undertook a voluntary assessment of its wildlife trade policy (with support from the CITES Secretariat), in which its wildlife legislation was reviewed (Nguyen Manh Ha *et al.,* 2007). It was reported that "Domestic wildlife exploitation and trade has been mainly regulated by Decree No.18/HĐBT (1992), based on Forest Protection and Development Law (1991), and later regulated by Decree No.32/2006/NĐ-CP (2006). The latter Decree is based on the newly amended Forest Protection and Development Law and National Action Plan on strengthening the control of wildlife trade towards 2010 (2004)." Decree No.32/2006/NĐ-CP stipulates a list of endangered forest animal and plant species (divided into two groups) as well as measures for their management and protection. *Heosemys grandis* is listed under category IIB (Forest animals), which consists of species "restricted from exploitation or use for commercial purposes" (Government of Viet Nam, 2006).

The CITES Management Authority of Viet Nam (2010) confirmed that *H. grandis* was listed in group II-B of Government Decree on protection of wild rare and precious species, noted that since 2005, this species was not allowed to be harvested from the wild.

D. Problems identified that are not related to the implementation of Article IV, paragraphs 2 (a), 3 or 6 (a)

Illegal trade for the consumption market in SE Asia was reported to be a threat in Viet Nam and possibly Cambodia and Lao PDR (e.g. Hendrie, 1999; Hendrie, 2000; Gong et al., 2009; CITES Management Authority of Viet Nam, 2010).

Resolution Conf 11.9 (Rev. CoP13) on the 'Conservation of and trade in tortoises and freshwater turtles' urges Parties, especially range States, to undertake a number of activities including enhancing enforcement and management efforts, implementing research programmes and management strategies, enacting legislation, and increasing public awareness. Range States that authorize trade in tortoises and freshwater turtles are required to provide information on their progress towards implementing this Resolution in their periodic reporting (Res. Conf. 11.9 [Rev. CoP13]). However, the range states under review have either failed to submit recent biennial reports (Brunei Darussalam for the biennia 2005-6 and 2007-8, Cambodia for the biennia 2003-4, 2005-6 and 2007-8 and Viet Nam for the biennia 2007-8), or have failed to include information on their progress towards implementing this Resolution.

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Heosemys spinosa (Gray, 1830): Brunei Darussalam, Cambodia, Lao People's Democratic Republic, Viet Nam

Geoemydidae. Spiny Terrapin, Spiny Turtle, Sunburst Turtle

Selection for Review of Significant Trade

Heosemys spinosa was selected following the 14th Conference of the Parties (CoP14) at the 23rd meeting of the Animals Committee on the basis of trade data provided in document AC23 Doc. 8.5, and noting that there were large numbers exported from Indonesia and the species was considered Critically Endangered (AC23 Summary Report; AC24 Doc. 7.4 Rev. 1). Malaysia was excluded from the review following its confirmation of a zero export quota (AC23 Summary Report; AC24 Doc. 7.4. Rev. 1). Brunei Darussalam, Cambodia, Lao People's Democratic Republic (hereafter referred to as Lao PDR) and Viet Nam remained in the Review of Significant Trade process as they failed to respond to a request for information from the CITES Secretariat, sent in May 2008 (AC24 Doc. 7.4. Rev. 1).

A. Summary

Overview of *Heosemys spinosa* recommendations.

Range State	Provisional category	Summary
Brunei Darussalam	Least Concern	Subpopulations in Brunei Darussalam considered to be small, of low density, but moderately secure. No information on threats specific to Brunei, and the species does not appear to be protected by national legislation. However, there has never been any reported international trade, hence the requirements of Article IV do not currently appear to be applicable, and on this basis, categorised as Least Concern.
Cambodia	Least Concern	On the basis that there was no evidence to suggest that Cambodia is a range State and there has been no reported international trade, categorised as Least Concern.
Lao PDR	Least Concern	On the basis that there was no evidence to suggest that the species is native to Lao PDR (although one author reported a small population in Phou Luey National Biodiversity Conservation Area), and there has been no reported international trade, categorised as Least Concern.
Viet Nam	Least Concern	No published reference was found to confirm the species' occurrence in Viet Nam, although the national Management Authority reported its occurrence in several provinces. No information on population status. Main threats to *Heosemys* spp. reported to include habitat loss/degradation, domestic consumption and illegal trade. Harvesting is not permitted inside Protected Areas. There has never been any reported international trade, hence the requirements of Article IV do not currently appear to be applicable, and on this basis, categorised as Least Concern.

B. Species overview

Biology: *H. spinosa* is a small, semiaquatic turtle which inhabits lowland and midhill forests, and may be found far from water (Bonin *et al.*, 2006; Das, 2007). It maintains a primarily herbivorous diet, consuming plants, vegetative debris, fallen fruits and insects (Bonin *et al.*, 2006). Clutch sizes were reported be usually one or rarely 2-3 elongated, hard-shelled eggs, with hatchlings measuring 6.3 cm in carapace length (Das, 2007). Up to three clutches were reported to be produced each year, with incubation periods lasting 106-145 days (CITES MA of Indonesia, 2008).

General distribution and status: *H. spinosa* was reported to occur on the Malay Peninsula from southern Myanmar and Thailand, southward through Malaysia to the islands of Sumatra and Borneo and numerous small Indonesian Islands (Iverson, 1992; Bonin *et al.*, 2006; Fritz and Havaš, 2007; Das, 2007). Its occurrence was also reported in Singapore and the Philippines (Bonin *et al.*, 2006; Auliya, 2007).

In 2000, *H. spinosa* was assigned the global threat status of Endangered (Asian Turtle Trade Working Group, 2000), with the following justification:

> "Detailed monitoring of trade and status is urgently required for this species; known trade volumes have declined by about 50% in Indonesia recently despite high demand in the food trade (C. Shepherd, pers. comm.) and the species is considered Critically Endangered in Indonesia (D. Iskandar, pers. comm.). In Thailand, the species is Vulnerable (OEPP, 1997) to Endangered and restricted to small, isolated subpopulations. Subpopulations in Brunei, Myanmar, Singapore, and Philippines are considered to be small and of low density, while only those of Singapore and Brunei may be moderately secure. Information for Malaysia is scarce, but a status of Vulnerable was suggested for Borneo and Peninsular Malaysia (I. Das, pers. comm.). Given the numbers in trade, the lack of confirmed extensive subpopulations occurring inside adequately protected areas, the known low reproductive output, and the wide-ranging status assessments summarized here, the species is listed as Endangered."

Bonin *et al.* (2006) reported that populations were decreasing, with the species threatened by collected for sale to Western hobbyists as well as deforestation and habitat destruction.

Overview of trade and management in the species: *H. spinosa* was listed in CITES Appendix II on 13/02/03. According to the CITES Trade Database, the majority of exports of *H. spinosa* involved live, wild-sourced individuals, from Malaysia and Indonesia. Indonesia has published an export quota for this species every year since 2003 (decreasing from 2000 individuals in 2003 to 450 individuals in 2010). Malaysia has published a zero export quota for this species since 2007, applicable only to Peninsular Malaysia since 2008.

H. spinosa is not native to China but was among the species recorded in Yuehe Pet Market in Guangzhou, China, 2006-2008 (1-10 individuals recorded during seven surveys) (Gong et *al.*, 2009), where the authors estimated that "50% of the species (CITES I and II listed) and c. 20% of individuals in Yuehe Pet Market are illegally traded." As the Chinese CITES Authorities have not permitted commercial importation of chelonians except for some common species since 2003, Gong *et al*. (2009) speculated that most of the non-native Appendix I and II species traded in large numbers in these markets were wild-caught individuals entering Chinese wildlife markets illegally.

C. Country reviews

BRUNEI DARUSSALAM

Provisional category: Species of Least Concern

Distribution in range State: Das (2007) reported the species' occurrence in the rainforest wilderness area of Batu Apoi (now Ulu Temburong National Park), Temburong District, Borneo. Iverson (1992) and Bonin *et al.* (2006) also mapped the species occurrence in Brunei Darussalam.

Population trends and status: The Asian Turtle Trade Working Group (2000) considered subpopulations in Brunei to be small and of low density, although moderately secure.

Threats: No information was located.

Trade: According to data in the CITES Trade Database, there has been no reported trade of *H. spinosa* from Brunei Darussalam, since its listing in the Appendices to the Convention.

Management: No information was located.

The country's Wild Life Protection Act of 1981 contains a list of protected animals on its First Schedule, for which it is forbidden to hunt, kill, capture, sell, possess or export without an appropriate licence (Government of Brunei, 1981). However, *H. spinosa* is not listed amongst these species.

CAMBODIA

Provisional category: Species of Least Concern

Distribution in range State: This species was not listed as a range State by Iverson (1992), Bonin *et al.* (2006), Das (2007), Fritz and Havaš (2007) or Auliya (2007), so it appears that Cambodia is unlikely to be a range State.

Population trends and status: No information was located.

Threats: No information was located.

Trade: According to data in the CITES Trade Database, there has been no reported trade of *H. spinosa* from Cambodia, since its listing in the Appendices to the Convention.

Management: Chapter 10 of Cambodia's Law on Forestry deals with wildlife conservation, which denotes that it is prohibited to harm, hunt, possess, transport, trade or export any species categorised as rare or endangered (Kingdom of Cambodia, 2002). However, *H. spinosa* is not listed in either of these categories. Aquatic animals (including water-breeding reptiles) are included under the regulations for fishery products in Law on Fisheries (Kingdom of Cambodia, 2007), although no individual species are mentioned specifically. Under this law, a license from the Fisheries Administration is required for all types of fishing exploitation (except subsistence fishing), and the catching, selling, buying, transporting, collecting, processing and stocking all types of endangered natural fishery products is an offence (unless they are products from aquaculture for which prior authorization is given) (Kingdom of Cambodia, 2007).

LAO PEOPLE'S DEMOCRATIC REPUBLIC

Provisional category: Species of Least Concern

Distribution in range State: This species was not listed as a range state by Iverson (1992), Bonin *et al.* (2006), Das (2007), Fritz and Havaš (2007) or Auliya (2007), nor reported to occur

in Lao PDR by Stuart (1999) or Stuart and Timmins (2000).

H. spinosa was identified by local inhabitants as a species occurring within the Phou Luey National Biodiversity Conservation Area (NBCA), Houaphanh Province, northeast Lao PDR, where interviewees in one village reported collecting 1-2 per year for the purpose of keeping as pets (Stuart, 1998). Stuart (1998) reported that "The villagers reported they did not discover this species until about 3 years ago. They only know it to occur in a single side pool of a stream, which was visited by the author on April 30, 1998. The pool, which was approximately 9 x 1-2 m in size, was searched intensively by a villager for about 20 minutes but no specimens were found. The turtles were supposedly released after their tenure as pets."

Population trends and status: No information was located.

Threats: No information was located.

Trade: According to data in the CITES Trade Database, there has been no reported trade of *H. spinosa* from Lao PDR, since its listing in the Appendices to the Convention. Lao PDR became a Party to CITES in 2004, submitting its first annual report in 2006.

Management: *H. spinosa* is not listed in the National Biodiversity Conservation Areas, Aquatic and Wild Life Management Regulations of Lao PDR (Ministry of Agriculture and Forestry, 2003).

VIET NAM

Provisional category: Species of Least Concern

Distribution in range State: This species was not listed as a range state by Iverson (1992), Bonin *et al.* (2006), Das (2007), Fritz and Havaš (2007) or Auliya (2007), nor was it included in Hendrie's (2000) list of turtle species found in Viet Nam or Hendrie *et al.'s* (2010) electronic guide to the turtles of Viet Nam. However, the CITES Management Authority of Viet Nam (2010) reported its occurrence in Thanh Hoa, Nghe An and Hoa Binh provinces, northern Viet Nam.

Population trends and status: The CITES Management Authority of Viet Nam (2010) reported that no information was available on population size.

Threats: The CITES Management Authority of Viet Nam (2010) reported the following threats to *Heosemys* species in Viet Nam: i) habitat fragmentation and loss, ii) environmental/water pollution, iii) climate change, forest fire and drought, iv) illegal trade and hunting for local consumption, v) infrastructure development.

Trade: According to data in the CITES Trade Database, there has been no reported trade of *H. spinosa* from Viet Nam, since its listing in the Appendices to the Convention.

The CITES Management Authority of Viet Nam (2010) reported that trade in this species was not allowed for commercial purposes. With regards to illegal trade they reported that between 2005 and 2009, 30 kg of *H. spinosa* had been confiscated in Ha Tinh, 345 kg in Ha Nam, 3 individuals in Binh Duong and 38 kg in Thanh Hoa provinces.

Management: *H. spinosa* is not listed in Decree No.32/2006/NĐ-CP (Government of Viet Nam, 2006). However, the CITES Management Authority of Viet Nam (2010) reported that the harvesting of this species was not allowed in protected areas. They also noted that non-detriment findings had not been conducted so far, due to lack of funding and technical support, but that they were seeking external funding and collaboration to conduct a comprehensive survey of the three *Heosemys* species currently under review (CITES MA of

Viet Nam, 2010).

D. Problems identified that are not related to the implementation of Article IV, paragraphs 2 (a), 3 or 6 (a)

Illegal trade for the consumption market in SE Asia was reported to be a threat in Viet Nam (e.g. CITES MA of Viet Nam, 2010).

Resolution Conf 11.9 (Rev. CoP13) on the 'Conservation of and trade in tortoises and freshwater turtles' urges Parties, especially range States, to undertake a number of activities including enhancing enforcement and management efforts, implementing research programmes and management strategies, enacting legislation, and increasing public awareness. Range States that authorize trade in tortoises and freshwater turtles are required to provide information on their progress towards implementing this Resolution in their periodic reporting (Res. Conf. 11.9 [Rev. CoP13]). However, the range states under review have either failed to submit recent biennial reports (Brunei Darussalam for the biennia 2005-6 and 2007-8, Cambodia for the biennia 2003-4, 2005-6 and 2007-8 and Viet Nam for the biennia 2007-8), or have failed to include information on their progress towards implementing this Resolution.

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Testudo horsfieldii Gray, 1844: Afghanistan, Islamic Republic of Iran, Kyrgyzstan, Pakistan, Russian Federation, Tajikistan, Uzbekistan.

Testudinidae, Afghan Tortoise; Central Asian Tortoise; Four-toed Tortoise; Horsfield's Tortoise; Steppe Tortoise

Selection for Review of Significant Trade

Testudo horsfieldii was selected following the 14th meeting of the Conference of the Parties at the 23rd meeting of the Animals Committee on the basis of trade data provided in document AC23 Doc. 8.5, and noting that the species is heavily traded and many adult specimens were found within trade (AC24 Doc 7.4. Rev.1).

A. Summary

Overview of *Testudo horsfieldii* recommendations.

Range State	Provisional category	Summary
Afghanistan	Least Concern	Occurs mainly in the north and north-west semi-desert regions. Population sizes are unknown and the species is classified within the country as 'Data Deficient'. Habitat loss and illegal trade are the main threats. Nationally protected in Afghanistan, with no collection permitted for commercial purposes. On the basis of very low levels of international trade reported by importers and no trade reported by Afghanistan, categorised as Least Concern.
Islamic Republic of Iran	Least Concern	The species occurs in north-eastern Iran. No country-wide population estimates are available, although status appears to be variable within the country, with the species described as rare to common. However, recent surveys report that densities appear to be "low" and range has been reduced due to agricultural expansion. No information on management measures known. However, on the basis of very low levels of reported international trade, categorised as Least Concern.
Kyrgyzstan	Least Concern	Reported to occur in the north of the country. No country-wide population estimates are available, but the species has reportedly undergone sharp declines, with the major threats identified as habitat loss and poaching. The species is not legally protected in Kyrgyzstan. Illegal trade had been reported and enforcement controls were considered inadequate. However, the only reported international trade was 20 live specimens imported in 2007 via the Russian Federation. On the basis of very low levels of reported international trade, categorised as Least Concern.
Pakistan	Least Concern	Reported to occur in the west of the country. No country-wide population estimates are available, although the species was reported as not uncommon by one author, but also rare in places in Pakistan. The species was considered to be declining, with the main threats identified as habitat loss and egg predation by dogs. The commercial export of the species is not permitted from Pakistan. The only trade reported by the exporter were eight scientific specimens in 2007. Whilst importers also reported five live animals imported that were not reported by Pakistan, international trade levels are very low, and on this basis, categorised as Least Concern.
Russian Federation	Least Concern	Occurrence in the Russian Federation appears questionable. No information on the population size or status in the country is available. However, whilst previous trade levels were high (representing exports from the former USSR), no direct trade has been reported by the Russian Federation or by importers since 2004, and on this basis, categorised as Least Concern.

Range State	Provisional category	Summary
Tajikistan	Possible Concern	Tajikistan is a non-Party to CITES. No information on population distribution, size or trends available for the country. Published export quotas are high, although trade levels as reported by importers have not approached these levels. Illegal export from the country was reported to be a problem. No information on management of the species was located, or the basis for non-detriment findings. The impact of trade levels are unknown and therefore, categorised as Possible Concern.
Uzbekistan	Possible Concern	Reportedly widespread throughout the country and described as not yet rare by one author, but occurs irregularly and densities are related to specific habitat types. Whilst several estimates of population size are very high, declines have been reported. Collection and trade (both legal and illegal) were identified as major factors in declines, in addition to habitat loss through agricultural expansion. Published export quotas and reported international trade levels are very high, with Uzbekistan reporting over a quarter of a million live specimens exported 1999-2008. Export quotas were possibly exceeded in five of these years. Illegal trade levels are also reported to be very high. Harvest of the species is regulated and collection was reported to occur only in areas of high abundance. However, specific information on the basis for a non-detriment finding for the high quota levels has not been provided, and impacts of all trade (legal plus illegal) unknown, therefore categorised as Possible Concern.

B. Species overview

Biology: *Testudo horsfieldii* is a medium-sized tortoise with a carapace length of 15-25 cm (Theile, 2002). It was reported to occur in dry, barren localities such as intermountain valleys, principally in sandy steppes, rocky deserts and porous sandy-loamy and loamy-sandy habitats (Highfield, 1992; Bondarenko and Peregontsev, 2006). In these arid habitats, it can be frequently found near springs and brooks (Anderson Cohen, 1994). Densities vary between habitat types occupied (Luxmoore *et al.,* 1988; Bondarenko and Peregontsev, 2006; Bondarenko and Peregontsev, 2009). Optimal habitat conditions were reported to be characterised by wormwood-ephemeral and empheral-shrub vegetation (Bondarenko and Peregontsev, 2009). The species was reported to be found at extreme altitudes: Minton (1966, cited in Luxmoore *et al*., 1988) recorded its occurrence between 1600 and 2300 m, but a more typical altitude in the former soviet sector of their range was reported to be between 800 m and 1600 m (Highfield, 1992).

Climatic extremes of Central Asian deserts limit the species activity to three months of the year, corresponding to the availability of plant food sources (Lagarde *et al.,* 2002; Lagarde *et al.,* 2003). For the remaining nine months, the species buries itself in sandy soils to aestivate and/or hibernate (Lagarde *et al.,* 2003).

Sexual maturity was reported to be reached at seven to ten years (Bergmann, 2001). Two to four clutches per year were reported (Highfield, 1992), with two to six eggs per clutch (Anderson-Cohen, 1994), but possibly up to 20 eggs per clutch on occasion (Highfield, 1992). Two to three clutches per season are not uncommon (Bergmann, 2001). Mortality of eggs and young were reportedly appreciable due to predation and climatic factors, but as yet unquantified (Luxmoore *et al.,* 1988).

Taxonomic note: Some authors assign this species to the genus *Agrionemys* rather than *Testudo* (Rhodin *et al*., 2008).

General distribution and status: *Testudo horsfieldii* has a wide range, extending from south-eastern Russia southward through Central Asia (Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan, the east of the Islamic Republic of Iran [hereafter referred to as Iran], Afghanistan, north-western Pakistan and western China) (Das, 1991). The main part of the range is to the east of the Alborz Mountains of the Iranian Plataeu (Bondarenko and Peregontsev, 2009). The range of the species was reported to cover 3,362,935 km^2, with the Central Asian deserts containing 73% of the species' range (Buhlmann *et al.,* 2009).

T. horsfieldii was reportedly widespread and locally abundant throughout Central Asia (Makeyev *et al.,* 1997). Bonin *et al.,* (2006) indicated that populations had started to decline rapidly in most range States. The main threats were considered to be heavy collection for export and food and habitat destruction for intensive agriculture (Luxmoore *et al.,* 1988; Highfield, 1992; Bonin *et al.,* 2006). Declines in the former USSR were attributed to expansion of mechanized agriculture onto untouched terrain leading to direct injury, poaching and the loss of habitat (Luxmoore *et al.,* 1988; Bonin *et al.,* 2006). In southern Kazakhstan, declines were attributed to plowing for crop production (Bondarenko *et al.,* 2008). Theile (2002) suggested that collection for use in Traditional Chinese Medicine or Asian food markets may have contributed to population declines, especially in China.

T. horsfieldii was assessed in 1996 by the Tortoise and Freshwater Turtle Specialist Group as Vulnerable (Tortoise & Freshwater Turtle Specialist Group, 1996). However this IUCN classification is annotated to indicate that it requires updating.

Overview of trade and management in the species: *T. horsfieldii* has been subject to bulk collection for trade (Lambert, 1984), and was considered to be one of the most heavily traded chelonians in the world (Bonin *et al.,* 2006). It was identified as one of the top ten live CITES-listed reptile species imported by the European Union from 1990 to 1999, with 97% of imports originating from the wild (Auliya, 2003). The countries of Central Asia are the main suppliers of the species within international trade. High mortality rates in captivity reported in Europe may be a result of climate conditions (Devaux, 2007), incorrect or unsuitable husbandry practices, or the time of year when animals enter the market, which may mean they are too weak to hibernate successfully (Theile, 2002). It was reported that individuals smaller than 5 cm were less likely to survive transport than larger ones, and juveniles of 2-3 years were more likely to survive in captivity than adults (Theile, 2002).

Exports of *T. horsfieldii* were noted to have remained steadily high from Central Asia, which were predominantly for the global pet trade, but occasionally for the food trade (IUCN SSC Tortoise and Freshwater Turtles Specialist Group, 2010). The species was previously considered under the Review of Significant Trade in March 1992 for Afghanistan, China, Iran, Pakistan and the USSR.

CITES Resolution Conf. 11.9 (Rev. CoP13) urged Parties trading in tortoises and freshwater turtles to enact and implement a suite of measures on management, trade and enforcement actions, and to report on progress towards these measures in their biennial reports. Many Asian Parties (and range States under review in this report) have not reported on progress made under the resolution's recommendations in their biennial reports (IUCN SSC Tortoise and Freshwater Turtles Specialist Group, 2010).

There is some evidence of illegal trade in the species. Serbia reported seizures of 510 'specimens' (possibly live individuals) of *T. horsfieldii* in their 2005-6 CITES biennial report. It was also noted that 181 specimens collected from Serbian territory had been confiscated in Hungary in 2006. In their 2007-8 biennial reports, the United Arab Emirates and Poland reported the confiscation of 233 and 30 live *T. horsfieldii* specimens respectively.

C. Country reviews

AFGHANISTAN

Provisional category: Species of Least Concern

Distribution in range State: Occurrence of *T. horsfieldii* in Afghanistan was reported by the Tortoise & Freshwater Turtle Specialist Group (1996) and Fritz and Havaš (2007), and was mapped by Iverson (1992). The species apparently occurs widely, with the exception of the Afghan portion of the Seistan basin and the mountain ranges in the centre and northeast (Anderson, 1979; cited in Luxmoore *et al.*, 1988). Specimens have been found up to an altitude of 2440 m in Afghanistan (Fritz and Pfau, 2002).

The CITES Management Authority of Afghanistan reported that most historical sightings occurred along the border regions of Iran, Turkmenistan and Uzbekistan (Barikzai *in litt.* to UNEP-WCMC, 2010).

Phadke (2010) reported that *T. horsfieldii* had been located mostly in the north and northwest semi-desert regions of Afghanistan, occurring across land types that included: rainfed crops, rangeland, rocky outcrops / bare soil, sand-covered areas, sand dunes, and waterbodies in areas that received >250 mm of rain per year. Presence in a number of ecoregions was reported, including Badaghyz and Karabil semi-desert, Baluchistan xeric woodlands, Central Persian desert basins, Gissaro-Alai open woodlands, Paropamisus xeric woodlands, and Registan-North Pakistan sandy desert from 0-2,500 m elevation, as well as near Kabul (Padke, 2010). The estimated extent of occurrence in Afghanistan was reported as approximately 411,250 km, although the requirement for additional fieldwork to check accuracy was noted (Phadke, 2010).

Population trends and status: *T. horsfieldii* was reported to be quite abundant in the Dasht-I-Leile between Maimana and Shibarghan in northern Afghanistan (Toynbee, 1961, cited in Luxmoore *et al.*, 1988). The CITES Management Authority of Afghanistan reported that the population size and status in the country is not currently known, however, listing on the country's Protected Species List as Data Deficient came into force from 28/02/2010, which will be reviewed after five years (Barikzai *in litt.* to UNEP-WCMC, 2010).

Threats: The main threats in Afghanistan identified by the CITES MA of Afghanistan were reported to be habitat loss due to agricultural intensification and smuggling for the pet trade into Pakistan (Barikzai *in litt.* to UNEP-WCMC, 2010).

Trade: According to data in the CITES Trade Database, in each of 2002 and 2004, Japan reported the import of 1000 live, wild *T. horsfieldii* from Afghanistan, all for commercial purposes. The CITES MA of Afghanistan confirmed that no permits were issued for these shipments (Barikzai *in litt.* to UNEP-WCMC, 2010). The only reported indirect trade in *T. horsfieldii* originating in Afghanistan referred to six live specimens re-exported via Denmark to the United Kingdom in 1983 (no source reported).

Afghanistan has not published any export quotas for this species.

Under European Union stricter domestic measures, imports of wild specimens of this species into the EU from Afghanistan were legally suspended from 18/02/2005 to 01/10/2007.

Illegal trade to Pakistan was identified as a problem by the CITES MA of Afghanistan (Barikzai *in litt.* to UNEP-WCMC, 2010). In 2009, Pakistani officials recovered 550 Afghan tortoises from a Quetta-Karachi bound train, and there have been numerous other reports of smuggling via vehicles across the porous and difficult to control Afghan-Pakistan border (Barikzai *in litt.* to UNEP-WCMC, 2010).

Management: *T. horsfieldii* is a protected species in Afghanistan. The CITES MA of Afghanistan (Barikzai *in litt*. to UNEP-WCMC, 2010) reported that the inclusion in the list of protected species under Environment Law (912) Article 47 (as of 28/02/2010) prohibits take from the wild. Permits may only be issued for captive breeding or scientific or educational purposes. M. Johnson (*pers. comm*. to UNEP-WCMC, 2010), who was identified by the CITES Authorities as an expert in this species in Afghanistan, noted that additional work would be required to enforce protection measures.

The CITES MA of Afghanistan reported that no non-detriment findings had taken place in the country because no applications for permits had been received (Barikzai *in litt*. to UNEP-WCMC, 2010).

ISLAMIC REPUBLIC OF IRAN

Provisional category: Species of Least Concern

Distribution in range State: *T. horsfieldii* occurs in north-eastern Iran (Figure 1) (Bondarenko and Peregontsev, 2009). Occurrence in the country was reported by the Tortoise & Freshwater Turtle Specialist Group (1996) and Fritz and Havaš (2007), and was mapped by Iverson (1992). The species was reported in the eastern parts of the Iranian plateau, in the provinces of Mazanderan (the north-east only) and Khorasan, but not south of the Seistan basin (Anderson, 1979 cited in Luxmoore *et al*., 1988).

Kami (1999) reported occurrence in the provinces of Golestan (Atrek River), Khorosan, Semnan (within the Khoshyeilagh Wildlife Refuge), and in Seistan and Baluchestan, yet Bondarenko and Peregontsev (2009) clarified that reports of the species occurrence in the last two provinces were erroneous. The province of Khorosan was split into three provinces in 2004 (North, Razavi and South) and the species occurs in all three new provinces (Bondarenko and Peregontsev, 2009).

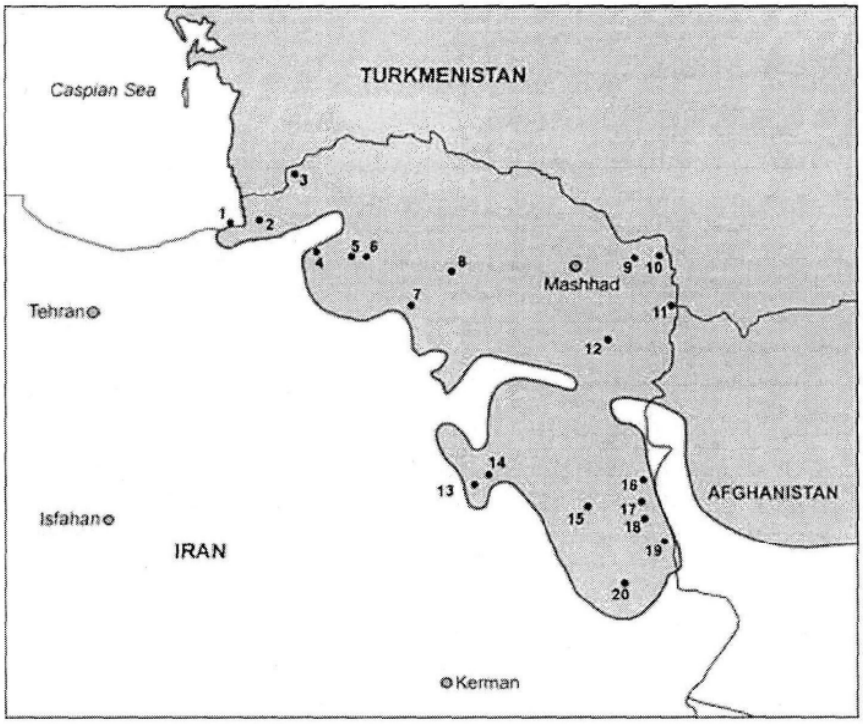

Figure 1. Location of records of occurrence of *T. horsfieldii* in Iran (Bondarenko and Peregontsev, 2009).

Population trends and status: The species was previously (in the very early 1900s) reported

to be rare in the southern part of its range in Iran but common in at least in one location in eastern Khorasan (Luxmoore *et al.*, 1988). Twenty specimens were observed in the Khoshyeilagh Wildlife Refuge near Shahroud in the Semnan Province during two hours in April 1997 (Kami, 1999).

No country-wide population estimates are available. Bondarenko and Peregontsev (2009) conducted survey transects during 2006 and 2009 in various ecosystems in Iran and estimated population densities (Table 1), reporting that densities everywhere proved to be "low". The highest population density was recorded in North Khorosan, in the Eastern spurs of the Kuh-e-Shakhneshin Mountains (Bondarenko and Peregontsev, 2009). The range of the species was reported to have been reduced in Iran due to expansion of agricultural areas (Bondarenko and Peregontsev, 2009).

Table 1. Census results for *T. horsfieldii* in ecosystems of Iran (Bondarenko and Peregontsev, 2009).

Region	Ecosystem	Location	Survey date	Transect length (km)	No of individuals	Population density (ind/ha)
Alborz Mountains – SW Kopetdag Mountains	Intermountain stony-loamy valley with shrub-wormwood vegetation	85 km E of Shahrud, near Miyandasht	May 2009	3	3	0.48 ±0.2
		92 km E Shahrud, near Miyandasht	May 2009	8	14	0.84±0.2
Eastern Kopetdag Mountains	Stony-loamy foothills with wormwood-ephemeral vegetation	3 km NE of Mazdavand	April 2006	9.15	39	1.65±0.4
	Stony-loamy middle mountains with ephemeral vegetation	Kuh-e-Shakhneshin Range, 25 km SW of Saleh Abad	April 2006	1.1	12	2.15±0.4
	Mountains, slope with xerophytes	Kuh-e-Sorkh Mountains, 35 km E of Dowlet Abad	April 2006	6.7	1	0.2±0.2
Eastern Iran Mountains	Stony-loamy foothills with wormwood, shribs and spurs ephemerals	Echdeger Range near Deyhuk	May 2009	7.2	1	0.07±0.07

Threats: Habitat loss as a result of agricultural expansion in the North Khorosan was reported to have forced *T. horsfieldii* out of the loamy Jam valley into stony foothills, where it exists in very low numbers (Bondarenko and Peregontsev, 2009).

Trade: According to data in the CITES Trade Database, trade levels from Iran were very low. Iran reported the export of only 15 live *T. horsfieldii* of wild origin, and one live animal and two bodies of unknown origin, all for scientific or personal purposes during the years 1999-2008 (Table 2). However, Iran did not submit annual reports for 2007 and 2008. There were no reported indirect exports of *T. horsfieldii* originating in Iran. No information on illegal trade from the country was located.

Table 2. Direct exports of *Testudo horsfieldii* from Iran, 1999-2008.

Source	Term	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
U	bodies	Exporter						2					2
		Importer											
	live	Exporter						1					1
		Importer									2		2

W	live	Exporter	15	15
		Importer		

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Iran has not published any export quotas for this species.

Under European Union stricter domestic measures, imports of wild specimens of this species into the EU from Iran were legally suspended from 18/02/2005 to 01/10/2007.

Management: The species is present within the Khoshyeilagh Wildlife Refuge in the Semnan province which covers 134,000 ha, especially in the arid steppe vegetation of the south and south west of the reserve (Kami, 1999), although the level of protection is unclear. No additional information on the management or monitoring of the species was located.

KYRGYZSTAN

Provisional category: Species of Least Concern

Distribution in range State: Occurrence was reported in Kyrgyzstan by the Tortoise & Freshwater Turtle Specialist Group (1996) and the species was mapped in the country by Iverson (1992). The CITES Management Authority of Kyrgyzstan submitted information compiled by Turdukulov (2008) in response to a request for information on the species by the CITES Secretariat following the country's inclusion within the Review of Significant Trade. Turdukulov (2008) reported the species to be found in Fergana, to the west of the Talas and Chui valleys in the northwest of Kyrgyzstan. The species was reported to inhabit desert and semi-desert heaths in the country, but was only occasionally found in "virgin places" and sometimes in cultivated areas (Turdukulov, 2008).

Population trends and status: According to Turdukulov (2008), numbers of *T. horsfieldii* have declined sharply in the Chui valley and the species was noted to have undergone a sharp reduction in the territory of Kyrgyzstan over the past 15 years.

Recent survey data indicated that the highest densities of individuals were found in the Maili-Sai region, where 46 individuals were encountered on a 10 km transect (Panfilov and Milko, 2003[2] cited in Turdukulov, 2008). The same study found ten individuals with similar survey effort in semi-desert habitat at the Turkestan crest of the lower canyon of the Naryn River. Ostashepko and Davletbakov (2006)[2] cited in Turdukulov (2008) located only two individuals in the Tuluk region during a 1.5km transect survey with 100 m width.

The species was reported to be included in the Red List of Kyrgyzstan (AC24 Doc 7.4 Rev. 1).

Threats: The main threats to the species were identified as loss of semi-desert habitat, capture for export (noted as a "major factor of reduction in numbers") and poaching (Turdukulov, 2008).

Trade: According to data in the CITES Trade Database, for the years 1999-2008, trade levels from Kyrgyzstan were very low. Kyrgyzstan has not reported any exports of *T. horsfieldii*, nor have any importers reported direct imports originating in Kyrgyzstan. The only reported indirect trade in *T. horsfieldii* originating in Kyrgyzstan referred to 20 live, wild specimens re-exported from the Russian Federation to Germany in 2007. Kyrgyzstan became a Party to CITES only in 2007, so the original export was not reported; however, the import was also not reported by the Russian Federation.

Turdukulov (2008) reported that illegal trade in the country did occur, with approximately

[2] Full reference not provided

100 specimens seized in 2005.

Kyrgyzstan has not published any export quotas for this species.

Under European Union stricter domestic measures, imports of wild specimens of this species into the EU from Kyrgyzstan were legally suspended from 18/02/2005 to 01/10/2007.

Management: The species is not legally protected in Kyrgyzstan (Turdukulov, 2008). The requirement for more rigorous control of criminal activities relating to collection and export of *T. horsfieldii* was recognized by Turdukulov (2008). No additional information on the management or monitoring of the species was located.

PAKISTAN

Provisional category: Species of Least Concern

Distribution in range State: Occurrence of *T. horsfieldii* in Pakistan was reported by the Tortoise & Freshwater Turtle Specialist Group (1996), Khan (2004) and Fritz and Havaš (2007). It was mapped in the country by Iverson (1992).

T. horsfieldii was reported to occur in the Baluchistan province of Pakistan (Khan, 2003) in the north and west, and into Waziristan in the tribal frontier areas (Minton, 1966 cited in Luxmoore *et al.*, 1988; Khan, 2003). In Pakistan, the species occurs in rocky hill country, especially between 1500 and 2100 m (Luxmoore *et al.*, 1988).

Population trends and status: This species was previously reported to be rare in places (Ghalib *et al.*, 1977 cited in Luxmoore, *et al.*, 1988) but also not uncommon locally elsewhere (Minton, 1966 cited in Luxmoore *et al.*, 1988). It was noted as sparsely distributed at the Hazargangi Chilton National Park in Baluchistan (Stubbs, 1989). The species was reported to be declining in Pakistan (Nawaz & Nawaz, 1986).

Threats: *T. horsfieldii* was considered threatened due to settlement of refugees from Afghanistan and destruction by farmers, competition with livestock and egg predation by dogs, however it was noted that the species was not exported from Pakistan nor was it known to be consumed locally (Nawaz & Nawaz, 1986).

Trade: According to data in the CITES Trade Database, for the years 1999-2008, Pakistan reported the export of only eight specimens of *T. horsfieldii* of unknown origin, for scientific purposes in 2008 (Table 3). It is likely that these scientific specimens were reported by the importer (Germany) in 2008, as originating from the wild. In addition, five live, wild animals were reported by importers but not reported exported by Pakistan. Two live seized/confiscated animals originating in Pakistan were reported by an importer in 1987, although no confiscated specimens were reported from Pakistan since. There were no reported indirect exports of *T. horsfieldii* originating in Pakistan.

Pakistan has not published any export quotas for this species.

Table 3. Direct exports of *Testudo horsfieldii* from Pakistan, 1999-2008.

Source	Term	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
U	specimens	Exporter										8	8
		Importer											
W	live	Exporter											
		Importer					1		4				5
	specimens	Exporter											
		Importer										8	8

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Under European Union stricter domestic measures, imports of wild specimens of this species into the EU from Pakistan have been legally suspended since 22/12/1997, with the last suspension confirmed on 21/05/2009 under Commission Regulation (EC) 359/2009.

Management: The CITES Management Authority of Pakistan reported that the commercial export of all wild reptiles (and mammals) has been banned in the country, with the exception of exports for research and hunting trophies (U. Khalid *pers.comm.* to UNEP-WCMC, 2010). No additional information on the management, monitoring or protection of the species in Pakistan was located.

RUSSIAN FEDERATION

Provisional category: Species of Least Concern

Distribution in range State: The range of *T. horsfieldii* was reported to include southeastern Russia (Anderson Cohen, 1994). Possible occurrence in the Russian Federation was mapped by Iverson (1992). Occurrence in the country was reported by the Tortoise & Freshwater Turtle Specialist Group (1996) but not by Fritz and Havaš, (2007).

Population trends and status: No information on the population size or trend could be located.

Threats: No information on specific threats to *T. horsfieldii* in the Russian Federation was located.

Trade: The Russian Federation published export quotas for 1997-1999 (Table 4), but all as re-exports from other range States, prior to the dissolution of the Soviet Union (USSR) in 2001.

Table 4. CITES export quotas for *Testudo horsfieldii* from the Russian Federation

Year	Quantity	Notes
1997	20000	As re-exports from Uzbekistan
1998	25000	As re-exports from Uzbekistan
1999	20000	As re-exports from Kazakhstan
1999	15000	As re-exports from Tajikistan

The Russian Federation reported exports of only two live, wild specimens of *T. horsfieldii* 1999-2004, yet importers reported over 4,500 imports (Table 5). However, importers reported only four specimens imported after 2001. There have been no exports of *T. horsfieldii* originating in the Russian Federation since 2004. Indirect trade originating in the Russian Federation is summarized in Table 10, page 153, and was reported at low levels since 2001.

Table 5. Direct exports of *Testudo horsfieldii* from the Russian Federation, 1999-2008 (all trade involved live specimens).

Source	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
C	Exporter											
	Importer			1082		1						1083
I	Exporter											
	Importer		4	710								714
W	Exporter	2										2
	Importer	2002	500	2001	3		1					4507

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Under European Union stricter domestic measures, imports of wild specimens of this species into the EU from the Russian Federation were legally suspended from 18/02/2005 to 01/10/2007.

Management: No information on the management, monitoring or protection of the species in the Russian Federation was located.

TAJIKISTAN

Provisional category: Species of Possible Concern

Distribution in range State: Occurrence of *T. horsfieldii* in Tajikistan was reported by the Tortoise & Freshwater Turtle Specialist Group (1996) and the species was mapped in the country by Iverson (1992).

Population trends and status: No information on the population size or trend could be located.

Threats: D. Bondarenko (*pers. comm.* to UNEP-WCMC, 2010) estimated that approximately 20 thousand individuals per year were exported illegally from Tajikistan and Uzbekistan to the Russia Federation and the Ukraine.

Trade: Tajikistan is a non-Party to CITES, so is not required to submit annual reports to the Convention. However, according to the CITES Trade Database, importers reported the direct trade of 7000 live, wild specimens of *T. horsfieldii* in 2006 originating in Tajikistan, in addition to 50 live, wild specimens in 2008. All imports were for commercial purposes. Tajikistan has however published export quotas for the species, as summarized in Table 6. Indirect exports of *T. horsfieldii* originating in Tajikistan are summarized in Table 11, page 156.

Table 6. CITES export quotas for live, wild-sourced *Testudo horsfieldii* from Tajikistan.

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Quotas	20000						17000	17000	17000

Under European Union stricter domestic measures, imports of wild specimens of this species into the EU from Tajikistan were legally suspended from 18/02/2005 to 01/10/2007.

Management: No information on the management, monitoring or protection of the species in Tajikistan was located. Tajikistan is a non-Party to CITES and therefore has not submitted any biennial reports or addressed progress on management, trade and enforcement actions concerning tortoises and freshwater turtles in compliance with the recommendations outlined in Res. Conf 11.9 (CoP13). No further information on management or monitoring of the population was located.

UZBEKISTAN

Provisional category: Species of Possible Concern

Distribution in range State: Occurrence of *T. horsfieldii* in Uzbekistan was mapped by Iverson (1992) and confirmed by Peregontsev (2001) and Fritz and Havaš (2007). The species was reported to be found throughout Uzbekistan, occurring in many different habitat types including flat desert, sandy steppe, ruined elevations, foothills as well as oases and cultivated plots, and absent only in moving sands and high mountains above 2,000 m (Peregontsev, 2001). The CITES Management Authority of Uzbekistan (Grigoryants *in litt.* to UNEP-WCMC, 2010) reported the species to be widespread in the country. However, it was reported to occur in Uzbekistan's territory irregularly, as many cultivated lands and mountainous landscapes with stony slopes are unsuitable for habituation (Bondarenko and Peregontsev, 2006). The main populations are apparently isolated from each other (Devaux, 2007).

Population trends and status: Estimates for the *T. horsfieldii* population in Uzbekistan varied greatly. A population of around 15-20 million individuals was estimated based on surveys

conducted between 1991 and 1999 in central Uzbekistan (Bozhansky and Polinova, 2000 cited in Theile, 2002; Mitropolski and Kashkarov, 2000 cited in Theile, 2002). A higher population estimate of 22-24 million animals was reported based on surveys conducted between 1990 and 2000 (Peregontsev, 2001). Devaux (2007) reported there are at least 20 million *T. horsfieldii* in Uzbekistan.

Devaux (2007) considered that *T. horsfieldii* was "not yet rare" in Uzbekistan, but noted that it was necessary to monitor the most fragile zones and to better manage the population. High densities were found in some places in Uzbekistan; in a 50-km long canyon in the east, three to four tortoises were found per metre, giving an estimate of thousands of tortoises per kilometre (Devaux, 2007). However, *T. horsfieldii* densities have been found to vary widely depending on habitat type, with considerable variation dependent on ground and soil type and vegetation conditions (Bondarenko, 1994; 1997; Grigoryants *in litt.* to CITES Secretariat, 2008). Mitropolski and Kashkarov (2000, cited in Theile, 2002) reported population density ranged from 3.1 to 40.3 individuals/10 hectare, dependant on habitat type, with an average of 11.4 ind./10 hectare.

In piedmont plains and foothills of mountains of Uzbekistan, densities of 0.1-3.0 ind./ha were found in stony-loam desert biomes 300-800 m above sea level (Bondarenko and Peregontsev, 2006). Higher densities were found in foothills with loose loam including 4.6 ind./ha in the Babathag range, 11.5 ind./ha in the Malguzar range and Karchinsky steppe, and 44.9 ind./ha in the Nuratha range (Bondarenko and Peregontsev, 2006). A summary of the census results are provided in Table 7.

Table 7. Census results for *Testudo horsfieldii* in ecosystems of Uzbekistan (Source: Bondarenko and Peregontsev, 2006).

Ecosystem	Location	Survey date	Transect length (km)	No of individuals	Density of population (ind./ha)
Sandy Plain	SE Kizilkum	April 2000	8.01	5	0.2±0.03
	SW Kizilkum	April 2001	16.35	55	0.7±0.1
	NW Kizilkum	April 2001	13.75	13	0.7±0.2
Sandy-loamy plain	SE Kizilkum	April 1999	10.76	40	4.3±0.5
	South Karshinsky steppe	April 2000	3.51	44	5.4±0.3
	Central Kizilkum	April 2000	9.29	93	9.7±0.3
Loamy piedmont plain	Karnabchul steppe	April 1999	10.26	207	11.5±1.2
	Piedmont plain of Kazakhtau	April 2000	2.86	294	46.0±8.1
	Piedmont plain of Nurathau	April 2000	3.90	37	10.6±1.0
Foothills	North adyrs (foothills) of Malguzar range	April 2001	8.82	299	7.5±1.9
	West adyrs of Tubere-Oland	April 2001	25.60	3046	28.3±3.6
	NW adyrs of Nuratha range	April 2001	11.11	777	44.9±5.2

Average densities were calculated as between 5-20 ind./ha (Bondarenko and Peregontsev, 2006). Some areas were noted to have 'forced overcrowding' as a result of redistribution in natural areas following development (Bondarenko and Peregontsev, 2006). Densities of three sites were described as "too high" (20-70 heads/ha); in piedmont plains of the low Kazakhtau mountain range, the foothills of the Nurutha range and the foothills of Tubere-Oland (Kugithang range) (Bondarenko and Peregontsev, 2006).

Bondarenko (1997) found comparable densities of 5.0 ind./ha in piedmont plains, with densities of 1.7 tortoises/hectare in flat habitats and 14.5 ind./ha in ravines.

The Kyzyl Kum desert region in the central part of the country was considered to have the highest population densities of the species (Peregontsev, 2001; Devaux, 2007). Up to 30-40 animals/hectare were reported by Peregontsev (2001) who recorded sixty thousand tortoises in an area of 12 km^2 (i.e. 5,000 individuals per km^2). Another study in the southern Kyzyl Kum desert, conducted in 1993, found that abundance in different habitats varied from 2.5 to 6.8 ind./ha (Michel and Stöck, 1996). Bondarenko (1994) found an irregular distribution in the Central Kizil Kum in 1998, with highest densities in the low-mountains (Bukantau) and foothills, where it was described as 'common', but with densities of 1 individual/ha in the majority of natural complexes.

Despite high numbers of *T. horsfieldii* reported from the Kyzil Kum desert, sharp declines in the local population were noted, probably as a direct consequence of large-scale collection (Mitropolski and Kashkarov, 2000 cited in Theile, 2002). Bondarenko and Peregontsev (2006) reported that in the north-western part of the Kyzyl Kum (spelt Kizilkum) desert, densities of 0.6 ind./ha were recorded, yet in the south abundance averaged 0.2 ind./ha. The population of Kizilkum was considered sparse (Bondarenko and Peregontsev, 2006).

In northwest Nuratau, where commercial collection was reported to have occurred since 1996, the average population density was found to have declined from 40 ind./ha in 1998 to 30.6 ind./ha in 1999 (Bozhansky and Polinova, 2000 cited in Theile, 2002).

Bondarenko and Peregontsev (2006) reported that small isolated populations were sustained on irrigated territories (oases) of the Kashkadaraya and Surkhandaraya valleys. However, it was considered that although small groups in irrigated lands may persist for some time, they were eventually 'doomed to elimination' (Bondarenko and Peregontsev, 2006).

Information summarized above from Bondarenko and Peregontsev (2006) was submitted by the CITES MA of Uzbekistan to the CITES Secretariat (Grigoryants, 2008) in response to the consultation on the inclusion of the species in the CITES Review of Significant Trade.

Threats: Bondarenko and Peregontsev (2006) reported that the species range within Uzbekistan had been reduced due to "continuous adverse anthropogenic factors" and eliminated in some areas. The major threats were identified as cultivation of virgin lands for cotton and grain and capture for commercial export (Bondarenko and Peregontsev, 2006). Reduction and significant alteration of natural habitats was also identified as the main threat to wildlife in Uzbekistan in the country's report to an FAO workshop on sustainable use and conservation of wildlife resources (Anon., 2006).

Habitat within the districts of Syrdatya, Jizak, Samarkand and Kashkadaraya had reportedly disappeared due to cultivation (Bondarenko and Peregontsev, 2006). High rates of mortality and injury were reported during desert development, with overcrowding resulting from tortoises redistributing to smaller islands of available natural habitat, especially in isolated zones and irrigation troughs (Bondarenko and Peregontsev, 2006). The species was noted to have been forced into areas such as canyons, dry rivers, isolated valley bottoms and the edge of deserts (Devaux, 2007).

Collection for selling, or intentional killing to prevent damage to harvesting machines and for conversion to food for animals by farmers was reported by Devaux (2007). Michel and Stöck (1996) noted that concentrated collection during the tortoise's short activity period (April-June) could cause rapid declines. Bondarenko and Peregontsev (2006) stated that road deaths were also a threat in areas of high densities, such as the western foothills of the Nurata mountains, where populations numbered 44.0 ind./ha.

The CITES Scientific and Management Authorities of Uzbekistan confirmed a decrease in numbers of wild specimens was attributed to habitat loss of virgin lands and catching for commercial export (Azimov and Chikin 2008; Grigoryants *in litt.* to UNEP-WCMC, 2010).

Trade: Published export quotas for live specimens of wild and ranched *T. horsfieldii* from Uzbekistan are summarised in Table 8. The CITES MA of Uzbekistan reported that with each year, the share of the quota for ranching increases (Grigoryants *in litt.* to CITES Secretariat, 2008). However, this was not true in 2009 (Table 8); the percentage of wild specimens increased on the previous year relative to ranched specimens. A quota of 2,000 live captive bred (source C) specimens was also published in 2008, and a quota of 5,000 eggs was published for 2007-2009 inclusive.

Table 8. CITES export quotas for *Testudo horsfieldii* from Uzbekistan for wild and ranched sources.

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Live (W)	25000	35000	35000	30000		25000	23000	22000	22000	22000	22000	29000	27000
Live (R)						5000	7000	13000	14000	13000	17000	17000	22000
Total live	**25000**	**35000**	**35000**	**30000**		**30000**	**30000**	**35000**	**36000**	**35000**	**39000**	**46000**	**49000**
% wild	**100**	**100**	**100**	**100**		**83**	**77**	**63**	**61**	**63**	**56**	**63**	**55**

Reported exports from Uzbekistan were high. Uzbekistan reported the export of 255,548 live wild specimens during 1999-2008, with importers reporting 223,875 corresponding live specimens (Table 9). When data reported by the exporter are considered, the export quota for wild specimens was exceeded in 2001, 2003, 2005 2006 and 2007. It was exceeded by a maximum of 4,877 tortoises in 2006. When considering the data reported by the importers, the export quota was exceeded in three years, by 3000 tortoises in 2005, 1500 tortoises in 2006 and 25 tortoises in 2007.

Trade in ranched specimens 1999-2008 was also reported at high volumes. Uzbekistan reported 71,900 ranched specimens exported, with importer reporting 65,568 specimens (Table 10). When data reported by the exporter for ranched individuals is considered, the export quota was apparently exceeded in 2004 by 1,150 individuals. However 1,650 animals destined for the United Kingdom were not reported as imports, so it may be that the trade did not take place. When considering data reported by the importers, the export quota for ranched individuals was exceeded in 2006 by 685 tortoises; however 1,200 animals imported that year were on export permits issued in 2005.

Table 9. Direct exports of live *Testudo horsfieldii* from Uzbekistan, 1999-2008. (All trade was in live animals over this period, except 20 specimens exported in 2006 for scientific purposes.)

Source	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
F	Exporter		2000									2000
	Importer		2000									2000
I	Exporter											0
	Importer	2256								7		2263
R	Exporter			2000	2000	4350	8150	12800	14000	12500	16100	71900
	Importer			2000	2000	4350	6000	9350	14685	12000	15201	65568
W	Exporter	34100	18500	32700	26850	25150	22300	26001	26877	22070	21000	255548
	Importer	17552	23750	20400	24850	24148	22300	25000	23500	22025	20350	223875

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Some of the exceeded quotas could be explained by the fact that Uzbekistan reports on the basis of permits issued rather than actual trade. However in 2006, the United States reported

the import of two shipments of animals from Uzbekistan that reportedly originated in Tajikistan, totalling 2,750 animals. One of these shipments showed in the Uzbekistan annual report as being for 3,327 animals with origin Uzbekistan, with a note that it was not used. The other shipment, of 1,000 animals, also showed in the Uzbekistan annual report, but Tajikistan was not given as the origin.

Seizures and confiscations of shipments of the species provided some evidence of illegal trade, however whilst importers reported large numbers seized in 1999 (2256 specimens), there have been only seven reported seizures since (Table 9).

However, illegal harvest and trade in *T. horsfieldii* was reported to be rather common in Uzbekistan (Sorochinsky, *pers. comm*. cited in Theile, 2002). Illegal export of the species to Western Europe was also noted by Michel and Stöck (1996). Mitropolski and Kashkarov (2000) reported that 'mass poaching' had taken place in recent years in the regions of Bukhara and Samarkand, with large adult tortoises (>17cm) being targeted. It was reported that the agencies responsible for control and enforcement (Customs and Biological State Control Agencies) estimated the volume of annual illegal export to be 7,000 tortoises from Uzbekistan (Theile, 2002). According to Devaux (2007), the Uzbekistan government give the much higher figure of 35,000 *T. horsfieldii* collected illegally each year, with an estimate that a further 10,000 a year could escape the statistics.

Illegal export into Russia, countries of the former USSR and Ukraine via Kazakhstan was reported by Bondarenko and Peregontsev (2006), who further noted that unofficial data suggested numbers of illegally poached tortoises from 1997-1999 were comparable to the levels legally traded, but also noted that strengthened customs controls had reduced this to less than 10,000 heads per year. This was confirmed by the CITES Scientific Authority of Uzbekistan (Azimov and Chikin *in litt*. to CITES Secretariat, 2008).

However, D. Bondarenko (*pers. comm*. to UNEP-WCMC, 2010) suggested that the State Biological Control Service (Gosbiokontrol) was ineffective in controlling illegal transit to Russia and Ukraine from both Uzbekistan and Tajikistan, which was estimated at approximately 20 thousand individuals per year, and recommended the suspension of collection and trade of the species in Uzbekistan for four to five years. The CITES MA of Uzbekistan reported that there was "slight poaching," but an assessment of its scale was difficult as not all cases of illegal trade could be identified (Grigoryants *in litt*. to UNEP-WCMC, 2010).

Indirect exports of *T. horsfieldii* originating in Uzbekistan are summarized in Table 12, page 157.

Under European Union stricter domestic measures, imports of wild specimens of this species into the EU from Uzbekistan were legally suspended from 18/02/2005 to 01/10/2007.

Management: It is not known whether *T. horsfieldii* occurs within the protected area system of Uzbekistan. However since 1995 measures have been taken to protect the territory of some regions where local sites with a high density of tortoises are situated (Djizak, Kashkadarya and Samarkand regions), where catching of *T. horsfieldii* is strictly prohibited (Peregontsev, 2001).

T. horsfieldii was not reported to be a protected species in Uzbekistan (Theile, 2002). However, harvest, possession and trade in this species was reported to be regulated under the general provisions outlined in various laws e.g. the Law of Republic of Uzbekistan No. 545-I: *On Protection and Use of Animal World of 26 December 1997*, and in more detail in the national legislation regulating commercial and sport hunting (Theile, 2002). The harvest of

T. horsfieldii for export requires a harvest licence and export permits (Article 15 of the above law) may also be needed (Theile, 2002).

Wildlife policy was improved in 2004 with the resolution of the Cabinet of Ministers of the Republic of Uzbekistan *On strengthening of the control over rational use of biological resources, their import and export outside the Republic of Uzbekistan* No.508 dated 28 October 2004. This resolution regulates the order of import and export of rare species, organisation of international hunting on the basis of CITES quotas and permissions for obtaining rare species in the republic (Anon, 2006).

Bondarenko and Peregontsev (2006) reported that capture for trade in the foothills of the Zaaminsky range commenced in the early 1990s, but had shifted to other regions, and at that time was concentrated in the districts of Navoi and Samarkand. It was reported that egg harvesting was mainly conducted in the territory of Navoi and Dzhizak regions (Azimov and Chikin, 2008 *in litt*. to CITES Secretariat). Theile (2002) reported that harvest quotas did not indicate the sex or age of the tortoises or specify a district or area for collection, however the CITES MA of Uzbekistan reported that harvesting took place only where there the population density was high (Grigoryants, *in litt*. to CITES Secretariat, 2008). Bondarenko and Peregontsev (2006) reported that Uzbekistan's permits for catches had only been issued in areas with high abundance of animals, usually exceeding 20 ind./ha.

The CITES MA of Uzbekistan (Grigoryants *in litt*. to UNEP-WCMC, 2010) stated that quotas for catching and export of *T. horsfieldii* are approved by the Interdepartmental Commission, composed of representatives of administrative and scientific bodies of CITES, the Academy of Sciences and the State Committee. However, specific details of the basis for non-detriment findings for the quotas published were not provided.

The CITES Scientific Authority of Uzbekistan (Azimov and Chikin *in litt*. to CITES Secretariat, 2008) considered ranching an effective way to reduce negative influences on wild populations. One facility was described (Zoocomplex) which incubates eggs taken from the wild, was reported to have been in operation since 1997 and had at that time, 17,000 young tortoises that had hatched in 2007 (Azimov and Chikin *in litt*. to CITES Secretariat, 2008). The importance of ranching for export from Uzbekistan appears to be increasing (Table 8).

According to Theile (2002), Zoocomplex issues specific harvest licenses to its harvesters indicating a certain district or region where tortoises (usually older than 12 years and sexually mature) should be harvested. A small number of tortoises were reported to be released into the wild (700 animals in 2000) (Theile, 2002).

In response to a questionnaire distributed by the CITES Animals Committee working group to review source code R, the Director of Zoocomplex provided the following summary (AC24 Doc 8.1): "The main egg collection is from 'pregnant' females after which these are returned to the wild. Eggs are incubated and hatchlings are reared in a nursery till the size of 6 cm in 8 months. The animals are exported at the size of 6 to 8 cm. In some years young tortoises are also released in the wild, but this seems less successful. Export of wild animals decreases and ranched animals increases over the years. Ranched and captive bred tortoises (F1) appear to well distinguishable from wild animals. The nursery reports some mostly economically positive aspects of ranching. As benefits the nursery notes minimal damage for the wild populations".

Directly quoted from (Bondarenko and Peregontsev, 2006), the CITES Scientific Authority of Uzbekistan (Azimov and Chikin *in litt*. to CITES Secretariat, 2008) reported that "control must be tightened over legal captures and measures must be taken against poaching of the

tortoise… A reduction in the levels of poaching of the tortoise can only be achieved by strengthening and criminal measures of influence and by tightening the customs control".

D. Problems identified that are not related to the implementation of Article IV, paras 2 (a), 3 or 6 (a)

Illegal trade was reported to be occurring in Afghanistan, Kyrgyzstan and Tajikistan, and an apparent pressing problem in Uzbekistan.

Resolution Conf 11.9 (Rev. CoP13) on the 'Conservation of and trade in tortoises and freshwater turtles' urges Parties, especially range States, to undertake a number of activities including enhancing enforcement and management efforts, implementing research programmes and management strategies, enacting legislation, and increasing public awareness. Range States that authorize trade in tortoises and freshwater turtles are required to provide information on their progress towards implementing this Resolution in their periodic reporting (Res. Conf. 11.9 [Rev. CoP13]). However, the range states under review have either failed to submit recent biennial reports (Afghanistan, Kyrgyzstan and Uzbekistan for the biennia 2003-4, 2005-6 and 2007-8, Iran for the biennia 2005-2006 and 2007-2008, Pakistan for the biennia 2003-4 and 2005-6 and the Russian Federation for 2003-4 and 2007-8), or have failed to include information on their progress towards implementing this Resolution (Iran for the biennia 2003-2004 and the Russian Federation for the biennia 2005-2006).

Pakistan has submitted a biennial report for 2007-8, but this was not available at the time of writing.

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Table 10. Indirect exports of *Testudo horsfieldii* originating in the Russian Federation, 1999-2008. All trade involved live specimens.

Exporter	Importer	Source	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
Finland	Russian Federation	U	Exporter							2				2
			Importer											
	Switzerland	W	Exporter							1				1
			Importer											
France	Russian Federation	C	Exporter			1		1						2
			Importer											
Japan	Hong Kong, SAR	W	Exporter											
			Importer		100									100
Portugal	Libyan Arab Jamahiriya	I	Exporter						4					4
			Importer											
United Kingdom	Jersey	C	Exporter											
			Importer			58								58
		I	Exporter											
			Importer			80								80
United States of America	Indonesia	W	Exporter							30				30
			Importer											
	Mexico	R	Exporter											
			Importer		100									100

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Table 11. Indirect exports of *Testudo horsfieldii* originating in Tajikistan, 1999-2008. All trade involved live specimens.

Exporter	Importer	Source	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
El Salvador	Germany	W	Exporter								100			100
			Importer											
	Spain	W	Exporter								100			100
			Importer											
	United States of America	C	Exporter											
			Importer								2265	3129	625	6019
		W	Exporter								8551			8551
			Importer											
Germany	Japan	W	Exporter										24	24
			Importer										24	24
Japan	China	W	Exporter			22								22
			Importer											
	Hong Kong, SAR	W	Exporter		100	100	70							270
			Importer											
	Malaysia	W	Exporter						2					2
			Importer											
Russian Federation	Germany	W	Exporter		200									200
			Importer	1200										1200
	Japan	W	Exporter	8500	12500									21000
			Importer	6900	5445									12345
	Spain	W	Exporter											
			Importer	500										500
	United States of America	W	Exporter	7000	4000									11000
			Importer											
	Uzbekistan	W	Exporter							3327				3327
			Importer											
Spain	United States of America	W	Exporter	1										1
			Importer											

Exporter	Importer	Source	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
Ukraine	Czech Republic	R	Exporter											
			Importer								1000			1000
	El Salvador	W	Exporter								10000			10000
			Importer											
	France	R	Exporter								1500			1500
			Importer											
		W	Exporter											
			Importer										1150	1150
	Germany	R	Exporter							300	200			500
			Importer											
		W	Exporter											
			Importer										5500	5500
	Japan	W	Exporter		5000	1000	3000				60			9060
			Importer		270	2000		1000						3270
	Mexico	W	Exporter											
			Importer										100	100
	Netherlands	W	Exporter											
			Importer										500	500
	Spain	R	Exporter								1650			1650
			Importer											
		W	Exporter											
			Importer										1500	1500
	United Kingdom	R	Exporter								300			300
			Importer											
		W	Exporter											
			Importer	300										300
	United States of America	C	Exporter											
			Importer					1000						1000

Exporter	Importer	Source	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
Ukraine (cont.)	United States of America	W	Exporter		3000	7000	5000	4450		10000	6400			35850
	(cont.)		Importer		500	1000		2330			1900	2500	5300	13530
United States of America	Czech Republic	W	Exporter											
			Importer										20	20
	Mexico	W	Exporter	8										8
			Importer	8									10	18
	Qatar	W	Exporter											
			Importer										2	2
Uzbekistan	United States of America	W	Exporter									1577		1577
			Importer								3750	1577		5327

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Table 12. Indirect exports of *Testudo horsfieldii* from Uzbekistan, 1999-2008. All trade involved live specimens.

Exporter	Importer	Source	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
Bulgaria	Republic of Korea	W	Exporter						4					4
			Importer											
	United States of America	W	Exporter				500							500
			Importer											
Germany	China	R	Exporter										30	30
			Importer											
	Hong Kong, SAR	R	Exporter											
			Importer										30	30
Japan	France	W	Exporter								1	1		2
			Importer									1		1
	Hong Kong, SAR	W	Exporter				70		100	300		100		570
			Importer				70			295				365
	Taiwan, Province of China	W	Exporter				500							500
			Importer											
	United States of America	W	Exporter											
			Importer					2						2
Panama	Chile	W	Exporter					58						58
			Importer											
Russian Federation	Japan	W	Exporter											
			Importer	1600										1600
	United States of America	W	Exporter											
			Importer		4000	6000	1500							11500
	Viet Nam	I	Exporter		1									1
			Importer											
Spain	Malaysia	R	Exporter									20	20	40
			Importer									20	20	40
Ukraine	Croatia	W	Exporter						500					500
			Importer											
	Japan	W	Exporter			3000		2000	48	200				5248
			Importer			3000		1000	1000					5000
	United States of America	W	Exporter			7000		5000						12000
			Importer					3120						3120

Exporter	Importer	Source	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
United Kingdom	Isle of Man	R	Exporter											
			Importer							2				2
United States of America	Argentina	W	Exporter							30	13		24	67
			Importer							30	13			43
	Bermuda	W	Exporter				6							6
			Importer				6							6
	Canada	W	Exporter				6			12				18
			Importer											
	Chile	W	Exporter										69	69
			Importer										69	69
	China	W	Exporter									12		12
			Importer											
	Costa Rica	W	Exporter	1		1								2
			Importer											
	Czech Republic	W	Exporter								196	25		221
			Importer								196			196
	Hungary	W	Exporter				12							12
			Importer											
	Indonesia	W	Exporter								10			10
			Importer											
	Japan	W	Exporter									4		4
			Importer				60					4		64
	Macao	W	Exporter											
			Importer									12		12
	Malaysia	W	Exporter							40				40
			Importer											
	Mexico	W	Exporter											
			Importer					12		9				21
	Netherlands	W	Exporter								1900			1900
			Importer								1900			1900
	Panama	W	Exporter				50	60			6			116
			Importer					160	100					260
		(blank)	Exporter											

Exporter	Importer	Source	Reported by	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
			Importer								6			6
	Philippines	W	Exporter				12							12
			Importer											
	Switzerland	W	Exporter							20	29			49
			Importer				60			20	29			109
	Taiwan, Province of China	W	Exporter				140							140
			Importer											
	United Kingdom	W	Exporter								25			25
			Importer								25			25
Unknown	Costa Rica	W	Exporter											
			Importer		1									1

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

Amyda cartilaginea (Boddaert, 1770): Indonesia

Trionychidae, Asiatic Softshell Turtle

Selection for Review of Significant Trade

Amyda cartilaginea was selected at the 23rd meeting of the Animals Committee on the basis of trade data provided in document AC23 Doc. 8.5, and Indonesia was contacted and requested to demonstrate its non-detriment finding (AC23 Summary Report; AC24 Doc. 7.4 Rev. 1). On 19th September 2008, Indonesia sent detailed information on the application of Article IV (AC24 Doc. 7.4 Rev. 1). However, it was retained in the Review of Significant Trade because no population estimates were available, the numbers exported were high and the export quota had recently been substantially increased (AC24 Summary Record).

A. Summary

Range State	Provisional category	Summary
Indonesia	Urgent Concern	Classified globally as Vulnerable. No estimates of population size or trends appear to be available. The species is protected from hunting only within protected areas. The main threat is international trade for consumption or as pets, although illegal trade is also noted to occur. Reported trade levels are very high, and although trade is controlled through a quota system, the biological basis for the high quota set is unclear. Quotas have been exceeded in two years, substantially in 2008. The impact of the trade is unknown, and on this basis, categorised as Urgent Concern.

B. Species overview

Biology: *A. cartilaginea* is a large freshwater turtle found in a variety of habitats such as rivers, lakes, canals, ponds and wetlands, where it maintains an omnivorous diet including plant material, fish and crustaceans (Moll and Moll, 2004; Bonin *et al.,* 2006; Jensen and Das, 2008b; Kusrini *et al.,* 2009). The species burrows under mud or sand for many hours but has been observed emerging from the water at night (Bonin *et al.,* 2006). *A. cartilaginea* was reported to require up to a decade to reach sexual maturity (AC19 Doc. 15.2[Rev.1]), however the CITES Management Authority of Indonesia (2008) reported that traders considered the species to be fast-growing, beginning to lay eggs when they are 7 kg in weight, or approximately 3 to 4 years old. Bonin *et al.* (2006) reported that females may form 3-4 nests annually, with 6-10 eggs per clutch, whereas however the CITES Management Authority of Indonesia (2008) reported that females could carry up to 60-70 eggs, and that Iskandar (2000) reported up to 40 eggs.

The eggs and hatchlings were reported to be preyed on by monitor lizards (*Varanus* spp.), crows (*Corvus* spp.) and serpent eagles (*Spilornis cheela*) (CITES MA of Indonesia, 2008). *A. cartilaginea* was also reported to be susceptible to ectoparasite infestation (CITES MA of Indonesia, 2008), with a study in Java finding that 90% of wild specimens were infested by *Pseudocalcoestoma* worms (Sudiana *et al*. 2000 cited in CITES MA of Indonesia, 2008).

General distribution and status: *A. cartilaginea* is currently the only recognised species in its genus (Meylan, 1987; Fritz and Havaš, 2006). It was reported to have a

wide but discontinuous distribution across south and southeast Asia, from eastern India to Viet Nam and southwards to the Malay Peninsula, and the islands of Borneo, Sumatra and Java (King and Burke, 1989; Iverson, 1992; Moll and Moll, 2004; Bonin *et al.*, 2006; Fritz and Havaš, 2007).

In 2000, *A. cartilaginea* was assigned the global threat status of Vulnerable, with the justification that "The security of a wide distribution and occurrence in protected areas is offset by specific demand for this species in the consumption trade, currently traded at levels of tons per day" (Asian Turtle Trade Working Group, 2000). Bonin *et al*. (2006) reported that habitat damage by humans and pollution were additional threats.

Overview of trade and management in the species: *A. cartilaginea* was listed in CITES Appendix II on 12/01/05. It was reported to be utilized for its meat, as a pet and for use in traditional medicines, being hunted by local people and traded both nationally and internationally (Bonin *et al.*, 2006; CITES MA of Indonesia, 2008; Jensen and Das, 2008a; Kusrini *et al.*, 2009). The species was described as "the most heavily traded wild-harvested Asian turtle" (IUCN/SSC TandFTSG and ATTWG, 2000 cited in CoP13 Prop. 20), and "the most voluminously traded CITES-listed Asian freshwater turtle by 2007" (CoP15 Inf. 22), whilst Bonin *et al.* (2006) noted that "Although the meat of this species is less sought after than that of certain other softshells, this turtle is still heavily caught and consumed."

The CITES Management Authority of Indonesia (2008) noted that whilst the species unique appearance made it desirable as a pet, information from pet turtle authors (e.g. Flank, 1997; Mueller, 1998) indicated that the species was not suitable for beginners as it is fast-growing (hence quickly requires larger housing) and could also be aggressive.

According to the CITES Trade Database, exports of *A. cartilaginea* have primarily been composed of live individuals, carapaces and meat (all wild-sourced), with the main exporter being Indonesia. Some exports were reported from Malaysia in 2005. Malaysia has published a zero export quota for this species since 2007, applicable only to Peninsular Malaysia since 2008.

C. Country reviews

INDONESIA

Provisional category: Species of Urgent Concern

Distribution in range State: *A. cartilaginea* was reported to occur on the islands of Sumatra, Java, Borneo (West, East, South and Central Kalimantan) (King and Burke, 1989; Iverson, 1992; Samedi and Iskandar, 2000; Bonin *et al.*, 2006; Auliya, 2007), and most recently, Sulawesi, where it is believed to have been introduced (Auliya, 2007; Koch *et al.*, 2008). Auliya (2007) also reported the species' occurrence in Bali, Lombok and associated islands, and possibly Roti and Timor. However, Koch *et al.* (2008) noted that the record of a specimen from Lombok was probably incorrect.

Koch *et al.* (2008) recently confirmed the species' occurrence on Sulawesi, marking the easternmost extent of its range. It was thought to have been introduced via public ferries or trading vessels from Borneo, Java or Bali (Koch *et al.*, 2008). The authors suggested that possible habitats for *A. cartilaginea* on Sulawesi were Danau Lindu (a lake located in Lore Lindu National Park, 50 km south-east of Palu), Danau Poso

(the largest lake of Central Sulawesi), and as previously suggested by Samedi and Iskandar (2000), Rawa Aopa Watumohai National Park (at the tip of the SE peninsula of Sulawesi) (Koch *et al.,* 2008).

Population trends and status: Samedi and Iskandar (2000) recorded the species status in Indonesia as "common", and Iskandar (2000 cited in CoP13 Prop. 20) considered it to be "abundant locally". The CITES Management and Scientific Authority of Indonesia (2010) also considered *A. cartilaginea* to be "quite abundant" and noted that although a thorough study had never been undertaken, there appeared to be ample habitat for the species and it appeared to be abundant in most areas/provinces that still had swamps, rivers and man-made wetlands.

In a population survey conducted in East Kalimantan (using fishhooks placed along 10.6 km of river), the number of turtles captured per unit effort was found to be highly variable between rivers, with an estimate of roughly 0.66 individuals per km of river (range 0-17 individuals per km) (Kusrini *et al.,* 2009). However, it was acknowledged that population numbers could not be accurately estimated, due to the small number of individuals captured (seven individuals over 17 days) and because the mark-recapture method is not suitable for this species (Kusrini *et al.,* 2009).

In a study of freshwater turtle exports from North Sumatra and Riau, Indonesia, Shepherd (2000) reported that "According to all dealers interviewed during this study, wild populations of all species are declining. Trappers bring in fewer turtles, resulting in export volumes that have dropped to about half of what they were two years ago."

Based on a recent field study conducted by Oktaviani (2007) in South Sumatra Province, the CITES Management Authority of Indonesia (2008) reported that *A. cartilaginea* was widespread in the province.

The *A. cartilaginea* population in Java was reported to have decreased and to no longer be suitable for commercial harvest (CITES MA of Indonesia, 2008).

Threats: The most significant threats to Indonesian freshwater turtle and tortoise populations were reported to be hunting for trade and habitat destruction (Samedi and Iskandar, 2000; Shepherd and Nijman, 2007). Samedi and Iskandar (2000) reported that "During the last decade, the trade in these [tortoise and freshwater turtle] species has increased considerably. Some of this trade centers on domestic consumption, but most of the trade is for export to fulfill the substantial increase in demand from consumer countries in East Asia, particularly China." Shepherd and Nijman (2007) reported that "Persistent trade is one of the main threats to their survival, and large volumes can be observed in trade in Indonesia's domestic markets, as well as being exported from Indonesia."

The CITES Management and Scientific Authorities of Indonesia (2010) reported that the main threats to *A. cartilaginea* were habitat conversion and illegal trade. Indonesia's lowland habitats and wetlands were reported to be under threat from a range of land uses, including agricultural development, logging, mining, wetland drainage, construction of reservoirs and flood defense (Samedi and Iskandar, 2000; CITES MA & SA Indonesia, 2010). These activities were reported to eliminate natural feeding and breeding habitats (Fritz and Gaulke, 1997; van Dijk, 1999; van Dijk and Palasuwan, 2000).

The nature and impacts of trade in *A. cartilaginea* were described in proposal CoP13

Prop. 20:

> "This species is harvested for local, regional, and international consumption. Large numbers are caught for rural consumption, while regional networks of hunters and traders supply restaurants and the international trade (Jenkins, 1995; van Dijk, 1999). All animals larger than about 15 cm shell length are taken, but traders prefer animals less than 5 kg (Jenkins, 1995; Shepherd, 2000). Because turtles do not reproduce until they reach a much larger size, intensive exploitation of juveniles and mature adults strongly affects population recruitment resulting in the rapid decline of populations (van Dijk and Palasuwan, 2000). Eggs are also harvested for local consumption, but not in great numbers (van Dijk and Palasuwan, 2000). […] Small juveniles are occasionally traded in domestic and international pet trade."

In East Kalimantan, Kusrini *et al.* (2009) reported the main threat to *A. cartilaginea* to be river poisoning for capture of fish and shrimps. This activity does not kill the turtles directly, but they were reported to die in subsequent weeks due to their inability to find sufficient food (Kusrini *et al.,* 2009).

The main harvest areas for *A. cartilaginea* were reported to be Kalimantan (East, South and West Kalimantan), Sumatra (mainly North Sumatra, Riau Jambi and South Sumatra Province) and Java Island (mainly Central Java and East Java provinces) (CITES MA & SA Indonesia, 2010). Shepherd (2000) surveyed two Sumatran provinces of North Sumatra and Riau and reported that they were "very significant in the trade of live softshell turtles" with statistics from the Fisheries Department indicating that these two provinces combined were the largest exporters of softshell turtles in the country. Shepherd and Nijman (2007) reported that turtles and tortoises were traded in most of the larger cities (e.g. Medan, Surabaya, Bandung), but the main centre for trade was, Jakarta.

In a survey on the harvest and trade of *A. cartilaginea* in East Kalimantan, it was found that the species was hunted from land or by boat using baited hooks (or sometimes long sticks), with fishers spending 1-5 days at each site, conducting roughly four hunting trips per month, with no clear capture season (Kusrini *et al.,* 2009). Fishers preferred to capture larger individuals (usually sold live to collectors, for meat), but a substantial proportion of small individuals were also captured and were usually traded as pets, or domestically for consumption. The supply chain consisted of local fishers selling turtles in traditional markets or to collectors, who then sold the turtles to exporters, for international trade or for sale to restaurants and markets in Jakarta (Kusrini *et al.,* 2009). It was not known how many people were involved in the trade (Kusrini *et al.,* 2009).

Trade: Indonesia has published annual export quotas for live, wild specimens since 2005. The export quota was reduced slightly in 2008 and has since remained constant. According to the CITES Trade Database, annual exports reported by Indonesia have been within quota, whereas data reported by the importers indicated that quotas may have been exceeded in 2007 and 2008 (Table 1). The 2008 quota was apparently exceeded by more than 10,000 specimens, according to importers.

Table 1. CITES export quotas for *Amyda cartilaginea* from Indonesia and associated global direct trade in live, wild-sourced individuals as reported by Indonesia and the importing countries (trade data not yet available for 2009 and 2010).

	2005	2006	2007	2008	2009	2010
Quota	27000	27000	27000	25200	25200	25200
Reported by Indonesia	25066	26665	26710	25197	-	-
Reported by Importers	400	23507	27267	35230	-	-

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK.

Direct exports from Indonesia since its listing in Appendix II in 2005 have primarily consisted of wild-sourced *A. cartilaginea*, exported as live individuals, carapaces and meat (Table 2). The main importers of live, wild-sourced individuals from Indonesia were China (including Hong Kong SAR) and Singapore; the sole importer of wild-sourced meat from Indonesia was China.

Table 2. Direct exports of *Amyda cartilaginea* from Indonesia, 2005-2008. All trade was for commercial purposes.

Source	Term (unit)	Reported by	2005	2006	2007	2008	Total
F	live	Exporter	1100				1100
		Importer					
W	carapace (kg)	Exporter	7900				7900
		Importer	7900				7900
	live	Exporter	25066	26665	26710	25197	103638
		Importer	400	23507	27267	35230	86404
	meat (kg)	Exporter		6000			6000
		Importer		6000			6000

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK.

Reported re-exports of *A. cartilaginea* originating in Indonesia included 310 live confiscated/seized turtles exported from Singapore for the purposes of law enforcement (Table 3).

Table 3. Indirect exports of *Amyda cartilaginea* from Indonesia, 2005-2008.

Re-exporter (Origin)	Source	Term (unit)	Purpose	Reported by	2005	2006	2007	2008	Total
Malaysia (Indonesia)	W	carapace (kg)	T	Exporter	7900				7900
				Importer	7900				7900
Singapore (Indonesia)	I	live	L	Exporter		310			310
				Importer					

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK.

Statistics from the Directorate General of Fisheries, Agriculture Department, Indonesia (cited in Shepherd, 2000) gave the total Indonesian exports of softshell turtles 1996-1998 to be 715,192; 423,100 and 358,927 individuals respectively. These were supposed to consist entirely of *A. cartilaginea*, but Shepherd (2000) noted that from observations and interviews it was apparent that other native species of softshell turtle were also included in these shipments. He also considered these figures to be underestimates.

Annual export quantities of *A. cartilaginea* presented in CITES Management Authority of Indonesia (2008) showed higher levels of exports than those given in Indonesia's annual report for the years 2005 and 2006 (Table 4).

Table 4. Export quota and actual export of *Amyda cartilaginea* from Indonesia (Source: Directorate General of Forest Protection and Nature Conservation, Ministry of Forestry; cited in CITES Management Authority of Indonesia, 2008).

Year	Export Quota (heads)	Actual Export (heads)
2000*	10000	1961
2001*	18000	3340
2002*	9000	1670
2003*	17000	16010
2004*	26775	23384
2005	27000	26666
2006	27000	26998
2007	27000 (23,000 consumption; 4,000 pets)	26355
2008	25200 (21600 consumption; 3600 pets)	22469**

*The trade of *Amyda cartilaginea* under CITES regulation was started in 2005. However, prior to 2004 Indonesia has set up a quota as a precautionary measure.
**Data up to mid September 2008.

Imports of wild specimens of this species into the European Union have been restricted since 02/10/2006, and legally suspended since 03/09/2008, with the suspension confirmed on 21/05/2009 under Commission Regulation (EC) 359/2009.

The CITES Management Authority of Indonesia (2008) reported that the national demand for *A. cartilaginea* (for food and as a pet) was very low compared with export quantities, but precise figures for harvest for national demand were not available.

Shepherd (2000) reported that softshell turtles were more valuable commercially than other turtle species, with *A. cartilaginea* found to be the most common turtle in trade in Sumatra, and also the most expensive and considered the best quality. Smaller specimens were reported to fetch higher prices as they apparently have a higher meat quality, with middlemen in Sumatra paying IDR 12,000-30,000/kg for *A. cartilaginea* weighing less than 5 kg, or IDR 7,000-9,000/kg for individuals weighing 5-15 kg (Shepherd, 2000).

Kusrini *et al*. (2009) reported that the price of *A. cartilaginea* varied at the fishers and collectors. The price for fishers in Kapuak was IDR 18,000/kg (US$ 1.8) for turtles having weights less than 20 kg, and IDR 15,000/kg (US$ 1.5) for turtles weighing more than 20 kg, but at the collection point in Berau, the prices were IDR 24,000/kg (US$2.4) for <20 kg, IDR 22,000 (US$ 2.2) for 20-30 kg size, and IDR 20,000 (US$ 2) for >30 kg size Kusrini *et al*. (2009). The price of meat at a traditional market (Nunukan) was reported to be IDR 18,000-20,000 (US$1.8-2) per kg (Kusrini *et al*., 2009).

The CITES Management Authority of Indonesia (2008) reported that at present, all specimens designated for pets were taken from the wild, but traders have reported difficulties in keeping young *A. cartilaginea* in good condition, as their soft shells easily get scratched and wounded. Turtles with damages shells are then sold for consumption at a lower price (CITES MA of Indonesia, 2008).

With regards to illegal trade, in proposal CoP13 Prop. 20 it was reported that "Trade statistics of the Agricultural and Fisheries Department of Hong Kong recorded a total of 312,459 *Amyda cartilaginea* imported into Hong Kong from Indonesia from November 1993 to October 1994 (Lau *et al*., 1996), about 6 times the total annual Indonesian quota at that time. This indicates the scale of unreported trade levels from Indonesia."

In Indonesia's 2005-6 biennual report, the confiscation of 7000 *A. cartilaginea* being smuggled to Hong Kong on 30/06/06 was reported.

The CITES Management and Scientific Authorities of Indonesia (2010) also reported an instance in 2002 where a permit to cover the export of 1200 kg of *A. cartilaginea* to Taiwan was found to have been falsified.

In June 2006, it was reported that a consignment of 630 endangered Asian softshell turtles from Indonesia, valued at $50,000, was seized by the Agri-Food and Veterinary Authority at Jurong Fishing Port, Singapore (The Straits Times, 2006; CITES Management Authority of Viet Nam, 2010).

Kusrini *et al*. (2009) also reported of a collector in Bulungan who sold turtles directly to Tawao (Malaysia) without a legal permit.

The CITES Management and Scientific Authorities of Indonesia (2010) noted that illegal trade was particularly difficult to control given that Indonesia consists of >17,000 islands with >60,000 km of coastline which is prone to wildlife smuggling and laundering. They noted that smuggling was often undertaken by foreign fishermen fishing in Indonesian waters (including freshwater turtles). They also noted that "While Indonesia has strict legislative requirements that only permit the export of CITES-listed species from certain ports, and imposes fixed export quotas (27,000 specimens annually for Asian Softshell Turtles), consistent and efficient monitoring and enforcement remains a challenge, especially with increasingly sophisticated smuggling methods" (CITES MA & SA Indonesia, 2010).

Management

Legal protection: *A. cartilaginea* was reported to be currently unprotected under Indonisian law (CITES MA of Indonesia, 2008; Iskandar and Erdelen, 2006) and the species was not included in the list of protected species in Government Regulation No. 7/1999 (President of the Republic of Indonesia, 1999). The CITES Management and Scientific Authorities of Indonesia (2010) reported that, in accordance with the Decree No. 5 of 1990 and Decree of the Minister of Forestry No. 447 of 2003, the harvest of wild turtles could only take place outside of protected areas (national parks, nature reserves, game reserves, recreation parks and grand forest parks) such as in hunting areas. Whilst wetland protected areas cover 15.6 million hectares in Indonesia (Ministry of Forestry, 2008 cited in CITES MA & SA Indonesia, 2010), the number of protected areas that include the range of *A. cartilaginea* is unclear.

Regulation of wild harvesting and trade: Shepherd and Nijman (2007) described how, under Indonesia's legislation, all trade in native non-protected species (whether listed on CITES or not), is regulated by a harvest and export quota system:

> "Following the decree of the Ministry of Forestry No. 447/Kpts-11/2003 (revised from Decree of the Ministry of Forestry No. 62/Kpts-II/1998), harvesting or capture and distribution of wild plant and animal specimens in Indonesia can only be done under a license given out by PHKA[Directorate General of the Forest Protection and Nature Conservation]. Sending or transporting wildlife from one location to another within Indonesia must be covered by legal documents (Article 42, Chapter X of the Regulations of the Government of the Republic of Indonesia Number 8, 1999) handed out by the regional offices for the Natural Resources Conservation Agencies (BKSDA) at the provincial level, whether the species is protected by law or not. Collectors and suppliers (or middlemen) must

> be registered with the BKSDA (Siswomartono, 1998). Once a year each of the provincial BKSDA offices is supposed to report to PHKA what species and volumes have been harvested and transported, and by whom. […] IRATA [the Indonesian Reptile and Amphibian Trade Association] is responsible for dividing up the annual allotted quotas among the association members each year […] Most of the domestic retail pet dealers are not members of IRATA […] and therefore cannot export. However, they can sell their animals locally, provided they are registered with PHKA and BKSDA."

However, Shepherd and Nijman (2007) also noted that few of the collectors, middlemen, and traders abided by the regulations and guidelines and that "in general, regulatory law enforcement regarding wildlife protection and trade management [in Indonesia] is less than optimal."

The CITES Management and Scientific Authorities of Indonesia (2010) reported that 28 companies were currently registered as exporters of *A. cartilaginea*, and that BKSDA monitored harvesting activities though regular inspections of registered collector companies. They reported that every transport permit issued had to have these inspection documents enclosed, to verify that the specimen being exported was in accordance with the permit.

Kusrini *et al.* (2009) reported that the Government of Indonesia had already set a regulation on harvestable weights (<5 kg for pets and >15 kg for consumption, with a 10% deviation), to help ensure harvest sustainability and to protect the females.

The CITES Management Authority of Indonesia (2010) reported they had increased efforts to monitor wildlife trade at several major ports by requesting the support of various local institutions.

Population monitoring: Kusrini *et al*. (2009) reported on a survey on harvest and trade in East Kalimantan, which was part of a larger program aimed at estimating the population number, distribution and age structure of *A. cartilaginea* in Kalimantan and Sumatra, identifying their key habitats and monitoring harvest and trade. Based on the population estimate of roughly 0.66 individuals per km of river, Kusrini *et al*. (2009) stated that "The estimation of harvest indicated that the capture rate was still far below the production of *A. cartilaginea* in the survey area. The export quota for two companies in Balikpapan in 2008 was 3,979 heads (CITES MA Indonesia, 2008). The captured *A. cartilaginea* from Berau in 3 months was 612 individuals, or totalling 2,766 individuals, including 13% mortality. This number was approximately 2/3 of the quota given to those companies."

The CITES Management and Scientific Authorities of Indonesia (2010) reported that a similar survey would be conducted in Sumatra in 2010.

The CITES Management Authority of Indonesia (2008) reported that there were currently no registered companies to conduct captive breeding, and that there had been some reluctance to breed this species "as harvesting from the wild is easier, cheaper, and faster compare[d] to setting up a breeding operation."

Basis for making non-detriment findings: The CITES Management and Scientific Authorities of Indonesia (2010) provided the following information on their approach to demonstrating that trade was not detrimental to wild *A. cartilaginea* populations:

> "The approach Indonesia took [to] this problem, which extended to many other species being harvested and exported and for which population data on [a]

national scale were lacking, was to introduce a system of management which we termed a "quota" system, but which in reality started as a harvest guide. As a first response aimed at introducing more strictly controlled and managed harvests in the future, an attempt was made to derive species-specific quotas which matched approximately the harvest levels known to occur.

Individual species harvest quotas are based on a range of available data, including information on the biology and distribution of the species, general land-use and potential threats in specific areas.

The export quota is typically established as 90% of the total harvest: domestic trade is around 10% [...] The decree identifies the annual allowable harvest of each species at national level, allocated between various provinces."

Annual quotas for *A. cartilaginea* were reported to be set by the Directorate General of Forest Protection and Nature Conservation (PHKA) as the Management Authority, with a precautionary approach and advice from the Scientific Authority (LIPI) (CITES MA & SA Indonesia, 2010). Proposed harvest levels for each province were reviewed by stakeholders under coordination of the Scientific Authority, including research institutions, universities, NGOs and exporters represented by their association, as well as the Scientific and Management Authorities themselves (CITES MA & SA Indonesia, 2010).

Shepherd and Nijman (2007) reported that Indonesian harvest quotas were divided by province or district (with harvest not permitted from provinces without an allocated quota), but that for many species these harvest areas and numbers allotted appeared erratic, bearing little relation to the geographic distribution of the species and often permitting harvest in one province but not adjacent provinces. The breakdown of quotas for *A. cartilaginea* in 2004 is given in Table 5.

Table 5. Quotas for *A. cartilaginea* in 2004 and the designated regional harvest areas. Between brackets, following the harvest region, the number of provinces where harvest is allowed /total number of provinces on the region.

Species	Harvest region	Harvest quota	Export quota	Domestic use
Amyda cartilaginea	Sumatra (5/10)	3500	9000	1000
	Java (4/4)	5000		
	Kalimantan (3/4)	1500		

Source: PHKA, 2003 in Shepherd and Nijman, 2007

Shepherd and Nijman (2007) noted that the quotas for tortoises and freshwater turtles in Indonesia clearly stated that the purpose of export and domestic use was for pets, not consumption, and that "Animals are not allowed to be harvested for purposes other than what is stated in the annual quotas." However, the literature indicated that this species is widely used for consumption, both nationally and elsewhere in Asia (Asian Turtle Trade Working Group, 2000; CITES MA of Indonesia, 2008; Jensen and Das, 2008a; Kusrini *et al.*, 2009). The CITES Management Authority of Indonesia (2008) confirmed that before 2007, quotas were set regardless of purpose, whereas from 2007 onwards, the CITES Authority split the quota for consumption (85%) and for pets (15%) (see Table 4).

D. Problems identified that are not related to the implementation of Article IV, paragraphs 2 (a), 3 or 6 (a)

Illegal trade for the consumption pet markets was reported to be a threat (e.g. CoP13 Prop. 20; Shepherd, 2000; CITES MA & SA Indonesia, 2010).

Resolution Conf 11.9 (Rev. CoP13) on the 'Conservation of and trade in tortoises and freshwater turtles' urges Parties, especially range States, to undertake a number of activities including enhancing enforcement and management efforts, implementing research programmes and management strategies, enacting legislation, and increasing public awareness. Range States that authorize trade in tortoises and freshwater turtles are required to provide information on their progress towards implementing this Resolution in their periodic reporting (Res. Conf. 11.9 [Rev. CoP13]). However, Indonesia did not submit a biennial report for 2007-8 and failed to include information on its progress towards implementing this Resolution in its 2003-4 and 2005-6 biennial reports (although cooperation between Indonesia and Singapore on exchanging information relating to illegal trade, including repatriation of seized turtles, was noted in Indonesia's 2005-6 biennial report).

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Scaphiophryne gottlebei Busse & Böhme, 1992: Madagascar

Microhylidae, Red Rain Frog, Painted Burrowing Frog

Selection for Review of Significant Trade

Scaphiophryne gottlebei was selected following the 14th Conference of the Parties at the 23rd meeting of the Animals Committee on the basis of trade data provided in document AC23 Doc. 8.5 (AC23 Summary Record).

A. Summary

Provisional category	Summary
Possible concern	Restricted to specific canyon habitats in the Isalo Massif area of Madagascar. Classified Endangered by IUCN, due to small range and threats from pet trade and habitat degradation. No estimates of population size available due to the elusiveness of adult individuals, but population known to be declining. However, reportedly abundant in suitable habitats. Range is partly within a National Park, some habitats reported to be under threat of mining activities, fires, logging, overgrazing and disturbance by tourists. Species is protected by national law, requiring permits for its collection. High levels of international trade reported since listing of the species in Appendix II in 2003. Exports managed within quotas set 2005-2008, and quota reduced to 250 live individuals in 2010. However, no clear basis for a non-detriment finding even for low levels of trade have been provided, and impact of collection for the international trade unknown, therefore categorised as Possible Concern.

B. Species overview

Biology: *S. gottlebei* is a small to medium-sized, conspicuously coloured frog species that is endemic to Madagascar (Andreone *et al.*, 2001). It was reported to be the only tetraploid amphibian species in Madagascar (Glaw and Vences, 2007).

S. gottlebei was found to inhabit rocky canyon habitats (Andreone, *in litt.* to UNEP-WCMC, 2010; Andreone *et al.*, 2001; Andreone, 2004; Crottini *et al.*, 2008; Mercurio *et al.*, 2008), characterised by stable temperatures of about 19-22°C, low light, about 100% humidity (Mercurio and Andreone, 2006), and temporary pools of still water (Andreone, *in litt.* to UNEP-WCMC, 2010). According to Andreone (*in litt.* to UNEP-WCMC, 2010) the habitat range of *S. gottlebei* covered savanna grasslands, temporary or permanent rivers, and canyons. However, Mercurio and Andreone (2006) recorded very few individuals to occur outside canyons.

Adult individuals were considered to be nocturnal (Busse and Böhme, 1992). Adults were mainly found burrowed on the sandy bottom substrate of canyons, but were also found to be capable of climbing canyon walls (Andreone *et al.*, 2001; Andreone, 2004; Mercurio *et al.*, 2008; Mercurio and Andreone, 2006). This kind of behaviour was suggested to indicate a high level of specialization to the canyons of Isalo Massif (Andreone *et al.*, 2006).

The CITES Scientific Authority for Madagascar (*in litt.* to UNEP-WCMC, 2010) reported that breeding was prolific, although no further details were provided. The behavioural pattern of tadpoles was also considered unique (Mercurio and Andreone, 2006). The *S. gottlebei* tadpoles were found to live in temporary rock pools (Andreone *et al.*, 2001), where they fed on bottom dedritus during the daytime, often burrowing themselves partially in the sand and mud (Mercurio and Andreone, 2006). During night time, they were found to move throughout the

whole water column, feeding on suspended particles (Mercurio and Andreone, 2006).

Breeding was reported to take place in the short season of heavy rainfall (Andreone, 2004). Andreone *et al.* (2001) reported *S. gottlebei* to produce a high number of eggs, and have a rapid larval development. The metamorphosis was estimated to take about 2-3 months (Mercurio and Andreone, 2006). Crottini *et al.* (2008) found evidence of high gene flow between local populations of *S. gottlebei*, which was suggested to be caused by the migration of individuals between subpopulations at the time of the breeding season. Andreone (*in litt.* to UNEP-WCMC, 2010) suggested that either the adult individuals move between habitat sites, or the tadpoles are dispersed between habitats during the time of cyclones. *S. gottlebei* was reported to be a short-lived species, with a life span of only 2-3 years (Andreone, *in litt.* to UNEP-WCMC, 2010).

C. Country review

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Distribution in range State: *S. gottlebei* was reported to be endemic to Madagascar (Crottini *et al.,* 2008) and restricted to the Isalo area in Fianarantso Province, occurring both within and outside the Isalo National Park (Andreone, *in litt.* to UNEP-WCMC, 2010; Glaw and Vences, 2007). According to surveys carried out in 1994 and 2004, the range of the species was reported to extend from Amparambatomavo in the north of the province to Lola in the south (Mercurio *et al.*, 2008). The species was recorded to be present in 14 sites in the Isalo Massif area by Crottini *et al.* (2008) (Table 1). Mercurio *et al.* (2008) reported that out of the total of 60 sites sampled in Isalo Massif, the species was found in 28 sites. Within its range, *S. gottlebei* was considered to be restricted to deep canyons with altitudes of 700-1000 m (Frost, 2010). The total range area was considered to be very small (Andreone *et al.*, 2005).

Table 1. List of sites, where *Scaphiophryne gottlebei* was found at Isalo during recent field surveys (source: Crottini *et al.*, 2008).

	Locality	Latitude	Longitude
1	Ambovo	22°30′48″	45°21′15″
2	Amparambatomavo	22°18′11″	45°21′36″
3	Andohasahenina	22°49′60″	45°11′28″
4	Andranombilahy	22°48′51″	45°14′16″
5	Andranomena	22°44′41″	45°16′50″
6	Antambonoa	22°22′31″	45°17′46″
7	Bemenara	22°48′07″	45°14′60″
8	Bevato	22°30′36″	45°21′35″
9	Lola	22°55′54″	45°19′48″
10	Malaso	22°35′31″	45°21′32″
11	Petit Nazareth	22°33′25″	45°21′23″
12	Tsiombivositra	22°18′15″	45°21′50″
13	Vohitanana	22°38′12″	45°20′46″
14	Zahavola	22°37′38″	45°21′52″

Population trends and status: The elusiveness of *S. gottlebei* was said to make it difficult to acquire reliable information on its distribution and abundance (Mercurio *et al.*, 2008). However, the species was reportedly abundant (Andreone *et al.*, 2008b; Stuart *et al.*, 2008) or likely to be abundant (Crottini *et al.*, 2008) in the humid canyons of northern Isalo Massif. Andreone (*in litt.* to UNEP-WCMC, 2010) stated that "populations appear to be quite big, although difficult to

detect". Breeding aggregations of 20 males and 10 females, and 60 males and 3 females were recorded to occur for a period of few days (Andreone, *in litt.* to UNEP-WCMC, 2010). It was suggested that due to the relatively high level of movement between habitats, *S. gottlebei* would be capable of colonising new sites (Andreone, *in litt.* to UNEP-WCMC, 2010).

Andreone *et al.* (2008b) estimated the population trend of *S. gottlebei* to be decreasing.

In the current IUCN Red List, the species was classified as Endangered with the following justification (Andreone *et al.*, 2008b): "Extent of occurrence is less than 5000 km², all individuals are in fewer than five locations, and there is continuing decline in the extent and quality of its habitat around Isalo, and it is possibly subject to over-collecting for the pet trade leading to a decline in the number of mature individuals." The species status was downlisted from Critically Endangered due to findings that showed the species to be more widespread than previously thought (Andreone *et al.*, 2008a).

Threats: Due to its rarity and attractive colouration, *S. gottlebei* was reported to have very high demand in pet trade (Andreone, *in litt.* to UNEP-WCMC, 2010; Andreone, 2004; Andreone and Luiselli, 2010; Staniszewski, 1998); according to Andreone (*in litt.* to UNEP-WCMC, 2010), pet trade was the "main real/potential threat affecting the species". The other main threat to the species was reported to be habitat alteration (Andreone, *in litt.* to UNEP-WCMC, 2010; Andreone *et al.*, 2005; CBSG, 2001; Stuart *et al.*, 2008).

Most of the capture of *S. gottlebei* was reported to take place in the Ilalaka area (Andreone, *in litt.* to UNEP-WCMC, 2010; Andreone *et al.*, 2001). According to Rabesihanaka *et al.* (2008), the species was collected by local peasants and villagers in large amounts in the breeding period, at the start of the rainy season. Reportedly, mainly juvenile individuals were collected, due to the secretive lifestyle of the adults (Andreone *et al.*, 2006). Rabesihanaka *et al.* (2008) described the capture process of Malagasy amphibians as follows: "In the past, all encountered animals were collected, but at present, owing to competition, exporters and collectors are becoming very demanding with regard to the condition and size of the animals; species are carefully selected before delivery. While orders are being accumulated, collectors keep animals in baskets or boxes in which they are transported and do not feed them unless the waiting time is at least one week. There is a high mortality rate before shipment and dead animals are not counted; for this reason exporters try to place their order directly in the field in order to avoid lengthy storage of animals." However, Andreone (*in litt.* to UNEP-WCMC, 2010) stated that unlike *Mantella* species, *S. gottlebei* was not "stocked" in containers but rather collected directly when in demand.

According to Andreone *et al.* (2006), "numerical evaluations of the reproductive proportion of the population as well as understanding of the possible effects of this collecting of juveniles are badly needed". Carpenter *et al.* (2007) stated that "there were no known studies investigating the population dynamics of any traded amphibian species, despite this trade existing since the mid-1990s". However, it was estimated by Andreone *et al.* (2005) that the populations of *S. gottlebei* were "still large enough to sustain some well-regulated commercial collecting". It was suggested that the species may recover well from harvesting due to its ability to produce large quantities of eggs and its rapid larval development (Andreone *et al.*, 2001).

S. gottlebei was reported to have a high level of mortality in captivity (Andreone *et al.*, 2008b; Mercurio *et al.*, 2008), possibly partially explained by the short life span of the species (Andreone, *in litt.* to UNEP-WCMC, 2010). There was no recorded evidence of successful

captive breeding, although short-lived tadpoles had been produced in a zoo (Andreone, *in litt.* to UNEP-WCMC, 2010; Andreone *et al.,* 2008a; García *et al.,* 2008; Mattioli *et al.,* 2006). However, as other *Scaphiophryne* species were known to breed successfully in captivity, it was suggested that such projects may be undertaken in the future, with an important impact on the conservation status of the species (Mattioli *et al.,* 2006).

Rabesihanaka *et al.* (2008) stated that the domestic trade was largely concentrated on the use of animals as food, rather than pet trade. Although large quantities of wild frogs are caught for food in Madagascar (Jenkins *et al.*, 2008), no further information on the use of *S. gottlebei* as a food source was located.

According to Andreone and Luiselli (2010), an evaluation of the level of threat posed by habitat alteration was difficult due to the poor knowledge of the species. Although other *Scaphiophryne* species were considered to be highly vulnerable to habitat change due to their requirement of natural forest conditions (Andreone and Luiselli, 2010), *S. gottlebei* is not dependent on forest habitats and hence, was said to be not threatened by deforestation (Andreone, *in litt.* to UNEP-WCMC, 2010). Some populations of *S. gottlebei* were reported to be threatened by the mining activity in the Llaka area (Andreone *et al.,* 2001), and the areas surrounding the Isalo National Park (Crottini *et al.,* 2008). Mercurio *et al.* (2008) reported that an urban centre was being created around sapphire searching activities in the Ilakaka area, where *S. gottlebei* was collected. However, Andreone (*in litt.* to UNEP-WCMC, 2010) stated that in general, mining activities do not directly affect the narrow canyons, which are the primary habitat of *S. gottlebei*. Additional threats to the habitats of *S. gottlebei* were considered to be fire, logging, overgrazing and the potential disturbance caused by tourists (Andreone *et al.,* 2008b; Stuart *et al.,* 2008).

Trade: *S. gottlebei* was listed in CITES Appendix II on 13/02/2003. According to data within the CITES Trade Database, Madagascar reported the export of 3188 live wild specimens during 2003-2008, with importers reporting 2812 live specimens over these six years (Table 2). All except one specimen was exported for commercial purposes. The main import countries for live, wild-sourced *S. gottlebei* between 1999 and 2008 were the United States of America, Japan and Canada. Indirect exports were reported at low levels, and are summarised in Table 3.

Table 2. Direct exports of *Scaphiophryne gottlebei* from Madagascar, 1999-2008. All trade was in wild-sourced specimens. The species was listed in Appendix II on 13/02/2003.

Term	Reported	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	Total
bodies	Exporter						30					30
	Importer						30					30
live	Exporter						725	330	749	667	717	3188
	Importer					980	776	270	216	465	105	2812

Source: CITES Trade Database, UNEP-World Conservation Monitoring Centre, Cambridge, UK

The trade in *S. gottlebei* reported by the Direction Général des Forêts, Nanisana (cited in CITES Scientific Authority of Madagascar *in litt.* to UNEP-WCMC, 2010), between the years 2000 and 2008 was significantly higher, totalling 10,586 individuals.

Imports of wild specimens of this species into the European Union have been restricted since 19/04/2004, and legally suspended since 10/05/2006 under a number of Commission Regulations, with the last suspension confirmed on 21/5/2009 under Commission Regulation (EC) 359/2009.

Table 3. Indirect exports of *Scaphiophryne gottlebei* wild specimens from Madagascar, 2003-2008. All specimens were live and wild-sourced. The species was listed in Appendix II on 13/02/2003. (No trade reported between 1999-2002).

Exporter	Importer	Reported by	2003	2004	2005	2006	2007	2008	Total
Canada	Japan	Exporter		29		25			54
		Importer		37		25			62
	Taiwan, Province of China	Exporter		12					12
		Importer							
	United States of America	Exporter		12					12
		Importer							
Thailand	Philippines	Importer				5			5
		Exporter							
United States of America	Japan	Exporter	15	28					43
		Importer							
	Republic of Korea	Exporter			7				7
		Importer							

According to Rabesihanaka *et al.* (2008), the annual quotas for wild species listed in Appendix II are set yearly in a meeting with the Scientific Authority and environmental NGOs. A summary of published export quotas are provided in Table 4.

Table 4. CITES Export quotas for wild-sourced *Scaphiophryne gottlebei* from Madagascar, 2005-2010.

	2005	2006	2007	2008	2009	2010
Quotas	1000	1000	1000	1000	1000	250

According to Andreone (*in litt.* to UNEP-WCMC, 2010) "the current exportation quota of 1000 individuals per year most likely represents a reasonable number". Trade data in Table 2 shows that the export quotas were not exceeded during the period 1999-2008. Madagascar reduced their export quota to 250 live specimens in 2010.

It was argued that the establishment of CITES export quotas may have led to increased illegal trade, as "smaller supply leads to higher demand, which encourages illegal trade and an outflow of or reduction in state revenues" (Rabesihanaka *et al.,* 2008). The endemic Malagasy species were considered to be particularly under such demand (Rabesihanaka *et al.,* 2008). However, Andreone (*in litt.* to UNEP-WCMC, 2010) stated that "I am not aware of recent illegal trade, although I cannot exclude that this happens". It was said that the elusiveness of the species may significantly limit the opportunities for collection for illegal trade, as the species is visible only during a very short breeding period (Andreone, *in litt.* to UNEP-WCMC, 2010).

On the international market, the price of Malagasy amphibians was reported to vary between 30-60€ (Rabesihanaka *et al.,* 2008) or 35-75$, with likely higher prices in pet stores (Edmonds, *in litt.* to UNEP-WCMC, 2010). The average price paid for the local hunters varied between 0.04 and 0.35 USD, whereas collectors were reported to receive 0.13-1 USD, and exporters 3-15 USD per animal (Rabesihanaka *et al.,* 2008). Prices for CITES-listed animals were reportedly higher, due to these species being more desirable in trade (Carpenter *et al.,* 2007).

According to Edmonds (*in litt.* to UNEP-WCMC, 2010), the species was "widely available from reptile dealers online and at trade shows" in the U.S. in early 2010. It was estimated that more

individuals were for sale in the period December 2009-March 2010 than in the same period on previous years; however, this did not seem to show as decreased demand of the species (Edmonds, *in litt.* to UNEP-WCMC, 2010).

Management: The Isalo national park was reported to cover a major part of the range of *S. gottlebei* (Andreone, 2004). The sale of wild animals from the protected areas was criminalized by the Law No. 2001-005 of 11 February 2001 (Rabesihanaka *et al.,* 2008). According to Crottiniet *al.* (2008), the habitats within the Isalo National Park could be considered relatively safe, due to control by park guides and the difficult accessibility of the inner areas of the park. However, the results of Crottini *et al.* (2008) indicated that a major part of the genetic diversity of *S. gottlebei* was found in the areas outside the protected areas.

The relevant legislation governing international wildlife trade as described by the CITES Scientific Authority for Madagascar (*in litt.* to UNEP-WCMC, 2010) include:

- **Ordinance 75-014** of 5 August 1975 on the ratification of the Convention;
- **Decree No. 6833/2001** of 28 June 2001 fixing the fees for permits and hunting permits, collection and export of specimens of flora and fauna;
- **Ministerial Order No. 3032/2003** of 13 February 2003, establishing fixed roles and responsibilities for the Scientific Authority of CITES in Madagascar;
- **Act No. 2005-018** of 17 October 2005 on International Trade and Endangered Species of Wild Fauna and Flora;
- **Decree No. 2006-097** of 31 January 2006 laying down detailed rules for implementing the Act No. 2005-018 of 17 October 2005;
- **Decree No. 2006-098** of 31 January 2006 concerning the publication of the revised Appendices to CITES;
- **Decree No. 2006-400** from 13 June 2006 on the classification of species of wildlife. The wildlife species of Madagascar are classified into three categories: protected (Category 1), harmful (Category 2) and game (Category 3).

In response to the Secretariat's consultation following inclusion of the species in the Review of Significant Trade process, the CITES Authorities in Madagascar confirmed that *S. gottlebei* was included in the protected category (Category 1) of Decree No. 2006-400, and that taking of this species from the wild was regulated on the basis of permits (AC24 Doc. 7.4).

With regards to the national quotas set by the Management Authority as described in Act No. 2005-018, Rabesihanaka *et al.* (2008) stated that quotas are allocated to CITES-listed species and that "The CITES committees meet regularly to exchange information on progress of action plan and implementation of CITES in general. Annually, the authority of science and environmental NGOs are involved in a large meeting to share recent data to set annual quotas for wildlife species listed in Appendix II".

For the collection of scientific samples, the scientific authorities of Madagascar had reportedly established a capture limit of five individuals per species of amphibians per site (Andreone *et al.,* 2006). However, no such site-specific quota was in place for commercial collection (Andreone *et al.,* 2006). It was reported that the collection of amphibian specimens for trade on the same site can take several days (Rabesihanaka *et al.,* 2008).

The CITES Scientific Authority of Madagascar (*in litt.* to UNEP-WCMC, 2010) stated that the basis for 'non-detriment' findings (NDFs) for amphibians included the following criteria:

- the area of occurrence of the species concerned;
- the natural parameters such as the range of the species and the method of reproduction;
- the anthropogenic parameter considering the condition of the habitat of the species (e.g. degraded, primary or secondary).

According to Andreone (*in litt.* to UNEP-WCMC, 2010), non-detriment findings were based upon expert opinions, and on published papers, although no further specific information was provided.

The CITES wildlife trade policy review of Madagascar was published in 2008, providing an evaluation of CITES implementation in Madagascar (Rabesihanaka *et al.*, 2008). The authors of the review noted that the "Malagasy wildlife trade policy is generally relevant to and consistent with other existing policies, but the resources available for its implementation do not match its ambitions, which is currently undermining its efficiency". As part of the review, Rabesihanaka *et al.* (2008) identified a number of weaknesses in CITES implementation in Madagascar, including a lack of finances, equipment and government support; a shortage of manpower to tackle illegal trade and a lack of communication between the different enforcement authorities and the Scientific Authority on the identification of species.

USAID (2008) noted that major constraints in the effort to conserve Madagascar's biodiversity were "Corruption and inadequate government management of natural resources, and enforcement of CITES and other legal controls that affect the environment."

To adhere to international CITES standards and support appropriate management decisions, the Government of Madagascar identified a need to develop and clarify national policies on the following CITES topics:

- Objectives for CITES management in Madagascar;
- Decentralization of enforcement;
- Sharing commercial receipts received with local communities where species or products are harvested;
- Management policies for areas where imported species are held; and
- Developing/establishing criteria for allocation of quotas and permits (USAID, 2008).

No information on population monitoring programs for *S. gottlebei* were located. It was noted that for the *Scaphiophryne* species, the "lack of population monitoring is of the utmost concern, as presence/absence data collected in present studies will not indicate any negative harvesting impacts until it is too late" (Carpenter *et al.*, 2007). The CITES Management Authority confirmed that there is no action plan currently in place for *Scaphiophryne gottlebei* (Rabesihanaka *pers. comm.* to UNEP-WCMC, 2010).

D. Problems identified that are not related to the implementation of Article IV, paragraphs 2 (a), 3 or 6 (a)

None identified.

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