CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II

A. Proposal

Inclusion of all species of the genus *Heosemys* in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES):

According to Article II, paragraph 2 (a) of the Convention, laid down in Resolution Conf. 9.24, fulfilling the criteria A and B (i):

Heosemys depressa (Anderson, 1875)

and

according to Article II, paragraph 2 (a) of the Convention, laid down in Resolution Conf. 9.24, fulfilling the criterion B (i):

Heosemys grandis (Gray, 1860)
Heosemys spinosa (Bell, 1830)

and

according to Article II, paragraph 2 (a) of the Convention, laid down in Resolution Conf. 9.24, fulfilling the criterion A:

Heosemys leytensis Taylor, 1920

B. Proponent

For *Heosemys depressa, H. grandis, H. leytensis*: People's Republic of China and the Federal Republic of Germany (on behalf of the Member States of the European Community).

For *Heosemys spinosa*: People's Republic of China and the Federal Republic of Germany (on behalf of the European Community and its Member States)

C. Supporting statement

Introductory Taxonomic Notes

The genus *Heosemys* was split out of the larger genus *Geoemyda* by McDowell (1964), who recognised *depressa*, *grandis*, *leytensis*, *silvatica* and *spinosa* as belonging to the genus *Heosemys*. Wermuth & Mertens (1961) listed these five species as belonging to the genus *Geoemyda*, and Obst (1996) provided an overview of subsequent generic assignments by revising authors.

The taxon *silvatica* is problematic in its placement; a number of recent taxonomic workers have placed it in the restricted genus *Geoemyda* (e.g. Das 1991; McCord, Iverson & Boeadi, 1995) while others retain it in *Heosemys* (e.g. Iverson, 1992; David, 1994; Fritz & Obst, 1996; Ernst, Altenburg & Barbour, 2000). For the purposes of this proposal, the taxon *silvatica* is specifically excluded from the genus *Heosemys*.

The taxon *yuwonoi* McCord, Iverson & Boeadi, 1995, has been attributed to the genus *Heosemys* (e.g. Fritz & Obst, 1996) and has subsequently been placed in the genus *Leucocephalon* McCord, Iverson, Spinks & Shaffer, 2001.

Executive Summary for the Arakan Forest Turtle (*Heosemys depressa*)

- An Appendix II listing is proposed for the Arakan Forest Turtle (*Heosemys depressa*); the species meets the criteria in Resolution Conf. 9.24, as outlined below. This listing is expected to provide further controls on international trade, providing importing countries with a mechanism to monitor and evaluate trade levels and the significance of their involvement, and allowing the range state to assess unreported trade levels by cross-checking against other Parties' registered imports.

- *Heosemys depressa* is only known to inhabit mainly evergreen forests and bamboo stands in the Arakan Yoma Hill range in Rahkhine State of western Myanmar. No information has been reported about growth, maturity or reproduction of the species.

- The species was rated Critically Endangered under criteria A2cd and B1 + 2c in both the 1996 and 2000 IUCN Red Lists, taking into consideration habitat loss and levels of exploitation.

- *Heosemys depressa* is a species with a restricted geographical range, low population density, low annual reproduction output and late maturity (like nearly all freshwater turtles). Removal of adult animals represents a major impact on population structure, recruitment and population genetics, and sustained collection may deplete populations to levels that compromise the ecological function of the species and may require decades or centuries to recover.

- Few specimens of this species are known, and it has generally been considered a rare and restricted species. *Heosemys depressa* is understood to be mainly under threat from over-collection for domestic consumption and the international food trade. Because of its rarity and enigmatic status the species is in significant demand in the high-end of the international pet trade, but this is understood to be diverted out from the mass consumption trade, rather than being a driving force in itself. It is strongly suspected that substantial numbers of live turtles, including *H. depressa*, are illegally exported from Myanmar by overland route from Mandalay to Yunnan, China. A small number of live adults of *Heosemys depressa* have been reported in the consumption trade in East Asia.

- This species meets the criteria listed in Resolution Conf. 9.24, Annex 2a, A, namely that "it is known, inferred or projected that unless trade in the species is subject to strict regulation, it will meet at least one of the criteria listed in Annex 1 in the near future". The species also meets criterion in Annex 2a, B (i), namely that "it is known, inferred or projected that the harvesting of specimens from the wild for international trade has, or may have, a detrimental impact on the species by exceeding, over an extended period, the level that can be continued in perpetuity".

- The CITES Scientific Authority of Myanmar supports the proposal. China approved the proposal and asked to act as a co-proponent. -- All participants of the "Technical workshop on conservation of and trade in freshwater turtles and tortoises", held at Kunming, P.R. China, on 25-28 March 2002, including representatives from range and non-range countries, supported this proposal.

1. <u>Taxonomy</u>

   1.1 Class: Reptilia

   1.2 Order: Testudines (Chelonia)

   1.3 Family: Bataguridae (Geoemydidae)

   1.4 Genus and species: *Heosemys depressa* (Anderson, 1875)

   1.5 Scientific synonyms: *Geoemyda depressa* Anderson, 1875
   Geoemyda arakana Theobald, 1876

1.6 Common names:

English:	Arakan Forest Turtle
French:	Héosémyde de l'Arakan
Spanish:	
Burmese:	
German:	Flache Erdschildkröte

2. Biological parameters

Heosemys depressa is a medium-sized species which can reach a carapace (dorsal shell) length of 26.3 cm. The carapace is proportionally broad and low, with a flattened vertebral region bearing an obvious keel. The shell margin is smooth at the sides, smooth or gently serrate at the front and distinctly serrate at the back. The plastron (ventral shell) is rigidly fixed to the carapace by a proportionally long bridge; the plastron is truncate anteriorly, tapered posteriorly, and has a distinct anal notch. The head is rather small, with a short blunt snout. The upper jaw bears two tooth-like cusps. The front legs bear enlarged scales, the strong hind legs have large scales on the anterior margin and the heel. The fingers are half-webbed, the toes are only webbed at their base; the claws are large and strong. The tail is moderately short.

The shell is light brown above, sometimes with dark mottling and a dark outside to the marginals. The yellow plastron shows a somewhat *irregular pattern of streaks and blotches* on most or all of the scutes and extending onto the bridge. The *head is uniform lead-grey or pale brown*, the iris is brown. The soft skin of neck and limbs is pale yellowish-brown, the large scales on the legs are nearly black.

No information has been reported about growth, maturity or reproduction in the species.

2.2 Distribution

Countries of Origin: Myanmar

Heosemys depressa is only known to inhabit the Arakan Yoma Hill range in Rakhine State of western Myanmar (Iverson, 1992; Platt, 2000). Records of animals originating from Yunnan, China (Iverson & McCord, 1997) are considered to pertain to transported trade animals (Platt, 2000).

2.3 Habitat availability

Heosemys depressa is relatively tolerant in its habitat requirements, inhabiting mainly evergreen forest and bamboo stands, but individuals have also been encountered in deciduous forest and in a sugarcane field (Platt, 2000). Extensive areas of these habitats remain (MacKinnon, 1997; Platt, 2000).

2.4 Population status

Few specimens of this species are known, and it has generally been considered a rare and restricted species. A recent field survey (Platt, 2000) reported that local hunter-gatherers consider the species rare.

2.5 Population trends

The available information does not allow meaningful conclusions about population trends to be made.

2.6 Geographic trends

The species inhabits a limited geographical area and no geographical trends have been reported.

2.7 Role of the species in the ecosystem

Limited available ecological information indicates that the species feeds predominantly on fruits and other vegetable matter (Platt, 2000). Its ecological role and significance remains unknown.

2.8 Threats

Heosemys depressa is understood to be mainly under threat from over-collection for domestic consumption and the international food trade. Because of its rarity and enigmatic status the species is in significant demand in the high-end of the international pet trade, but this is understood to be diverted out from the mass consumption trade, rather than being a driving force in itself. Habitat degradation, including logging, forest clearance for agriculture, and uncontrolled forest fires, may represent additional threats, but are currently understood to be secondary in importance (Platt, 2000).

The species was rated Critically Endangered under criteria A2cd and B1 + 2c in both the 1996 and 2000 IUCN Red Lists (IUCN, 1996; Hilton-Taylor, 2000; IUCN TFTSG & ATTWG, 2000).

3. Utilization and trade

3.1 National utilization

Collection of *H. depressa* by local hunters usually occurs as part of hunting activities employing trained dogs. A hunter usually collects fewer than 10 individuals of *H. depressa* per year; an exceptionally large harvest of 40 animals per year was reported by one professional hunter. Turtle meat is consumed locally and the shells are kept for incidental sale to middlemen in the Traditional Medicine trade; shell prices range between 200 and 500 kyats / viss (about USD 0.42 to 1.04 per kg); plastrons of this species have been encountered in the TCM trade in Taiwan (H.-c Chang, in Platt, 2000). Large live adults can be sold to brokers based in Mandalay for 1200 kyats (USD 4) each, presumably destined for the East Asian consumption trade (Platt, 2000).

3.2 Legal international trade

Commercial export of turtles from Myanmar is prohibited and thus no legal international trade exists.

3.3 Illegal trade

It is strongly suspected that substantial numbers of live turtles, including *H. depressa*, are illegally exported from Myanmar by overland route from Mandalay to Yunnan (Kuchling, 1995; van Dijk, 1998a, Platt, 2000; Platt *et al.*, 2000; Platt, 2001). A small number of live adults of *Heosemys depressa* have been reported in the consumption trade in East Asia, including two animals purchased in Po Shang, Yunnan, China, in 1994, that were subsequently exported to the USA (Iverson & McCord, 1997). USFWS records of imports of live reptiles during the period 1996-1999 showed small numbers (7-17 per year) of expensive (declared value USD 17 to 75 per animal) animals imported from China and identified as '*Heosemys* species'; some of these may represent *H. depressa*.

3.4 Actual or potential trade impacts

Heosemys depressa is a species with a restricted geographical range, low population density, low annual reproductive output and late maturity (like nearly all freshwater turtles). Removal of adult animals represents a major impact on population structure, recruitment and population genetics, and sustained collection may deplete populations to levels that compromise the ecological function of the species and may require decades or centuries to recover (Thirakhupt & van Dijk, 1995).

Inclusion of the genus *Heosemys*, including *H. depressa*, in Appendix II of CITES is expected to provide further controls on international trade, providing importing countries with a mechanism to monitor and evaluate trade levels and the significance of their involvement, and allowing the range state to assess unreported trade levels by cross-checking against other Parties' registered imports.

3.5 Captive breeding for commercial purposes

Only a small number of animals are known to be kept in zoos or private collections, and no commercial breeding has been carried out or proposed.

4. Conservation and management

4.1 Legal status

4.1.1 National legislation

Heosemys depressa is specifically included as a Protected Species in the Protection of Wildlife, Wild Plants and Conservation of Natural Areas Law of Myanmar, which was enacted in 1994 (U Kyaw Moe *et al.*, 2002).

4.1.2 International legislation

Heosemys depressa is not covered by inter-governmental legislation.

4.2 Species management

4.2.1 Population monitoring

No population monitoring efforts are known to be completed or in progress.

4.2.2 Habitat conservation

Two large protected areas, Thanlwe-ma-e-chaung and Taungup Pass/Thandwe-chaung, have been proposed in the Arakan Yoma Hill range, located just to the south of known *H. depressa* localities and encompassing similar habitat types as inhabited by the species. All wildlife is strictly protected within Wildlife Sanctuaries and national Parks in Myanmar, and any activities in Reserved Forest require special permits under the Forest Law of Myanmar, enacted in 1992 (U Kyaw Moe *et al.*, 2002).

4.2.3 Management measures

No species management efforts are known to be in progress in the single range state. The species is a priority for establishment of ex-situ assurance colonies (Platt, 2000; CBSG, 2001).

4.3 Control measures

4.3.1 International trade

Once exported from Myanmar, animals of *H. depressa* are subject to national regulations pertaining to customs regulation and quarantine measures when entering the importing country.

4.3.2 Domestic measures

Beyond enforcement of the ban on commercial exploitation of natural resources, no domestic control measures are known to be in effect.

5. Information on similar species

Heosemys depressa resembles very large individuals of *H. spinosa* and small or subadult specimens of *H. grandis*, but can be separated from these by its uniform grey to black head and the vague streaked pattern on the plastral scutes (reddish-brown head for *H. spinosa*, orange head with small black markings for *H. grandis*, and distinct fine radiating pattern on each ventral scute in both *grandis* and *spinosa*). Cyclemys species have a hinged, moveable plastron with similar radiating pattern and a femoro-anal seam that curves strongly forward.

6. Other comments

Both the Management and Scientific Authorities of the range states of *Heosemys* sp. had been contacted in March 2002. The CITES Scientific Authority of **Myanmar** supports the proposal. **China** approved the proposal and asked to act as a co-proponent. For these comments, see copies attached.

All participants of the "Technical workshop on conservation of and trade in freshwater turtles and tortoises", held at Kunming, P.R. China, on 25-28 March 2002, including representatives from range and non-range countries, supported this proposal.

7. Additional remarks

Executive Summary for the Giant Asian Pond Turtle (*Heosemys grandis*)

- An Appendix II listing is proposed for the Giant Asian Pond Turtle (*Heosemys grandis*); the species meets the criteria in Resolution Conf. 9.24, as outlined below. This listing is expected to impose further controls on international trade, including the necessity to carefully consider whether current or proposed trade levels would have detrimental impacts on the survival of the species in its range, and will provide importing countries with a mechanism to monitor and evaluate trade levels and the significance of their involvement. Listing will also result in jurisdiction over management of the species being shifted to the CITES MA in Malaysia.

- *Heosemys grandis* inhabits rivers, streams, marshes and rice paddies from estuarine lowlands to moderate altitudes (up to about 400 m MSL) throughout Cambodia and Viet Nam and in parts of Lao PDR, Malaysia, Myanmar and Thailand. This species becomes sexually mature at the age of about 6 to 10 years. In captivity, one or two clutches of 3 to 11 eggs are laid each year. The only clutch size reported from a female in the wild was 3 eggs.

- The species was rated Vulnerable under criteria A1d + 2cd in the 2000 IUCN Red List; it was rated LR:nt in the 1996 IUCN Red List, stressing the currently high levels of exploitation.

- The species is impacted by targeted collection and habitat impacts. Targeted collection occurs for subsistence consumption throughout the species' range, and has presumably been a feature since historical times. In recent years, however, collection has developed into an intensive, export-oriented business, shifting collection pressures from incidental local use to intensive harvesting across wide areas. This species is particularly sought after for consumption because of its large size. Removing significant numbers of mature reproducing individuals has a particularly severe impact on species whose life history has evolved to low annual reproductive output which is sustained for a long adult lifespan.

- This species meets the criteria listed in Resolution Conf. 9.24, Annex 2a, B (i), namely that "it is known, inferred or projected that the harvesting of specimens from the wild for international trade has, or may have, a detrimental impact on the species by exceeding, over an extended period, the level that can be continued in perpetuity".

- The MA of Thailand confirmed the correctness of the presented data related to this country. The CITES Scientific Authority of Myanmar supports the proposal. China approved the proposal and asked to act as a co-proponent. – All participants of the "Technical workshop on conservation of and trade in freshwater turtles and tortoises", held at Kunming, P.R. China, on 25-28 March 2002, including representatives from range and non-range countries, supported this proposal.

1. <u>Taxonomy</u>

1.1	Class:	Reptilia	
1.2	Order:	Testudines (Chelonia)	
1.3	Family:	Bataguridae (Geoemydidae)	
1.4	Genus and species:	*Heosemys grandis* (Gray, 1860)	
1.5	Scientific synonyms:	*Geoemyda grandis* Gray, 1860	
1.5	Common names:	English:	Giant Asian Pond Turtle
		French:	Héosémyde géante
		Spanish:	
		German:	Riesen-Erdschildkröte
		Bahasa Malayu:	

Bahasa Indonesia:	Kura-Kura Kepala Jingga
Burmese:	
Khmer:	Andoeuk Saom Nhi
Laotian:	Tao Hwai
Thai:	Tao Hwai
Vietnamese:	Rùa Dât Lón

2. Biological parameters

Heosemys grandis is a large freshwater turtle species which may on occasion reach a shell length of 48 cm and a weight of 12 kg. The carapace (dorsal shell) is moderately elevated and bears a distinct midline keel at all ages. The anterior carapace margin is indented and the posterior margin is distinctly serrate, particularly in juveniles but remaining so even in adults. The plastron (lower shell) is solidly attached to the carapace by the relatively long bridge; however, the posterior half of the plastron is slightly moveable in mature females. The seam between the femoral and anal scutes on the plastron is almost straight across, resulting in a short midline seam between the anal scutes. The head is moderately proportioned; the upper jaw bears two tooth-like cusps. The limbs are proportionally large and powerful. Males reach a larger maximum size than females (females maximum 35 cm shell length) and males have a proportionally large tail and a concave plastron.

The carapace is dark brown to black, while the vertebral keel is distinctly orange –brown. The undersurfaces of the shell are yellow with a fine brown radiating pattern on each individual scute. The head is orange with fine black spots and curls. The limbs, neck, tail and soft skin at the shell openings are pale brown or olive-grey, with some orange dots on the large limb scales.

Juvenile *Heosemys grandis* may grow relatively rapidly; under optimal conditions in captivity females become sexually mature at 28-29 cm carapace length which is attained at the age of 6-10 years (Goode, 1998). The single record of attained male maturity was at the age of 10 years (Rudolphi & Weser, 2000). The age at which animals reach maturity in nature remains unknown. In captivity, mature females lay clutches of 3 to 11 eggs, usually 4 to 7 eggs; a single clutch or two clutches can be laid per year (Rudolphi & Weser, 2000). The only clutch size reported from a female in the wild was 3 eggs (van Dijk, 1998b).

2.1 Distribution

Countries of Origin: Cambodia, Lao PDR, Malaysia, Myanmar, Thailand, Viet Nam.

Cambodia: Widespread in wetlands in lowlands and low hill terrain (Touch Seang Tana *et al*., 2000)

Lao PDR.: Known from the limestone region of Central Laos, and from southern Laos (Stuart, 1999).

Malaysia: Inhabits mainly the northern part of Peninsular Malaysia, although records exist from Johor at the peninsula's southern tip (MCZ 29557); does not inhabit Sarawak or Sabah on Borneo (Sharma, 1999; Sharma & Tisen, 2000).

Myanmar: Historically known from the Tenasserim region (Theobald, 1868), recent surveys have extended the species' range as far north as Shwegu (24 °N - Platt, 2001).

Thailand: Mainly in southeastern and peninsular regions but probably in wet lowland areas throughout the country (van Dijk & Palasuwan, 2000).

Viet Nam: Inhabits streams, rivers and freshwater marshes of central and southern Viet Nam (Hendrie, 2000).

There are no records from Singapore (Lim & Lim, 1992) or Indonesia (Rooij, 1915; Samedi & Iskandar, 2000).

2.2 Habitat availability

Available information indicates that *Heosemys grandis* inhabit rivers, streams, marshes and rice paddies from estuarine lowlands to moderate altitudes (up to about 400 m MSL), where they lead a cryptic and mainly aquatic existence (Thirakhupt & van Dijk, 1995).

Cambodia: Large areas of suitable wetland habitat remain in Cambodia.

Lao PDR: Areas of suitable wetland habitat remain, but details are not available (Claridge, 1996; Stuart, 1999; Stuart & Timmins, 2000).

Malaysia: Natural lowland grass swamps, wet ricefields and irrigation canals in Perlis, Kedah, Kelantan, Terengganu and northwestern Perak provide ample habitat for the species (Sharma & Tisen, 2000).

Myanmar: No information on habitat availability in Myanmar is available.

Thailand: Substantial areas of suitable habitat remain in Thailand, and large areas of such habitat have been declared as protected areas (Gray *et al*., 1994; MacKinnon, 1997; van Dijk & Palasuwan, 2000).

Viet Nam: Details of habitat availability are not available; Hendrie (2000) suggested that available habitat had been reduced due to conversion of wetlands and riverside forests to agricultural purposes.

2.3 Population status

Cambodia: The Cambodian population is considered to be of significant size, but details are lacking (Touch Seang Tana et al., 2000).

Lao PDR: No information on population status in Laos is available.

Malaysia: Interviews with locals in northern Peninsular Malaysia indicated that the species was still encountered in fair numbers in wet ricefields, irrigation canals, natural swamps and other wetlands (Sharma & Tisen, 2000).

Myanmar: No information on population status is available for Myanmar. U Kyaw Moe *et al. (*2002) assert that "almost all chelonian species in Myanmar ought to be regarded as threatened by levels of harvest that are not sustainable".

Thailand: Surveys of western Thailand (Thirakhupt & van Dijk, 1995) and the remainder of the country (van Dijk, 1999) found *H. grandis* to be uncommon to rare, and presumed to be depleted in most areas.

Viet Nam: No information on population status in Viet Nam is available (Hendrie, 2000).

2.4 Population trends

Malaysia: The species apparently remains abundant in Perlis and Kedah, but the absence of the species from stores was interpreted as indicating actual declines of wild populations (Sharma & Tisen, 2000).

Thailand: The species is presumed to be in continuing decline outside protected areas (van Dijk & Palasuwan, 2000).

Population trends in Cambodia, Lao PDR, Myanmar and Viet Nam are unknown but are thought unlikely to sustain current levels of exploitation (Hendrie, 2000; Platt *et al*., 2000; Stuart *et al*., 2000).

2.5 Geographic trends

Malaysia: The lower density of occurrence in the southern part of Peninsular Malaysia is thought to be a natural, ecological phenomenon (Sharma & Tisen, 2000).

Thailand: Low population densities in western Thailand (Thirakhupt & van Dijk, 1995) and central Thailand (van Dijk, 1999) are thought to result from a combination of ecological and exploitation factors (van Dijk, 1999).

No geographic trends have been reported for Cambodia, Lao PDR, Myanmar or Viet Nam.

2.6 Role of the species in the ecosystem

Heosemys grandis feeds predominantly on fallen forest fruits and other vegetable matter, but will also accept foods of animal origin, presumably including scavenged material (van Dijk, 1998b). Eggs and hatchlings may be preyed upon by monitor lizards, mongooses, ants and other predators (van Dijk, 1998b). No further information is available on the ecological role of this species.

2.7 Threats

The species is impacted by targeted collection and habitat impacts. Targeted collection occurs for subsistence consumption throughout the species' range, and has presumably been a feature since historical times. In recent years, however, collection has developed into an intensive, export-oriented business, shifting collection pressures from incidental local use to intensive harvesting across wide areas. This species is particularly sought after for consumption because of its large size. Removing significant numbers of mature reproducing individuals has a particularly severe impact on species whose life history has evolved to low annual reproductive output which is sustained for a long adult lifespan (thought to be in the order of decades – van Dijk, 1998b). (Thirakhupt & van Dijk, 1995; van Dijk, 1999; Stuart, 1999; Sharma & Tisen, 2000)

Habitat impacts affecting the species throughout most of its range include clearing and draining of natural wetlands for agricultural, residential and industrial purposes, loss of river bank nesting habitat, and the effects of logging, erosion, mining and reservoir construction on water quality, water temperature and seasonal flow patterns. The number of animals accidentally entangling and drowning in fishing nets is unknown but may be significant in otherwise secure areas (such as Non-Hunting Areas). (Thirakhupt & van Dijk, 1995; van Dijk, 1999; Sharma & Tisen, 2000).

The species was rated Vulnerable under criteria A1d + 2cd in the 2000 IUCN Red Lists (IUCN, 1996; Hilton-Taylor, 2000; IUCN TFTSG & ATTWG, 2000); it was rated LR: nt in the 1996 IUCN Red List (IUCN, 1996). The species is considered VU A1d + 2d in Cambodia, Laos and Viet Nam, while it is considered VU A2cd in Peninsular Malaysia and limited data for Myanmar and Thailand (currently not listed on the national Red List [OEPP, 1997]) suggest at least VU A1d (IUCN TFTSG & ATTWG, 2000).

3. Utilization and trade

3.1 National utilization

Cambodia: Domestic use of turtles includes consumption of meat and eggs, use as traditional medicine, for decoration, as pets and for religious meritous release. Domestic use is minor compared to collection for export (Touch Seang Tana *et al*., 2000)

Lao PDR: Some degree of subsistence consumption occurs, as evidenced by possession and trade in shells of *H. grandis*; collection for export trade is suspected (Stuart, 1999; Stuart & Timmins, 2000).

Malaysia: *Heosemys grandis* is collected for subsistence consumption and is also traded for consumption by city-inhabitants: Moll (1976, 1987) reported the species to be commonly for sale in Peninsular Malaysian 'pet shops', where animals are purchased primarily for food and medicine, and Sharma (1999) found the species at a number of shops during 1994. Substantial numbers of animals are donated to temples for religious purposes (Lim & Das, 1999). In addition, collection for export involves large numbers (Sharma & Tisen, 2000).

Myanmar: Some level of subsistence consumption presumably occurs, but no details have been reported (Platt *et al*., 2000).

Thailand: Occasional use for subsistence consumption (Thirakhupt & van Dijk, 1995) and supply to specialized wildlife restaurants is likely to continue opportunistically (van Dijk & Palasuwan, 2000).

Viet Nam: Previously, *H. grandis* was probably hunted for local consumption, however in recent years it is likely that most turtles encountered are sold to traders (Hendrie, 2000). Lehr (1997) recorded between 10 and 25 animals of *H. grandis* in trade in South Viet Nam in 1993, but did not observe the species in 1996. A proportion of animals in trade are released at temple ponds (Lehr, 1997; Hendrie, 2000). Lehr (1997) noted that shells of *H. grandis* were used as wall ornaments in Ho Chi Minh City. Le Xuan Canh *et al.* (2002) noted that *H. grandis* have been observed in trade in Hanoi and Mong Cai (Quang Ninh province).

3.2 Legal international trade

Cambodia: No details are available of the proportion of *Heosemys grandis* in legal international exports from Cambodia. Export quantities of about 100 tons of turtles, each individual larger than 1 kg, were approved for each of the 1998-1999 and 1999-2000 fishing seasons (Touch Seang Tana *et al*., 2000).

Malaysia: Malaysia exports large numbers of *Heosemys grandis*, mainly for the East Asian consumption trade. Export records from the Department of Wildlife and National Parks (PERHILITAN) noted that up to 325,325 individuals of *H. grandis*, or 13.17% of total freshwater turtles, were exported during the period of January to October 1999 (Sharma & Tisen, 2000).

Viet Nam: Legal exports of *Heosemys grandis* from Viet Nam comprised a total of 1971 animals during the period 1994-1999, representing 5.5% of total declared exports of tortoises and freshwater turtle species. No animals were exported in 1994, 180 animals in 1995, 740 in 1996, 626 in 1997, 235 in 1998, and 190 in 1999, these numbers showing a distinct bell curve, as do Vietnamese total turtle export numbers during this period.

P.R. China: *Heosemys grandis* has been observed to be offered for sale in several food markets in southern China in substantial numbers (Lau *et al*., 1995; Lau & Shi, 2000). A total of 646 animals were seen during monthly surveys of food markets, mainly in Guangdong province, from November 1993 to October 1994 (Lau *et al.*, 1995).

In Ping Xian, a town in Guangxi province, China, on the border with Viet Nam, in May 2000, two *H. grandis* were offered by sidewalk vendors and another trader had at least 10 adult *H. grandis* in stock, in addition to other turtles. (van Dijk, in litt. to German Scientific Authority, Nov. 2001). In Nanning, Guangxi, street vendors offered a single adult *H. grandis* over 3 consecutive days in May 2000.

At the Qing Ping market in Guangzhou, China, in May 2000, about a dozen moderate-sized to large *H. grandis* were offered for sale as food; no exact numbers or price information were recorded (van Dijk, in litt. to BfN). At the same market in November 2000, hundreds of *H. grandis* were offered for sale (Artner & Hofer, 2001). In October 2001, a total of several hundred *H. grandis* were offered for sale at this market (van Dijk, in litt. to BfN).

A survey of 3 food markets in Guangzhou and Shenzhen, China, and one turtle trader in Hong Kong SAR carried out between 30 October 2000 and 13 October 2001 observed 6889 individuals of *H. grandis* offered for sale. Another 17 individuals were observed in surveys of 5 pet shops in Hong Kong and one pet market in Guangzhou. These markets and shops were surveyed twice during every winter month and once during each summer month; thus, the number observed is a minimum number, not an approximation of total annual turnover (Ades, 2002).

Statistics of the Endangered Species Import & Export Management Office of the People's Republic of China indicate that permits for the import of 21,500 *H. grandis* into China were issued in the year 1998, for 85,000 individuals in 1999, and for 267,670 animals in 2000. However, actual quantities traded may be lower than quantities indicated on permits due to permit validity and logistic restrictions, or may be higher due to irregularities, casting some uncertainty about these statistics (Endangered Species Import & Export Management Office, P.R. China, 2002).

Hong Kong: *Heosemys grandis* was occasionally encountered in the pet trade and once in the food trade during a year-long survey of turtle trade in Hong Kong during 1998-1999 (Chan, in Lau *et al*., 2000).

Potentially significant numbers of *Heosemys grandis* are traded in the European pet trade. Altherr & Freyer (2000) noted that *H. grandis* were offered for sale by pet traders in Germany and the Netherlands in 1999. A review by the German Scientific Authority of 13 available offer lists (dating from 1990 to 2002) from German reptile wholesalers yielded offers of *H. grandis* at DEM 65.00 per animal in 1992 and 1993, DEM 180.00 for a pair in 1995, DEM 295.00 per presumed immature animal in 2000, and DEM 220.00 per large animal of wild origin in 2001. An additional list from a Netherlands-based wholesaler offered small animals 'from Thailand' in 1996 for DEM 35.00 each.

United States: Records of the US Fish & Wildlife Service of live reptile imports for 1996-1999 show no imports during 1996 or 1997 of *Heosemys grandis*, but recorded 82 (1996) and 335 (1997) animals of '*Heosemys* species'; these were mostly cheap (declared value USD 2.00 to 4.00 each) animals originating from Viet Nam and thus likely to have been *H. grandis*. In 1998, 21 animals were declared as *H. grandis*, consisting of 20 animals from Viet Nam (ranging in value from USD 2.00 to USD 2.67) and one from Hong Kong (at USD 35.00). In 1999, 293 *H. grandis* were recorded, 184 from Viet Nam (at values between USD 1.50-5.00, average USD 2.36) and 109 from China (valued between USD 1.00 and 5.00, average USD 3.06). Neither China nor Hong Kong are range states and these animals were likely acquired from consumption markets. All animals were declared as originating from the wild.

Sharma (1999) surveyed six reptile shops based in the USA and trading via the internet in 1997 and found one to offer *Heosemys grandis*, at USD$ 35 per animal. Salzberg (2001) noted that *H. grandis* were offered for sale in the USA via the Internet on 9 December 2000 at USD 55.00 per animal.

3.3 Illegal trade

Cambodia: Illegal exports of turtles, mainly via middlemen based in Phnom Penh and transported by road and river to southern Viet nam, was stated to be much larger than the legal export of 100 tons annually. few data exist on illegal exports to Thailand, but this trade is presumed to be significantly smaller (Touch Seang Tana *et al*., 2000).

Lao PDR: No specific details are available about the trade in *Heosemys grandis* in Laos; it is presumed to be part of the general, unquantified, illegal export of freshwater turtles and tortoises from Laos to Viet Nam and onwards to China (Stuart, 1999; Stuart & Timmins, 2000).

Myanmar: Platt (2001) reported that turtle traders were located in almost any village visited during a survey of the Upper Ayeyarwady (Irrawady) River, and observed *Heosemys grandis* among many other turtle species. The trade in turtles, although illegal, is extensive and well-organised into a network of collectors, local traders and middlemen, and the animals are transported along well-established trade routes to the ultimate destinations in China. (Kuchling, 1995; van Dijk, 1998a; Platt *et al*., 2000; Platt, 2001).

Thailand: *Heosemys grandis* continues to be collected and traded in some numbers in Thailand by organised groups of specialised turtle hunter-collectors, for supply directly to wildlife restaurants, which attract a specialised, partly foreign, clientele. In late November 1998, reports of turtle hunting in the Samut Songkhram region appeared in Thai newspapers. Based on the pictures accompanying the articles, the main species involved are *Heosemys grandis* and *Malayemys subtrijuga*. Parties of hunters were described to arrive in pick-up trucks to collect turtles from fruit orchards, probing tall grass and other hiding places with bamboo poles and searching for foraging animals at night. This was usually done without permission from the landowners, many of whom were decidedly unhappy about this. The collected turtles were reportedly sold at Muang district market for about 20 baht per kg, and destined for restaurants in Bangkok for consumption by tourists from Eastern Asia. Villagers were reported to have called for state intervention to protect the turtles (Hutasingh, 1998).

Heosemys grandis is rarely included in confiscations in Thailand: of 13 confiscations detailed by van Dijk & Palasuwan (2000) and Lauprasert *et al.* (2002), only a single shipment containing 278 individual *H. grandis* was recorded, and this was part of a trans-shipment.

Hong Kong: A large shipment of live freshwater turtles was intercepted in Hong Kong on 11 December 2001 and confiscated due to the undeclared presence of CITES-listed species. On arrival at the rescue facility, Kadoorie Farm and Botanic Garden, the shipment was found to contain 7544 live freshwater turtles and tortoises, and an unrecorded number of animals already dead. Among the living animals were 503 *Heosemys grandis*, representing 6.7 percent of the total shipment. These animals were subsequently relocated to the United States, Europe, Hong Kong Zoo or died despite veterinary care (57 animals , 11%) (Ades, 2002).

3.4 Actual or potential trade impacts

Direct collection of large numbers of adults and juveniles, over sustained periods for subsistence consumption and by intensive collection for international trade in recent years, is highly likely to have significantly impacted populations of a species whose life history has evolved to accept moderate losses of juveniles but whose reproductive adults are of great population value (see e.g. Gibbons, 1990; Doroff & Keith, 1990).

Inclusion of the genus *Heosemys*, including *H. grandis*, in Appendix II of CITES is expected to impose further controls on international trade, including the necessity to carefully consider whether current or proposed trade levels would have detrimental impacts on the survival of the species in its

range, and will provide importing countries with a mechanism to monitor and evaluate trade levels and the significance of their involvement.

Including the genus *Heosemys* in CITES Appendix II will result in jurisdiction over management of the species being shifted from the Fisheries Department of Peninsular Malaysia to the Department of Wildlife and National Parks (Perhilitan, the CITES MA) in Peninsular Malaysia.

3.5 Captive breeding for commercial purposes

Some Vietnamese entrepreneurs have expressed interest in farming of *Heosemys grandis* (Nguyen Tri Man, in litt to TRAFFIC SE Asia) but no operations are known to be in production at present. A large turtle farm in Tunchan, Hainan, P.R. China (described by Shi & Parham, 2001), was verified to produce dozens of eggs and is said to produce several hundred hatchlings per year, which are raised at the farm before being sold into the regional consumption trade (van Dijk, in litt. to German Scientific Authority, Nov. 2001; Shi *et al*., 2002).

4. Conservation and management

4.1 Legal status

4.1.1 National legislation

Cambodia: National Wildlife Legislation in Cambodia is still in development; Joint Declaration (Ministry of Agriculture and Environment) No 1563 states, among others, that wild animals can not be sold, commercialized, exploited, or transported, nor can wild animals or their products be served in restaurants; a number of Government Decisions are directed at ending illegal trade in wildlife and aquatic animals. (Touch Seang Tana *et al*., 2000). Under Declaration No. 359 of the Ministry of Agriculture, Forestry and Fisheries, nationally threatened wildlife species are protected, but no status data is available to determine whether *H. grandis* or other turtle species qualify as nationally threatened. Co-ordinated efforts are made by government authorities to induce traders and restaurants to voluntarily stop exploiting turtles (Ing Try & Poum Sotha, 2002).

Lao PDR: Wildlife legislation is under review in Lao PDR; current legislation does not, in effect, protect freshwater turtles from exploitation (Stuart & Timmins, 2000).

Malaysia: Malaysian legislation governing freshwater turtles is complicated by its division of responsibilities between Federal and State authorities regulating Wildlife and Fisheries. State fisheries legislation in Johore, Kelantan and Negeri Sembilan can be interpreted to cover *Heosemys grandis*; coverage under Malacca State legislation is contradictory. Exports of freshwater turtles from peninsular Malaysia comes under the remit of the Federal Department of Wildlife and National Parks of Peninsular Malaysia. (Gregory & Sharma, 1997).

Myanmar: *Heosemys grandis* is specifically included as a Protected Species in the Protection of Wildlife, Wild Plants and Conservation of Natural Areas Law of Myanmar, which was enacted in 1994 (U Kyaw Moe *et al*., 2002).

Thailand: *Heosemys grandis* is protected from all forms of exploitation under the Wild Animals Reservations and Protected Areas Act (1992).

Viet Nam: *Heosemys grandis* is currently not covered under 'Ministerial decree No 18 of the Council of Ministers Stipulating the Categories of rare and precious forest fauna and flora, and their management and protection, dated 17 January 1992', but has been proposed for inclusion in the current round of amendments (Le Xuan Canh *et al*., 2002).

Directive 359 (1996) restricts trade in wildlife and animal parts, including prohibiting the sale of wildlife in restaurants. Commerce and trade regulations require a permit issued at the provincial level for trade in any commodity, including wildlife.

Circular 62/2001/TT-BNN issued on 05 of June 2001 by the Ministry of Agriculture and Rural Development to guide imports and exports of goods and commodities managed by the Ministry for the period of 2001-2005 stipulates that Viet Nam prohibits exports of all wild animals and rare and precious plants. Thus export of this and all other native turtle species is prohibited. A similar directive had been in effect from 1 April 2000 until it was superseded by Circular 62/2001 (Le Xuan Canh *et al*., 2002).

4.1.2 International legislation

Heosemys grandis is not covered by inter-governmental legislation.

Under Notice of Strengthening the Trade Management on Turtles and Tortoises, issued on June, 17, 2001, the People's Republic of China suspended all commercial imports of all turtles from Cambodia, Indonesia and Thailand, including *Heosemys grandis*.

4.2 Species management

4.2.1 Population monitoring

The best available information indicates that population surveys have been carried out in Thailand (Thirakhupt & van Dijk, 1995; van Dijk, 1999) but no population monitoring actions have taken place or are in preparation throughout the species' range.

4.2.2 Habitat conservation

Cambodia: Designation of protected areas is proceeding in Cambodia but precise details including occurrence of *Heosemys* and other turtle populations in protected areas remain unavailable.

Lao PDR: *Heosemys grandis* occurs in a number of National Biodiversity Conservation Areas but this designation does not confer absolute protection on turtle populations inhabiting such areas (Stuart, 1999).

Malaysia: Protected areas in Peninsular Malaysia contain areas that appear suitable for the species (Taman Negara, Krau, Belum, Perlis State Park), but *Heosemys grandis* has not been confirmed from any of these (Moll & Khan, 1990; Davison, 1995; Sharma *et al*., 2001)

Myanmar: Significant areas of Myanmar have been designated as protected areas (currently 38 areas covering 31,972 sq. km or 4.7% of total land area - U Kyaw Moe *et al*., 2002), but no information is available whether these encompass wetland or forest areas inhabited *Heosemys grandis*.

Thailand: Significant areas of suitable habitat are included in Thailand's system of protected areas, and populations of *Heosemys grandis* are confirmed from Huai Kha Khaeng WS, Thung Yai Naresuan WS and Erawan NP (Thirakhupt & van Dijk, 1995) and likely inhabit other protected areas as well.

Viet Nam: A number of wetland protected areas exist in the parts of Viet Nam inhabited by *Heosemys grandis*, but surveys of at least Cat Tien N.P. and U Minh Thuong have failed to encounter the species (Hendrie, Polet, Stuart, pers. comm. to van Dijk, in litt. to German Scientific Authority, Nov. 2001).

4.2.3 Management measures

No specific management measures beyond legal protection of the species or its habitat are known to be in place or planned in any of the range states. Conservation breeding of *Heosemys grandis* has occurred at a number of zoos and private hobbyists in Asia, Europa and North America (Zwartepoorte, 1996; Goode, 1998; Rudolphi & Weser, 2000; CBSG, 2001; Schildkrötenfreunde Österreich, 1999, 2000, 2001; Slavens & Slavens, 2002), but the species is generally considered a lower priority and progress towards studbooks and integrated, coordinated breeding programs is made only slowly.

4.3 Control measures

4.3.1 International trade

Animals of *Heosemys grandis* legally exported from Peninsular Malaysia are subject to the usual national regulations pertaining to customs regulation and quarantine. Animals will be subject to similar customs and quarantine regulations as are in effect when entering the importing country.

4.3.2 Domestic measures

No control measures such as quotas are known to be in effect in any of the range states that currently allow exploitation of the species.

5. Information on similar species

The other *Heosemys* species remain smaller, have proportionally lower shells and all have distinctively different colouration, without the unique black-speckled orange head; *H. spinosa* is strongly serrate all around the carapace margin; *H. depressa*, *H. leytensis* and *Leucocephalon yuwonoi* lack the finely radiating plastral pattern. *Cyclemys dentata* has a forward-curving femoro-anal seam, less distinctly serrate carapace margin, clearly moveable plastron when adult and attains only half the size of an adult *H. grandis*. Adult *Hieremys annandalii* have yellow head pigmentation, a black carapace without vertebral keel, and a less serrate carapace margin.

6. Other comments

Both the Management and Scientific Authorities of the range states of *Heosemys* sp. had been contacted in March 2002. **Cambodia** responded not being able to comment in detail on the proposal due to the lack of sufficient country-related information. The MA of **Thailand** confirmed the correctness of the presented data related to this country. The CITES Scientific Authority of **Myanmar** supports the proposal. For all these comments, see copies attached. No other responses have been received until now.

China approved the proposal and asked to act as a co-proponent.

All participants of the "Technical workshop on conservation of and trade in freshwater turtles and tortoises", held at Kunming, P.R. China, on 25-28 March 2002, including representatives from range and non-range countries, supported this proposal.

7. Additional remarks

Executive Summary for the Philippine Pond Turtle (*Heosemys leytensis*)

- An Appendix II listing is proposed for the Philippine Pond Turtle (*Heosemys leytensis*); the species meets the criteria in Resolution Conf. 9.24, as outlined below. This listing is expected to impose basic controls on any possible trade, including the necessity to carefully consider whether proposed trade levels would have detrimental impacts on the survival of the species.

- *Heosemys leytensis* is only known from the Philippines. Its distribution remains enigmatic: Three specimens were obtained before 1920 from a shipment of mixed turtles said to originate from Leyte Island in the Philippines. A fourth specimen was found in the possession of a villager in Taytay municipality in eastern Palawan, who claimed to have collected it from a local stream. Despite searches of both Leyte and Palawan, no further animals have been found. The only available information indicates that the species inhabits small rivers; it is not possible to extrapolate reliable assessments of habitat availability from this.

- There are no documented obvious impacts on the species. However, due to the safe assumptions of habitat degradation (about 45% of Palawan is still covered with forests, while only 9.3% of the Philippines as a nation remains covered by natural vegetation types), subsistence consumption and the undeniable interest in the species by hobbyist collectors – bearing in mind the remarkable potential trade value of one of the world's most enigmatic turtles - the species is rated Critically Endangered under criteria A2d and B1 + 2c in the 2000 IUCN Red List; it was rated Endangered under Criteria B1 + 2d in the 1996 IUCN Red List.

- As *Heosemys leytensis* is probably the world's least-known and most enigmatic freshwater turtle species, it exerts great fascination for turtle hobbyists; in addition, like any other turtle, it would be in demand for the Asian consumption trade. Any removal of reproductive adults, and to a lesser extent of juveniles, from one or a few small population of animals with a limited annual reproductive potential and late maturity, would have significant effects on the population structure, recruitment and population genetics.

- This species meets the criteria listed in Resolution Conf. 9.24, Annex 2a, A, namely that "it is known, inferred or projected that unless trade in the species is subject to strict regulation, it will meet at least one of the criteria listed in Annex 1 in the near future".

  China approved the proposal and asked to act as a co-proponent – All participants of the "Technical workshop on conservation of and trade in freshwater turtles and tortoises", held at Kunming, P.R. China, on 25-28 March 2002, including representatives from range and non-range countries, supported this proposal.

1. <u>Taxonomy</u>

   1.1 Class: Reptilia

   1.2 Order: Testudines (Chelonia)

   1.3 Family: Bataguridae (Geoemydidae)

   1.4 Genus and species: *Heosemys leytensis* Taylor, 1920

   1.5 Scientific synonyms: *Geoemyda leytensis* (Taylor, 1920)

   1.6 Common names:
   English: Philippine Pond Turtle
   French: Héosémyde de Leyte
   Spanish:
   German: Philippinen-Erdschildkröte

2. Biological parameters

Heosemys leytensis is a small to medium-sized turtle which is known to reach a shell length of at least 21 cm. The carapace (dorsal shell) is rather narrow and raised; it is flat on top in adult males while a faint posterior keel is shown by younger animals. The shell margin may be indented or serrated at the front and back. The vertebral scutes are triangular or mushroom-shaped. The plastron (ventral shell) is proportionally narrow and is solidly attached to the carapace by the short bridge. The head is proportionally large while the legs and tail are moderate.

The carapace has been reported as reddish brown to black, the plastron as yellow in juveniles becoming dark brown to black in adults. The head is uniform brown or black except for a distinct yellow band across the back of the head and a yellow spot at the side of the lower jaw in youn g animals. The neck is dark above and grades to brown on the sides; the limbs and tail are brown. (Taylor, 1920; Buskirk, 1989; Timmerman, in Ernst *et al.*, 2000).

No information has been reported about growth, maturity or reproduction in the species.

2.1 Distribution

Countries of Origin: the Philippines

The distribution of *Heosemys leytensis* remains enigmatic. Three specimens were obtained before 1920 from a shipment of mixed turtles said to originate from Leyte Island in the Philippines (Taylor, 1920; Buskirk, 1989). A fourth specimen was found in the possession of a villager in Taytay municipality in eastern Palawan, who claimed to have collected it from a local stream (Timmerman & Auth, 1988). Despite searches of both Leyte and Palawan, no further animals have been found (Das, 1998; Gaulke & Fritz, 1998; Widmann, 1998).

2.2 Habitat availability

The only available information indicates that the species inhabits small rivers; it is not possible to extrapolate reliable assessments of habitat availability from this.

2.3 Population status

No information is available on population status; however, the fact that only a single individual of the species has been encountered during intensive biological surveys of much of the Philippines during the past 80 years by a variety of eminent herpetologists (Taylor, Brown, Alcala, Gaulke, Ross and others), many of whom were aware of and interested in the species, strongly indicates that the species is extremely rare.

2.4 Population trends

There is no reliable information on population trends; the fact that two or three animals occurred in a single shipment of 40 turtles in 1918 (Taylor, 1920; Buskirk, 1989), whereas a single animal was found 70 years later, and no further animal has been found, despite searches over the past 13 years, suggests that the species is in decline.

2.5 Geographic trends

The available information does not permit reliable consideration of geographic trends.

2.6 Role of the species in the ecosystem

Nothing has been reported on the ecology of this species beyond the information that one animal was caught in a pool of a creek of an interior drainage on Palawan (Timmerman & Auth, 1988).

2.7 Threats

There are no documented obvious impacts on the species. However, it is a safe assumption that the species would have suffered to an unknown extent from deforestation and other forms of habitat degradation (about 45% of Palawan is still covered with forests (Widmann, 1998), while only 9.3% of the Philippines as a nation remains covered by natural vegetation types (MacKinnon, 1997)). It is also safe to assume that collection by tribal hunters for subsistence consumption would be a further impact. Finally, there is an undeniable interest in the species by hobbyist collectors – the potential trade value of one of the world's most enigmatic turtles would be remarkable, and this would be further incentive to remove any remaining animals from their habitat. Based on these considerations, the species is rated Critically Endangered under criteria A2d and B1 + 2c in the 2000 IUCN Red List (Hilton-Taylor, 2000; IUCN TFTSG & ATTWG, 2000); it was rated Endangered under Criteria B1 + 2d in the 1996 IUCN Red List.

3. Utilization and trade

3.1 National utilization

No information is available on the domestic exploitation of this or other Philippine freshwater turtle species.

3.2 Legal international trade

There is no known international trade in *Heosemys leytensis*.

3.3 Illegal trade

There are no records of illegal trade in the species.

3.4 Actual or potential trade impacts

As *Heosemys leytensis* is probably the world's least-known and most enigmatic freshwater turtle species, it exerts great fascination for turtle hobbyists; in addition, like any other turtle, it would be in demand for the Asian consumption trade. Any removal of reproductive adults, and to a lesser extent of juveniles, from one or a few small population of animals with a limited annual reproductive potential and late maturity, would have significant effects on the population structure, recruitment and population genetics.

Inclusion of the genus *Heosemys*, including *H. leytensis*, in Appendix II of CITES is expected to impose basic controls on any possible trade, including the necessity to carefully consider whether proposed trade levels would have detrimental impacts on the survival of the species.

3.5 Captive breeding for commercial purposes

There are no known animals in captivity within or outside the Philippines and thus no captive breeding is known.

4. Conservation and management

4.1 Legal status

4.1.1 National legislation

As far as can be ascertained, *Heosemys leytensis* is not specifically protected by endangered species legislation in the Philippines, but is included under the general prohibition of export of native wildlife.

4.1.2 International legislation

Heosemys leytensis is not covered by inter-governmental legislation.

4.2 Species management

4.2.1 Population monitoring

No populations of *Heosemys leytensis* are known and monitoring would thus be impossible.

4.2.2 Habitat conservation

The Philippines has designated at least 59 National Parks, which are variously reported as covering 1.3% to 3.6% of the country (MacKinnon, 1997, and references therein), which at most cover 0.4% of original primary habitat. Many of these parks protect coastal ecosystems and no existing or proposed protected areas cover extensive areas of forest and/or freshwater habitats in either Leyte or Palawan (MacKinnon, 1997; Widmann, 1998).

4.2.3 Management measures

No specific management measures for *Heosemys leytensis* are known.

4.3 Control measures

4.3.1 International trade

No animals are known to have occurred in international trade, but were such to occur, the animals would be subject to national customs regulations and quarantine measures of the importing country.

4.3.2 Domestic measures

No control measures such as quotas are known to be in effect for freshwater turtles in the Philippines.

5. Information on similar species

Only two other turtle species world-wide share the mushroom-shaped anterior vertebral scutes, *Orlitia borneensis* and *Siebenrockiella crassicollis*; neither of these species has a yellow band over the head.

6. Other comments

Both the Management and Scientific Authorities of the range states of *Heosemys* sp. had been contacted in March 2002. To date only a provisional reply has been received from the Management Authority of the **Philippines**

China approved the proposal and asked to act as a co-proponent. For all these comments, see copies attached.

All participants of the "Technical workshop on conservation of and trade in freshwater turtles and tortoises", held at Kunming, P.R. China, on 25-28 March 2002, including representatives from range and non-range countries, supported this proposal.

7. Additional remarks

Executive Summary for the Spiny Turtle (*Heosemys spinosa*)

- An Appendix II listing is proposed for the Spiny Turtle (*Heosemys spinosa*); the species meets the criteria in Resolution Conf. 9.24, as outlined below. This listing is expected to impose further controls on international trade, including the necessity to carefully consider whether current or proposed trade levels would have detrimental impacts on the survival of the species in its range, and will provide importing countries with a mechanism to monitor and evaluate trade levels and the significance of their involvement. Listing will also result in jurisdiction over management of the species being shifted to the CITES MA in Indonesia and Malaysia.

- *Heosemys spinosa* inhabits lowland and hill rainforest up to an altitude of 900 m MSL, usually in the vicinity of small streams, mainly in hill areas up to 900 m. The Spiny Turtle is known from Brunei Darussalam, Indonesia, Malaysia, Myanmar, the Philippines, Singapore and Thailand. No information is available on growth, maturity and reproduction in nature. A captive-raised pair was estimated to have reached maturity at the age of about 10 years. Females lay one or occasionally two eggs per clutch, and may lay several clutches per year.

- Direct collection of large numbers of adults and juveniles, over sustained periods for subsistence consumption and by intensive collection for international trade in recent years, is highly likely to have significantly impacted populations of a species whose life history has evolved to tolerate moderate losses of juveniles but whose reproductive adults are of great population value. Adults of this species are collected by local people, whenever they are found in the course of other activities in the forest. The remarkable juveniles of this species are in demand in the domestic and international pet trade. Deforestation, encroachment and other forms of habitat impacts inside and out of protected areas represent further threats. The species was therefore rated as Endangered A1bcd in the 2000 IUCN Red List, an increase from VU A1bd in the 1996 IUCN Red List.

- Legal and/or illegal international trade in *Heosemys spinosa* for food or as pets is recorded from the range states Indonesia, Malaysia, Singapore, and Thailand. Apart from these, mainly China incl. Hong Kong, the European Union and the US are involved.

- This species meets the criteria listed in Resolution Conf. 9.24, Annex 2a, B (i), namely that "it is known, inferred or projected that the harvesting of specimens from the wild for international trade has, or may have, a detrimental impact on the species by exceeding, over an extended period, the level that can be continued in perpetuity".

- Indonesia announced the willingness to act as a co-proponent. The MA of Thailand confirmed the correctness of the presented data related to this country. The CITES Scientific Authority of Myanmar supports the proposal. China approved the proposal and asked to act as a co-proponent. – All participants of the "Technical workshop on conservation of and trade in freshwater turtles and tortoises", held at Kunming, P.R. China, on 25-28 March 2002, including representatives from range and non-range countries, supported this proposal.

1. Taxonomy

   1.1 Class: Reptilia

   1.2 Order: Testudines (Chelonia)

   1.3 Family: Bataguridae (Geoemydidae)

   1.4 Genus and species: *Heosemys spinosa* (Bell, 1830)

1.5 Scientific synonyms: *Emys spinosa* Bell, 1830
Geoemyda spinosa (Bell, 1830)
Heosemys spinosa (Bell, 1830)

1.6 Common names:

English:	Spiny turtle
French:	Héosémyde épineuse
Spanish:	
Bahasa Indonesia:	Kura-Kura Mas, Kura-Kura Duri
Bahasa Malayu:	Kura-Kura Duri Bukit
German:	Stachel-Erdschildkröte
Thai:	Tao Chak

2. Biological parameters

Heosemys spinosa is a small to medium-sized turtle reaching a maximum shell length of 22.5 cm. When young, the shell is nearly circular in outline and provided with exceptionally long sharp spikes around its margin; as the animals grow the shell becomes more rectangular and the marginal spikes become reduced in prominence; old adults merely have strongly indented anterior and posterior carapace margins. A distinctive raised vertebral keel with square outline runs over the midline of the carapace (dorsal shell). The plastron (ventral shell) is solidly attached to the carapace by a moderately short bridge. There is no plastral hinge, but the posterior lobe of the plastron is slightly kinetic in adult females. The head is rather small. The legs are proportionally long and covered with large scales; the tail is relatively short.

The shell is uniform brown above; the underside is yellowish with a distinct radiating brown pattern on each scute. The head is dark brown, sometimes with dark red or pale blotches. The limb scales vary from black to pale brown, often suffused with red, while the soft skin between the scales, in the shell openings and at the tail is dark grey.

No information is available on growth, maturity and reproduction in nature. A captive hatchling grew from 55mm to 78 mm in one year. Its captive-raised parents were estimated to have reached maturity at the age of about 10 years (Herman, 1993). Females lay one or occasionally two eggs per clutch, and may lay several clutches per year; 10 eggs were produced by a single captive female between 1989 and 1993 (Herman, 1993).

2.1 Distribution

Countries of Origin: Brunei Darussalam, Indonesia, Malaysia, Myanmar, the Philippines, Singapore, Thailand

Brunei Darussalam: The species is known from the inland Batu Apoi dipterocarp forest area and Kerangas forest in the Belait district of Brunei (Das, 1998; Charles, 2000).

Indonesia: *Heosemys spinosa* has been recorded from Sumatra, the Mentawei Islands, the Natuna Islands, Banka, the Batu & Banyak Islands, and from Kalimantan (de Rooij, 1915; Iverson, 1992; Samedi & Iskandar, 2000); it is not known from Java.

Malaysia: The species has been recorded from most areas of Peninsular Malaysia, Sarawak and Sabah (Iverson, 1992; Lim & Das, 1999; Sharma & Tisen, 2000).

Myanmar: Old records and museum specimens attest to the occurrence of *Heosemys spinosa* in Tenasserim, but no specimens have been reported recently (Smith, 1931; van Dijk, 1998a; Platt *et al*., 2000).

Philippines: The species has recently been reported from Mindanao, based on a single museum specimen (Das, 1996), and from Tawitawi Island in the Sulu Archipelago (Fritz, 1997).

Singapore: The species is known from the Bukit Timah N.P. and Central Catchment areas (Lim & Lim, 1992).

Thailand: *Heosemys spinosa* occurs in forested hill regions from the Chumphon area to the Malaysian border (van Dijk, 1999)

2.2 Habitat availability

Heosemys spinosa inhabits lowland and hill rainforest up to an altitude of 900 m MSL, usually in the vicinity of small streams, mainly in hill areas up to 900 m (Flower, 1899; Smith, 1931; Taylor, 1970; Pritchard, 1979; Lim & Das, 1999). Animals occasionally occur in other habitats, such as Kerangas heath forest (Charles, 2000).

Brunei Darussalam: Large areas of lowland dipterocarp forest and other suitable forest habitat are available in Brunei (Das, 1998; Lim & Das, 1999; Charles, 2000).

Indonesia: Extensive areas of evergreen rainforest remain in Sumatra, Kalimantan and some of the smaller islands inhabited by *H. spinosa*, but rates of deforestation and forest impacts in Indonesia have averaged 1.2% annually during 1990-2000; rates are perceived to be higher in western Indonesia and accelerating (MacKinnon, 1997; FAO 2001) and include loss of forest within protected areas (Whitten *et al.,* 1997).

Malaysia: Extensive areas of suitable lowland and hill evergreen forest remain in Peninsular Malaysia, Sarawak and Sabah (Sharma & Tisen, 2000).

Myanmar: No information is available on the status of remaining evergreen rainforest in Tenasserim.

Philippines: No information is available on the status of remaining evergreen rainforest in Mindanao and the Sulu islands.

Singapore: Suitable rainforest habitat in Singapore is apparently restricted to the Bukit Timah N.P. and Central Catchment areas (Lim & Lim, 1992).

Thailand: Substantial areas of evergreen rainforest remain in the hill and montane parts of Peninsular Thailand which offer suitable habitat (Gray *et al*., 1994; MacKinnon, 1997).

2.3 Population status

Brunei Darussalam: Das (1998) indicated that the species is rare at Batu Apoi N.P. and suspected long-tern subsistence collection by native Orang Asli to have depleted populations.

Indonesia: Samedi & Iskandar (2000) consider the species 'rare' in Indonesia, while Iskandar (2000) considered it 'uncommon'. Suwelo (2001) considered the species threatened with extinction in Indonesia.

Malaysia: "It can still be found in fair numbers in unlogged forest reserves and protected areas if sampling intensity is high. Good populations are expected to occur in Taman Negara, Krau Wildlife Reserve and the Endau-Rompin State Park large due to the size of these areas." (Sharma & Tisen, 2000).

Myanmar: No recent information is available on the species' status in Myanmar. U Kyaw Moe *et al.* (2002) assert that "almost all chelonian species in Myanmar ought to be regarded as threatened by levels of harvest that are not sustainable".

Philippines: No information is available, but the late discovery of the species' occurrence in the Philippines suggests that the species is uncommon or rare.

Singapore: The species was considered 'uncommon' in Singapore by Lim & Lim (1992).

Thailand: In Thailand the species is uncommon or rare (van Dijk, 1999; van Dijk & Palasuwan, 2000).

2.4 Population trends

No quantitative information on population trends is available for any of the range states (van Dijk & Palasuwan, 2000; Samedi & Iskandar, 2000; Sharma & Tisen, 2000). However, some indication can be gleaned from contrasting Shelford's observation (1916) that *Heosemys spinosa* was one of the commonest hardshelled turtles in Sarawak, to Das' observation (1998) that 18 months of surveys in nearby Batu Apoi encountered a single turtle. Likewise, Tweedie & Harrison (1954) considered the species common in the wooded country around the reservoirs in Singapore, while Lim & Lim (1992) rated the species as 'rare'. Samedi *et al*. (2002) stated that declining exports had been observed for *Heosemys spinosa* during the period 1996-2001 despite stable or increasing demand, and concluded that trade and habitat loss had led to population declines.

2.5 Geographic trends

This species reaches the northern margin of its natural distribution range in Thailand, and it is to be expected that populations are localised and small in such conditions (van Dijk, 1999). Similar processes may govern abundance of the species in Myanmar and the Philippines.

2.6 Role of the species in the ecosystem

Heosemys spinosa is generally considered to feed on fruit and other vegetable matter (Flower, 1899; Smith, 1931; Taylor, 1970; Nutphand, 1979; Iskandar, 2000), but captive animals at least may accept some animal foods, such as earthworms, mealworms, pieces of fish and meat (Wermuth, 1972; Müller, 1993; Ernst *et al*., 2000). No further information on the species' ecological role is available.

2.7 Threats

Adults of this species are collected for subsistence consumption by local people, whenever they are found in the course of other activities in the forest. The remarkable juveniles of this species are in demand in the domestic and international pet trade. Deforestation, encroachment and other forms of habitat impacts inside and out of protected areas represent further threats (see section 4.2.2).

The species was rated as Endangered A1bcd in the 2000 IUCN Red List, an increase from VU A1bd in the 1996 IUCN Red List (IUCN, 1996; Hilton-Taylor, 2000; IUCN TFTSG & ATTWG, 2000). The species is considered CR in Indonesia (Iskandar, in IUCN TFTSG & ATTWG, 2000). In Thailand, the species is considered VU (OEPP, 1997) to EN (van Dijk, 1999). An assessment as Vulnerable was suggested for Borneo and Peninsular Malaysia (Das, Sharma, in IUCN TFTSG & ATTWG, 2000).

3. Utilization and trade

3.1 National utilization

Brunei Darussalam: Das (1998) stated that hunting by Iban tribespeople, settled from adjacent Sarawak, may be the reason for low turtle density in otherwise undisturbed rainforest. Such hunting is presumably mainly for subsistence consumption.

Indonesia: Samedi & Iskandar (2000) wrote that there is little documented information on domestic use of freshwater turtles in Indonesia. They state that freshwater turtles are mainly utilized and traded for human consumption, with intertwined value as food and medicine; they believe that

domestic use of freshwater turtles involves much lower numbers than the number of animals exported.

Malaysia: Lim & Das (1999) note that the flesh of *Heosemys spinosa* is consumed by the Orang Asli, the indigenous forest people of West Malaysia. The Iban tribespeople of Sarawak are efficient hunters employing traditional methods such as spearing, trapping and the use of trained dogs (Das, 1998). Turtles are also traded for consumption by city-inhabitants: Moll (1976, 1987) reported a distinct decline in the numbers of *Heosemys spinosa* offered for sale in Peninsular Malaysian 'pet shops', where animals are purchased primarily for food and medicine, and Sharma (1999) failed to find the species during 1994.

Singapore: There are no indications of local collection and exploitation of *H. spinosa* in Singapore (Theng, 2002).

Thailand: Adult *Heosemys spinosa*, as well as any other turtle species, are consumed by the Sakai and other forest-dwelling indigenous people of southern Thailand. There is also a modest trade in animals, particularly juveniles, as pets. (van Dijk, 1999)

No information is available on domestic utilisation of *Heosemys spinosa* in Myanmar or the Philippines.

3.2 Legal international trade

Brunei Darussalam: No trade in *H. spinosa* is known to involve Brunei.

Indonesia: Indonesia has a legal annual quota for the number of *Heosemys spinosa* that may be exported, set by the Management Authority, the Directorate General of Nature Protection and Conservation (DGNPC). The quota was 13,675 in 1998, 7200 in 1999, 2000 in 2000, and 4500 in 2001. These quotas comprise all forms of exploitation, including consumption and export for pet trade. During those years, *Heosemys spinosa* represented respectively 7.0, 3.8, 5.2 and 5.3 percent of total annual turtle quotas from Indonesia. (Samedi *et al*., 2002).

The CITES Management Authority, the DGNPC, keeps careful records of exports for the pet trade, only, and recorded pet trade exports of *H. spinosa* comprising 1377 animals in 1998, 1586 in 1999, 1985 in 2000 and 3338 animals in 2001. (Samedi *et al*., 2002).

No reliable data are available on actual exports of *H. spinosa* from Indonesia beyond declared pet exports, as neither exporters nor most government authorities such as fisheries, wildlife, quarantine or customs authorities maintain records by species. An indication of the scale of the problem is provided by contrasting the export quota set by the CITES Management Authority, the DGNPC, with the exports by 40 exporters in selected ports as reported by the Directorate General of Fisheries. The combined quota for all species of freshwater turtles and tortoises in 1998 amounts to 196,605 animals. Export data for 1998 indicate that 396,719 animals were exported from only a subset of total export locations (Samedi & Iskandar, 2000; Samedi *et al*., 2002).

Examination of stock held by middlemen and exporters in Sumatra show that *H. spinosa* is traded in variable and at times significant numbers locally. Two of 98 turtles reported at two traders in North Sumatra were *H. spinosa* (Fritz & Gaulke, 1997), while about 450-500 *H. spinosa* were seen among about 2900 turtles held on a single day at a single exporting company in Medan (Shepherd, 2000), representing 17.24% of total stock.

Malaysia: Export of *Heosemys spinosa* from Malaysia is not prohibited, yet no animals were recorded in export records of the Department of Wildlife and National Parks of Peninsular Malaysia for January to October 1999. Nevertheless, the species was observed at a trader's premises in Perlis in early 1999 and the trader stated that the animals were mainly destined for export. Small

numbers of animals were recorded as originating from Malaysia in import statistics of the United States for 1996 and 1998.

In addition, it is worth noting that Kuala Lumpur, Penang and perhaps Kuching are major trans-shipment hubs in the trade from Indonesia.

Singapore: While Singapore does not allow exploitation its native populations of freshwater turtles, it imports substantial quantities from Indonesia and perhaps Malaysia. About 10% of imports is used domestically, predominantly soft-shelled turtles, and the remainder is re-exported, making the country a major hub in the trade of turtles from Indonesia to East Asia (Shepherd, 2000; van Dijk *et al*., 2000; Theng, 2002).

P.R. China: Statistics of the Endangered Species Import & Export Management Office of the People's Republic of China indicate that 36,600 *H. spinosa* were permitted to be imported into China in the year 2000; no records were available for import permits issued in 1998 or 1999. Actual quantities traded may be lower than quantities indicated on permits due to permit validity and logistic restrictions, or may be higher due to irregularities, casting some uncertainty about these statistics (Endangered Species Import & Export Management Office, P.R. China, 2002). *Heosemys spinosa* has been observed in recent years to be offered for sale in some food markets in southern China, often in large quantities (Lau & Shi, 2000; Endangered Species Import & Export Management Office of P.R. China, 2002). At the Qing Ping market in Guangzhou, China, in May 2000, some 280 adult *H. spinosa* were offered for sale as food, at a retail price of about RMB 90 per kg (approx. USD 11.25 /kg) (van Dijk, in litt. to German Scientific Authority, 2001). At the same market in November 2000, 'hundreds' of individuals of *H. spinosa* from Sumatra were offered for sale (Artner & Hofer, 2001). In October 2001, a total of between 200 and 300 adult *H. spinosa* were offered for sale at this market (van Dijk, in litt. to German Scientific Authority, Nov. 2001). A survey of 3 food markets in Guangzhou and Shenzhen, China, and one turtle trader in Hong Kong SAR, carried out between 30 October 2000 and 13 October 2001, observed 8750 individuals of *H. spinosa* offered for sale. Another 313 individuals were observed in surveys of 5 pet shops in Hong Kong and one pet market in Guangzhou. These markets and shops were surveyed twice during every winter month and once during each summer month; thus, the number observed is a minimum number, not an approximation of total annual turnover (Ades, 2002).Noteworthy is that the species was not seen during market surveys in 1993-1994 (Lau *et al*., 1995) or 1995 (Meier, 2000)

European Union: Potentially significant numbers of *Heosemys spinosa* are traded as pets in Europe. Altherr & Freyer (2000) noted that *H. spinosa* were offered for sale by pet traders in Germany, the Netherlands, the United Kingdom and Switzerland in 1999. Between 1986 and 1991, the United Kingdom alone imported 775 *H. spinosa* (Smart & Bride, 1993). A review by the German Scientific Authority of 13 available offer lists (dating from 1990 to 2002) from German reptile wholesalers yielded offers of *H. spinosa* at DEM 115.00 per animal in 1993, DEM 75.00 in 1996, and DEM 195.00 per animal in 2000.

United States of America: Records of the US Fish & Wildlife Service of live reptile imports for 1996-1999 show fairly steady imports of *Heosemys spinosa*. In 1996, 137 animals were recorded as imported from China (2), Indonesia (96), Malaysia (11) and Viet Nam (28), at declared values averaging USD 13.91 but ranging widely from USD 1.43 to USD 112. In 1997, 52 animals were imported, 21 from Hong Kong (valued at USD 50.00 each) and 32 from Indonesia (at values between USD 12.50 and USD 70.00), valued on average at USD 33.23. In 1998, imports increased to 197 animals, from China (61 animals), Hong Kong (6), Indonesia (112) and Malaysia (18), valued on average at USD 10.71 per animal (range USD 0.67 to USD 20.00). In 1999, 256 *Heosemys spinosa* were imported, 64 from China (valued at USD 12 each, average USD 1.34), 167 from Indonesia (valued between USD 13 and USD 15.80, average USD 15.41) and 25 from Viet Nam (each valued at USD 12.52), at an average value of USD 11.61. China, Hong Kong and Viet Nam are not range states and these animals may have been misidentified or acquired from consumption markets. All animals were declared as originating from the wild. Similar numbers

continued to be imported during 2000 and 2001, since Weissgold (2002) reported over 1500 specimens imported into the USA during the period 1997-2001. Salzberg (2001) noted that *H. spinosa* were offered for sale in the USA via the Internet at USD 85.00 per animal.

3.3 Illegal trade

Myanmar: No trade in *H. spinosa* is known to involve Myanmar.

Philippines: No trade in *H. spinosa* is known to involve the Philippines.

Singapore: There is no information indicating that the population inhabiting Singapore is exploited (Theng, 2002).

Thailand: Small individuals of *Heosemys spinosa* were occasionally offered for sale at Chatuchak market in Bangkok during 1996-1997 and at other pet trading locations, and some of these individuals may have been domestically collected (van Dijk, 1999; van Dijk & Palasuwan, 2000). Some local trade occurs in adult *H. spinosa* for pets, religious purposes, domestic consumption or for export, but no specific information is available. *Heosemys spinosa* is rarely included in confiscations in Thailand: of 13 confiscations detailed by van Dijk & Palasuwan (2000) and Lauprasert *et al.* (2002), only a single *H. spinosa* was recorded, and this was part of a trans-shipment.

Hong Kong: A large shipment of live freshwater turtles was intercepted in Hong Kong on 11 December 2001 and confiscated due to the undeclared presence of CITES-listed species. On arrival at the rescue facility, Kadoorie Farm and Botanic Garden, the shipment was found to contain 7544 live freshwater turtles and tortoises, and an unrecorded number of animals already dead. Among the living animals were 524 *Heosemys spinosa*, representing 6.9 percent of the total shipment. These animals were subsequently relocated to the United States, Europe, Hong Kong Zoo or died despite veterinary care (40 animals , 7.6%) (Ades, 2002).

3.4 Actual or potential trade impacts

Direct collection of large numbers of adults and juveniles, over sustained periods for subsistence consumption and by intensive collection for international trade in recent years, is highly likely to have significantly impacted populations of a species whose life history has evolved to tolerate moderate losses of juveniles but whose reproductive adults are of great population value (see e.g. Gibbons, 1990; Doroff & Keith, 1990).

Inclusion of the genus *Heosemys*, including *H. spinosa*, in Appendix II of CITES is expected to impose further controls on international trade, including the necessity to carefully consider whether current or proposed trade levels would have detrimental impacts on the survival of the species in its range, and will provide importing countries with a mechanism to monitor and evaluate trade levels and the significance of their involvement.

Including the genus *Heosemys* in CITES Appendix II will result in a transfer of jurisdiction over management of the species from the Fisheries Department of Indonesia to the Directorate General of Forest Protection and Nature Conservation of the Ministry of Forestry (the CITES MA) in Indonesia, and from the Fisheries Department of Peninsular Malaysia to the Department of Wildlife and National Parks (Perhilitan, the CITES MA) in Peninsular Malaysia.

3.5 Captive breeding for commercial purposes

The species is relatively difficult to maintain in captivity; successful reproduction has occurred in captivity a number of times (Herman, 1993; CBSG 2001) but this occurred in the care of zoos and private hobbyists without commercial motives. Some turtle farms in China maintain adult *Heosemys*

spinosa and claim to produce eggs and hatchlings, but these claims remain unverified by independent observers (van Dijk, 2001, in litt. to German Scientific Authority; Shi *et al*., 2002).

4. Conservation and management

4.1 Legal status

4.1.1 National legislation

Brunei Darussalam: No information is available on legal protection of *H. spinosa* in Brunei.

Indonesia: The species is currently not protected by domestic Indonesian legislation, but is considered a candidate for national protection by inclusion under Law No.5/1990 concerning the Conservation of Biological Natural Resources and their Ecosystems, and Law No. 5/1985 concerning Fisheries (Suwelo, 2001)

Malaysia: Malaysian legislation governing freshwater turtles is complicated by its division of responsibilities between Federal and State authorities regulating Wildlife and Fisheries. State fisheries legislation in Johore, Kelantan and Negeri Sembilan can be interpreted to cover *Heosemys spinosa*; coverage under Malacca State legislation is unclear. Exports of freshwater turtles from peninsular Malaysia comes under the remit of the Federal Department of Wildlife and National Parks of Peninsular Malaysia. (Gregory & Sharma, 1997). In Sarawak, the Wild Life Protection Ordinance 1998 includes *Heosemys spinosa* as a 'Protected Species'. In Sabah the species is not protected under the Wild Life Enactment 1997.

Myanmar: *Heosemys spinosa* is specifically included as a Protected Species in the Protection of Wildlife, Wild Plants and Conservation of Natural Areas Law of Myanmar, which was enacted in 1994 (U Kyaw Moe *et al*., 2002).

Philippines: *Heosemys spinosa* is apparently not specifically protected from exploitation, but it is included under the general prohibition of export of native wildlife.

Singapore: Native wildlife species, including freshwater turtles, are protected under the Wild Animals and Birds Act, 1985. While this Act does not specifically name *Heosemys spinosa*, it effectively protects the species since prior permission is needed to trap any turtle or other native animal species from anywhere in Singapore, and permission is only granted in exceptional cases such as scientific research (Theng, 2002).

Thailand: *Heosemys spinosa* is protected from all forms of exploitation under the Wild Animals Reservations and Protected Areas Act (1992).

4.1.2 International legislation

Heosemys spinosa is not covered by bilateral or inter-governmental legislation.

Under Notice of Strengthening the Trade Management on Turtles and Tortoises, issued on June, 17, 2001, the People's Republic of China suspended all commercial imports of all turtles from Indonesia and Thailand, including *Heosemys spinosa*.

4.2 Species management

4.2.1 Population monitoring

No population monitoring efforts are known to have been carried out, to be in progress, or to be in preparation in any of the range states.

4.2.2 Habitat conservation

Brunei Darussalam: *Heosemys spinosa* is confirmed to occur, at very low densities, in Batu Apoi N.P. (Das, 1998).

Indonesia: The species has been reported from Gunung Leuser N.P. (Supriatna & Sidik, 1996), Padang Island and Tanjung Padang, Sumatra, and from Lake Sentarum Wildlife Reserve, West Kalimantan (Wetlands International Database, in Samedi & Iskandar, 2000), and is likely to occur in other areas of protected forest in Sumatra and Kalimantan.

Malaysia: *Heosemys spinosa* is confirmed to inhabit several of Malaysia's protected areas, including Taman Negara (Moll & Khan, 1990), the Perlis State Park (Sharma *et al*., 2001), Endau-Rompin (Kiew, 1987), Krau Wildlife Reserve, Bukit Cerakah Agricultural Park (Sharma & Tisen, 2000) and the Forest Research Institute of Malaysia (Norsham *et al*, MS). No records of occurrences in the protected areas of Sarawak and Sabah are available but the species is expected to inhabit at least some of these areas.

Myanmar: No information is available about the occurrence of *Heosemys spinosa* in protected areas in Tenasserim.

Philippines: It is not known whether *H. spinosa* inhabits any of the protected areas of Mindanao, some of which apparently encompass suitable forest habitat (MacKinnon, 1997).

Singapore: *Heosemys spinosa* is known to inhabit the Bukit Timah Nature Reserve and the Central Catchment Area (Lim & Lim, 1992; Lim & Das, 1999). Protected areas in Singapore are designated under the National Parks Act, which is administered by the National Parks Board (Theng, 2002).

Thailand: Significant areas of remaining natural vegetation have been protected in Thailand under the Wild Animals Reservations and Protected Areas Act, 1992, including large hill areas of evergreen rainforest (Gray et al., 1994; MacKinnon, 1997) providing suitable habitat for *Heosemys spinosa*. Populations of the species are confirmed to occur in Thaleban N.P. and Khao Luang N.P. and are likely to occur elsewhere in protected forest areas of the Peninsula (van Dijk, 1999).

4.2.3 Management measures

No specific management measures are known to be in place or planned in any of the range states. Conservation breeding of *Heosemys spinosa* has occurred at least three zoos and private collections (Herman, 1993; CBSG, 2001), and progress towards development of studbooks and integrated, co-ordinated breeding programs is underway.

4.3 Control measures

4.3.1 International trade

Animals of *Heosemys spinosa* legally exported from Peninsular Malaysia and Indonesia are subject to the usual national regulations pertaining to customs regulation and quarantine. Animals entering the importing country will be subject to similar customs and quarantine regulations as are in effect in that country.

4.3.2 Domestic measures

Indonesia sets an annual export quota for *Heosemys spinosa*, which was set at 7,200 individuals in 1998. None of the other range states attempts to manage a controlled harvest.

5. Information on similar species

Juvenile *Heosemys spinosa* are unmistakable, but adults are easily confused with various other species. Juvenile *Heosemys grandis* have distinctly serrated posterior and nuchal regions of the carapace, but not along the sides, and have different head colouration. *Heosemys depressa*, *H. leytensis*, *Leucocephalon yuwonoi* and *Notochelys platynota* lack the radiating plastral pattern. *Cyclemys* terrapins have a moveable plastron and proportionally long inter-anal seam because the femoro-anal seam curves strongly forward.

6. Other comments

Both the Management and Scientific Authorities of the range states of *Heosemys* sp. had been contacted in March 2002. **Brunei Darussalam** responded not being able to comment in detail on the proposal due to the lack of sufficient country-related information. **Indonesia** announced the willingness to act as a co-proponant (see attachment). To date only a provisional reply has been received from the Management Authority of the **Philippines** The MA of **Thailand** confirmed the correctness of the presented data related to this country. The CITES Scientific Authority of **Myanmar** supports the proposal. For all these comments, see copies attached. No other responses have been received until now.

China approved the proposal and asked to act as a co-proponent.

All participants of the "Technical workshop on conservation of and trade in freshwater turtles and tortoises", held at Kunming, P.R. China, on 25-28 March 2002, including representatives from range and non-range countries, supported this proposal.

7. Additional remarks

---

8. References

Ades, Gary W. J. 2002. *Turtle Trade Monitoring in South China & Summary of Turtle Rescue Operation in Hong Kong.* Report and Presentation presented at the Technical workshop on conservation of and trade in freshwater turtles and tortoises in Asia, Kunming, Yunnan Province (People's Republic of China), 25-28 March 2002.

Buskirk, James R. 1989. A third specimen and neotype of *Heosemys leytensis* (Chelonia: Emydidae). *Copeia*, 1989 (1): 224-227.

CBSG (Conservation Breeding Specialist Group). 2001. *IUCN Asian Turtle Workshop: Developing Conservation Strategies through Captive Management – Briefing Book.* IUCN/SSC Conservation Breeding Specialist Group, Apple Valley, MN, USA. 393 pp.

Charles, Joseph K. 2000. A new record of a spiny hill turtle *Heosemys spinosa* in a kerangas forest, Brunei Darussalam. *Hamadryad*, Vol. 25 (2): 207-208.

Claridge, Gordon F. (compiler). 1996. *An Inventory of Wetlands of the Lao PDR*. IUCN, Bangkok, Thailand.

Das, Indraneil. 1991. *Colour Guide to the Turtles and Tortoises of the Indian Subcontinent.* R & A Publishing Ltd, Avon, England, 133 pp.

Das, Indraneil. 1996. First record of *Heosemys spinosa* from the Philippines, with biogeographical notes. *Chelonian Conservation and Biology*, Vol. 2 (1): 80-82.

Das, Indraneil. 1998 "1997". Conservation Problems of Tropical Asia's Most-Threathened Turtles. pp. 295-301 in *Proceedings: Conservation, Restoration and Management of Tortoises and Freshwater Turtles: An International Conference*, 11-16 July 1993, S.U.N.Y. Purchase, New York (van Abbema, ed.). New York Turtle and Tortoise Society and WCS Turtle Recovery Program.

David, Patrick. 1994. Liste des Reptiles actuels du monde. I. Chelonii. *Dumerilia*, Vol. 1 (1): 7-127.

Davison, G. W. H. 1995. *Belum – a Rainforest in Malaysia*. Malaysian Nature Society, Kuala Lumpur, Malaysia. 201 pp.

van Dijk, Peter Paul. 1998a "1997". Turtle Turtle Conservation in Myanmar: past, present and future. pp. 265-271 in *Proceedings: Conservation, Restoration and Management of Tortoises and Freshwater Turtles: An International Conference*, 11-16 July 1993, S.U.N.Y. Purchase, New York (van Abbema, ed.). New York Turtle and Tortoise Society and WCS Turtle Recovery Program.

van Dijk, Peter Paul. 1998b. The Natural History of the Elongated Tortoise, *Indotestudo elongata* (Blyth, 1853) (Reptilia: Testudines) in a hill forest mosaic in western Thailand, with notes on sympatric turtle species. Ph. D. thesis, Department of Zoology, Faculty of Science, National University of Ireland at Galway. July 1998. 255 pp.

van Dijk, Peter Paul. 1999. *A Review of the Conservation Status of Tortoises and Freshwater Turtles in Thailand.* Report to IUCN Asia Programme and Species Survival Commission IUCN/SSC Tortoise and Freshwater Turtle Specialist Group.

van Dijk, Peter Paul, and Thanit Palasuwan. 2000. Conservation status, trade and management of tortoises and freshwater turtles in Thailand. Pp. 137-144 in *Asian Turtle Trade: Proceedings of a Workshop on Conservation and Trade of Freshwater Turtles and Tortoises in Asia* (van Dijk, Stuart & Rhodin, eds.). Chelonian Research Monographs, Number 2..

van Dijk, Peter Paul, Djoko T. Iskandar, Thanit Palasuwan, Anders G. J. Rhodin, Samedi, Dionysius S. K. Sharma, Chris R. Shepherd, Oswald Braken Tisen and Vagi R. Genorupa. 2000. Turtle Trade in Southeast Asia: Regional Summary (Indonesia, Malaysia, Papua New Guinea, and Thailand. Pp. 145-147 in *Asian Turtle Trade: Proceedings of a Workshop on Conservation and Trade of Freshwater Turtles and Tortoises in Asia* (van Dijk, Stuart & Rhodin, eds.). Chelonian Research Monographs, Number 2.

Endangered Species Import & Export Management Office of the People's Republic of China. 2002. *Conservation, Management and Trade Status of Wild Turtles and Tortoises in China*. Report and Presentation presented at the Technical workshop on conservation of and trade in freshwater turtles and tortoises in Asia, Kunming, Yunnan Province (People's Republic of China), 25-28 March 2002.

Ernst, Carl H., Ruud G. M. Altenburg, and Roger W. Barbour. 2000. *Turtles of the World* - CD-ROM edition, Version 1.2. ETI Expert Center for Taxonomic Identification, Amsterdam, UNESCO Publishing, Paris, and Springer Verlag, Heidelberg & New York.

FAO (Food and Agricultural Organisation of the United Nations). 2001. State of the World's Forests 2001. FAO, Rome, ISSN 1020-5705. 181 pp.

Flower, Stanley Smyth. 1899. Notes on a Second Collection of Reptiles made in the Malay Peninsula and Siam, from November 1896 to September 1898, with a List of the Species recorded from those Countries. *Proceedings of the Zoological Society of London*, 1899: 600-695.

Fritz, Uwe. 1997. Zum Vorkommen von *Heosemys spinosa* (Gray, 1831) auf den Philippinen. *Faunistische Abhandlungen Staatliches Museum für Tierkunde Dresden*, Vol. 21 (7): 131-134.

Fritz, Uwe & Maren Gaulke. 1997. Zur Herpetofauna Nord-Sumatras. Teil 1: Schildkröten. *Herpetofauna*, vol. 19 (110): 12-22.

Fritz, Uwe, and Fritz Jürgen Obst. 1996. Zur Kenntnis der Celebes-Erdschildkröte, *Heosemys yuwonoi* (McCord, Iverson & Boeadi, 1995). *Herpetofauna*, Vol. 18 (102): 27-34.

Gaulke, Maren, and Uwe Fritz. (1998): Distribution patterns of batagurid turtles in the Philippines, *Herpetozoa* 11(1/2), 3-12.

Goode, Mike. 1998 "1997". Reproduction in captive *Heosemys grandis*. Pp. 478-479 in *Proceedings: Conservation, Restoration, and Management of Tortoises and Turtles – An International Conference* (Jim van Abbema, editor). New York Turtle and Tortoise Society and WCS Turtle Recovery Program.

Gray, Denis, Colin Piprell and Mark Graham. 1994. *National Parks of Thailand.* Industrial Finance Corporation Limited, Bangkok. 2nd, revised edition. 250 pp.

Gregory, Rick, and Dionysius S. K. Sharma. 1997. Review of legislation affecting marine and freshwater turtle, terrapin and tortoise conservation and management in Malaysia: recommendations for change. Project MYS 343/96 Report to WWF Malaysia.

Hendrie, Douglas B. 2000. Status and Conservation of Tortoises and Freshwater Turtles in Viet Nam. Pp. 63-73 in *Asian Turtle Trade: Proceedings of a Workshop on Conservation and Trade of Freshwater Turtles and Tortoises in Asia* (van Dijk, Stuart & Rhodin, eds.). Chelonian Research Monographs, Number 2.

Herman, Dennis W. 1993. Reproduction and Management of the Southeast Asian Spiny Turtle (*Heosemys spinosa*) in Captivity. *Herpetological Natural History*, Vol. 1 (1): 97-100.

Hilton-Taylor, Craig (Compiler). 2000. *The 2000 IUCN Red List of Threatened Species*. IUCN, Gland, Switzerland and Cambridge, UK. 79 pp + CD-ROM database, also accessible at www.redlist.org.

Hutasingh, Onnucha. 1998. *Army of turtles invades fruit orchards*. *The Bangkok Post*, Sunday 29 November 1998, page 1, 3.

Ing Try and Poum Sotha. 2002. *The Current Status of Freshwater Turtle and Tortoise Conservation and Management in Cambodia*. Country Report and Presentation presented at the Technical workshop on conservation of and trade in freshwater turtles and tortoises in Asia, Kunming, Yunnan Province (People's Republic of China), 25-28 March 2002.

Iskandar, Djoko T. 2000. *Turtles & Crocodiles of Insular Southeast Asia & New Guinea*. IUCN, World Bank and Bandung Institute of Technology. 191 pp.

IUCN. 1996. *1996 IUCN Red List of Threatened Animals*. IUCN, Gland, Switzerland. 448 pp.

IUCN TFTSG & ATTWG (IUCN/SSC Tortoise & Freshwater Turtle Specialist Group and Asian Turtle Trade Working Group). 2000. Recommended changes to 1996 IUCN Red List Status of Asian turtle species. Pp. 156-164 in *Asian Turtle Trade: Proceedings of a Workshop on Conservation and Trade of Freshwater Turtles and Tortoises in Asia* (van Dijk, Stuart & Rhodin, eds.). Chelonian Research Monographs, Number 2.

Iverson, John B. 1992. *A Revised Checklist with Distribution Maps of the Turtles of the World.* Privately Printed, Richmond, Indiana, 363pp.

Kiew, Bong Heang. 1987. An Annotated Checklist of the Herpetofauna of Ulu Endau, Johore, Malaysia. *Malayan Nature Journal*, Vol. 41: 413-423.

Kuchling, Gerald. 1995. Turtles at a Market in Western Yunnan: Possible Range Extensions for some Southern Asiatic Chelonians in China and Myanmar. *Chelonian Conservation and Biology*, Vol. 1 (3): 223-226.

Lau, Michael Wai-Neng, Gary Ades, Nick Goodyer and Fa-Sheng Zou. 1995. Wildlife Trade in Southern China including Hong Kong and Macao. Report, available at http://monkey.ioz.ac.cn/bwg-cciced/english/bwg-cciced/tech-27.htm. 29 pp.

Lau, Michael, Bosco Chan, Paul Crow and Gary Ades. 2000. Trade and Conservation of turtles and Tortoises in the Hong Kong Special Administrative Region, People's Republic of China. Pp. 39-44 in *Asian Turtle Trade: Proceedings of a Workshop on Conservation and Trade of Freshwater Turtles and Tortoises in Asia* (van Dijk, Stuart & Rhodin, eds.). Chelonian Research monographs, Number 2.

Lau, Michael, and Shi Haitao. 2000. Conservation and Trade of Terrestrial and Freshwater Turtles and Tortoises in the People's Republic of China. Pp. 30-38 in *Asian Turtle Trade: Proceedings of a Workshop on Conservation and Trade of Freshwater Turtles and Tortoises in Asia* (van Dijk, Stuart & Rhodin, eds.). Chelonian Research monographs, Number 2.

Lauprasert, Manop, Sawang Tipayanukool and Prapun Leepayakoon. 2002. *Thailand Country Presentation*. Presentation presented at the Technical workshop on conservation of and trade in freshwater turtles and tortoises in Asia, Kunming, Yunnan Province (People's Republic of China), 25-28 March 2002.

Le Xuan Canh, Tran Thi Hoa and Truong Quang Bich. 2002. *Status of Freshwater Turtles and Tortoises and Measures for their Conservation in Viet Nam*. Country Report and Presentation presented at the Technical workshop on conservation of and trade in freshwater turtles and tortoises in Asia, Kunming, Yunnan Province (People's Republic of China), 25-28 March 2002.

Lehr, E. (1997): *Untersuchungen zum Schildkrötenhandel in Viet Nam zwischen 1993 und 1996*. Mitteilungen der Zoologischen Gesellschaft für Arten- und Populationsschutz, Issue 2 1997, 12 ff., Germany.

Lim, Kelvin K. P., and Francis L. K. Lim. 1992. *A Guide to the Amphibians and Reptiles of Singapore*. Singapore Science Centre, Singapore. 160 pp.

McCord, William P., John B. Iverson and Boeadi. 1995. A New Batagurid Turtle from Northern Sulawesi, Indonesia. *Chelonian Conservation and Biology*, Vol 1 (4): 311-316.

McCord, William P., John B. Iverson, Phillip Q. Spinks, and H. Bradley Shaffer. 2001 "2000". A New Genus of Geoemydid Turtle from Asia. *Hamadryad*, Vol. 25 (2): 86-90.

MacKinnon, John (editor). 1997. *Protected Areas Systems Review of the Indo-Malayan Realm.* Asian Bureau of Conservation and World Conservation Monitoring Centre for the World Bank. 198 pp., 24 maps.

McDowell, Samuel B. 1964. Partition of the genus *Clemmys* and related problems in the taxonomy of the aquatic Testudinidae. *Proceedings of the Zoological Society of London*, Vol. 143: 239-279.

Meier, Elmar. 2000. Sind die Schildkröten Asiens noch zu retten? Pp. 171-176 in *Schildkröten – Grosses Schildkrötensymposium 5. Jahrestagung der SfÖ* (Artner & Meier, eds.). Natur und Tier-Verlag, Münster.

Moll, Edward O. 1976. West Malaysian Turtles: Utilization and Conservation. *Herpetological Review*, Vol. 7 (4): 163-166.

Moll, Edward O. 1987. *The River Terrapin conservation program in Malaysia: Follow-up study and evaluation*. Report to the Department of Wildlife and National Parks, Malaysia.

Moll, Edward O., Brian Groombridge, and J. Vijaya. 1986. Redescription of the Cane Turtle with notes on its natural history and classification. *Journal of the Bombay Natural History Society*, Vol. 83, supplement: 112-126.

Moll, Edward O., and Mohamed Khan bin Momin Khan. 1990. Turtles of Taman Negara. *Journal of Wildlife and Parks*, Vol. 10: 135-138.

Müller, Gerhard. 1993. Schildkröten: Land-, Sumpf- und Wasserschildkröten im Terrarium. 2nd edition. Eugen Ulmer Verlag, Stuttgart, Germany. 238 pp.

Norsham, Y, Leong, T. M., Grismer, J. L., Grismer, L.L., and Lim, B. L. MS. The Herpetofauna Diversity in the Forest Research Institute Malaysia (FRIM), Kuala Lumpur, Malaysia.

Nutphand, Wirot. 1979. *The Turtles of Thailand*. Siamfarm Zoological Garden, Bangkok, 222 pp.

Obst, Fritz Jürgen. 1996. Commentary on the Reprint Wermuth / Mertens (1961): "Schildkröten – Krokodile – Brückenechsen". Pp. 425-506 in the 1996 reprint of H. Wermuth & R. Mertens, 1961, *Schildkröten, Krokodile, Brückenechsen*. Gustav Fischer Verlag, Jena.

OEPP (Office of Environmental Policy and Planning). 1997. *Proceedings of the Conference on the Status of Biological Resources in Thailand, 29-30 May 1996*. Ministry of Science, Technology and Environment, Bangkok. 52 pp. [in Thai]

OOS (Overkoepelend Orgaan Stamboeken). 2000. *European Studbook Foundation Breeding Programs for Reptiles and Amphibians*. Brochure, 10 pp.

Platt, Steven G. 2000. *An Expedition into Central Rakhine State, Myanmar*. Wildlife Conservation Society, New York, USA. 64 pp.

Platt, Steven G. 2001. *An Investigation into the Conservation Status of Kachuga trivittata and Other Turtles of the Upper Ayeyarwady and Dokthawady (Myitnge) Rivers, Myanmar*. Wildlife Conservation Society, New York, USA. 64 pp.

Platt, Steven G., Kalyar and Win Ko Ko. 2000. Exploitation and Conservation Status of Tortoises and Freshwater Turtles in Myanmar. Pp. 95-100 in *Asian Turtle Trade: Proceedings of a Workshop on Conservation and Trade of Freshwater Turtles and Tortoises in Asia* (van Dijk, Stuart & Rhodin, eds.). Chelonian Research monographs, Number 2.

de Rooij, Nellie. 1915. *The Reptiles of the Indo-Australian Archipelago. Vol. 1. Lacertilia, Chelonia, Emydosauria.* E.J. Brill, Leiden, 384pp.

Rudolphi, Michael, and Ronald Weser. 2000. Zucht der F2-Generation bei der Riesenerdschildkröte *Heosemys grandis* (Gray, 1860). *Sauria*, Berlin, Vol. 22 (3): 17-24.

Salzberg, 2001. Turtles for Sale. *Turtle and Tortoise Newsletter*, Issue 3: 22.

Samedi, and Djoko T. Iskandar. 2000. Freshwater Turtle and Tortoise Conservation Utilization in Indonesia. Pp. 106-111 in *Asian Turtle Trade: Proceedings of a Workshop on Conservation and Trade of Freshwater Turtles and Tortoises in Asia* (van Dijk, Stuart & Rhodin, eds.). Chelonian Research monographs, Number 2.

Samedi, Akhmad Rukyani, and Irvan. 2002. *Utilization and Trade in Freshwater Turtles and Tortoises in Indonesia.* Country Report and Presentation presented at the Technical workshop on conservation of and trade in freshwater turtles and tortoises in Asia, Kunming, Yunnan Province (People's Republic of China), 25-28 March 2002.

Schildkrötenfreunde Österreich. 1999. Nachtzuchtstatistik 1998. *Emys*, vol. 6 (3): vi-vii.

Schildkrötenfreunde Österreich. 2000. Nachtzuchtstatistik 1999. *Emys*, vol. 7 (1): ix-xi.

Schildkrötenfreunde Österreich. 2001. Nachtzuchtstatistik 2000. *Emys*, vol. 8 (1): xi-xiii.

Sharma, Dionysius S. K. 1999. *Tortoise and Freshwater Turtle Trade and Utilisation in Peninsular Malaysia*. TRAFFIC Southeast Asia, Petaling Jaya, Malaysia. 39 pp.

Sharma, Dionysius S., Shahrul Anuar Mohd. Sah, Reuben S. K. Sharma and Richard M. DeCruz. 2001. The Reptilian Fauna of Perlis State Park at Mata Ayer and Bukit Wang Mu Forest Reserves. Pp. 129-137 in *Kepelbagaian Biologi dan Pengurusan Taman Negeri Perlis Persekitaran Fizikal dan Biologi Wang Kelian* (Faridah-Hanum, Osman & Latiff, eds.). Jabatan Perhutanan Perlis, Malaysia.

Sharma, Dionysius S. K., and Oswald Braken Tisen. 2000. Freshwater turtle and Tortoise Utilisation and Conservation Status in Malaysia. Pp. 120-128 in *Asian Turtle Trade: Proceedings of a Workshop on Conservation and Trade of Freshwater Turtles and Tortoises in Asia* (van Dijk, Stuart & Rhodin, eds.). Chelonian Research monographs, Number 2.

Shepherd, Chris R. 2000. Export of live freshwater turtles and tortoises from north Sumatra and Riau, Indonesia: A case study. Pp. 112-119 in *Asian Turtle Trade: Proceedings of a Workshop on Conservation and Trade of Freshwater Turtles and Tortoises in Asia* (van Dijk, Stuart & Rhodin, eds.). Chelonian Research Monographs, Number 2.

Shi, Haitao, and James Ford Parham. 2001. Preliminary Observations of a large turtle farm in Hainan Province, People's Republic of China. *Turtle and Tortoise Newsletter*, Issue 3: 4-6.

Shi, Hai-tao., Michael Lau, Tien-hsi Chen, and James Ford Parham. 2002. *The Status of Trade, Captive Breeding, Research and Conservation of the Chelonians in China, including Hong Kong and Taiwan.* Country Report and Presentation presented at the Technical workshop on conservation of and trade in freshwater turtles and tortoises in Asia, Kunming, Yunnan Province (People's Republic of China), 25-28 March 2002.

Slavens, F., and K. Slavens. 2002. Reptiles and Amphibians in Captivity - Breeding - Turtles, Crocodiles and Tuatara. http://fslavens.home.mindspring.com/bturtle.html (Apr 25, 2002).

Smart, A. C., and I Bride. 1993. *The UK Trade in live reptiles and amphibians.* Durrell Institute of Conservation and Ecology, University of Kent, UK. (Not seen, cited in Altherr & Freyer, 2000)

Smith, Malcolm A. 1931. *The Fauna of British India, including Ceylon and Burma - Reptilia and Amphibia. Vol. 1.-Loricata, Testudines.* Taylor & Francis Ltd. for the India Office, London, xxviii + 185pp.

Stuart, Bryan L. 1999. Amphibians and Reptiles. Pp. 43-67 in: Duckworth, J.W., R.E. Salter & K. Khounboline (compilers): *Wildlife in Lao PDR: 1999 Status Report*. Vientiane: IUCN-the World Conservation union / Wildlife Conservation Society / Centre for Protected Areas and Watershed Management.

Stuart, Bryan L., and Robert J. Timmins. 2000. Conservation Status and Trade of Turtles in Laos. Pp. 58-62 in *Asian Turtle Trade: Proceedings of a Workshop on Conservation and Trade of Freshwater Turtles and Tortoises in Asia* (van Dijk, Stuart & Rhodin, eds.). Chelonian Research monographs, Number 2.

Stuart, Bryan L., Robert J. Timmins, Douglas B. Hendrie, Lieng Sopha, Chun Sophat, Hout Piseth, Heng Kimchay, Touch Seang Tana, Prak Leang Hour, Chul Thach, James Compton, and Rohan Holloway. 2000. Turtle Trade in Indochina: Regional Summary (Cambodia, laos, and Viet Nam). Pp. 74-76 in *Asian Turtle Trade: Proceedings of a Workshop on Conservation and Trade of Freshwater Turtles and Tortoises in Asia* (van Dijk, Stuart & Rhodin, eds.). Chelonian Research monographs, Number 2.

Supriatna, Jatna, and Irvan Sidik. 1996. Checklist of Herpetofauna of the Gunung Leuser National Park. Pp. 231-246 in *Leuser – A Sumatran Sanctuary* (van Schaik & Supriatna, eds.). Yayasan Bina Sains Hayati Indonesia.

Suwelo, Ismu Sutanto. 2001. The Threatened species of Indonesian Tortoises, Terrapins and Turtles. *Tigerpaper*, Vol. 28 (2): 11-13.

Taylor, Edward H. 1920. Philippine Turtles. *The Philippine Journal of Science*, Vol. 16 (2): 111-144.

Taylor, Edward H. 1970. The Turtles and Crocodiles of Thailand and Adjacent waters. *The University of Kansas Science Bulletin*, Vol. 49 (3): 87-179.

Theng, Hui Hwen. 2002. *Conservation of and Trade in Freshwater Turtles and Tortoises in Singapore.* Country Report and Presentation presented at the Technical workshop on conservation of and trade in freshwater turtles and tortoises in Asia, Kunming, Yunnan Province (People's Republic of China), 25-28 March 2002.

Theobald, William. 1868. Catalogue of the Reptiles of British Birma, embracing the provinces of Pegu, Martaban, and Tenasserim: with descriptions of new or little-known species. *Journal of the Linnean Society - Zoology*, Vol. 10: 4-20 (turtle section).

Thirakhupt, Kumthorn, and Peter Paul van Dijk. 1995 "1994". Species Diversity and Conservation of Turtles of Western Thailand. *Natural History Bulletin of the Siam Society*, Vol. 42: 207-259.

Timmerman, Walter W., & David L. Auth. 1988. Geographic distribution - *Heoemys leytensis*. *Herpetological Review*, Vol. 19 (1): 21.

Touch Seang Tana, Prak Leang Hour, Chul Thach, Lieng Sopha, Chun Sophat, Hout Piseth and Heng Kimchay. 2000. Overview of Turtle Trade in Cambodia. Pp. 55-57 in *Asian Turtle Trade: Proceedings of a Workshop on Conservation and Trade of Freshwater Turtles and Tortoises in Asia* (van Dijk, Stuart & Rhodin, eds.). Chelonian Research Monographs, Number 2.

Tweedie, M. W. F., & J. L. Harrison, 1954. *Malayan Animal life.* (3rd edition, 1970). Longman, London.

U Kyaw Moe, U Soe New & U Aung Din. 2002. *Trade in Freshwater Turtles and Tortoises in the Union of Myanmar*. Country Report and Presentation presented at the Technical workshop on conservation of and trade in freshwater turtles and tortoises in Asia, Kunming, Yunnan Province (People's Republic of China), 25-28 March 2002.

Weissgold, Bruce J. 2002. *Turtle Trade in North America: Legal Requirements and Trade Trends*. Report and Presentation presented at the Technical workshop on conservation of and trade in freshwater turtles and tortoises in Asia, Kunming, Yunnan Province (People's Republic of China), 25-28 March 2002.

Wermuth, H., 1972. Die Stachelrandschildkröte, *Geoemyda (Heosemys) spinosa. Deutsche Aquarien und Terrarien Zeitschrift*, Vol. 25 (2) : 64-65.

Wermuth, Heinz, and Robert Mertens. 1961. *Schildkröten, Krokodile, Brückenechsen*. Gustav Fischer Verlag, Jena. Reprinted in 1996 with an appendix (pages 425-506) by F. J. Obst. xxvi + 506 pp.

Whitten, Tony, Sengli J. Damanik, Janzanul Anwar, & Nazaruddin Hisyam. 1997. *The Ecology of Sumatra*. Periplus Editions (HK) Ltd., Hong Kong. 478 pp.

Widmann, Peter (Compiler). 1998. *A Guide to the Ecosystems of Palawan, Philippines*. Times Editions, Singapore. 120 pp.

Zwartepoorte, Henk. 1996. Reproductive data on *Heosemys grandis* and *Cyclemys dentata* at Blijdorp Zoo, Rotterdam. In litt. to PP van Dijk, in litt. to German Scientific Authority, Nov. 2001.

Attachment to Heosemys sp. 1

BRUNEI MUSEUMS DEPARTMENT
KEMENTERIAN KEBUDAYAAN, BELIA DAN SUKAN
JALAN KOTA BATU
BANDAR SERI BEGAWAN BD1510
NEGARA BRUNEI DARUSSALAM

PENGARAH *DIRECTOR* : 673-2-222952 email : **bmdir@brunet.bn** PEJABAT *OFFICE* :(02) 244545/6, 244181/3, 244303, 244881 **Fax : (02) 242727**

Ruj. Kami :
Our Ref. 50/JMB/617/85/12

Tarikh :
Date 2nd April 2002

Mr. Harald Martens
German Scientific Authority to CITES,
Federal Agency for Nature Conservation
Konstantinstrasse 110
53179 Bonn
Germany
Fax: +49 228 8491 119

Dear Sir,

Re: **Considerations to propose the turtle genus *Heosemys* spp. for inclusion in Appendix II of CITES in the next Conference of the Parties**

Thank you for your letter of 14th March 2002 regarding the above matter.

The Management Authority of CITES-Brunei is glad to inform you that there is no trade of *Cuora* and *Heosemys* species recorded in this country.

We do not have sufficient information or data in responding to your proposal. So we do not have good reasons for tabling this item.

Please do not hesitate to ask for further information if needed.

Yours sincerely,

(SAMHAN BIN NYAWA)
Curator of Natural History
Brunei Museums Department
For Management Authority
CITES-Brunei

c.c. Permanent Secretary, Ministry of Culture, Youth & Sports Brunei Darussalam

● Pusat Latihan Kesenian & Pertukangan Tangan Brunei *(Brunei Arts & Handicrafts Training Centre)* Jalan Residency Bandar Seri Begawan BS8110 Brunei Darussalam
Tel : 673-2-240676, 240391/3, 240199, 240200 Fax : 673-2-241909 email : plphead@brunet.bn plpsup@brunet.bn

● Muzium Teknologi Melayu *(Malay Technology Museum)* Jalan Kota Batu Bandar Seri Begawan BD1510 Brunei Darussalam
Tel : 673-2-244545 Ext : 150, 151, 242862 Fax : 673-2-242727 email : bmethno@brunet.bn

● Bangunan Alat Kebesaran Diraja *(Royal Regalia Building)* Jalan Sultan Bandar Seri Begawan BS8811 Brunei Darussalam
Tel : 673-2-238358 238360, 238361 Fax : 673-2-242727 email : bmexhib@brunet.bn

● Bangunan Arkib Negara *(National Archive Building)* Jalan Menteri Besar Bandar Seri Begawan BP3913 Brunei Darussalam
Tel : 673-2-381672 381684, 381691 Fax : 673-2-381686 email : bmcuro@brunet.bn bmlibry@brunet.bn

● Bumbongan Dua Belas Jalan Residency Bandar Seri Begawan BS8110 Brunei Darussalam
Tel : 673-2-226937 Fax : 673-2-242727 email : bmconsv@brunet.bn

● Taman Warisan Merimbun *(Merimbun Heritage Park)* Tutong TH1349 Brunei Darussalam
Tel : 673-4-261179, Fax : 673-2-242727 email : bmddir@brunet.bn bmnahis@brunet.bn

Attachment to Heosemys sp. 2

KINGDOM OF CAMBODIA
NATION RELIGION KING
****

Department of Fisheries
No..589.....DoF

Phnom Penh, April 08, 2002

To: Dr. Heiko Haupt
Federal Agency for Nature Conservation
German Scientific Authority to CITES

Re: **Turtle Proposals for COP 12.**

In response to your e-mail on March 15, 2002 regarding the turtle proposals for CITES COP 12, I would like to inform you that so far the Department of Fisheries has an ongoing study on species diversity of turtles in Cambodia. For this study we have only surveyed the species composition and we have no quantitative data.

Therefore, it is very difficult for the Department of Fisheries to determine which species should be listed in the CITES appendix. Based on recent studies 24 species of turtles have been identified. Among these are 2 species of the genus *Heosemys* (*Heosemys grandis* and *Hieremys annandalii*) and *Mauremys annamensis*. During the Technical workshop on trade in freshwater turtles and tortoises in Asia, Kunming, China from 25-28 March 2002 the CITES authority of Cambodia have expressed an interest in listing all 24 species of freshwater turtles and tortoises that we found in Appendix III. We will re-list in Appendix I or II when we have enough quantitative data.

On this auspicious occasion, I would like to request you to assist Cambodia in terms of Technical Assistance, financial support and identification books for continuing studies.

Finally, we would like to take this opportunity to thank you very much for your kind cooperation and we look forward to working more closely with you in the future.

Sincerely yours,

Chhao Thuok
Director of Fisheries Department

Department of Fisheries, # 186 Norodom Blvd, P.O.Box 582, Phnom Penh, CAMBODIA
Tel/Fax: (855-23) 215 470, E-mail: tmmp.cam@bigpond.com.kh; catfish@camnet.com.kh

Attachment to Heosemys sp. 4

Republic of the Philippines
Department of Environment and Natural Resources
PROTECTED AREAS AND WILDLIFE BUREAU
Quezon Avenue, Diliman, Quezon City
Tel. No. 924-6033 to 35 Fax No. 924-0109
Website http://www.pawb.gov.ph E-mail planning@pawb.gov.ph

Dr. Emonds
Ministry of Environment, Nature
Conservation and Nuclear Safety
Naturschutz --Referat N 13
Godesberger Allee 90
Postfach 12 06 29
D-53048 Bonn

Attn. Heiko Haupt
Federal Agency for Nature Conservation
CITES Scientific Authority
Fax No. ++49-228-84 91-119

Dear Sir,

This is to acknowledge receipt of your letter dated March 5, 2002 requesting comments on the draft proposal for the inclusion of *Heosemys sp.* in Appendix II of the CITES. *Heosemys sp.* includes among others, *Heosemys leytensis*, a native species in the Philippines.

Please be informed that the Philippine CITES Management and Scientific Authorities are still evaluating the said proposal. We will send you our comments/position on the matter the soonest possible time.

Thank you and regards.

Very truly yours,

WILFRIDO S. POLLISCO
Director

Protect & conserve our forest to save our wildlife

FROM CITES THAILAND RFD. TO 100 P.01

Attachment to Heosemys sp. 5

FAX MESSAGE FOR TRANSMISSION

No. 0741 / 291 Date : 11 April 2002

To : CITES Management Authority of Germany Fax : (49228) 8491-119

From : CITES Management Authority of Thailand Fax : (66-2) 561-4838

Subject ; Draft proposal of *Heosemys* spp. Total : 1 page

Dear Mr. Heiko Haupt,

Please refer to your letter, dated 12 March 2002, concerning the information pertaining to Thailand and its population of *Heosemys* spp. We have already examined the draft report of the species concerned. It mentions about Thailand correctly, so we have no additional comments on the draft.

Thank you for your kind co-operation.

Yours sinserely

Mr. Manop Lauprasert

Director of CITES Office

Management Authority of Thailand

MINISTRY OF FORESTRY OF THE REPUBLIC OF INDONESIA
DIRECTORATE GENERAL OF FOREST PROTECTION AND NATURE CONSERVATION
Manggala Wanabakti Building, Block VII, 7th Floor.
Jl. Jenderal Gatot Subroto, Jakarta 10270 – Telp/ Fax. 021-5720227, 5734818
e-mail : cites@dephut.cbn.net.id

Jakarta, May 2002

TELEFAX
No. 503/IV/KK45/2002

To : Ms Elizabeth Munzert
German Federal Ministry for the Environment.
Fax : 49 228 8491200
From : CITES Management Authority Indonesia
Fax : 62 21 5720227
Subject : Consultation letter on Asian Freshwater Turtles

Dear Sir,

This is responding your consultation concerning listing proposal of Asian Freshwater Turtles. The CITES Management Authority Indonesia herewith would like to inform you as follows:

1. The population of fresh water turtles and tortoise are in general declining due to a number of factors such as over collecting to meet the demand of turtle trade. Many of the species are not covered by sufficient protection, nationally and internationally. However, little is known concerning the population status of the species, and trade data is not well-documented. The records of trade made by authorities may not reflect the actual exports as many exports can be directly undertaken by using permits only from the local district government. It is also known that trans-border transaction is also in existence without permit.

2. Based on the consultation and recommendation from CITES Scientific Authority of Indonesia and The Ministry of Marine Affairs and Fisheries, and also from the discussion in the Workshop on the Conservation and Trade in Freshwater turtle and Tortoises, held in Kunming, China 25-28 March 2002 the CITES Management Authority Indonesia strongly supports the proposal of Germany to list *Heosemys spinosa, Heosemys yuwonoi, Orlitia borneensis,* into Appendix II and Indonesia is willing to be the co-proponents.

Thank you for your kind assistance.

Sincerely yours,

YAYA MULYANA
Acting Director of Biodiversity Conservation

Cc:
1. Minister of Forestry of Republic of Indonesia
2. Secretary General of the Ministry of Forestry
3. Director General of Aquaculture, Ministry of Marine Affairs and Fisheries
4. Director General of Forest Protection and Nature Conservation

C:\My Documents\CITES\COP XII Listing Appendiks\Listing appendiks.doc

The Endangered Species Import and Export Management Office of the People's Republic of China

From: Meng Xianlin Vice Director General
The Endangered Species Import and Export Management Office of the People's Republic of China (CITES Management Authority of China)
Fax: +86 10 84256388

To: Dr. Emonds, Mr. Heiko Huapt
Scientific Authority of Germany
Fax: +49 1888 3055 3225, 49 228 8491 119

Cc: Dr. Kurt Johnson
Chief, Division of Scientific Authority, Fish and Wildlife Service,
United States Department of the Interior
CITES Secretariat

Pages:

Subject: Co-sponsor the Draft Proposals on Asian Freshwater Turtle

Dear Dr. Emond and Mr. Heiko Haupt,

Its my pleasure to formally inform you that, having got the final approval from concerning national authorities on the freshwater turtle issues, China would like to co-sponsor all draft proposals on freshwater turtles prepared by Germany, including Heosemys spp., Leucocephalon yuwonoi, Mauremys annamensis, and Orlitia borneensis.

If US and Germany decide to package all the 11 proposals on freshwater turtles, China will also co-sponsor that package.

I wish the above information helpful.

Best wishes,

Fernschreibstelle BMU 03.06.2002 Lfd.Nr. NT3 10235

Sincerely yours,

Meng Xianlin
2002/6/3 MengXianlin

P.S. Is it necessary for me to formally write to the Secretariat on our decision? Or you can just attach this letter when submitting the proposals? Please tell me which way is preferred.

Add: State Forestry Administration, 18 Hepingli Dongjie, Beijing, 100714, P. R. China
Tel: +86-10-84239011 Fax: +86-10-84256384
E-mail: cnma@hublic.fhnet.cn.net web: http://www.cites.gov.cn

Email received by the CITES Scientific Authority from Myanmar

-----Ursprüngliche Nachricht-----

Von: NWCD-CAS [mailto:nwcd-cas@mptmail.net.mm]
Gesendet: Sonntag, 5. Mai 2002 18:10
An: Dr. Emonds
Betreff:

Dear Dr. Emonds,

Regarding to your letter on Considerations to propose the turtle genus Heosemys for inclusion in Appendix II of CITES, evaluation was made on your draft.

The information presented on your draft reflects the status of the Heosemys species in Myanmar. So, we are willing to support your proposal if you tabled it at Cop 12.

With best regards,

Yours sincerely,

(Khin Maung Zaw)

Director

Nature and Wildlife Conservation Division

CITES Scientific Authority