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

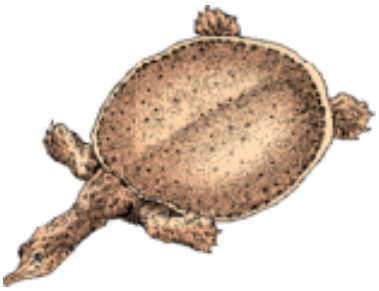
Sixteenth meeting of the Conference of the Parties
Bangkok (Thailand), 3-14 March 2013

CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II

A. Proposal

Inclusion of the following species of the Family Trionychidae in Appendix II: *Aspideretes leithii, Dogania subplana, Nilssonia formosa, Palea steindachneri, Pelodiscus axenaria, P. maackii, P. parviformis*, and *Rafetus swinhoei*. This proposed inclusion is in accordance with Article II paragraph 2(a) of the Convention, satisfying Criterion B, Annex 2a of Res. Conf. 9.24 (Rev CoP15). Transfer for the follow species from Appendix II to Appendix I*: Chitra chitra* and *Chitra vandijki*. This proposed transfer is in accordance with Article II paragraph 1 of the Convention, satisfying Criteria A, B and C of Annex 1 of Res. Conf. 9.24 (Rev CoP15).

For a complete list of species see Table 1.



B. Proponent

People's Republic of China and the United States of America*

C. Supporting statement

1. Taxonomy

1.1 Class: Reptilia

1.2 Order: Testudines

1.3 Family: Trionychidae Gray 1825

1.4 Genus, species or subspecies, affected by this Proposal: The Family Trionychidae contains 14 genera and 30 species, as currently recognized in the CITES Standard Reference (Fritz & Havas, 2007, excluding Appendix).

Of these, 9 species are already included in Appendix II (*Amyda cartilaginea*; genus *Chitra* [all 3 species]; *Lissemys punctata*, *L. scutata*; genus *Pelochelys* [all 3 species]), and 4 species in Appendix I (*Aspideretes gangeticus*, *A. hurum*, *A. nigricans*, and *Apalone spinifera atra*).

This proposal seeks to include **8 species in Appendix II**:

Aspideretes leithii [presently not included in the Appendices]

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

Genus *Dogania* [1 species; presently not included in the Appendices]
Dogania subplana
Genus *Nilssonia* [presently not included in the Appendices]
Nilssonia formosa
Genus *Palea* [1 species]
Palea steindachneri [presently on Appendix III – China]
Genus *Pelodiscus* [4 species; *P. sinensis* excluded from proposal]
Pelodiscus axenaria [presently on Appendix III – China]
Pelodiscus maackii [presently on Appendix III – China]
Pelodiscus parviformis [presently on Appendix III – China]
Genus *Rafetus* [2 species; *R. euphraticus* excluded from proposal]
Rafetus swinhoei [presently on Appendix III – China]

This proposal seeks to transfer **2 species from Appendix II to I**:

Chitra [3 species; *C. indica* retained in II]
Chitra chitra
Chitra vandijki

This proposal specifically **excludes** the following genera and species:

Genus *Apalone (A. ferox*, *A. mutica*, and *A. spinifera* other than *A. spinifera atra* [retain in Appendix I];
Genus *Cyclanorbis* [2 species: *C. elegans*, *C. senegalensis*]
Genus *Cycloderma* [2 species: *C. aubryi*, *C. frenatum*]
Pelodiscus sinensis
Rafetus euphraticus
Genus *Trionyx* [1 species: *T. triunguis*]

1.5 Scientific synonyms: See Fritz & Havas, 2007, and TTWG 2011 for synonyms of family, genus and species names

1.6 Common names: English: Softshell turtles
French: Tortues molles
Spanish: Tortugas de caparazón blando
See TTWG 2011 for suggested English names for specific species.

1.7 Code numbers: NA

2. Overview

Turtles are the world's most endangered vertebrates with almost half being categorized on the IUCN Red List of Threatened Species as critically endangered, endangered, or vulnerable. They are at high risk of extinction because of their combination of biological life history traits. Harvest as well as habitat degradation and loss are their greatest threats (TCC, 2011).

The plight of Asian turtles has been a focus of CITES since CoP10 (1997) when *Callagur (~Batagur) borneoensis* was included in Appendix II. Subsequent CITES Actions for Asian turtles include:

- 1999 - Phnom Penh workshop (*Conservation and Trade of Freshwater Turtles and Tortoises in Asia*) participants recommend listing all turtle species in CITES Appendices because of the non-discriminatory nature of food trade (switching species as they become depleted or rare) and for look-alike reasons;

- o 2000 –9 species listed in App. II and adoption of Res. Conf. 11.9;

- o 2002 - CITES Kunming workshop (*Technical workshop on conservation of and trade in freshwater turtles and tortoises*) participants recommend all Asian Turtles be included in the CITES appendices (AC18 Inf. 12);

- o 2003 - AC19 forms turtle working group and adopts its recommendations, including the Kunming workshop recommendation that Parties prepare listing proposals for all unlisted Asian species to App. II (and until that happens, place them on App. III);

- o 2004 - CoP adopts the AC Chair's report, including Asian species listing recommendations from Kunming workshop.

    - CoP13 adopts Decisions 13.36 and 13.37 directed to the Secretariat regarding reporting and liaison with the WCO.
    - *Pyxis arachnoides* uplisted to App. I.
    - Five Asian species added to App. II.
    - Revisions to Resolution Conf. 11.9 adopted.
    - 17 Asian species added to App. III (China);

- o 2005 - 1 species removed from App. III (China);

- o 2006 - 13 North American species added to App. III (U.S.);

- o 2007- Decs. 14.126-14.129 directed to the Secretariat, Parties and AC adopted by CoP. Includes direction to the Secretariat to commission the IUCN trade study review on the implementation of Conf. 11.9 (Rev. CoP13);

- o 2010 - CoP adopts Decs. 15.79 - 15.83 directed to the AC, SC and the Parties; Decisions covered the IUCN trade study, implementation of Conf. 11.9 (Rev. CoP13), and Customs codes;

- o 2011 - AC25 establishes turtle working group and adopts its recommendations based on IUCN trade study;

    - SC61 forms turtle working group to consider IUCN trade study and AC recommendations;

- o 2012 - AC26 adopts additional recommendations and draft Decisions;

    - SC62 endorses AC recommendations and adopts its own, including a number of draft Decisions for CoP16 consideration.

While the Family Trionychidae has a nearly world-wide distribution with a current total of 30 species found in Asia, Africa, the Middle East, and North America, the Asian species have been the subject of significant CITES attention and action over the past 15 years because of their exceptionally high risk of overexploitation associated with international trade. This proposal focuses on Trionychidae (softshell turtles) native to Southeast Asia (22 species). Trade in Asian turtle species continues to follow a boom and bust pattern in which exploitation and trade shift from one species to another when: 1) a species becomes so depleted or rare that it is no longer commercially exploitable; or 2) a species becomes the subject of stricter regulation, and as such is less exploitable (Fig. 1). Of the 22 Asian species of Trionychidae, 3 are already included in Appendix I, 8 in Appendix II, and 5 in Appendix III. They continue to meet the criteria for inclusion in those Appendices, though some should be considered for transfer to Appendix I. In this proposal, **two species** are proposed for transfer from Appendix II to Appendix I and **eight species** are proposed for inclusion on Appendix II. *Pelodiscus sinensis* is excluded from this proposal because it is the subject of the mass farming to supply the trade. Given the extensive farming of this species, harvest of wild specimens to supply the trade or to supply parental stock for farms is believed to be low and not of conservation concern (see Table 1 for a complete list of species and Section 11 for exclusions).

Eight species of Trionychidae (*Aspideretes leithii* [draft Critically Endangered], *Dogania subplana* [draft Least Concern], *Nilssonia formosa* [draft Critically Endangered], *Palea steindachneri* [draft Endangered], *Pelodiscus axenaria* [draft Data Deficient], *Pelodiscus maackii* [draft Data Deficient], *Pelodiscus parviformis* [draft Data Deficient], and *Rafetus swinhoei* [draft Critically Endangered]) qualify for inclusion in Appendix II

under Annex 2a, Criterion B because it is known, or can be inferred or projected, that regulation of trade in the species is required to ensure that the harvest of specimens from the wild is not reducing the wild population to a level at which its survival might be threatened by continued harvesting or other influences. Theses turtles are vulnerable to overexploitation because of biological characteristics/life history traits, including adult longevity, late maturity, limited annual reproductive output, and high juvenile/egg mortality (Congdon *et al,* 1993; Ernst and Lovich, 2009; AC25 Doc. 19. 2011). Given these characteristics/traits, the high-volume trade in Asian softshell turtles and their parts for consumption as food and traditional medicines must be managed and regulated to ensure the long-term sustainability of the species. Even species that are currently thought to have large population sizes or low levels of exploitation are vulnerable due to the boom and bust nature of the turtle trade.

Two species of Trionychidae (*Chitra chitra* [Critical] and *Chitra vandijki* [draft Critical]) qualify for transfer to Appendix I under Annex 1, Criterion A i, iii, v; B i, iii, iv; and C i, ii.

Chitra chitra and *Chitra vandijki* meet Criterion C of Annex 1 for inclusion in CITES Appendix I, as they have undergone marked declines in their population sizes in the wild which can be inferred based on their inclusion in the IUCN Red Data List of Threatened Species as Critically Endangered (CR) and their respective inclusion in the "*Top 40 Endangered Freshwater Turtles at **Very High Risk** of Extinction*" and the "*Top 25 Endangered Freshwater Turtles at **Extremely** High Risk of Extinction*" by the Turtle Conservation Coalition, which includes the IUCN/SSC Tortoise and Freshwater Turtle Specialist Group; Turtle Conservation Fund; Turtle Survival Alliance; Turtle Conservancy; Chelonian Research Foundation, Conservation International; Wildlife Conservation Society; and San Diego Zoo Global (TCC, 2011). IUCN uses criteria for ranking threats to species that include measures of reduction in population size and habitat area (IUCN Criteria, 2012). While quantitative population trend data are not available, populations of both of these species are increasingly vulnerable and are declining as a result of exploitation. They are harvested from the wild as by-catch to fishery operations and are also targeted catch for food, pet trade, and eggs. Both *Chitra spp.* are riverine softshell turtles that nest in sandy areas on river banks at specific times of the year (predictable levels or patterns of exploitation), making them geographically concentrated and susceptible to harvest. A long-term study of turtles shows that harvesting, even if it is a one-time event, can cause a turtle population to significantly decline and remain impacted for decades (UF, 2012). In addition, both species suffer from a confluence of intrinsic and extrinsic threat factors that result in significant population declines. The creation of water reservoirs and alterations to river flow regimes has led to nest inundations, which kills embryos and decreases recruitment. Creation of water reservoirs and alterations to river flow regimes has also led to a decrease in habitat quality since fewer nesting sites are available, which also affects recruitment. In addition, water releases alter the turbidity of the water, which affects habitat quality because it interferes with the turtle's ability to capture prey since they are "sit and wait" predators (Kitimasak *et al,* 2005).

C. vandijki also meets Criterion A of Annex 1 for inclusion in Appendix I, as it has a small population size being found only in the Ayeyarwady and Salween river systems of Burma (Myanmar) and border of Thailand. It is considered rare to very rare according to field surveys and market observations, and as such a decline in the number of individuals is inferred. As indicated above, *C. vandijki* being a riverine softshell turtle, nests in sandy areas on river banks at specific times of the year (predictable) making it geographically concentrated during one of its life-history phases and extremely susceptible to harvest. Also described above, the species has a high vulnerability to both intrinsic and extrinsic factors.

While *C. chitra* has a wider range than *C. vandijki,* both species meet Criterion B of Annex 1 for inclusion in CITES Appendix I because their wild populations have restricted areas of distribution. By drawing inference from studies of *C. indica*, a very similar species occurring in similar habitats to *C. chitra* and *C. vandijki,* it can be concluded that these species require specialized habitats. This requirement has led to localized and patchy distribution and contributed to their rarity (van Dijk *et al,* 2000; Kitimasak *et al,* 2005). Also described above, the species has a high vulnerability to both intrinsic and extrinsic factors.

3. Species characteristics

3.1 Distribution

The Family Trionychidae has a nearly world-wide distribution with species found in Asia, Africa, the Middle East, and North America (Ernst and Barbour, 1989; Fritz & Havas, 2007). The species of Trionychidae for which this proposal seeks inclusion or transfer in the Appendices occur in the following range states:, Bangladesh, Brunei Darussalam, China (including Taiwan Province, Hong Kong SAR and Macao SAR), Indonesia, India, Korea (Democratic People's Republic of), Korea (Republic of), Lao People's Democratic Republic, Myanmar, Malaysia, Philippines, Russian

Federation, Singapore, Thailand, and Viet Nam. For more detailed information on country range of each species, see Table 1.

3.2 Habitat

All Trionychid turtles are highly aquatic and restricted to freshwater rivers and lakes at low to moderate altitudes; a few species occasionally venture into brackish or saline coastal waters. Most softshell turtles prefer slow moving streams and rivers with muddy or sandy bottoms, but they can also be found in ponds, marshes, and lakes.

3.3 Biological characteristics

Species of this family are all semiaquatic to highly aquatic; a few species emerge to bask, while many species do not emerge from water except to nest.

Species of Trionychidae are largely carnivorous (Moll and Moll, 2004) feeding on fish, aquatic snails, muscles, crab, shrimp, other water dwelling invertebrates, and amphibians. Some species such as *Amyda cartilaginea*, *Lissemys punctata* and *Palea steindachneri* also eat aquatic vegetation (Ernst and Barbour, 1989).

Turtles have evolved a remarkable life history strategy characterized by slow growth and late maturity (usually on the order of 10-15 years), longevity (typically living for six or more decades, and generation times often at 25-30 years) and successful reproduction throughout life without senility, relatively modest annual reproductive output (one to over 100 eggs per mature female per year, depending on species), very low survivorship of eggs and juveniles, but increasingly high average annual survivorship of subadults and adults (AC25 Doc. 19). Softshell turtles can lay multiple clutches per year with *Dogania* laying 3-7 eggs/clutch; *Palea, Pelodiscus,* and *Aspideretes/Nilssonia,*laying up to 30 eggs per clutch; and *Chitra* laying 60-110 eggs/clutch (Ernst and Barbour, 1989; Bonin et al., 2006). The key to turtle life history is to reach maturity, live for a long time, and produce a relatively modest number of eggs each year, so that over a lifetime enough eggs are produced to ensure that a few will successfully hatch and some of these will survive to adulthood (AC25 Doc. 19). If we compare turtles with commonly managed large mammals (see Fig. 2), turtles, because of their life history traits, are clearly vulnerable to significant off take (e.g. taken from North American species but applicable to all turtles).

3.4 Morphological characteristics

The distinguishing characteristic of this group is that the shell lacks horny scutes and is instead covered with leathery skin. Their necks are long and retractable; the legs are very paddle-like with three claws on each front foot. Many members of this family have long proboscis-like snouts (Ernst and Barbour, 1989). Trionychidae range in size from 25 cm (examples of small species include: *Dogania* and *Pelodiscus)* to 140 cm (examples of larger species include: *Chitra chitra* and *Rafetus swinhoei)* carapace length (Bonin *et al,* 2006).

3.5 Role of the species in its ecosystem

Turtles are major components of riverine food webs, playing important roles in energy flow, nutrient cycling, dispersal of riparian vegetation, and maintenance of water quality (Moll and Moll, 2004). Softshell turtles often act as ecosystem scavengers (Vasudevan, 2009).

4. Status and trends

4.1 Habitat trends

Many of species in the family Trionychidae are found in river systems and are therefore susceptible to alteration of riverine habitat. Gold mining, sand mining, and river dam projects all alter turtle habitat. Mining causes loss or disturbance to nesting habitat (sandy beaches). The physical building of dams may impact nesting, but dams have much further reaching impact both up river and down river. The alteration of water flow causes inundation to nesting areas (drowning eggs or covering nesting sites). Water flow can change the clarity of water also impacting quality of turtle habitat. This is especially true for species like *Chitra spp.* which are ambush predators that need to see prey to catch it. Examples of riverine species impacted by lower habitat quality/lose include: *Chitra vandijki*, *Chitra*

chitra, Chitra indica, Pelochelys cantorii, Nilssonia Formosa (Kitimasak *et al,* 2005; TCC,2011; Horne *et al,* 2012).

4.2 Population size

Few population studies have been conducted on turtles in the Family Trionychidae. For most Asian turtle species in trade the size of populations is inferred from the volume of international trade and/or the prevalence of specimen availability in food and pet markets. The only softshell turtle species in Asia for which there is a definitive population size is *Rafetus swinhoei*. It was once found in the Red River in China and Vietnam as well as the Yangtze River flood plain. Today it has a total known population of 4 animals (1:1 in China and 2:0 in Vietnam) and its extremely small population size is the direct result of historical overexploitation of this species. The example of *Rafetus swinhoei* demonstrates the vulnerability of softshell turtles to overexploitation. With the exploitation of *Rafetus swinhoei* no longer viable, the unyielding demand for Asian softshell turtles has to be met through harvest of the remaining Asian species in the family. Studies show that harvest, even a one-time event, can cause a turtle population to significantly decline and remain impacted for decades (UF, 2012).

4.3 Population structure

Data derived from studies of North American softshell turtles (*Apalone*) indicate that females have a larger body size than males and show sex ratios ranging from 1:1 to a greater numbers of males than females (Ernst and Lovich, 2009). In cases where females are larger than males, they may be differentially harvested for size and eggs, which further impacts population demography since there are fewer reproductive females in the population.

4.4 Population trends

For most Asian turtle species in trade, population trends can be inferred from the levels of international trade and/or the trend of specimen availability in food and pet markets. Local market availability can be an indicator of population status. Local market research has shown that locally available species are usually sold cheaply, are found in larger quantities, and have a high turnover rate (Shepherd and Nijman 2007). Commodities found in larger quantities in markets are often more generally available in the wild, especially where barriers to trade are low (such as the ease and cost of collection). Decreased availability of a species in markets is often a function of their availability in the wild and can be an indicator of population decline. This is an accepted principle of market forces and is commonly used in evaluating food markets when examining the availability and price of staple foods. “The underlying assumption is that a rise in the prices of major staples is generally indicative of food scarcity, and vice versa (Kumar 1989, p.22).” This concept has also been applied to reptiles, where hunting success can be considered an indicator of the population status of a species, as with the *Caiman yacare* (Van Damme et al. 2007). Inferring population status from the availability of aquatic resources is similarly used in fishery-dependent data. For instance, decrease in catch per unit effort (CPUE) is one among several common indicators of decline in fisheries (Meusch et al., 2003). It is generally understood that exploited populations of Asian turtle species, including ones in the Family Trionychidae, are in decline. Accounts from field collectors unanimously report that more effort is required now to find a turtle than in the past. Local middlemen and exporters pay increasingly higher prices as supplies to their businesses decline (ATTWG, 2000).

For examples until the 1990s *Aspideretes leithii* was generally considered common (Moll, 1990; Sharath, 1997), although the general lack of detailed data was noted (Das, 1991). Since the 1990s, populations suffered significant declines (Choudhury *et al*., 2000); by 2005 it was estimated that a 90% decline had occurred as a result of overexploitation (CFH/MCBT, 2006).

4.5 Geographic trends

Not only have downward population trends been noted in Asian species in the Family Trionychidae, but there has been a total disappearance of some species from some waterways and river systems, such as the disappearance of *Rafetus swinhoei* from the Red River of China and Vietnam and the lower Yangtze River floodplain, (Moll and Moll, 2004; TCC, 2011).

5. Threats

5.1 Softshell turtles in particular are prized in the Asian aquaculture industry because of their rapid growth rates and because they are a preferred food source due to their highly valued gelatinous cartilage content (calipee, also found in sea turtles). Softshell turtles, like all Testudines, are vulnerable to overexploitation because of biological characteristics/life history traits such as adult longevity, late maturity, limited annual reproductive output, and high juvenile/egg mortality. This life history strategy leads to a high probability that at some time during their long lifespan, some hatchlings will survive to maturity. However, turtles' life history strategy fails as a result of human exploitation. Human exploitation of adults leads to too few eggs being laid to survive to maturity. Likewise, human exploitation of eggs leads to too few hatching to survive to maturity. Population collapse is the ultimate result (Congdon *et al,* 1993; Ernst and Lovich, 2009; AC25 Doc. 19. 2011).

Global turtle trade in the last 15 years has followed a boom and bust pattern – once a species is depleted or regulated, the trade shifts to other species (Fig. 1). In addition, with continued human development and growth, turtle populations face pressure from habitat degradation and loss (Zhou and Jiang, 2008). Below are some specific examples of the threats that species face.

5.2 *Chitra chitra* is considered one of the *Top 25 Endangered Freshwater Turtles at Extremely High Risk of Extinction* (TCC,2012*)*. It is threatened by fisheries bycatch, egg harvesting, and hunting for food and the pet trade (attractive color patterns). Its predictable nesting behavior (i.e. timing and location) make it particularly vulnerable to harvesting. The species is also strongly affected by the creation of dams and reservoirs that alter water flow in native river habitat. Release of water often floods nesting area and drowns eggs. Increased water turbidity affects water clarity, which impacts this species since it is an ambush predator that must be able to see its prey (Kitimasak *et al,* 2005; TCC, 2011).

5.3 *Chitra vandijki* is considered one of the *Top 40 Endangered Freshwater Turtles at Very High Risk of Extinction*.(TCC,2011) Field surveys and market observations indicate that this species is rare to very rare and intensively exploited. As with *Chitra chitra* above, dams and reservoirs impact this species (TCC, 2011).

5.4 *Nilssonia formosa* is considered one of the *Other Freshwater Turtles at High Risk of Extinction* (TCC, 2011*)*. It is largely unregulated and is hunted for meat and exported in significant numbers to markets in Asia. Other threats include over-fishing and gold mining along nesting riverbanks (TCC, 2011). This species is uncommon to rare in the wild, not known to inhabit protected areas, and has a life history particularly sensitive to exploitation of adults (ATTWG, 2000).

5.5 *Aspideretes leithii* is widely exploited for consumption, traditionally for subsistence but increasingly for large-scale regional and national meat trade in recent years. In addition, hydrological alteration of rivers in the species' area of occurrence represent significant impacts on the area of available suitable habitat (TFTSG & ATTWG, 2000; CFH/MCBT, 2006).

5.6 *Rafetus swinhoei* is considered one of the *Top 25 Endangered Freshwater Turtles at Extremely High Risk of Extinction* (TCC,2011*)*. This species was historically threatened by consumption, water pollution and wetland destruction. Today only four individuals are known to exist in the world – a male and female in China (Suzhou Zoo) and two males in Vietnam (near Hanoi) (TCC, 2011).

6. Utilization and trade

6.1 National utilization

China has a long history of national utilization of turtles and tortoises as reflected in many ancient pharmaceutical and medical books. Among the most significant demands is for traditional medicines; the whole body, shell, and shell gel (calipee) are used to cure weakness, vertigo, insomnia, etc. An analysis of turtle import and export data by China shows a shift from net exporter to net importer, which indicates either domestic demand is increasing or the domestic resource is decreasing or both (Zhou and Jiang, 2008). Buddhists have kept turtles in temple ponds as signs of longevity (Zhou and Jiang, 2008). In Bangladesh, turtles are used as a source of protein for low-income non-Muslims and tribal peoples. Hunters can collect 5-10 turtles per day by muddling or harpooning (plus those caught in fishing nets or by hook) and it is believed that there are over 50,000 individuals involved full time in these activities around the country (van Dijk *et al,* 2000). National utilization of Asian softshell turtles is extensive and is consistent with international uses of those same species.

In the late 1990s and early 2000s, at least 13,000 metric tons of live turtles were exported from South and Southeast Asia to East Asia each year (5000 tons wild from ID, 1500 tons wild from BD, 4000 tons farmed softshell from TH, and 2500 tons farmed & wild from MY). Softshell turtles are the most preferred species of turtle for consumption and make up the greatest proportion of turtle trade volume. Much of volume of trade in softshell turtles is from farmed *Pelodiscus sinensis*, but equal volumes consist of other wild-caught Asian softshells (van Dijk *et al,* 2000). Export statistics for specific turtle species from various countries show short periods of rapid increases in trade volumes exported, followed by equally rapid declines in total volumes exported over a period of a few years. Regular shifts in known trade routes and the species offered for sale in East Asian food markets demonstrate that new areas and species to supply the trade are exploited as existing supply areas and species are exhausted. All indications are that one area after another in South and Southeast Asia is depleted of its native turtle species to supply the demand from East Asia.

Ten years later (2011), according to participants at the Conservation of Asian Tortoises and Freshwater Turtles: Setting Priorities for the Next Ten Years in Singapore, the trade in wild-caught turtles and turtle products (e.g., meat, shell, eggs, and cartilage) is still the number one problem facing global turtle populations.

6.2 Legal trade

As mentioned above the overall volume in trade of Asian turtles (13,000 metric tonnes) is large and softshells represent the biggest proportion of that trade. For example between 2004-2010 130,798 live *Amyda cartilaginea* were exported (Indonesia was the major exporter) which show that the volume is high enough to warrant it be examined in the Review of Significant Trade. For species not yet listed under CITES, the volume of legal trade in unknown. For *Chitra chitra* 369 live specimens were exported (Malaysia was the major exporter) between 2003-2010. No *Chitra vandijki* are recorded in the CITES trade database but this species was only described and listed in 2003.

6.3 Parts and derivatives in trade

Recent reports from South Asia have shown an increasing trend of trade in the dried calipee (the cartilaginous parts of a softshell turtle's shell) to China where it is consumed in a soup that has rendered the turtle cartilage into a gelatinous substance. Because the dried cartilage can be stored and stockpiled for lengthy periods it can be difficult to ascertain not only if the dried substance is calipee but also which species the dried cartilage originated from (Horne *et al,* 2011). Calapee is also used in traditional medicines (Zhou and Jiang, 2008; Horne *et al,* 2011).

6.4 Illegal trade

Illegal trade in both live animals and parts and products has been documented and appears to involve animals from across the Asia region. There currently is, and for many years has been, a high volume of illegal trade in live turtles; however, illegal trade appears to be shifting toward parts and processed products (often easier to conceal) such as ground turtle paste, calipee, and bone powder (AC25 Doc. 19; SC61). Yet such shipments have rarely been entered into the CITES Trade Database, indicating that this aspect of the trade is largely illegal (Altherr & Freyer, 2000). There are significant challenges with identification of turtle species traded alive, with processed turtle parts and products in trade. There is an epidemic of smuggled turtles openly for sale in several Asian countries (AC25 Doc. 19). Some of these countries do not have the effective regulatory tools in place to allow officials to deal with illegal trade.

6.5 Actual or potential trade impacts

This proposal focuses on Asian species of the Family Trionychidae because they are currently at highest risk and are a priority for conservation action. Trade in Asian turtle species follows a boom and bust pattern where exploitation and trade shift from one species to another when: 1) a species becomes so depleted or rare that it is no longer commercially exploitable; or 2) a species becomes the subject of stricter regulation, and as such is less exploitable (see Fig. 1). Therefore, the inclusion of these Asian species in Appendix II and, in two cases, uplisting to Appendix I, is needed to ensure sustainable trade in the species.

7. Legal instruments

7.1 National

The table below lists national legal instruments of the parties that responded to our consultation:

Country	Law/Regulation/Action	Year	Explanation
Bangladesh	Conservation Act	2012	All turtle species under Schedule I except *L punctata* which is Schedule II are considered *protected animals*
China	SFA Regulation: List of National Protected Terrestrial Wild Animals which are Beneficial, or with Important Economic and Scientific Research Values	2000	The Species listed in CITES appendix I or II are considered as Category I or II national protected animal in China, and most of these native Chinese turtles, which are not listed in the CITES Appendices, are in the List of National Protected Terrestrial Wild Animals which are Beneficial, or with Important Economic and Scientific Research Values.
Indonesia	Minister of Forestry decree No. 447/2003	2003	All domestic traders should be registered by Provincial Office of Conservation and Natural Resources (BKSDA) based on the harvest quota allowed. *Chitra chitra* protected from commercial trade under Government Decree No. 7/1999
Pakistan	Moratorium on commercial trade of all reptiles		Provincial wildlife authorities in collaboration with Pakistan Wetlands Programme took various steps for conservation of freshwater turtles e.g. amendments in provincial wildlife legislations to declare all freshwater turtle species as protected
Singapore	National Parks Act, Parks and Trees Act; Wild Animals and Birds Act; Endangered Species (Import and Export) Act		*D subplana* - Listed as rare in Singapore and Critically Endangered in the Singapore Red Data Book. Commercial harvest is prohibited.
Thailand	Wild Animal Protection and Reservation Act	1992	Native turtles and tortoises are protected species under this Act, therefore commercial harvest, trade and all kind of exploitation, including import and export, are not allowed.
UK - British Indian Ocean Territory	The protection and preservation of Wild Life Ordinance; The Trade in Endangered Species (Control) Ordinance	1970; 2007	No softshell turtles in BIOT. Legislation to protect wildlife (including turtles), prohibit the purchase, sale or export of wildlife, and prohibit the introduction of wildlife.
Viet Nam	Group IIB of Governmental Decree No 32/2006/ND-CP	2006	None of the softshell turtles in Viet Nam are protected by this law

7.2 International

Eighteen species of the family Trionychidae are currently listed in the CITES Appendices (Appendix I=3, Appendix II=10, Appendix III=5). There are no other international trade controls or management measures.

8. Species management

8.1 Management measures

None known.

8.2 Population monitoring

Very little population monitoring is known to occur for Asian softshell turtle species. Softshelled turtles, unlike the hardshelled pond turtles, largely do not bask and spend more of their time in the water, which can make them harder to detect. Indonesia committed at AC26 / SC62 to implement a monitoring program for *Amyda.* Thailand has tried surveying for *Chitra chitra* but found very few animals.

8.3 Control measures

8.3.1 International:

None known except for CITES which controls trade for some of the species in this proposal (see Table 1).

8.3.2 Domestic

Some species are protected at the range State and provincial level (see Section 7.1 Legal Instruments, National). However, domestic protection appears to be inadequate to control the harvest pressure cause by international trade.

8.4 Captive breeding and artificial propagation

It is possible for large-scale captive breeding of turtles to alleviate pressure on wild populations; such is the case for *Pelodiscus sinensis* which is excluded from this proposal. However, some captive-breeding operations rely heavily on wild-sourced parental stock or need more attention on genetic management and containment to ensure that wild populations are not affected by disease and genetic pollution or outcompeted by non-native species. For the species being proposed for a change in CITES status in this proposal, little captive breeding is occurring and it is primarily to establish assurance colonies rather than for commercial production.

8.4.1 Breeding Programs:

The Turtle Survival Alliance (TSA) formed in 2001 and was originally an official Task Force of the IUCN-TFTSG but is now an independent NGO. The TSA focuses on captive management and prevention of turtle extinctions through range-country and international breeding programs (establishing *in situ/ex situ* assurance colonies). TSA has programs throughout the world including the following breeding programs for Trionychidae (http://turtlesurvival.org/):

Species	Country	Location	Organization	Notes
Chitra vandijki	Burma (Myanmar)	Mandalay	Yadanabon Zoo	New facility for endemic softshells with 4 10 x 20 ft oval ponds with shallow basking areas dropping to 3 ft deep. (2009-2010)
Nilssonia formosa	Burma (Myanmar)	Mandalay	Yadanabon Zoo	New facility for endemic softshells with 4 10 x 20 ft oval ponds with shallow basking areas dropping to 3 ft deep. (2009-2010)
Rafetus swinhoei	China	Suzhou	Suzhou Zoo	Only 4 known animals in the world. Breeding attempts (1 male & 1 female) have been taking place at the zoo since 2008 with no successful hatchings to date

8.4.2 Individuals:

There are hundreds of individual breeders/hobbyists around the world who have had success breeding many of the turtles identified in this proposal. However, these animals are not known to be systematically used to support conservation in the wild. Individual breeding efforts also have complications when it comes to stock genetics and diseases that can be introduced to wild populations.

8.4.2 Farms:

Softshelled turtle species grow and reproduce significantly faster than hardshelled turtle species while fetching similar or higher market prices per kg. The farming softshelled turtles is thus larger market in the general food trade (AC19Doc 15.2 [Rev. 1]). A large danger with farming is that farmers are always seeking wild breeders because successive generations of farm-raised turtles show a marked decrease in reproductive capability. This reliance on wild-collected individuals indicates that turtle farming is not a sustainable practice (Shi H. T. *et al,* 2007). *Pelodiscus sinensis* is mass farmed in China. However, given the extensiveness of the farming of this species, harvest of wild source specimens or parental stock which would be of conservation concern, is believed to be low. A reported trade shift away from imported wild caught stock to in country [China] farmed stock (e.g. *Pelodiscus sinensis* and *Mauremys reevesii*) supports this (Horne *et al,* 2012).

In 2008 there were 1499 officially recognized turtle farms in China (for each recognized farm there are many more that operate covertly). Forty-six percent of these responded to a survey which showed that these farms produced 125 million *Pelodiscus sinensis* / year (value $685 million) from a captive stock of 300 million adults. They also produced 80,000 *Palea steindachneri* / year (value $784,000) from a captive stock of 252,000 adults (Shi H. T., 2008). Japan is not known to have produced significant quantities of freshwater turtles in a long time. Operation in Thailand peaked in 1996 with 6 million turtles produced per year. By 2002 there were only a handful of the 10,000+ farms left because China had imposed stricter import regulation in 1999 as the result of *Samonella* contamination. Chinese domestic turtle production also reached its peak at this point and prices started to drop. Malaysia also experienced this same reduction in farming. Only Viet Nam continued to increase softshell production because of domestic market demand (AC19Doc 15.2 [Rev. 1]).

8.5 Habitat conservation

Several species of Trionychid turtles are passive beneficiaries from protected areas established for the conservation of other species, such as gharial, tigers and others; only a single protected area, Qingtian Reserve in Zhejiang Province, China, has reportedly ever been designated specifically for the protection of a Trionychid turtle, specifically for Rafetus swinhoei, (Das, 2008)

9. Information on similar species

Asian species in the Family Trionychidae are similar in appearance and there are similarities in how they are used in international trade, as food, medicine, to supply aquaculture operations and for pets. This proposal submits that, because of the similarity of their biological vulnerabilities and in the ways that they are used in international trade, these species warrant inclusion in CITES at a higher taxa level under Annex 2a Criterion B.

The softshell turtles in this proposal are similar in appearance to other softshell turtles outside of Asia. However there is little evidence to indicate that several of these non-Asian species are traded internationally in any significant volume, and for those that are found in international trade, namely the North American Apalone species, the United States is currently considering including *Apalone* in Appendix III in order to insure that specimens are entering the trade chain lawfully (see section 6.5).

Two other species of turtle may be confused with members of the Trionychidae because they also have characteristic leathery shells. *Dermochelys coriacea* (Leatherback sea turtle; included in Appendix I since 1977) may be differentiated from softshell turtles because it is much larger (largest turtle in the world) and it is only found in a marine environment. *Carettochelys insculpta* (pig-nosed turtle; included in Appendix II since 2005) has 2 claws on the forelimbs (softshells have 3), the snout is shorter and faces laterally giving it its pig-like appearance, it has a complete bony shell under its velvety skin so that its shell margins are

completely inflexible, and it is only found in Australia (no Trionychidae in Australia), Indonesia, and Papua New Guinea.

10. Consultations

Consultation letters have been sent to all 22 range countries with the following responses regarding Trionychidae (with respect to species found in that country):

Bangladesh: Bangladesh indicated that it generally agrees with the proposal to transfer or include species in the CITES Appendices or advocates higher protection (i.e. Appendix I).

India: India supports all proposed softshell higher taxa listings.

Indonesia: Indonesia supports four of the six softshell turtle species for transfer or inclusion in the CITES Appendices. Indonesia does not support inclusion of *Dogania subplana* and *Pelochelys cantorii.* However, note that *Pelochelys cantorii* is already included in CITES Appendix II and this proposal does not propose any change for the species.

Japan: Japan does not have enough information to determine the necessity of up-listing each species. However, they indicated that they take this proposal positively.

Nepal: Nepal supports the proposals for COP16.

Pakistan: Pakistan extends its support for the proposal.

Singapore: Singapore provided data on trade, biology, and illegal harvest.

Thailand: Thailand indicated that it has no problem in implementing its own law for these species.

United Kingdom or its Overseas Territories, Crown Dependencies and Sovereign Base Areas – British Indian Ocean Territory: While no softshell turtles are found in this range, the UK sees merit in considering a higher taxa listing for species of the Family *Triohychidae*.

Viet Nam: Viet Nam supports this proposal.

11. Additional remarks

Exclusions:

The Genera *Apalone*, *Cyclanorbis*, *Cycloderma*, and *Trionyx* (i.e. eight species) as well as the species *Rafetus euphraticus* are excluded from this proposal because they face a lower trade risk as a consequence of a reduced regional utilization. The economic constraints associated with producing, collecting, and shipping species of three African Genera also lowers their trade risk. According to the numerous references (Cheung & Dudgeon, 2006; Shepherd & Nijman, 2007, 2008; Gong et al., 2009) to turtles in the Asian markets no African softshells are listed. *Apalone* trade has increased since 2001 (Fig. 1). However this genus is indigenous to the United States and is currently being evaluated for a possible Appendix III listing.

Pelodiscus sinensis is also excluded from this proposal because of the mass farming that is undertaken for this species in China. Given the extensiveness of the farming of this species, harvest of wild source specimens or parental stock which would be of conservation concern, is believed to be low (see Section 8.4 for specific details; Shi H.T. *et al,* 2007; Shi H.T. *et al,* 2008).

IUCN information:

Five of the ten species of Softshell turtle proposed for transfer or inclusion in the CITES Appendices are Critically Endangered (or draft Critically Endangered) and one is Endangered according to the Red List of Threatened Species. See Table 1 for a complete listing of IUCN status.

International Workshops/Congresses:

An international workshop on the *Conservation of Asian Tortoises and Freshwater Turtles: Setting Priorities for the Next Ten Years* was held in Singapore in February 2011. Nearly 70 delegates from 17 countries – including 14 Asian nations – attended. This was a follow-up to the Asian turtle meetings convened in Phnom Penh, Cambodia in 1999 to discuss the plight of turtles since that initial effort. Significant strides have been made since the 1999 workshop; however, the trade in wild caught turtles and turtle products (e.g., meat, shell, eggs, and cartilage) is still the number one problem facing global turtle populations. Among the recommendations of the workshop were updates to the CITES statuses of turtles. Thirteen species were recommended for inclusion in Appendix II and 25 species were recommended for transfer from Appendix II to I. Among these were the following Trionychidae: Appendix I - *Lissemys punctata*, *Pelochelys cantorii*, and *Pelochelys bibroni* and for Appendix II - *Nilssonia formosa*, *Nilssonia leithii, Dogania subplana,* and *Palea steindachneri* (Horne *et al,* 2011) The Appendix-II inclusions are consistent with this proposal.

The *IUCN 5th World Conservation Congress* held in Korea in September 2012 calls on CITES parties to "Evaluate that turtle species subject to international trade are appropriately included in the CITES Appendices" with particular emphasis on making Non-Detriment Findings, ensuring stricter domestic measures safeguard turtles, and that laws are enforced.

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Table1. Table showing current CITES and proposed CITES status for all Trionychidae species world-wide.

Note: Shaded boxes show the proposed listings/transfers for this family.

Comon Name	Scientific Name	Range States	Current CITES Status	Proposed Position	IUCN Status	Note
Asian Narrow-headed Softshell	*Chitra chitra*	ID MY TH	Appendix II	Appendix I	CR (2000), draft CR	Transfer
Burmese Narrow-headed Softshell	*Chitra vandijki*	MM	Appendix II	Appendix I	NE, draft CR	Transfer
Indian Softshell Turtle	*Nilssonia (Aspideretes) gangetica*	AF BD IN NP PK	Appendix I	Appendix I	VU (2000), draft EN	No change
Indian Peacock Softshell Turtle	*Nilssonia (Aspideretes) hurum*	BD IN NP PK	Appendix I	Appendix I	VU (2000), draft EN	No change
Black Softshell Turtle	*Nilssonia (Aspideretes) nigricans*	BD IN	Appendix I	Appendix I	EW (2002), draft CR	No change
Asiatic Softshell Turtle	*Amyda cartilaginea*	BN KH IN ID LA MY MM SG TH VN	Appendix II	Appendix II	VU (2000)	No change
Indian Narrow-headed Softshell	*Chitra indica*	BD IN NP PK	Appendix II	Appendix II + Zero quota	EN (2000), draft EN	Zero quota until reviewed by AC
Malayan Soft-shelled Turtle	*Dogania subplana*	ID,MY,MM,PH,SG	Non CITES	Appendix II	LR/LC (2000), draft LC	Listing
Sri Lankan Flapshell Turtle	*Lissemys ceylonesis*	LK	Appendix II	Appendix II	NE	No change
Indian Flapshell Turtle	*Lissemys punctata*	BD IN MM NP PK	Appendix II	Appendix II	LC (2000), draft LC	No change
Burmese Flapshell Turtle	*Lissemys scutata*	MM TH	Appendix II	Appendix II	DD (2000), draft NT	No change
Leith's Softshell Turtle	*Nilssonia (Aspideretes) leithii*	IN	Non CITES	Appendix II	VU (2000), draft CR	Listing
Burmese Peacock	*Nilssonia formosa*	MM	Non CITES	Appendix II	EN (2000),	Listing

Comon Name	Scientific Name	Range States	Current CITES Status	Proposed Position	IUCN Status	Note
Softshell					draft CR	
Wattle-necked Softshell Turtle	*Palea steindachneri*	CN, LA, VN,MU,US	Appendix III	Appendix II	EN (2000), draft EN	Listing
Striped New Guinea Softshell Turtle	*Pelochelys bibroni*	ID,PG	Appendix II	Appendix II	VU (2000), draft VU	No change
Northern New Guinea Softshell Turtle	*Pelochelys signifera*	ID,PG	Appendix II	Appendix II	NE, draft DD	No change
Hunan Softshell Turtle	*Pelodiscus axenaria*	CN	Appendix III	Appendix II	NE, draft DD	Listing
Northern Chinese Softshell Turtle	*Pelodiscus maackii*	CN KR KP RU	Appendix III	Appendix II	NE, draft DD	Listing
Lesser Chinese Softshell Turtle	*Pelodiscus parviformis*	CN VN	Appendix III	Appendix II	NE, draft DD	Listing
Euphrates Softshell Turtle	*Rafetus euphraticus*	IR IQ SY TR	Non CITES	Excluded from this proposal	EN (1996), draft EN	Lower Trade Risk
Swinhoe's Giant Softshell Turtle	*Rafetus swinhoei*	CN VN	Appendix III	Appendix II	CR, draft CR	Listing
Asian Giant / Cantor's Giant Softshell	*Pelochelys cantorii*	KH,CN,IN, ID,LA,MY,MM, PH,SG,TH,VN	Appendix II	Appendix	EN (2000), draft CR	No change
Florida Softshell Turtle	*Apalone ferox*	US	Non CITES	Excluded from this proposal	LC (2011)	Lower Trade Risk
Midland Softshell Turtle	*Apalone mutica*	US	Non CITES	Excluded from this proposal	LC (2011)	Lower Trade Risk
Spiny Softshell Turtle	*Apalone spinifera*	CA MX US	Non CITES	Excluded from this proposal	LC (2011)	Lower Trade Risk
Nubian Flapshell Turtle	*Cyclanorbis elegans*	BJ CM CF TD ET GH NG SD TO	Non CITES	Excluded from this proposal	NT (1996)	Lower Trade Risk
Senegal Flapshell Turtle	*Cyclanorbis senegalensis*	BJ BF CM CF TD CD ET GA GM GH	Non CITES	Excluded from this proposal	NT (1996)	Lower Trade Risk

Comon Name	Scientific Name	Range States	Current CITES Status	Proposed Position	IUCN Status	Note
		GW CI ML MR NG SN SD TO				
Aubry's Flapshell Turtle	*Cycloderma aubryi*	AO CF CD CG GA	Non CITES	Excluded from this proposal	Not Listed	Lower Trade Risk
Zambezi Flapshell Turtle	*Cycloderma frenatum*	ML MZ TZ ZM ZW	Non CITES	Excluded from this proposal	LR/NT (1996)	Lower Trade Risk
Chinese Softshell Turtle	*Pelodiscus sinensis*	CN HK VN JP	Non CITES	Excluded from this proposal	VU (2000), draft VU or EN	Mass Farm Production
African Softshell Turtle	*Trionyx triunguis*	AO BJ CM TD CD CG EG GQ ER ET GA GM GH GN GW IL CI KE LB LR MR NA NE NG SN SL SO SD SY TZ TO TR UG	Non CITES	Excluded from this proposal	Not Listed	Lower Trade Risk

Figure 1. Effects of CITES Actions: Exports by Specimen.
(Credit: IUCN Tortoise and Freshwater Turtle Specialist Group; CITES CoP15).

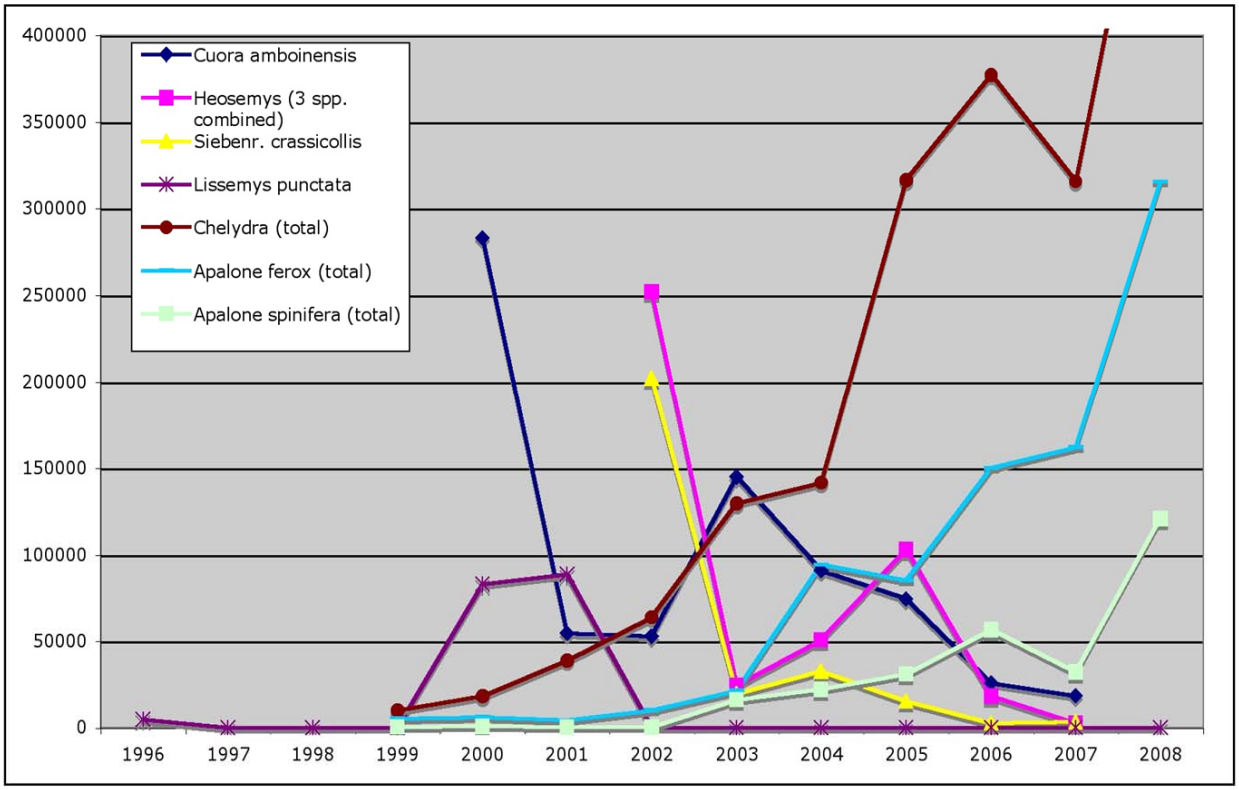

Figure 2. Comparison of reproductive output of a North American Snapping turtle to Managed North American Game Species: Bear, Moose, and Deer.
(Credit Ron Brooks Co-Chair of OMSTARRT (Ontario Multi-Species of Turtles At Risk Recovery Team)).