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

Eighteenth meeting of the Conference of the Parties
Colombo (Sri Lanka), May 2019

CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II

A. Proposal

The proponents propose the transfer of *Geochelone elegans* (Indian Star Tortoise), from CITES Appendix II to Appendix I in accordance with Article II, paragraph 1, of the Convention. Specifically, this species meets the biological criteria found in paragraphs C i) and ii) of Resolution Conf. 9.24 (Rev. CoP16), Annex 1, due to a marked decline in population sizes in the wild observed as ongoing or inferred or projected on the basis of levels or patterns of exploitation, and a high vulnerability to intrinsic (i.e. late maturity, low reproductive output, long generation time and low population recovery potential) and extrinsic (i.e. a decrease in the area and quality of habitat) factors, and a reduction in recruitment due to indiscriminate off take.

B. Proponent

India and [*co-proponent- Sri Lanka*]

C. Supporting statement

1. Taxonomy

1.1 Class: Reptilia (Laurenti, 1768)

1.2 Order: Testudines (Batsch, 1788)

1.3 Family: Testudinidae (Batsch, 1788)

1.4 Genus, species or subspecies, including author and year: *Geochelone elegans* (Schoepff, 1795). Taxonomy follows the standard nomenclatural reference for Turtles (Fritz & Havas, 2007).

1.5 Scientific synonyms: *Testudo elegans* Schoepff, 1795; *Testudo stellata* (Schweigger, 1812);*Testudo actinodes*(Bell, 1828);*Testudo actinoides*(Bell in Gray, 1844);*Testudo megalopus*(Blyth, 1853);*Peltastes stellatus*(Gray, 1870); *Peltastes stellatus seba*(Gray, 1870).

1.6 Common names: English: Indian star tortoise, star tortoise

French: Tortue étoilée de l'Inde

Spanish: Tortuga estrellada de la India

1.7 Code numbers: ITIS number 551777.

2. Overview

Figure 1: Adult Indian Star Tortoise (*Geochelone elegans*). The unique pattern of its shell has made it a target for criminal actors involved in the international illegal wildlife trade for use as exotic pets.

The Indian Star Tortoise(*Geochelone elegans*) is a medium sized tortoise endemic to parts of India, Pakistan and Sri Lanka.This species can be distinguished from other tortoises of the region by the pattern of light radiating lines on the otherwise dark carapace of their shells (Moll, 1989). Their biological attributes make them extremely vulnerable to over-exploitation by humans because they are easily hunted, have a low reproductive rate, potentially occur at low densities, and do not survive or breed readily in captivity (Anand 2005; Vyas, 2010; Nijman and Shepherd, 2015a).*G. elegans*is is in rapid decline due to heavy poaching pressure, particularly for use in the international live trade for use as exotic pets (Choudhury and Bhupathy, 1993;D'Cruze et al., 2016).

To safeguard wild populations, all range states have chosen to adopt strict domestic legislation that prohibits commercial utilization of the species. For example, the species was placed under Schedule IV of the Wildlife (Protection) Act 1972of India,and for over 38 years it has been illegal to hunt and commercially trade this species either within or from India . Similarly, in Sri Lanka this species is protected under the Sri Lanka Fauna and Flora Ordinance (1993);in Pakistan, the Forest, Environment and Wildlife Department of the Government of Sindh, through a notification issued on September 2014, included *G. elegans* along with other chelonian species of Pakistan in Schedule II (Protected Animals) of the Sindh Wildlife Protection Ordinance 1972.However, this strict national legislation in all three range States has not been sufficient to stop illegal trade due to the ongoing demand for the international pet trade, and inadequate enforcement by transit and importing States. The species qualifies for Appendix I, which would both strengthen international cooperation of enforcement authorities and result in higher and more deterring fines and penalties.

Numerically, *G. Elegans*is the single most seized species of tortoise or freshwater turtle worldwide and is thought to represent around 11% of global seizures involving these taxa (van Dijk, pers. comms. 2016). For example, between 2000 and 2015, at least 34,080 live individuals were recorded as seized by wildlife and customs authorities during 118 different enforcement actions internationally (CITES, 2017).A separate analysis of seizure events in India reported by the media between 2011 and 2015 revealed that at least 8,533 individual live specimens were seized and that this species occurred in at least 23% of all such seizure events (223) reported during this time period (Mendiratta *et al.*, 2017). In Sri Lanka, unpublished data provided by Customs Department and other enforcement officials (including the Navy, Police and Flying Squad) states that at least 3,130 individual specimens were seized between 2015 and 2017 alone (Malsinghe et al., 2017; de Silva pers. comms. 2017).

In Thailand, *G. elegans* was also the most frequent illegally traded tortoise seized by enforcement authorities between 2008 and 2013 (5,966 individuals during 15 cases) and is the most commonly observed tortoise at the Chatuchak Market in Thailand (Chng 2014). Additional seizures of Indian Star Tortoises occurred in Germany, Indonesia, the Netherlands, the Philippines, Slovakia, Spain, the United Kingdom and the United States, in most cases from air travellers arriving from Asia, as well as some from express mail parcels sent from Asia (CITES, 2017). However, studies have shown that these seizures represent only the tip of a far larger iceberg (D'Cruze et al., 2015; CITES, 2017). D'Cruze *et al*. (2015) reported the illegal collection of at least 55,000(mostly juvenile) specimens from just one location (comprising 16 villages) from the state of Andhra Pradesh in India over a period of one year. This figure is three to six times larger than the 10,000–20,000 individuals previously estimated to be poached throughout the entire range of this species each year (Sekhar *et al*. 2004).

While some small-scale captive breeding may be occurring at some zoos and with some private keepers, few of the offspring are traded internationally, and no large-scale commercial captive production facilities are known to exist (CITES, 2017).

Habitat loss is also occurring throughout *G. elegans* range; in particular scrub forest habitat is being converted to orchards and cash crop agriculture, leading to reduction of available area of the preferred habitat type (Vyas, 2006, 2010; de Silva, 2015; D'Cruze et al., 2016). Although it is a relatively adaptable species, able to tolerate anthropogenically-altered habitat, continued habitat loss is likely to further impact wild numbers (Vyas, 2006; de Silva, 2015; D'Cruze et al., 2016). Locally, in rural areas, *G. elegans* are sometimes eaten for subsistence and kept in households for spiritual use (Anand, 2005; D'Cruze et al., 2015). Additional documented threats faced by *G.elegans* include accidental mortalities, via road kills, agricultural equipment (such as 'brushmovers' and discarded fishing nets (de Silva, 1996, 2003; 2015; Ekanayake et al., 2004; Jayawickrama et al., 2010), and deliberate mortalities to protect crops (de Silva, 2003, 2015).

For manyyears, freshwater turtles and tortoises have been the subject of significant CITES attention and action because of their exceptionally high risk of overexploitation associated with international and illegaltrade (CITES, 2017). The Indian star tortoise was recognized as a species of conservation concern in the 1970's when CITES was first established and has been included in CITES Appendix II since 1975 (CITES, 2017).

A review of the best available information on the trade and status of *G. elegans* shows that this species is significantly affected by illegal trade, and that it meets the biological criteria for transfer to Appendix I in accordance with Resolution Conf. 9.24 Annex 1, Criterion C i) and ii) based on the following:

1. [Criterion C i)] Observed on-going decline in population size due to a dramatic increase in international trade inliveIndian star tortoise specimens in the last 15 years [see Table 1 and sections 5.1, 5.2, 5.3 and 5.4]. Also noting that the > 30% population decline recently determined by the IUCN(D'Cruze et al., 2016)is possibly an underestimate since there is incomplete information on wild population densities[see section 4.4].

2. [Criterion C ii)] An inferred decrease in recruitment due to the indiscriminate removal of juvenile and adult Indian star tortoises from the wild over multiple generations for exploitation in domestic and international trade [see sections 5 and 6].

3. [Criterion C ii)] A high intrinsic vulnerability of the species to overexploitation due to late onset of reproduction and slow reproductive rate, behavioural traits that allow ease of capture, and specialized niche requirements (i.e. diet and habitat)[see section 3.3].

4. [Criterion C ii)] A high vulnerability to extrinsic factors, specifically a decrease in area and quality of habitat due to deforestation and land conversion for agriculture, and a high threat of accidental mortalities, via road kills, agricultural equipment and deliberate mortalities to protect crops in converted habitats [see sections 4.1, 5.3 and 5.4].

In 2016, the IUCN assessed the conservation status of *G. elegans* and found it to have a decreasing population trend and to be threatened with extinction (D'Cruze et al., 2016). Based on recent documented levels of seizures, illegal trade and the suspected future reduction in population size that could occur because of this activity, an IUCN listing of Vulnerable A4cd has been given based on concerns that population reductions of >30% are likely to occur if this exploitation continues or expands (D'Cruze et al., 2016). This echoes separate earlier national CAMP workshop assessments of Indian (Molur and Walker, 1998) and Sri Lankan (de Silva et al., 2000) populations.

3. Species characteristics

3.1 Distribution

The Indian star tortoise (*Geochelone elegans*) isnative to India, Pakistan, and Sri Lanka. In India it occurs in two main disjunct areas, in the northwestern states of Gujarat and Rajasthan, and in the southern states of Andhra Pradesh, Karnataka, Kerala, Madhya Pradesh, Orissa, and Tamil Nadu. In Pakistan the species is limited to south-eastern Sind. The species occurs throughout Sri Lanka in lowland areas up to about 270 meters altitude (D'Cruze et al., 2016; TTWG, 2017).

3.2 Habitat

G. elegans is primarily an inhabitant of open dry scrublands. However, this species also occurs in scrub forests, grasslands and some coastal scrublands of arid and semi-arid regions throughout its range. It is somewhat adaptable to human dominated landscapes including agricultural fields, hedgerows and plantations if left undisturbed by deliberate off take and accidental killings by humans (D'Cruze et al., 2016).

3.3 Biological characteristics

Similar to other tortoises belonging to the genus *Geochelone*, *G. Elegans*has a slow life history, being long-lived with a low reproductive rate (TTWG, 2017). Data on key life-history parameters in wild populations are incomplete, however mature females are known totypically produce two clutches

(exceptionally up to four clutches), each comprising on average between 2-10 eggs per year (Deraniyagala, 1939; Whelen and Coakley, 1982; Vyas 2005).Generation length has been estimated as approximately 10 years, based on studies focused largely on growth and maturity of specimens in captivity (Frazier, 1987; Das; 1991; Vyas, 1997; D'Cruze et al., 2016 and reference therein). This species is most active during the monsoon season when the majority of wild collection for the international pet trade appears to occur (D'Cruze et al., 2015). Outside of monsoon season the species is predominantly crepuscular, typically venturing out in early morning and late afternoon, hiding under bushes or tufts of grass throughout the rest of the day (D'Cruze et al., 2016).

3.4 Morphological characteristics

G. elegans is a medium-sized tortoise; adult males typically reach up to 26 cm while adult females typically can grow to 32 cm in carapace length (Moll 1989).This species has a broad, rounded and domed shell; it is characterized by the bold pattern of yellow lines radiating from the areolus (growth centre) of each scute of the otherwise near-black shell, including on the marginal scutes along the sides of the shell, and on each of the scutes of the plastron. It is this unique pattern of its shell which has made it a target for criminal actors involved in the international illegal wildlife trade for use as exotic pets (D'Cruze et al., 2015; 2016).The carapace in many individuals shows distinct pyramiding, with the center of each vertebral and pleural scute raised to some extent. The shell margin is smooth to very gently scalloped, but never spiky or serrate. The head may show yellow markings on a dark grey to black background, or may be predominantly yellowish or pale brown.

3.5 Role of the species in its ecosystem

The role of *G. elegans* in its native ecosystem has not been studied in detail; however its feeding activities may affect and regulate the populations of preferred food plants and disperse seeds, while its eggs and young specimens occasionally contribute to the diet of predatory mammals, birds and other species.

4. Status and trends

4.1 Habitat trends

Habitat loss, destruction and/or degradation threaten the continued survival of *G. elegans* populations in the wild (D'Cruze et al., 2016). In particular, scrub forest habitat is being converted to orchards and cash crop agriculture leading to reduction of available area of the preferred habitat type (Vyas, 2006, 2010; de Silva, 2015; D'Cruze et al., 2016). Restricted to parts of Southern Asia,in thewild this species inhabits a region with one of the highest human populations in the world (United Nations, 2017). India alone currently has an estimated population of 1.3 billion people comprising 18% of the globalhuman population, and itisprojected to increase by approximately 1% per year, surpassing that of China to become the world's most populous country in 2022 (United Nations, 2017). Estimates of change in the availability of preferred and or suitable habitat for *G. elegans*have not been made. However, levels of anthropogenic activity are of particular concern. For example, despite having one of the largest forest areas in world (estimated as 68 million hectares in 2010), India recorded some 25.5 million hectares of forests as being affected by grazing by domestic animals (FAO, 2010). Although it is a relatively adaptable species, able to tolerate anthropogenically-altered habitat, continued habitat loss is likely to further negatively impact wild numbers (Vyas, 2006; de Silva, 2015; D'Cruze et al., 2016).

4.2 Population size

Partly due to the ecology of this species, *G. elegans* is understudied and the status of specific geographic populations in the wild is poorly known. However, Frazier (in Das 1991) recorded estimated densities of 4-12.5 animals per hectare in Gujarat.

4.3 Population structure

Illegal removal of juvenile specimens from the wild to fuel the exotic pet trade has likely skewed the population to adult tortoises in some areas (D'Cruze et al., in press). Due to the long life expectancy of this species, a consequent lack of recruitment may not manifest as a population reduction for several years, masking the impact of off-take (D'Cruze et al., in press).

4.4 Population trends

Based on recent documented levels of seizures, illegal trade and the suspected future reduction in population size that could occur because of this activity, an IUCN listing of 'Vulnerable' A4cd has been given based on concerns that population reductions of >30% are likely to occur if this exploitation continues or expands (D'Cruze et al., 2016). This echoes separate earlier national CAMP workshop assessments of Indian (Molur and Walker, 1998) and Sri Lankan (de Silva et al., 2000) populations.

4.5 Geographic trends

The current range of *G. elegans* includes wild populations present in the Deccan thorn scrub forests; a xeric shrub land ecoregion that sprawls across the Indian states of Tamil Nadu, Andhra

Pradesh, Karnataka, and Maharashtra and also includes part of northern Sri Lanka (Champion and Seth, 1986). More than 90% of this ecoregion's natural habitat has been degraded or cleared (WWF, 2018) As such, the conservation status of the ecoregion was changed from endangered to critical after the analysis of projected threats from the human population (WWF, 2018). There are concerns that this trend could extend to other dry scrub forests inhabited by wild populations of this species (D'Cruze et al., 2016). Spatial occupancy of this species is shrinking at a fast rate. For example, of the 16 protected areas surveyed in the State of Gujarat, five of them lost the Indian Star Tortoise during 1989-98 (Vyas and Parasharya, 2000).Moreover, habitat loss is also occurring throughout *G. elegans* range; in particular scrub forest habitat is being converted to orchards and cash crop agriculture, leading to reduction of available area of the preferred habitat type (Vyas, 2006, 2010; de Silva, 2015; D'Cruze et al., 2016).

5. Threats

The main current threats to the survival of *G. elegans* include illegal collection and habitat loss, in addition to accidental and retaliatory killings.

5.1 Exploitation driven by intercontinental trade

Illegal collection for the international wildlife trade is of most major concern. Numerically, *G. elegans* is the single most seized species of tortoise or freshwater turtle worldwide and is thought to represent around 11% of global seizures involving these taxa (van Dijk, pers. comms. 2016). For example, between 2000 and 2015, at least 34,080 live individuals were recorded as seized by wildlife and customs authorities during 118 different enforcement actions internationally (CITES, 2017). During this time nearly two-thirds of all seized live *G. elegans* (21,316 animals) were detected and seized within India (CITES, 2017). However, studies have shown that these seizures represent only the tip of a far larger iceberg (D'Cruze et al., 2015; CITES, 2017). D'Cruze et al. (2015) reported the illegal collection of at least 55,000 (mostly juvenile) specimens from just one location (comprising 16 villages) from the state of Andhra Pradesh in India over a period of one year. This figure is three to six times larger than the 10,000–20,000 individuals previously estimated to be poached throughout the entire range of this species each year (Sekhar et al., 2004). There are concerns that this species is being smuggled from India and Sri Lanka into pet markets in Asia, Europe and the United States (de Silva 2003; Horne et al. 2012; Vyas 2015). However, the majority of animals appear to be destined for use as exotic pets in Asian countries, such as Thailand and China (Shepherd et al. 2004; D'Cruze et al. 2015; D'Cruze et al., 2016).

5.2 Domestic consumption of wildmeat and live specimens

Locally, in rural areas, *G. elegans* are sometimes eaten for subsistence (Anand, 2005; D'Cruze et al., 2015). However they are also kept as pets in many homes, their owners believing that they bring good luck and fortune (Anand, 2005; D'Cruze et al., 2015). Over 100 hatchlings have been observed in one urban household in India alone (D'Cruze *et al*. 2015). In addition, for many people *G. elegans* plays an even more spiritual rolein some societies as they are thought to represent a reincarnation of the Hindu God "Vishnu" (D'Cruze *et al*. 2015). In 2015, researchers observed a total of 22 animals at three different Shiva temples in the state of Gujarat, India (D'Cruze et al., 2015).

5.3 Habitat loss

Habitat loss is occurring throughout *G. elegans*' range; in particular scrub forest habitat is being converted to orchards and cash crop agriculture, leading to reduction of available area of the preferred habitat type (Vyas, 2006, 2010; de Silva, 2015; D'Cruze et al., 2016). Although *G. elegans* is a relatively adaptable species, able to tolerate anthropogenically-altered habitat, continued habitat loss is likely to further impact wild numbers (Vyas, 2006; de Silva, 2015; D'Cruze et al., 2016).

5.4 Accidental and retaliatory killings

Additional documented threats faced by G. elegans include accidental mortalities, via road kills, agricultural equipment such as 'brushmovers' and discarded fishing nets (de Silva, 1996, 2003; 2015; Ekanayake et al., 2004; Jayawickrama et al., 2010), and deliberate mortalities to protect crops (de Silva, 2003, 2015).

6. Utilization and trade

6.1 National utilization

G. elegans is hunted within its range as wild meatby certain tribal communities (D'Cruze et al., 2015; D'Cruze et al., 2016).This species is also collected for use as pets and for spiritual use (D'Cruze et al., 2015; D'Cruze et al., 2016). However, trade for these purposes is likely to be negligible compared with thehigh volume of theinternational pet trade (D'Cruze at al., 2016).Stringent national legislation exists in all three range States that effectively prohibit personal and commercial use[see section 7.1].

6.2 Legal trade

According to the CITES WCMC trade database, 70,664 live *G. elegans* were exported by 37 different non-range states between the years 2000 and 2015 (CITES WCMC, 2018).Of these specimens, only 4% (*n* = 2741) were recorded as wild sourced or ranched specimens during this time period (CITES WCMC, 2018). Rather, the majority (58%; *n* = 41,193) of these specimens were recorded as being bred or born in captivity (CITES WCMC, 2018). Data on country of origin was missing for 91% (37,735) of these specimens (CITES WCMC, 2018). In this regard, Jordan was reported as the largest exporter, being responsible for 75% (*n* = 30,923) of specimens all of whom were intended for either commercial or personal use (CITES WCMC, 2018). However, given that Jordan is a non-range state that has only received one shipment of 20 live G. elegans of unknown origin, there are concerns that its founderstock was not bred in captivity in conformity with Res. Conf 10.16 (Rev.) (CITES, 2017). Consequently, Jordan has been asked to report on how this founder stock was sourced and how much time was required to build up the breeding population (Resolution Conf. 17.7). The Animals Committee recommended at its 70th meeting in July 2018 that Jordan establish a zero export quota for the species from all sources, and provide evidence of the legal origin of its breeding stock. Ukraine (*n* = 3,962), Hong Kong (*n* = 1,797) and Slovenia (*n* = 1,783) were the three largest exporters after Jordan. Ukraine and Slovenia reported no legal import records for *G. elegans* that also bring the legitimacy of their founding into question. Hong Kong reported the import of 7,117 live *G, elegans* since 2000, however 97% (6,876) of these live specimens were imported from Jordan.

There are also concerns that 'legal loopholes' are being exploited to sell illegally sourced *G. elegans* in non-range states such as Thailand (Nijman and Shepherd 2015a,b). Historically, Kazakhstan is reported to have been the main supplier into Thailand despite the fact that it is not a range country for this species and has a complete lack of import records for any captive breeding stock (Nijman and Shepherd, 2010; D'Cruze et al., 2015). The significant involvement of Lebanon (a non-CITES Party until 2013) also calls the legitimacy of Thailand's founderstock into question. Previous calls for CITES Management Authorities to investigate this particular trade route (e.g. Nijman and Shepherd 2010) may be partly responsible for the observed lack of Indian Star Tortoise imports into Thailand since 2010 (D'Cruze et al., 2015).

6.3 Parts and derivatives in trade

Occasionally, shells of *G. elegans* are traded as curios or crafted into masks or other items, but as far as is known, and based on recorded seizures, the vast majority of (illegal) trade in this species occurs as live specimens for the international pet trade (see section 6.4). In contrast to trade in live specimens, since 2000 only five shells and carapaces were reported as legally exportedsince 2000 (CITES WCMC, 2018).

6.4 Illegal trade

Numerically speaking, the Indian star tortoise is the single most seized species of tortoise or freshwater turtle worldwide and is thought to represent around 11% of global seizures involving these taxa (van Dijk, pers. comms. 2016). For example, between 2000 and 2015, at least 34,080 live individuals were recorded as seized by wildlife and customs authorities during 118 different enforcement actions internationally (CITES, 2017). A separate analysis of seizure events in India reported by the media between 2011 and 2015 revealed that at least 8,533 individual live specimens were seized and that this species occurred in at least 23% of all such seizure events (*n* = 223) reported during this time period (Mendiratta *et al.*, 2017). More recently, data collated by Robin De Bois (2018) documented a total of 8,825 individual live specimens (with an estimated market value of 3,530,000 $ USD) that were reported as seized during 2016 and 2017 (Appendix X). In Sri Lanka, unpublished data provided bytheCustoms Department and other enforcement officials (including the Navy, Police and Flying Squad) states that at least 3,130 individual specimens were seized between 2015 and 2017 alone (Malsinghe et al., 2017; de Silva pers. comms. 2017). In Thailand, *G. elegans* was also the most frequent illegally traded tortoise seized by enforcement authorities between 2008 and 2013 (5,966 individuals during 15 cases) and is the most commonly observed tortoise at the Chatuchak Market in Thailand (Chng 2014). Additional seizures of Indian Star Tortoises occurred in Germany, Indonesia, the Netherlands, the Philippines, Slovakia, Spain, the United Kingdom and the United States, in most cases from air travellers arriving from Asia, as well as some from express mail parcels sent from Asia (CITES, 2017).The price per specimen in the European pet market may be up to 400-800 Euro.

6.5 Actual or potential trade impacts

Studies have shown that these seizures represent only the tip of a far larger iceberg (D'Cruze et al., 2015; CITES, 2017). Moll (1989) estimated an annual turnover of 10,000 animals in Calcutta's New Market alone in the late 1970s, before enforcement of domestic legislation nearly eliminated this domestic trade. However, export trade seems to have developed into the replacement trade outlet (Choudhury and Bhupathy 1993); by 1993, about 5,000 tortoises were estimated as illegally exported.

A recent conservative estimate of annual pet-trade export is 10,000 to 20,000 animals, and four confiscated shipments in 2002-2003 comprised between 305 and 1,090 animals per shipment (Shepherd et al., 2004). Most of the pet trade involves small to medium-sized animals, few exceeding 10 cm carapace length. This size / age class is preferred for trade as tortoises of this size are large enough to withstand the handling, and shortage of water and food, associated with clandestinely transporting tortoises in suitcases, while maximizing the number of specimens that can be shipped per container. D'Cruze et al., (2015) reported the illegal collection of at least 55,000 (mostly juvenile) tortoises from just one location (comprising 16 villages) from the state of Andhra Pradesh in India over one year. This figure is three to six times larger than the 10,000–20,000 individuals previously estimated to be poached throughout the entire range of this species each year (Sekhar et al. 2004).

7. Legal instruments

7.1 National

G. elegans is fully protected by law from commercial exploitation, trade or possession in each of its three range States:

India: *G. elegans* was placed in Schedule IV of the Wildlife (Protection) Act 1972 in 1980 and for over 38 years it has been illegal to hunt (including take from the wild) this species or trade it domestically without a license (Sections 9 and 44 of the Wildlife (Protection) Act, 1972). To date no permissions to trade the species domestically appear to have ever been granted. International trade of the species from India is prohibited.

Pakistan: The Forest, Environment and Wildlife Department of the Government of Sindh, through a notification issued on September 2014, included *G. elegans* along with other chelonian species of Pakistan in Schedule II (Protected Animals) of the Sindh Wildlife Protection Ordinance 1972.

Sri Lanka: *G. elegans* is protected under the Sri Lanka Fauna and Flora Ordinance (1993).

7.2 International

G. elegans, has been included in CITES Appendix II, as part of the listing of the genus *Geochelone*, from the date of entry into force of the Convention on 1 July 1975.*G. elegans* is listed in Annex A of the EU Council Regulation 338/97, providing highest protection level to this species within the European Union. It is not specifically covered by other Conventions or multilateral environmental agreements.

8. Species management

8.1 Management measures

Currently there are no official management measures in range States for the protection and study specific to *G. elegans*. There are a number of challenges associated with the reactive management and repatriation involving large numbers of seized and confiscated live *G. Elegans*specimens. These challenges include but are not limited to: (1) Non-existent national action plans for effective seizure and disposal of live specimens; (2) Incomplete understanding of which national agencies are responsible for effective seizure of live specimens; (3) a lack of financial resources for effective disposal of live specimens; and (4) lack of skilled staff for effective seizure and disposal of live specimens.

8.2 Population monitoring

No official in-country population monitoring programs have yet been established for *G. elegans* by any of the three range States.

8.3 Control measures

8.3.1 International

Control of the legal provisions to protect *G. elegans* from international commercial exploitation depends first and foremost on the vigilance and actions of customs officials and wildlife inspection agents at border crossings; they may supported and assisted by information from NGOs monitoring wildlife trade in source and destination markets.

8.3.2 Domestic

Implementing the existing national legal protection in the three range countries is primarily the responsibility of the respective wildlife departments and their associated law enforcement units. As documented in Annex I, numerous seizures occur domestically as a result of diligent investigations and information from observant and concerned citizens. A number of enforcement drives have also helped to protect wild populations of *G. elegans*. Most recently, in 2017 the Wildlife Crime Control Bureau (WCCB) of India was awarded a certificate of commendation by the CITES Secretariat for its effort to combat the proliferating illegal trade in

freshwater turtles and tortoises following “Operation Save Kurma” which resulted in the seizure of approximately 16,000 animals between December 2016 and January 2017 (CITES Notification to the Parties 2017/076).

Advocacy, targeted lobbying, and public-awareness campaigns using evidence-based research are thought to have contributed to an observed significant reduction and in the scale of *G. elegans* openly traded in pets shops in Malaysia since 2003 (Chng, 2015).

8.4 Captive breeding and artificial propagation

In contrast to the Burmese star tortoise (*Geochelone platynota)*, which breeds very well in captivity in range and in suitable climate areas in other countries and continents(Platt et al., 2011), *G. elegans* does not appear to reproduce regularly or in great numbers even at the best of captive facilities. While some small-scale captive breeding may be occurring at some zoos and with some private keepers, few of the offspring are traded internationally, and no large-scale commercial captive production facilities are known to exist (CITES, 2017). Vyas (2006) reported that captive specimens of *G. elegans* were being kept in 16% (*n* = 26) of the 164 captive wild animal facilities in India; citing a document entitled ‘Indian Zoo Inventory of 2002-2003’ produced by the Central Zoo Authority of the Government of India. At the time of writing, Vyas (2006) reported that none of the captive production facilities in India were known to have successfully bred any *G. elegans* in captivity within the last 12 months and that data regarding sex ratios was not available from 10 of these institutions.

Information provided by the global online database Species 360 (2014) confirmed that a total of 765 *G. elegans* specimens (187 males, 161 females and 417 of unknown sex) were being held in captivity at 78 different zoos and aquaria in four different geographical regions. In Asia, a total of 516 *G. elegans* specimens (107 males, 101females and 308 of unknown sex) were reported from 20 different institutions (Species 360, 2014). In Europe, a total of 82 *G.elegans* specimens (32 males, 31 females and 19 of unknown sex) were reported from 20 different institutions (Species 360, 2014). In Oceania, a total of 16 *G. elegans* specimens (6 males, 4 females and 6 of unknown sex) were reported from three different institutions (Species 360, 2014). In North America, a total of 151 *G. elegans* specimens (45 males, 25 females and 81 of unknown sex) were reported from 35 different institutions (Species 360, 2014).

8.5 Habitat conservation

Populations of *G. elegans* are present in both protected areas and in agricultural landscapes in range states (D’Cruze et al., 2016). Available information indicates that this species maintains relatively large populations of >10,000 adult individuals with an extent of occurrence of over 20,000 km^2 and an area of occupancy of more than 2,000 km^2 (D’Cruze et al., 2016). In India, *G. elegans* is thought to be still present in at least 30 protected areas (Vyas pers. comms., 2018) although recent detailed field surveys are lacking. Any populations in Pakistan appear to be extremely localized and small with recent detailed field surveys also lacking (D’Cruze et al., 2016).In Sri Lanka, *G. elegans* is thought to be still present in at least 26 Wildlife National Parks (de Silva pers. comms., 2018).

8.6 Safeguards

Not applicable.

9. Information on similar species

The Burmese Star Tortoise (*Geochelone platynota)* (CITES Appendix I) tends to have a smoother carapace with fewer ‘star lines’ on each scute, predominantly cream to yellow marginal scutes in the bridge region without clear star pattern, and usually a uniform yellowish head; the plastron of *G. platynota* shows bold black triangles on a pale background, and never a radiating pattern. The Geometric Tortoise (*Psammobates geometricus*, CITES App. I), other *Psammobates* tortoises (App. II) of southern Africa, the Radiated Tortoise (*Astrochelys radiata*, App.I), and Spider tortoise (*Pyxis arachnoides*, App. I) of Madagascar, all share a carapace pattern of yellowish radiating lines on a dark background colour, but all these species generally lack a corresponding radiating pattern on the plastral scutes; only *Psammobates oculiferus*may show a plastral radiating pattern, but this species can be distinguished by its strongly serrated carapace margin (smooth in *G. elegans*).

10. Consultations

India has circulated the draft proposal of Star Tortoise (*Geochelone elegans*) to the Range Countries of Shri Lanka and Pakistan on 5th December, 2018. In response to India’s proposal, Sri Lanka has agree to become a co-proponent of the proposal. Si Lanka has conveyed that, the content of the proposal was reviewed by a technical review committee under the Department of Wildlife Conservation, Sri Lanka and is in agreement on transfer of species *Geochelone elegans (*Indian Star Tortoise) from Appendix II to Appendix I of CITES. Myanmar has also supported the proposal.

11. Additional remarks

From a policy perspective, transferring *G. elegans* from CITES Appendix II to Appendix I is recommended as this would help to safeguard remaining wild populations, aid national enforcement efforts and better reflect current legislation in range States. In particular, given its concerning current role as a country of transit, extending WARPA to protect non-indigenous species could help to aid Thailand's existing enforcement efforts to address this illegal trade activity (Nijman and Shepherd, 2015a,b; D'Cruze et al., 2015).

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Annexes

Table 1: Confiscations of Indian star tortoises made between January 2016 and December 2017 based on media sources. Note for reference to estimated market value: one live Indian star tortoise specimen is estimated to have a market value of 400 $USD (NEED REF).

Date	Size of Seizure	Estimated Market Value $USD	Location of Seizure	Source Country	Source of Information
February 3, 2016	1	400	Indonesia	Unknown	On the Trail 12:2016
May 2, 2016	7	2800	India	India	On the Trail 13:2016
May 3, 2016	6	2400	India	India	On the Trail 13:2016
May 8, 2016	25	10000	Sri Lanka	Sri Lanka	On the Trail 13:2016
May 30, 2016	1	400	India	India	On the Trail 13:2016
May 11, 2016	6	2400	India	India	On the Trail 13:2016
June 23, 2016	22	8800	Singapore	Unknown	On the Trail 13:2016
July 9, 2016	3	1200	India	India	On the Trail 14:2016
July 28, 2016	500	200000	India	India	On the Trail 14:2016
August 23, 2016	150	60000	India	India	On the Trail 14:2016
August 25, 2016	1011	404400	Malaysia	Unknown	On the Trail 14:2016
September 19, 2016	24	9600	India	India	On the Trail 14:2016
November 13, 2016	199	79600	India	India	On the Trail 15:2016
December 14, 2016	62	24800	Thailand	Unknown	On the Trail 15:2016
December 21, 2016	4	1600	India	India	On the Trail 15:2016
January 4, 2017	9	3600	India	India	On the Trail 16:2017
January 29, 2017	280	112000	India	India	On the Trail 16:2017
February 7, 2017	10	4000	India	India	On the Trail 16:2017
February 20, 2017	2	800	India	India	On the Trail 16:2017
March 12, 2017	75	30000	China	Unknown	On the Trail 16:2017
March, 2017	28	11200	Malaysia	Unknown	On the Trail 16:2017
April 23, 2017	105	42000	India	India	On the Trail 17:2017
June 17, 2017	2089	835600	Sri Lanka	India	On the Trail 17:2017
July 4, 2017	200	80000	India	India	On the Trail 18:2017
July 23, 2017	2	800	Thailand	Unknown	On the Trail 18:2017
August 22, 2017	2515	1006000	India	India	On the Trail 18:2017
August, 2017	97	38800	Singapore	Unknown	On the Trail 18:2017
October 9, 2017	852	340800	India	India	On the Trail 19:2017
November 30, 2017	330	132000	Thailand	Unknown	On the Trail 19:2017
December 11, 2017	210	84000	India	India	On the Trail 19:2017
Total	8825	3530000	-	-	-

Table 2. UNEP-WCMC trade data: 2000 – 2015 for *Geochelone elegans*. Purpose codes: L = law enforcement; H = hunting trophy; P = personal; Q = circus/traveling exhibit; T = trade; Z = Zoo. Source codes: I = confiscation; O = Pre-convention; W = wild; R = ranched specimen – to be added.

Figure 2. Range map of *G. elegans*.