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

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Seventeenth Meeting of the Conference of the Parties (CoP17)
(Johannesburg, South Africa), September 24 – October 5, 2016

REVIEW OF PROPOSALS TO AMEND APPENDICES I AND II

A. Proposal

The proponent proposes the transfer from Appendix II to Appendix I of *Manis culionensis* (Philippine pangolin) in accordance with Article II, paragraph 1, of the Convention. This species qualifies for listing on CITES Appendix I because it is a country endemic that is threatened with extinction and is detrimentally affected by international trade and habitat loss.

This species qualifies for listing on CITES Appendix I because it meets the biological criteria found in Resolution Conf. 9.24 (Rev. CoP16), Annex 1, specifically:

Paragraph B: The wild population has a restricted area of distribution and is characterized by:

iii) a high vulnerability to intrinsic factors (i.e. low fecundity) and extrinsic factors (habitat loss/destruction);
iv) an observed, inferred or projected decrease in area and quality of habitat due to deforestation, and a decrease in the number of individuals due to overharvest for local and international trade.

Paragraph C: A marked decline in the population size in the wild, which has been:

i) observed as ongoing;
ii) inferred or projected on the basis of a levels and patterns of exploitation, decrease in area and quality of habitat, and a high vulnerability to intrinsic factors (i.e. low reproductive output) and extrinsic factors (habitat loss/destruction).

B. Proponent

Philippines

C. Supporting Statement

1. Taxonomy

1.1. Class: Mammalia
1.2. Order: Pholidota (Weber, 1904)
1.3. Family: Manidae (Gray, 1821)
1.4. Genus, species or subspecies, including author and year:
Manis culionensis (Elera, 1895)
1.5. Scientific synonyms:
1.6. Common names

Manis culionensis	English: Philippine Pangolin, Palawan Pangolin
	French: Pangolin, Ecailleuse Fourmilier
	Spanish: Pangolín, Escamosa Oso Hormiguero
	Filipino: Balintong

1.7. Code numbers:

Manis culionensis	A-108.001.001.008

2. Overview

Manis culionensis (Philippine pangolin) is a medium-sized mammal endemic to primary and secondary lowland forests on six islands in the Palawan faunal region of the Philippines. Like all pangolins, *M. culionensis* has evolved an external plate of armour composed of keratinized scales, and is highly specialized to feed on ants and termites (Gaubert 2011). Pangolins have very low fecundity, usually producing one, or in rare circumstances two, offspring per year. There are four pangolin species distributed in Asia, and four additional species found in Africa. Formerly considered to be a subspecies of *M. javanica*, *M. culionensis* was recognized as a distinct species in 1998 (Feiler).

Population numbers of *M. culionensis* are in decline and the species is listed as Endangered by IUCN. Populations are suspected of having decreased by more than 50% in the past 21 years (three generations based on a generation length of seven years) (Lagrada *et al.* 2014). This species is threatened by three principle factors: 1) local use for meat and scales, 2) illegal international trade, and 3) loss of habitat from illegal deforestation (Schoppe and Cruz 2009; Challender *et al.* 2015). *M. culionensis* is hunted for local consumption of its meat and scales on Palawan, but also for trade at a national level (Cruz *et al.* 2007; Esselstyn *et al.* 2004; Schoppe and Cruz 2009). *M. culionensis* has also been documented in international trade with China and Malaysia, and possibly with Viet Nam (Schoppe and Cruz 2009; Challender 2011; Challender *et al.* 2015; Pantel and Anak 2010). Large confiscations of other Asian pangolin species have been recovered in route to markets particularly in China for use in Traditional Chinese Medicine as well as for luxury food (Challender *et al.* 2015). Pangolins native to China are now commercially extinct and pangolins are increasingly sourced from other countries to meet demands (Challender *et al.* 2015; Wu *et al.* 2004). Between 2000 and 2013, the number of *M. culionensis* in illegal trade was estimated at 996 animals (662 reported; 334 inferred)(Challender *et al.* 2015). In April 2013, a Chinese fishing vessel ran aground in the Philippines' Tubbataha Reefs National Park and was found to contain over 3000 frozen pangolins. Although genetic analyses confirmed that the illegal shipment did not contain *M. culionensis* specimens, but rather only *M. javanica* (Luczon *pers. Com.*), the Tubbataha confiscation confirms that east Asian traffickers have routes through Philippine waters and therefore likely have access to traders in the Philippines (Luczon *et al. in press*). In the last decade, increasing prices associated with the sale of pangolins in East Asia have incentivized hunters to poach pangolins for the international market rather than for local consumption (Challender *et al.* 2014). The price for live pangolins paid to hunters in Palawan more than doubled in one year, from USD1.5/kg in 2006, to USD3.8/kg in 2007, and then increased again to USD4.3/kg in 2008 (Schoppe and Cruz 2009).

Compounding the threat of trade to *M. culionensis* is loss of habitat due to a growing human population on Palawan and a subsequent increase in development and agriculture (Lagrada 2012). Schoppe and Cruz (2009) indicate that habitat loss is as important a threat as exploitation in driving population declines of *M. culionensis*. Lowland primary forest has been eliminated from most parts of Palawan and large scale logging ranks third among the 10 major threats to Palawan´s biodiversity (Esselstyn *et al.* 2004; Lasmarias 2004). Logging for the illegal timber trade and subsequent land conversion through shifting cultivation for agriculture and for industrial tree plantations, particularly for palm oil, were identified as the major causes of forest degradation in Palawan (Orbeta 2004). According to Global Forest Watch, >69,000 ha of forest were destroyed on Palawan between 2001 through 2013 (Hansen *et al.* 2013).

Asian pangolins, including *M. culionensis,* have been included in Appendix II of CITES since 1975 (although *M. culionensis* was originally listed as *M. javanica* prior to being recognized as a distinct species). CITES trade data indicate that between 1977 and 2012 an estimated 576,303 Asian pangolins (primarily *M. pentadactyla* and *M. javanica*) were in international trade (Challender *et al.* 2015). On the basis that trade levels were potentially unsustainable in the 1980s, each species was included in the Review of Significant Trade (RST) process: a preliminary phase in 1988 (Broad *et al.* 1988), phase I in 1992 (Reeve, 2002), and phase IV in 1999. *M. javanica* and *M. pentadactyla* were also candidate species for the RST in 2004 (post-CoP13 phase). RST reported that much of the trade that occurred up to 2000 was not reported to CITES, and that CITES figures did not accurately reflect supply of pangolins products to international markets. The CITES RST's documented high volumes of illegal, international trade in Asian pangolins and reported hunting-driven population declines in many areas of the species' range. In response to these threats, the CITES Secretariat made a series of recommendations to a number of Parties focusing primarily on strengthening trade controls (Anon. 1999a,b). Notwithstanding implementation of these recommendations (see CITES 1999), high volumes of international trade continued to occur throughout the

1990s, principally destined for China, which significantly surpassed trade reported to CITES (Anon. 1999a,b). In 2000, the CITES Parties established zero export quotas for all wild-caught Asian pangolin specimens traded for commercial purposes (CITES 2000a). As of 2000, only a small volume of trade in pangolins has been reported to CITES; however, seizure data indicated that a substantial illegal trade continued to occur. Despite additional protection afforded to *M. culionensis* through the Philippine Wildlife Act and under the Palawan Wildlife Resources Conservation and Protection Act (Schoppe and Cruz 2009; Lagrada 2009), and despite the Philippines having made illegal the export of all wild-caught fauna including *M. culionensis* (Schoppe and Cruz 2009), populations of this species are believed to still be in decline. In 2015, the Palawan Council for Sustainable Development in Resolution no. 15.521 classified the Palawan pangolin as critically endangered (PCSD 2016).

As an endemic of the Philippines, *M. culionensis* is highly vulnerable to extinction due to its restricted distribution. In fact, island endemism is one of the most significant predictors of extinction risk (Purvis *et al*. 2000). The species has already undergone heavy population declines (>50%) due to illegal harvest and habitat loss. Given the species' low rate of reproduction it will be impossible for populations to recover given current rates of harvest. This species qualifies for listing on CITES Appendix I because it meets the biological criteria found in Resolution Conf. 9.24 (Rev. CoP16), Annex 1, specifically:

Paragraph B: As an endemic island species the wild population has a restricted are of distribution and is characterized by:

iii) a high vulnerability to intrinsic factors (i.e. low fecundity) and extrinsic factors (habitat loss/destruction);
iv) an observed, inferred or projected decrease in area and quality of habitat due to deforestation, and a decrease in the number of individuals due to overharvest for local and international trade.

Paragraph C: A marked decline in the population size in the wild, which has been:

i) observed as ongoing;
ii) inferred or projected on the basis of a levels and patterns of exploitation, decrease in area and quality of habitat, and a high vulnerability to intrinsic factors (i.e. low reproductive output) and extrinsic factors (habitat loss).

3. Species Characteristics

3.1 Distribution

M. culionensis is endemic to six islands in the Palawan faunal region of the Philippines (Lagrada *et al.* 2014), which together comprise a total area <14,800 km^2. The species inhabits mainland Palawan and adjacent islands including: Busuanga Island(392.90 km^2), Coron Island (689.10 km^2), Culion Island (499.59 km^2), Dumaran Island (435.00 km^2) and Balabac Island (581.60 km^2) (Lagrada *et al.* 2014; area measurements of each island from Wikipedia). On Palawan, which is the largest of the islands, the species is considered to be more abundant in the northern and central parts of Palawan Island and much rarer in the south (Schoppe and Cruz 2007).

3.2 Habitat

M. culionensis is found in lowland primary and secondary forests, grassland/secondary growth mosaics, mixed mosaics of agricultural lands and scrubland adjacent to secondary forests (Esselstyn *et al.* 2004; Heaney *et al.* 1998). Lagrada (2012) recorded an upper elevational limit of 2,015 m. As with other pangolins, *M. culionensis* feeds almost exclusively on the various life stages of termites and ants and therefore is found in areas where these insects are most abundant. An affinity of *M. culionensis* to fig trees (*Ficus* spp.) has been reported, perhaps because these trees provide tree hollows which are used as burrows and because they attract ants (Gaubert 2011; Schoppe and Cruz 2007).

3.3 Biological characteristics

M. culionensis is a primarily nocturnal , solitary, and semi-arboreal mammal. As with all *Manis sp.* their morphology reflects adaptation to a specialized diet of ants and termites (Lekagul and McNeely 1988). *M. culionensis* are adept climbers, using their prehensile tails as supports as they access ant nests in trees. Generation length is estimated to be seven years (Lagrada *et al.* 2014) with breeding possibly occurring in August and September (Schoppe and Cruz 2009).

3.4 Morphological characteristics

In general, all pangolins share a similar morphology likely constrained by their adaptations for feeding on ants and termites. These traits include a conical shaped head, strong claws for breaking apart ant and termite nests, small eyes and thick eyelids, a long, sticky tongue for consuming their prey (Challender *et al.* 2014c), and muscular stomachs with keratinous spines used for mashing their prey, as they have no teeth (Ganguly 2013). Pangolins are evolutionarily unique among mammals in that they are covered with hundreds of individual, overlapping keratinous scales (Challender *et al.* 2014c) which they use to protect themselves from predators (Spearman 1967). Asian pangolin species have hairs between their scales, while African species do not (Challender *et al.* 2014c). A threatened pangolin will roll into a ball with the hard, sharp-edged scales on the outside; females will protect their young within the ball. While able to deter most predators (even lions and tigers), this otherwise highly effective anatomy and behavior unfortunately facilitates poaching by humans.

Schoppe and Cruz (2009) noted that one adult male *M. culionensis* specimen measured 450 mm in head-body and 390 mm in tail length and weighed 2700 g while two adults and two sub-adults measured 325-540 mm head-body and 290-500 mm tail. Average weight is 2.5 – 8 kg (Gaubert 2011).

M. culionensis was recognized as a distinct species from *M. javanica* in the 1990's (Feiler 1998), a finding that was later supported through a comparison of discrete morphological characteristics (Gaubert and Antunes 2005). Gaubert and Antunes (2005) identified 5 diagnostic characters based on both scale patterns and skull traits that differentiated *M. culionensis* from *M. javanica*: M. culionensis had 19-21 scale rows compared to 15-18 for *M. javanica*; the size scales in particular regions of the body was smaller in *M. culionensis* than in *M. javanica*; the ratio of head and body to tail length was smaller in *M. culionensis* (1.11+0.03) than in *M. javanica* (1.25+0.13) and the ratio of nasal bone to total skull length was <1/3 in *M. culionensis* and >1/3 in *M. javanica*.

3.5 Role of the species in the ecosystem

Pangolins perform an important ecological role of regulating social insect populations. It has been estimated that an adult can consume more than 70 million insects annually. Up to 200,000 ants may be eaten in one meal (Francis, 2008). In addition, abandoned pangolin burrows become shelters for many other species of animals (Nguyen *et al.* 2014).

4. Status and Trends

4.1 Habitat trends

As discussed in 3.1 and 3.2, *M. culionensis* is distributed in primary and secondary lowland forests on the island of Palawan and smaller surrounding islands. Due to deforestation, the Philippines is one of the most threatened hotspots of global biodiversity (Lasco et al. 2013). The country has lost the majority of its forest cover since the 1980's with approximately 11 percent of primary forest remaining (Hansen *et al.* 2013). Although forest cover loss on Palawan has slowed since the late 1980's, large scale logging continues to rank third among the 10 major threats to Palawan´s biodiversity (Palao *et al.* 2010; Lasmarias, 2004). Illegal logging and conversion of forests to other uses such as shifting cultivation, permanent agricultural crops and industrial tree plantations, particularly for palm oil, were identified as the major causes of forest degradation in Palawan (Orbeta, 2004). According to Global Forest Watch, >69,000 ha of forest were destroyed on Palawan between 2001 through 2013 (Hansen *et al.* 2013). At 3.2 percent, MIMAROPA, or the area formerly known as part of the Southern Tagalog Islands — including the provinces of Mindoro, Marinduque, Romblon and Palawan- had the highest rate of forest loss between 2000 and 2012, accounting for 42 percent of all forest loss in the Philippines during that period.

Human population growth and economic development are major contributing factors to forest loss in the Philippines today (Shively and Martinez 2001). There are now more than 102 million people living in the Philippines. In the last decade, the population growth rate on Palawan has exceeded that of other regions of the Philippines; Palawan's population grew at an annual rate of 2.66 percent from 2000-2010 in contrast to the rest of the Philippines which grew at 1.9 percent during the same time period (Philippines National Statistics Office (NSO) records). Often, protected areas are also impacted. Mallari *et al.* (2013) showed that about 1,500 ha. of forest in the Puerto Princesa Underground River National Park were felled between 2002 and 2007, with land converted for other uses such as agriculture and residential development. Schoppe and Cruz (2007) indicate that habitat loss is

as important a threat as exploitation in driving population declines of *M. culionensis*.

4.2 Population size

M. culionensis is infrequently observed in part due to its increasing rarity, but also because of its elusive, solitary and nocturnal habits. It is suspected to be more common in northern and central Palawan and relatively rare in the south (Schoppe and Cruz 2009). According to local hunters, populations are declining as a result of hunting both for subsistence use and international trade, a trend exacerbated by habitat loss (Schoppe and Cruz 2007; Lagrada 2012). Recent population surveys from six sites covering northern to southern Palawan estimated population densities oat 2.5±1.4 adult individuals per km^2 of good forest habitat (Schoppe and Luz *in prep*.).

4.3 Population structure

Little is known on the population structure for *M. culionensis*. Seizure records, however, may be indicative of high levels of indiscriminate offtake. Due to the long life-expectancy of the species, a consequent lack of recruitment may not manifest as a population reduction for several years, masking the impact of offtake.

4.4 Population trends

It is suspected that *M. culionensis* populations have declined by ≥50% over a period of 21 years (three generations, generation length estimated to be seven years), based on levels of exploitation for trade, including national and international trade, and habitat loss (Lagrada *et al.* 2014). The status of the species has deteriorated since 2008 at which point the species was listed by IUCN as Near Threatened; in 2014 the conservation status of the species was elevated to Endangered (Lagrada *et al.* 2014). Local hunters report populations are declining due to hunting for subsistence and for local and international trade (Schoppe and Cruz 2009; Lagrada *et al.* 2014).

4.5 Geographic Trends

Although *M. culionensis* only occurs on six islands in the Philippines, there is limited information available on specific geographic trends. Most information on geographic specific population trends has been acquired anecdotally. For example, according to hunters from the municipality of Brookes Point on Palawan, capture of pangolins per unit effort has purportedly decreased which may be a consequence of declining populations (Lagrada 2012).

5. Threats

The primary threats to *M. culionensis* are hunting for local use of its meat, scales and skin (Esselstyn *et al.* 2004), an increasing international trade with East Asia, and deforestation associated with illegal timber harvest and agriculture (Schoppe and Cruz 2009; Challender *et al.* 2015). The species was reported as being heavily hunted in the 1990's (Heany *et al.* 1998), as well as in more recent years (Esselstyn *et al.*2004). Although the full extent of illegal trade in *M. culionensis* is unknown, there appears to have been an increase over the past decade. For example, between 1999 and 2012 there was an rise in the number of confiscations and number of confiscated *M. culionensis* pangolins, which may be indicative of either an increase in demand and/or trade or improved law enforcement (KFI 2013). According to the Katala Foundation, between 1999 and 2009 47 animals were seized, but between 2010 and 2012, confiscations involved 369 animals (KFI 2013). Deforestation has been a chronic problem in the Philippines for many decades and continues today primarily for agricultural expansion, both subsistence and for industrial plantations such as for oil palm (see Section 4.1 for details).

6. Utilization and Trade

6.1 National utilization

M. culionensis is hunted at a local, subsistence level for consumption of its meat and for trade at a national level (blood, meat, skins and scales), although the market for pangolins in Manila today may be quite limited (Cruz *et al.* 2007, Esselstyn *et al.* 2004; Schoppe and Cruz 2009). Interviews with local farmers and hunters on Palawan confirmed that numerous villages (including Dumarao, Sandoval, Mendoza and Magara in Roxas and Capayaz in Dumaran) were involved in pangolin trade in the 1980s, supplying Puerto Princesa City with pangolin meat and scales (Schoppe and Cruz 2009). Ex-poachers on Dumaran Island stated that pangolins are still abundant on the island and that they were hunted by the locals for food consumption until few years ago, possibly due to the

implementation of conservation programs in the area (Schoppe and Cruz 2009).

6.2 Legal trade

Local and international trade in *M. culionensis* is illegal (Schoppe and Cruz 2009). Hunting, including subsistence hunting, and trade is prohibited under The Philippine Wildlife Act and under the Palawan Wildlife Resources Conservation and Protection Act (Schoppe and Cruz 2009; Lagrada 2009); and in 1994 the Philippines stopped the export of all wild-caught fauna including *M. culionensis* (Schoppe and Cruz 2009). Since 2000, Asian pangolin species, including *M. culionensis*, have been listed on CITES Appendix II with a zero export quota of wild specimens for primarily commercial purposes. Between 2007 and 2014, 14 *M. culionensis* specimens were listed in trade from the Philippines to the United States, Canada and France, all for scientific purposes. However, no imports were recorded. Because *M. culionensis* was only recently recognized as a separate species by CITES, trade prior to 2007 would have been recorded as *M. javanica*. According to the UNEP-WCMC trade database, the only records of trade from the Philippines prior to 2007 were from 1982 to 1992. Exports included 2 pangolin bodies, 8428 skins, 1 pair of shoes, 537 live animals, and 3 leather items to Japan and the United States (UNEP-WCMC 2016).

6.3 Parts and derivatives in trade

Meat, scales, skin, whole animals, and live animals (Lagrada *et al.* 2014).

6.4 Illegal Trade

Hunting and domestic trade in *M. culionensis* are prohibited (Schoppe and Cruz 2009). Nonetheless, pangolins are hunted and traded locally for food and medicine in Palawan and are also traded from Palawan to Manila (Esselstyn *et al.* 2004; Lagrada 2009; Schoppe and Cruz 2009). Traders within the Philippines are often not full-time but have other wildlife-related businesses such as transporting marine fish and birds (Schoppe and Cruz 2009).

Pangolins poached in Palawan are also illegally traded to Malaysia and then on to China (Schoppe and Cruz 2009). In one case described in Shoppe and Cruz (2009), hunters transport live poached pangolins by motorcycle from the areas where they were collected (villages of Bataraza, Rizal and Quezon) to the trader's house (in Bataraza); the trader tries to keep the pangolins alive at his house until he has at least ten; he takes them by his private boat to Sitio Sapa on the west coast of Batarazato where more pangolins are added; then he takes these on the same boat to Balabac where they are transferred to large passenger boat destined for Sandakan or Kudat, in Sabah, Malaysia; the buyer in Sabah is a middleman who supplies a Chinese pangolin trader who exports the pangolins to China for use in traditional Chinese medicine.

Zhang *et al.* (2015) examined scale samples from two confiscations in Hong Kong, one in 2012 and one in 2013, using molecular tracing methodology and found that most where *M. javanica* and speculated that the others may have been *M. culionensis*.

The price for live pangolins paid to hunters in Palawan more than doubled in one year, from USD1.5/kg in 2006, to USD3.8/kg in 2007, and then increased again to USD4.3/kg in 2008 (Schoppe and Cruz 2009). The price paid once the pangolins reach Malaysia is more than five times this price: USD 24.6/kg is paid by the Malaysian importer to the Palawan exporter. During one month, in April 2008, 2000 kg of live pangolin were transported out of Palawan according to the National Bureau of Investigation (Lagrada 2009).

Obtaining detailed quantified data on the scale of illegal trade is challenging. The table below summarizes confiscations indicating the nature of illegal trade in recent years.

Table 1. Summary of confiscations and other reports of illegal trade involving *M. culionensis* between 2012 and 2015.

Date	Details
2012, January	95kg of scales seized in an airline cargo at Puerto Princesa City International Airport.
2012, January	26.5kg of meat seized in an airline cargo at Puerto Princesa City International Airport.
2012, March	4kg of scales seized in Taytay, Palawan.

2012, March	1.1kg of scales seized in Taytay, Palawan.
2012, May	20kg of meat seized at Liminangcong Pier in Taytay, Palawan.
2012, June	250g of scales seized in Coron, Palawan.
2012, June	16.6kg seized in an airline cargo at Puerto Princesa City International Airport.
2014, January	0.333kg of scales and 1 whole body without scales and internal organs were seized in Puerto Princesa City, Palawan.
2014, January	19 whole bodies without scales and internal organs were seized in Puerto Princesa City, Palawan.
2014, January	19 whole bodies without scales and internal organs were seized in El Nido, Palawan.
2014, February	17 whole bodies without scales and internal organs were seized in Puerto Princesa City, Palawan.
2014, March	4.05kg of scales were seized in Puerto Princesa City, Palawan.
2014, May	4kg of scales were seized in Puerto Princesa City, Palawan.
2014, May	3.55kg of scales were seized in Coron, Palalwan.
2015, April	1 live pangolin was seized.

In the decade preceding 2014, an estimated one million pangolins were taken from the wild for illegal international trade, making pangolins the "most heavily trafficked wild mammal in the world" (Challender *et al.* 2014c). There have been numerous seizures of pangolins and their parts in recent years. However, most seizures do not identify the species of pangolins involved, making the true scale of illegal international trade in any one pangolin species impossible to ascertain. The difficulty of identifying pangolins and their parts and products in trade to the species level complicates enforcement. Enforcement is especially problematic when pangolin species have different levels of protection as is currently the case. While it is possible to distinguish amongst pangolin species when they are whole specimens or live animals (Challender *et al.* 2014), it is not possible to visually identify dried, loose and powdered scales to the species level (Hsieh *et al.* 2011). DNA analysis can be used to identify scales to the species level for forensic purposes, but it is not feasible for law enforcement officials to employ such analytical tools for every seizure (Hsieh *et al.* 2011).

6.5 Actual or potential trade impacts

M. culionensis is threatened by international trade in meat, skin, scales and whole animals to Malaysia and from there to China for use in traditional Chinese medicine (Cruz *et al.* 2007; Lagrada 2009; Schoppe and Cruz 2009; Lagrada *et al.* 2014). The species has been subjected to heavy hunting pressure (Heaney *et al.* 1998; Esselstyn *et al.* 2004). Signs that trade is negatively impacting the species include a decrease in catch-per-unit-effort of hunters in Brookes Point on Palawan (Lagrada 2012), an increase in number of confiscations and confiscated animals in the Philippines from 2009-2012 (KFI 2013), and an increase in prices paid, and a shift from trade in meat and live animals to scales between 2006-2013 (Lagrada *et al.* 2014). The species is now rare in southern Palawan (Schoppe and Cruz 2009) and this may be due to over-exploitation in this area as it is located closer to Malaysia which is an illegal trade destination for poached pangolins; the species is more common in central and northern Palawan (Esselstyn *et al.* 2004). Respondents to a 2006 survey conducted in the Calamianes group of islands state that *M. culionensis* used was once very common but that hunting for trade and subsistence led to its decline there (Schoppe and Cruz 2009).

The IUCN Pangolin Specialist Group identified hunting and poaching for illegal international trade in live animals, meat and scales primarily destined for Asia, mainly China and Viet Nam, as the main threat to pangolins (Challender *et al.* 2014c). In the decade preceding 2014, an estimated one million pangolins were taken from the wild for illegal international trade, making pangolins the "most heavily trafficked wild mammal in the world" (Challender *et al.* 2014c).

Asian pangolins have been included in CITES Appendix II since 1975. On the basis that trade levels were potentially unsustainable in the 1980s, each species was included in the Review of Significant Trade (RST) process in 1988 (preliminary phase) (Broad *et al.* 1988), 1992 (phase I) (Reeve, 2002) and 1999 (phase IV). *M. pentadactyla* and *M. javanica* were also candidate species for the RST in 2004 (post-CoP13 phase). These reviews documented high

volumes of illegal, international trade in Asian pangolins and reported hunting-driven population declines in many areas of the species' range. In response, a series of recommendations were made to a number of Parties which predominantly focused on strengthening trade controls. However, high volumes of international trade, mainly in skins, continued to occur throughout the 1990s and Asian pangolins were subsequently included in phase IV of the RST process in 1999 (see Anon 1999a,b). These reviews again concluded that the species were subject to extremely heavy hunting pressure, in particular *M. pentadactyla* and *M. javanica*, resulting in major populations declines, and that illegal trade, much of which was destined for China, dwarfed trade reported to CITES (see Section 4.1; Anon. 1999a,b). In 2000, the Asian pangolin Range countries established zero export quotas for all wild-caught Asian pangolins traded for primarily commercial purposes (CITES, 2000a)(See Section 6.4). The impact of international trade was one of the major factors used by the IUCN to determine the reclassification of *M. culionensis* from Threatened to Endangered on its Red List of Threatened Species (see also Sections 4.4, 6.2, 6.4 of this document).

7. Legal Instruments

7.1 National

The entirety of Palawan province was declared a game refuge and bird sanctuary in 1969 (Proclamations 219 and 530-B). *M. culionensis* is classified as 'Critically Endangered' under the Philippine Wildlife Act 9147 (2001), which bans the collection of any form of wildlife in the Province of Palawan without a permit. The Act establishes strong penalties for actions against species listed as Endangered including (table from Schoppe and Cruz 2009).In addition, the Philippines made illegal the export of all wild-caught fauna in 1994 (Schoppe and Cruz 2009).

Table 2: Offences and penalties under the Wildlife Act if dealing with the Palawan pangolin or other species that are classified *Endangered* in the Act.

Offence Under Republic Act 9147	**Endangered (EN)**
Killing and destroying wildlife species	4-6 years imprisonment and/or USD1219-12 192 fine
Inflicting injury which cripples and / or impairs the reproductive system of wildlife species	2-4 years imprisonment and/or USD731-7315 fine
Trading of Wildlife	1-2 years imprisonment and/or USD487-4876 fine
Collecting, hunting, possessing wildlife, their by-products and derivatives. Gathering or destroying of active nests, nest trees, host plants and the like.	1-2 years imprisonment and/or USD487-4876 fine
Maltreating and / or inflicting injuries not covered by the preceding paragraph.	3-6 months imprisonment and/or USD487-1219 fine
Transporting of wildlife	3-6 months imprisonment and/or USD487-1219 fine

7.2 International

This species is listed in CITES Appendix II. Zero export quotas were established for wild-caught specimens traded for primarily commercial purposes in 2000 (CoP11).

8. Species Management

8.1 Management measures

Neither species management plans nor regulatory mechanisms governing capture, holding, transport and export exist.

8.2 Population monitoring
There are no population monitoring programs focusing on this species in the Philippines.

8.3 Control measures
8.3.1 International
There are no international measures in place other than CITES to control the movement of *M. culionensis* specimens across international borders. However, the Philippines is a member of the Association of Southeast Asian Nations Wildlife Enforcement Network (ASEAN-WEN), a regional network with a mission to strengthen, promote and coordinate regional cooperation for curbing illegal wildlife trade that threatens wild flora and fauna in Southeast Asia.

The Philippines participated in COBRA, a multi-regional wildlife law enforcement operation initiated by regional wildlife enforcement agencies/networks comprising Lusaka Agreement Task Force (LATF), ASEAN-WEN, South Asian Wildlife Enforcement Network (SA-WEN) as well as the United States, China and South Africa. The operation was inspired by the need to put into action commitments made by governments and the international community to address wildlife crime. Operation COBRA bridges source, transit and destination countries of wildlife contraband jointly to fight transnational organized wildlife crime. To date, three COBRA operations have been carried out, in 2013, 2014 and 2015.

8.3.2 Domestic
Since *M. culionensis* is endemic only to the province of Palawan in the Philippines, the Palawan Council for Sustainable Development (PCSD) has been vested with the power to implement The Wildlife Resources Conservation and Protection Act (aka, the Wildlife Act #9147). The PCSD has adopted and approved for implementation its Administrative Order # 12 ("Detailed Guidelines in the Implementation of Republic Act 9147 and Joint DENR-DA-PCSD Administrative Order No. 1 as may be made Applicable in the Province of Palawan"). PCSD AO # 12 regulates the export and import of *M. culionensis* from and to the province. In 2014, the PCSDS joined Operation COBRA, a global operation aimed to combat wildlife poaching and trafficking.

8.4 Captive breeding and artificial propagation
While few pangolins have been successfully kept in captive conditions (notably *M. javanica* in the Singapore Zoo and *M. pentadactyla* in the Taipei Zoo), in general, pangolins do not survive well in captivity and can suffer high mortality rates (up to 70%) in the first year of captivity (Wilson 1994). Over the last 150 years, more than 100 zoos or other wildlife organizations have attempted to keep pangolins. Most of the animals died within six months to 3 years (Yang *et al.* 2007). Hua *et al.* (2015) provided a recent review of pangolins in captivity and concluded that poor adaptability to captive environments, highly specialized natural diet, poor understanding of pangolin's reproductive biology, and weak immune systems are some of the challenges underlying poor survival and breeding in captivity. Because pangolins have never been consistently bred in captivity, the IUCN Pangolin Specialist Group gave "conservation breeding" the lowest priority rating possible (four out of a scale from one to four) in their July 2014 Conservation Action Plan (Challender *et al.* 2014c).

8.5 Habitat conservation
Deforestation in Palawan is a significant problem and is as serious a threat to the viability of *M. culionensis* populations as direct exploitation for trade (Schoppe and Cruz 2007). No areas have been protected specifically for the conservation of *M. culionensis* although the species can be found within two large protected areas, Puerto Princesa Subterranean River National Park (22, 202ha) in Central Palawan and Mt. Matalingahan Protected Landscape (120,457 ha) in Southern Palawan. Poaching is prevalent in both parks, which are difficult to monitor given their large extent. Poaching also occurs in the 1500 ha Dumaran Island Critical Habitat in northwestern Palawan declared in 2013. The 400 ha lower Ilian-Ilian Masaya I, Maharlika Protected Watershed Area in Northern Palawan declared in 2013 is relatively well protected and has no reports of pangolin poaching from last year.

8.6 Safeguards
Other than the legal instruments previously described, no safeguards are in place for this species.

9. Information on Similar Species

All four species of Asian pangolins are morphologically similar with differences in the number and size of scales, size of foreclaws and ears and the ratio of head and body to tail length (Wu *et al.* 2004; Gaubert and Antunes, 2005). *M. pentadactyla* has relatively longer front claws, larger ears, and fewer rows of scales on the tail (14 to 17 instead of about 30) than *M. javanica* (Wu *et al.* 2004). Although morphologically similar to *M. javanica* and *M. pentadactyla,* the scales of *M. crassicaudata* are relatively larger than those of *M. pentadactyla* and have 11–13 rows of scales across the back compared to 15–18 rows in *M. pentadactyla* and up to 30 rows of scales in *M. javanica*. A terminal scale is also present on the ventral side of the tail of *M. crassicaudata*, but absent in *M. pentadactyla* (Pocock, 1924; Heath, 1995; Prater, 2005). Interscale bristles are unique to Asian pangolins (they are absent on African pangolin species, Challender, 2011).

Scales are the most common derivatives found in trade and it is difficult to confirm species identity from isolated scales of the four species of Asian pangolins. DNA forensic studies have been applied to species identification from pangolin scales (Hsieh *et al.* 2011) and Zhang *et al.* (2015) have recently shown that molecular tracing of confiscated pangolin scales is also feasible.

10. Consultations

M. culionensis is endemic to the Philippines and therefore no further consultations are needed.

11. Additional Remarks

From 24 to 26 June 2015, the Philippines attended the First Pangolin Range States Meeting, which was co-hosted by the governments of Viet Nam and the United States of America and organized and facilitated by Humane Society International,. The meeting brought together delegates from 29 African and Asian pangolin range States, the Secretariat, one non-range State, pangolin experts and non-governmental organizations. This meeting gave pangolin range States an opportunity to develop a unified action plan to protect the eight pangolin species, including *M. culionensis*, against over-exploitation as a result of international trade. Participants agreed on a suite of recommendations addressing enforcement, conservation, implementation, and data collection challenges concerning pangolin over-exploitation as a result of illegal and unsustainable legal trade. The recommendations agreed upon at the workshop were shared with the CITES Pangolin Working Group s by the workshop organizers. Participants of the meeting – including Asian range State representatives present – evaluated each Asian pangolin species and agreed that each Asian pangolin species qualifies for inclusion in CITES Appendix I in accordance with CITES Res. Conf. 9.24 (Rev. CoP16). Details of the assessment can be found in the report of the First Pangolin Range States Meeting, which was provided to the twenty-eighth meeting of the CITES Animals Committee (AC28; Tel Aviv 2015) as information document AC28 Inf. 23 and to the sixty-sixth meeting of the CITES Standing Committee (SC66; Geneva 2016) as SC66 Inf. 6. An abbreviated report of the meeting consisting of the recommendations in the three official languages of CITES was submitted for discussion at SC66 (SC66 Doc. 50.2). A link to the report can also be found at: http://www.fws.gov/international/pdf/first-pangolin-range-states-meeting-report-8-3-2015.pdf. In addition, a link to an archive of the presentations given at the First Pangolin Range States Meeting can be found at: http://www.fws.gov/international/publications-and-media/archive.html#pangolins.

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