

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



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

CONSIDERATION OF PROPOSALS FOR AMENDMENTS TO APPENDICES I AND II

A. Proposal

The proponents propose the transfer of *Manis tetradactyla*, *M. tricuspis*, *M. gigantea* and *M. temminckii*, from CITES Appendix II to Appendix I in accordance with Article II, paragraph 1, of the Convention. Specifically, all four species meet 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. low reproductive output, low density, specialized niche requirements) and extrinsic (i.e. a decrease in the area and quality of habitat) factors, and a reduction in recruitment due to indiscriminate offtake.

B. Proponents

Central African Republic ,Chad, Côte d'Ivoire, Gabon, Guinea, Kenya, Ivory Coast, Liberia, Nigeria, Senegal, South Africa,Togo and United States.

C. Supporting statement

1. Taxonomy

1.1 Class: Mammalia

1.2 Order: Pholidota Weber 1904

1.3 Family: ManidaeGray 1821

1.4 Genus, species or subspecies (including author and year):

Manis tricuspis(Rafinesque 1821)

Manis tetradactyla(Linnaeus 1766)

Manis gigantea (Illiger 1815)

Manis temminckii(Smuts 1832)

1.5 Scientific synonyms:

Manis gigantea:*Smutsia gigantea* (Smuts, 1832); *Phataginus gigantea* (Grubbet *al.*, 1998)

Manis temminckii: *Smutsiatemminckii*(Smuts, 1832) *Phataginus temminckii* (Grubbet *al.*, 1998)

Manis tricuspis: *Phataginustricuspis* (Grubbet *al.* 1998)

Manis tetradactyla:*Phataginus tetradactyla*(Grubbet *al.* 1998); *Uromanis tetradactyla*(McKenna and Bell,1997)

1.6 Common names:

Scientific name	English	French	Spanish
<i>Manistricuspis</i>	African white-bellied pangolin, common African pangolin, African tree pangolin, three- cusped pangolin	petit pangolin	pangolinarboricola

<i>Manis tetradactyla</i>	black-bellied pangolin	pangolin à longue queue	pangolincolilargo
<i>Manis 2omm.2ean</i>	giant ground pangolin; giant Pangolin	pangolingéant	pangolingigante
<i>Manis temminckii</i>	Temminck's ground pangolin, Cape pangolin	pangolin de Temminck	pangolinterrestre

1.7 Code Numbers:

<i>Manis tricuspis</i>	A-108.001.001.007
<i>Manis tetradactyla</i>	A-108.001.001.004
<i>Manis 2omm.2ean</i>	A-108.001.001.002
<i>Manis temminckii</i>	A-108.001.001.006

2. Overview

Pangolins, also known as scaly anteaters, are small to medium sized, primarily nocturnal mammals specialized for foraging on ants and termites (Gaubert 2011). Like elephants and pandas, pangolins are EDGE species (Evolutionarily Distinct and Globally Endangered), meaning they have few close relatives and represent a disproportionate amount of unique evolutionary history (Zhou *et al.* 2014). They are morphologically distinct from all other mammals in that they are covered in an armor of keratinous scales. Their biological attributes make them extremely vulnerable to over-exploitation by humans because they are easily hunted, have a low reproductive rate and low densities, and do not survive or breed readily in captivity (Hoyt 1987; Gaubert 2011; Yanget *al.* 2007; Swart *et al.* 2009). Four of the eight species of pangolin are found in sub-Saharan Africa. The remaining four are distributed in Asia.

All pangolin species are in rapid decline due to heavy poaching pressure, particularly for use of their body parts in traditional medicine, as luxury foods in Asia, and as bushmeat throughout their range (Challender and Hywood 2012; Challender 2011). Based on confiscations of illegally traded wildlife, it is estimated that over one million Asian and African pangolins were traded in the past decade, a staggering number that excludes animals killed for local consumption (D. Challender, IUCN Pangolin Specialist Group Co-Chair, *pers. 2omm.* April 2016; Challender 2014). In Africa, pangolins are legally protected in many range countries, yet large-scale poaching continues due to a demand for their parts and products, and a lack of enforcement resources (First Pangolin Range States Meeting Report 2015). Pangolins in Africa are heavily harvested for domestic bushmeat and traditional medicine, and hunting for domestic use may already be at unsustainable levels in many range countries (Boakyeet *al.* 2016; Boakyeet *al.* 2015; Boakyeet *al.* 2014; Fa *et al.* 2006; Soewu and Ayodele 2009). For decades, pangolins have been traded internationally primarily for their skin for leather manufacturing, while their scales and meat have been regionally exploited for traditional medicine and food both in Asia and Africa. Today's international market is almost entirely driven by demand for pangolin scales and meat (Boakyeet *al.* 2015; Boakyeet *al.* 2014; Challender 2012; Challender 2011). The increasing scarcity of pangolins in Asia, however, has led to an escalation in market prices which is now driving the illegal poaching of African species (Challender 2014; Zhou *et al.* 2014). Since 2008 alone, the price of pangolin scales in China's Yunnan Province has increased from \$300 to \$600 per kilogram (Zhou *et al.* 2014). Similar trends are seen in Africa. In Nigeria, for instance, the price of pangolins has increased 10 fold in the last five years (E. Ehi-Ebewele, Deputy Director, Federal Dept. of Forestry, Nigeria, *pers. 2omm.* Feb. 2016). In addition, increasing economic affluence in China and Viet Nam has created a growing market for pangolin derivatives (Challender 2014). Confiscations of pangolins and their parts by customs authorities, often bundled in shipments with elephant ivory, have confirmed an increase in trade from African sources (Table 1) (Challender and Hywood 2012). Confounding attempts to regulate trade is the difficulty in differentiating between pangolin species once their scales have been removed (Challender 2011). It is partly for this reason that African species were listed on Appendix II along with Asian species (CITES CoP9 Prop. 7. 1994). Despite being protected throughout most of their African range, and despite an Appendix II listing, African species are increasingly being found in illegal trade, and it is expected that this trend will continue or increase as Asian species become commercially extinct (Challender 2011).

Table 1: Confiscations of African pangolin species (live and derivatives) sourced for Asian markets between 2013 and 2015 based on media sources. Note for reference to scales: one pangolin is estimated to yield between 360g – 570g of scales in trade based on estimates obtained from Asian species *M. pentadactyla* and *M. javanica* (Zhou *et al* 2012). The World Customs Organization suggests that 3 – 4 pangolins are required to produce 1 kg of scales (World Customs Organization 2013). Data collected by TikiHywood Trust on African pangolins shows that African pangolins can yield 600-3600g of scales depending on the species (L. Hywood, Director, TikiHywood Trust, *pers.comm.* April 2016).

Date	Size of Seizure	Estimated market value	Location of Seizure and additional comments	Source country	Source of information
December 12, 2015	324 kg scales		Seized along with 505 kg elephant ivory at Changi Airfreight Center, Singapore together worth \$1.3 million	Lagos, Nigeria	Channel news Asia http://www.channelnewsasia.com/news/singapore/illegal-ivory-pangolin/2354944.html
December 18, 2015	587 kg scales		Seized along with 800 kg elephant ivory at SuratThani international airport, Thailand. Date of seizure: Dec. 10, 2015 together worth \$1.1 million	Nigeria, via Singapore	Bangkok Post http://www.bangkokpost.com/news/general/799200/b40msmuggledivorypangolinscalesseized
May 2015	270 kg scales		Seized in Shanghai; two separate confiscations	Nigeria	Shanghai Daily.com “Shanghai customs seizes 270kg shipment of pangolin scales” http://www.shanghaidaily.com/metro/Shanghai-customs-seizes-270kg-shipment-of-pangolin-scales/shdaily.shtml
February 2015	1000 kg scales		Seized by Hong Kong customs agents	Kenya	News.gov.hk: http://www.customstoday.com.pk/hong-kong-customs-seizes-contraband-1-tonne-of-pangolin-scales-from-shipping-container/
January 21, 2015	2,029 kg scales		Seized by Uganda Wildlife Authority. Shipment slated for Amsterdam and falsely labeled as telecommunication equipment.	Uganda	http://annamiticus.com/2015/01/28/ugandan-ngo-suing-wildlife-authority-pangolin-scale-debacle/
January 2015	7310 kg scales	\$4.2 million	In July 2014 the Uganda Wildlife Agency (UWA) issued a permit for the export of over 7000 kg of <i>M. 3omm.3ean</i> scales (reportedly all from old wildlife trophies held by communities across the country and from and UWA stores) to Laos. NGO Greenwatch Uganda filed a lawsuit against UWA in January 2015 just prior to expiration of lawsuit to stop the export delaying it pending a hearing. In June 2015 the lawsuit on the shipment of scales was dismissed. Uganda CITES Management Authority maintains that the export was legal under Ugandan law even though there was no non-detriment finding (NDF) made and since population estimates of all pangolin species in Uganda are unavailable anywhere in the scientific literature, there is no basis for the NDF.	Uganda	http://mobile.monitor.co.ug/News/News/NGO-sues-UWA-over-wildlife-licence/-/2466686/2603858/-/format/xhtml/-/1vksi5z/-/index.html http://www.monitor.co.ug/News/National/Court-stops-UWA-from-issuing-pangolin-licences/-/688334/2641488/-/8sc0fg/-/index.html Additional source: CITES permits obtained from Uganda government
October 2014	320 kg scales		Seized by Hong Kong customs agents	Africa	News.gov.hk: http://www.customstoday.com.pk/hong-kong-customs-seizes-contraband-1-tonne-of-pangolin-scales-from-shipping-container/
June 11, 2014	2,100 kg scales	\$1.5 million	115 bags of scales seized by Hong Kong customs agents; represents approximately 4,000 animals	Cameroon	“Pangolin scales worth HK\$17m found hidden in shipments from Africa Web. 17June. 2014” http://www.scmp.com/news/hong-kong/article/1534140/pangolin-scales-worth-hk17m-found-hidden-shipments-africa

May 28, 2014	900 kg	\$300,000	40 bags of scales seized by Kwai Chung Custom House, Hong Kong. Probably <i>M. temminckii</i>	Uganda via Kenya	Pangolin scales worth HK\$17m found hidden in shipments from Africa Web. 17 June. 2014 http://www.scmp.com/news/hong-kong/article/1534140/pangolin-scales-worth-hk17m-found-hidden-shipments-africa
April 2013	80 kg		Cameroon based Wildlife NGO LAGA reported that the sacs of scales had been seized in Limbe from a Chinese national	Cameroon	http://annamiticus.com/2013

The rapid rates of deforestation and agricultural land conversion in west and central Africa are compounding population declines caused by hunting. Three African pangolin species are found in west Africa where it is estimated that 80% of original forest has been converted to an agricultural mosaic with an estimated loss of 10 million hectares (ha) of forest in the twentieth century (Norris *et al.* 2015). Drivers of deforestation include human population growth and the accompanying increase in urban food demands. In particular, monocultures of farmed cacao have driven deforestation in many parts of west and central Africa which produces 70% of the world's cocoa. Reductions in pangolin densities and distribution are believed to be most pronounced in areas converted for agriculture (Pietersenet *al.* 2014b). Lastly, entanglement in electrified fences associated with ranching and farming has further intensified population declines for African pangolins (Beck 2008; Pietersenet *al.* 2014b).

In 2013, the 1st IUCN Pangolin Specialist Group (SG) Conservation Conference convened to assess knowledge gaps in pangolin conservation. At that conference, it was established that populations of all four African species, which are now classified as 'Vulnerable' by the IUCN, are in decline and threatened with extinction (IUCN 2015). In 2014 at the 27th meeting of the Animal Committee (AC27)(Vera Cruz 2014), the Animals Committee recommended the inclusion of *M. 4omm.4ean* and *M. tricusps* as species of priority concern for Review of Significant Trade ([AC27 Sum.4 \(Rev.1\)](#)).

In 2014, the IUCN assessed the conservation status of pangolin species and found all eight to have decreasing population trends and to be threatened with extinction. The four African species are classified as 'Vulnerable' (Pietersenet *al.* 2014; Waterman *et al.* 2014a,b,c), while two Asian species are 'Critically Endangered' (*M. javanica*: Challenderet *al.* 2014b; *M. pentadactyla*: Challenderet *al.* 2014c), and two others are 'Endangered' (*M. crassicaudata*: Bailleet *al.* 2014; *M. culionensis*: LaGradaet *al.* 2014). As a result of increased demand, African species are believed to have declined by 30-40% in the past decade, and projected to continue declining by as much over the next twenty years (Pietersenet *al.* 2014; Waterman *et al.* 2014a,b,c).

A review of the best available information on the trade and status of the four African pangolin species (*M. tricusps*, *M. tetradactyla*, *M. 4omm.4ean*, and *M. temminckii*) shows that all four species are or will likely be affected by trade, and that they all meet 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 ongoing decline in population size due to a dramatic increase in international trade in African pangolin species in the last 5 years [see Table 1 and sections 5.1, 5.2, 6.4, 6.5]. Also noting that the 30-40% population decline recently determined by the IUCN is possibly an underestimate since there is incomplete information on pangolin generation lengths (First Pangolin Range State Meeting 2015; Waterman *et al.* 2014a,b,c)[see section 4.4].
- 2) [Criterion C ii] An inferred decrease in recruitment due to the indiscriminate removal of adult pangolins from the wild over multiple generations for exploitation in the 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, behavioral 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 electrocution from electrified fences in converted habitats [see sections 4.1, 5.3 and 5.4].

3. Species characteristics

3.1 Distribution

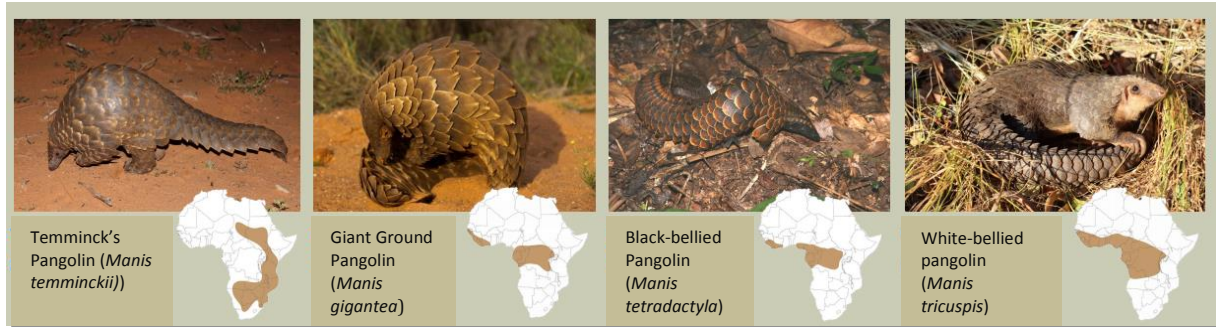


Figure 1. The four species of Pangolin found in Africa. Image taken from Endangered Wildlife Trust www.ewt.org.za

The four African species for which this proposal seeks inclusion or transfer in the Appendices occur in the following range states (Figure 1):

Temminck's pangolin (*Manis temminckii*): Temminck's pangolin is the most widespread African pangolin species. **Native to:** Botswana; Central African Republic; Chad; Kenya; Malawi; Mozambique; Namibia; Rwanda; South Africa; South Sudan; Tanzania, United Republic of; Uganda; Zambia; Zimbabwe. **Possibly extinct in:** Swaziland (Pietersen et al. 2014).

Giant ground pangolin (*Manis gigantea*): **Native to:** Cameroon; Central African Republic; Congo; The Democratic Republic of Congo; Côte d'Ivoire; Equatorial Guinea (Bioko, Equatorial Guinea (mainland)); Gabon; Ghana; Guinea; Guinea-Bissau; Kenya; Liberia; Nigeria; Senegal; Sierra Leone; Tanzania, United Republic of; Uganda. **Extinct in:** Rwanda (Waterman et al. 2014c).

Black-bellied pangolin (*Manis tetradactyla*): **Native to:** Cameroon; Central African Republic; Congo; The Democratic Republic of Congo; Côte d'Ivoire; Equatorial Guinea (Equatorial Guinea (mainland)); Gabon; Ghana; Liberia; Nigeria; Sierra Leone (Waterman et al. 2014c).

White-bellied pangolin (*Manis tricuspis*): **Native to:** Angola; Benin; Cameroon; Central African Republic; Congo; The Democratic Republic of Congo; Côte d'Ivoire; Equatorial Guinea (Bioko, Equatorial Guinea (mainland)); Gabon; Ghana; Guinea; Guinea-Bissau; Kenya; Liberia; Nigeria; Rwanda; Sierra Leone; South Sudan; Tanzania, United Republic of; Togo; Uganda; Zambia (Waterman et al. 2014b).

3.2 Habitat

African pangolins inhabit tropical and subtropical forests, dry woodlands, and open savannah regions in tropical and inter-tropical regions of the continent (Pangolin Specialist Group 2014). Although they can occur on livestock farms if afforded protection from human persecution and have been found on palm oil and rubber plantations, they avoid areas of extensive agriculture and human settlements (Challender et al. 2014; Gaubert 2011). The main factors determining the presence of pangolins is the availability of prey and water (depending on the species) (Gaubert 2011). The two arboreal species, *M. tetradactyla* and *M. tricuspis*, are found in both primary and secondary tropical rainforest and require the availability of large trees for shelter. *M. temminckii* is the only African species that lives in arid regions, primarily woodland savannah with moderate to dense scrub (Heath and Coulson 1997), although both species of African ground pangolin (*M. temminckii* and *M. gigantea*) are absent from desert and semi-desert habitat (Heath 1992).

3.3 Biological characteristics

Little is known about the ecology or behavior of any pangolin species. However, based on available data, pangolins are very vulnerable to overexploitation given their low reproductive rate (1 young per year, with 2 offspring on rare occasions). *M. temminckii* is the most well-studied of the African species and yet little is understood about the biology of this species in the wild (Pietersenet *al.* 2014b).

Pangolins are primarily nocturnal mammals that feed almost exclusively on ants and termites. They appear to be highly selective of the ants and/or termites they prey upon and show a seasonality in their diet selection, both are factors which may reduce trophic competition (Gaubert 2011). Foraging specificity is a contributing factor for the poor success in keeping pangolins in captivity. Larger species such as the giant ground pangolin, also consume other arthropods in low quantity (Gaubert 2011). Pangolins have highly developed olfactory organs and likely rely on sense of smell to forage. Pangolins will open termite and ant mounds using their front claws, although insect colonies are not destroyed and recover easily after pangolin raids (Gaubert 2011).

When threatened, pangolins will roll into a ball, exposing only their scaled armor and shielding their face and underparts from predators; a behavioral defense mechanism that is appropriate with natural predators but makes them more vulnerable to overexploitation by humans as they are easily captured when found.

Of the four species found in Africa, two are arboreal (*M. tetradactyla*, *M. tricuspis*) and two are terrestrial (*M. temminckii*, *M. gomm. 6ean.*). Arboreal pangolins will inhabit tree cavities, while terrestrial species burrow underground (fossorial), often using burrows established by other animals such as spring hares (*Pedetes capensis*) or aardvarks (*Orycteropus afer*) (Heath and Coulson 1997). Arboreal species will also forage in trees and use their prehensile tail to anchor themselves while feeding and moving among branches.

All species are solitary and it is believed they meet only to mate. Breeding is poorly documented but may be non-seasonal and continuous. African pangolins likely breed once annually and give birth to one young. A gestation period of 130-150 days has been observed for African species (Gaubert 2011). Young will disperse after about 1 year (Pietersenet *al.* 2014a).

Communication between individuals is poorly understood although senses of smell, taste, and hearing are more developed than vision. Pangolins have highly developed olfactory organs, and olfaction and scent marking seem to play important roles in feeding, sexual and territorial behavior (Gaubert 2011).

M. temminckii home ranges have been estimated at approximately 5.6 – 11 km², with older male pangolins and older individuals of both sexes having larger home ranges than females and younger animals (Pietersenet *al.* 2014a; Heath and Coulson 1997). Pangolins seem to occur at low density with 0.24 – 0.31 individuals/ km² and 0.84 individuals km² reported for *M. temminckii* and *M. tricuspis* respectively (Pietersenet *al.* 2014a; Gaubert 2011).

There are little data on the longevity of any pangolin species in the wild. However, based on available growth rates, the late onset of reproduction, and slow reproductive rate, pangolins are thought to be relatively long-lived, perhaps 20 years or more (Pietersenet *al.* 2014c). According to zoo records, in very rare instances pangolins have survived up to 27 years in captivity. However, more typically, once born in captivity or brought into captivity from the wild, pangolins do not survive more than 2 to 3 years (Hoyt 1987; Wilson 1994; Yang *et al.* 2007). In addition, the majority of records for longevity are based on animals brought into captivity and records of captive births are extremely rare.

3.4 Morphological characteristics

Despite their ancient origins, the order Pholidota is one of the smallest and least diverse of the extant placental mammal orders (Gaudinet *al.* 2009). All pangolins share a similar morphology. Their most distinguishing characteristic is their unique armor composed of large, flat overlapping keratinous scales that cover their entire body except for the ventral side of the head and trunk, the foot pads and the inner side of the legs. Contrary to some accounts, the scales are not compressed hair as is the case with rhino horn, nor modified hairs as is the case with porcupine or echidna spines. Rather, the scales are extrusions of the epidermis, homologous to primate nails (Gaubert 2011). When threatened, pangolins will roll into a ball, tucking their face under their tails, their armored scales forming a protective barrier to predators. At birth, the scales are soft but will harden after several days.

Pangolins have a small, conical head with a reduced or absent outer ear, and an elongate body that tapers to a thick tail. They will often opt to use their hind legs for locomotion, their thick and long tail providing counter balance as they walk. They are highly adapted to eating ants and termites (myrmecophagy) and their morphology reflects this specialized diet. Pangolins have large clawed front legs that they use to break into anthills and termite mounds. Arboreal species will use their tails as a prehensile appendage to hang from tree branches as they strip away bark in search of insects. They lack teeth and their jaws have very limited movement. Instead they probe for their prey with a very long, narrow tongue which in the largest species (*M. 7omm.7ean*) can reach a total length of 27.5 inches (70cm). Viscous saliva is secreted onto the tongue by a large salivary gland.

Based on morphological and behavioral characteristics, pangolins were once taxonomically grouped with anteaters, armadillos and sloths (*superorder Xenartha*) (Nowak 1999). However, recent molecular phylogenetic data suggest that the Manidae are sister group to the order Carnivora (du Toit *et al.* 2014; Gaudinet *al.* 2009).

Species specific characteristics (Gaubert 2011):

Species	Weight / size	Scale morphology
<i>M. temminckii</i>	5-120kg / head-body: 40-52cm & tail: 40-52cm; Males may be twice as heavy as females (Heath 1992)	Broad scales; Scales three cusped; 13 dorsal scale rows; scales show a longitudinal, rufous brown to golden color gradient
<i>M. gigantea</i>	c. 30kg / head-body: 67-81cm; tail: 58-68cm; Males larger than females	Scales uniformly colored beige to gray-brown; 15-16 dorsal scale rows; on juveniles and subadults, scales on posterior margin are tri-cusped, but cusps disappear with age due to natural abrasion.
<i>M. tricuspis</i>	1.6 – 3 kg / head-body: 25-43cm; tail: 35-62cm; Males larger than females	Little three-cusped pine cone-like scales. Scales longer than wide; 19-25 dorsal scale rows; scales uniformly colored, from brownish-gray to rufous and yellowish-brown.
<i>M. tetradactyl</i>	2-3.5kg / head-body: 30-40cm; tail: 55-70cm; Sexual dimorphism unknown.	Scales are golden in color; 13 dorsal row scales.

3.5 Role of species in its ecosystem

Pangolins are highly adapted to feed on ants and termites (myrmecophagy), and therefore trophic competition between pangolins and other groups of mammals is rare. The only other ant-feeding specialist from Africa is the aardvark (*Orycteropus afer*) which overlaps in range with three pangolin species (Gaubert 2011). Pangolins consume large quantities of ants and/or termites and as a result may aid in population control of those arthropods. It has been estimated that an adult can

consume more than 70 million insects annually and up to 200,000 ants may be eaten in one meal (Francis 2008).

4. Status and trends

4.1 Habitat trends

Habitat loss, destruction and/or degradation threaten all four African pangolin species (Pietersenet *al.* 2014; Waterman *et al.* 2014a,b,c). Africa continues to have one of the highest global rates of primary forest loss (FAO 2010). Therefore, habitat loss and degradation likely pose some level of threat to African pangolins even though correlative research is lacking. Three pangolin species are found in west Africa where it is estimated that 80% of original forest has been converted to an agricultural mosaic with an estimated loss of 10 million ha of forest in the twentieth century (Norris *et al.* 2015). Drivers of deforestation include human population growth and the growth in urban food demands. Cocoa farming has also become a major driver of deforestation in west Africa and central Africa which produce around 70% of the world's cocoa. Cote d'Ivoire alone supplies 40% of global production (Rufet *al.* 2015). Data on biodiversity loss in this region are limited and further studies are needed to assess population changes in space and time for pangolins and other species (Norris *et al.* 2015). The use of pesticides in agricultural areas may be a particular concern as some pangolin species have shown possible sensitivity to such chemicals (Heath 1992).

4.2 Population size

Partly due to their elusive nature, all species of African pangolins are understudied and the status of specific geographic populations in the wild is poorly known. The most abundant species is believed to be the *M. tricuspis* and the species most likely to be found in trade (Boakye *et al.* 2016; Gaubert 2011). The least frequently recorded of all African pangolin species is *M. tetradactyla*, which may reflect the inaccessibility of its range habitat by humans (Gaubert 2011; Waterman *et al.* 2014a).

Limited data on population densities are available for *M. temminckii* and *M. tricuspis*. Studies of *M. temminckii* in the northern Cape Province of South Africa (Kalahari desert) showed average densities between 0.24 – 0.31 individuals/km² (Pietersenet *al.* 2014a). In the Gokwe district of Zimbabwe in 1997 densities were recorded as 0.11 individuals/km² (Heath and Coulson 1997). However, it is possible that populations have decreased since the time of study (Pietersenet *al.* 2014c). *M. temminckii* has been observed to use the same home ranges for several years (Heath and Coulson 1997; Pietersenet *al.* 2014c). According to one study, *M. tricuspis* is able to thrive in "relatively high densities in suitable habitat." Population density in the Lama Forest Reserve in Benin averaged 0.84/km² during the dry season and did not vary significantly between plantations and forest. Although, preferred habitat did depend on the presence of termite mounds (Akpona *et al.* 2008).

According to the Management Authority of Uganda, in 2014 the Uganda Wildlife Authority, the Japan International Cooperation Agency (JICA), WSS Services Uganda Limited and China Gezhouba group Company Ltd. (CGGC) conducted a survey of *M. 8omm.8ean* using camera traps and estimated there to be 2,172 individuals of that species in Uganda (6 individuals/200km²) (J. Lutalo, Director of Tourism, Wildlife and antiquities, Uganda, *pers.comm.* Feb. 2016).

4.3 Population structure

Pangolins are solitary animals and males and females will come together only to mate (Heath and Coulson 1997), although breeding behavior is poorly understood. Male home ranges may be considerably larger than females, and may overlap with several females (Gaubert 2011). Males become sexually mature later than females and take longer to establish home ranges. There are no data on sex ratios.

4.4 Population trends

According to the recent (2013) IUCN Red List assessment, all four African Pangolin species are in decline and listed as 'Vulnerable' (Waterman *et al.* 2014 a,b,c; Pietersen *et al.* 2014a). Large scale local bushmeat hunting and use in traditional medicines both locally and in Asia are very likely causing population declines for all four African species. IUCN Red List assessments found the following population trends that are based on historical and contemporary trade data and market information, supported by social science research in range States.

- *M. gomm.lean* has already begun declining and will continue to decline by at least 40% over a 27 year period (nine years past, 18 years future) (Waterman *et al.* 2014c);
- *M. temminckii* has an inferred past/ongoing and projected future population reduction of 30-40% over a 27 year period (generation length 9 years) (Pietersen *et al.* 2014c);
- *M. tricuspis* has already begun declining and will continue to decline by at least 40% over a 21 year period (seven years past, 14 years future) (Waterman *et al.* 2014b);
- *M. tetradactyla* is projected to undergo a population decline of at least 30-40% over a 21 year period (seven years past, 14 years future; generation length estimated at seven years) (Waterman *et al.* 2014a).

4.5 Geographic trends

Decimation of Asian pangolin populations by unrelenting harvest to satiate local and international demand foretells geographic trends for African pangolin species. Declining population trends have been noted in each of the four African species and it is suspected that pangolins have been eradicated from parts of their historic range. For example, *M. temminckii* is locally abundant and distributed throughout several protected areas but has likely been extirpated from Swaziland and parts of South Africa (Pietersen *et al.* 2014c; Gaubert 2011). *M. gomm.lean*, already locally rare, is now likely extinct in Rwanda (Waterman *et al.* 2014c). The Management Authority for Nigeria noted that pangolins have been almost completely extirpated from savannah habitat and other parts of northern Nigeria, although some populations may still exist in the forest zones of the south-west and southern parts of the country, although in general pangolins are considered very rare and endangered (E. Ehi-Ebewele, Deputy Director, Federal Dept. of Forestry, Nigeria, *pers. gomm.* Feb. 2016).

5. Threats

5.1 Exploitation driven by intercontinental trade

All African pangolin species are threatened by hunting to supply increased demand in international markets (Waterman *et al.* 2014a, b, c; Pietersen *et al.* 2014). Asian pangolins have been used for centuries in Chinese medicinal pharmacopeia and are traded widely for their scales which are used in a number of Asian communities. As Asian pangolin species have become increasingly depleted in the wild, pangolins sourced from Africa have been used to supplement Asian demand, particularly in China and Viet Nam (Challender 2011). The secretive nature of illicit trade in wildlife makes it difficult to estimate trade levels but there are increasing media reports of customs seizures (See Table 1) (Challender and Hywood 2012; Challender 2011). African pangolin species are listed in CITES Appendix II which requires that a non-detriment finding (NDF) has been made for the relevant species before a CITES export permit can be issued. The First Pangolin Range States meeting held in 2015 recommended that because African species are in decline and because there is a lack of sufficient biological information on harvested populations there should be no positive NDF's except for scientific research. In 2014 at the twenty-seventh Animals Committee meeting (AC27, Vera Cruz), the Animals Committee recommended the inclusion of two African species, *M. gigantea* and *M. tricuspis*, as species of priority concern for Review of Significant Trade (see section 7.2 and Table 2).

5.2 Domestic bushmeat and traditional medicine

All African pangolin species are threatened by hunting for local markets (Waterman *et al.* 2014a, b, c; Pietersen *et al.* 2014). Pangolins are subject to widespread and often intensive exploitation for locally consumed bushmeat and traditional medicine (Boakye *et al.* 2016; Gaubert 2011;

Soewu and Ayodele 2009). Fa *et al.* (2006) report that during the course of six months fieldwork in Cameroon in 2002–2003, *M. tricuspis* was the fourth most harvested species from 47 sites sampled. According to a recent study that analyzed market and hunting data between 1972 and 2014, the proportion of pangolins hunted has increased significantly over time across Sub-Saharan Africa and for the Congo Basin (Figure 2); there was a 9-fold increase from 2005–2014 alone (Ingram *et al.* 2016). The number of pangolins sold for traditional medicine and cultural practices is substantial and most likely unsustainable considering the reproductive biology of this species (Waterman *et al.* 2014a).

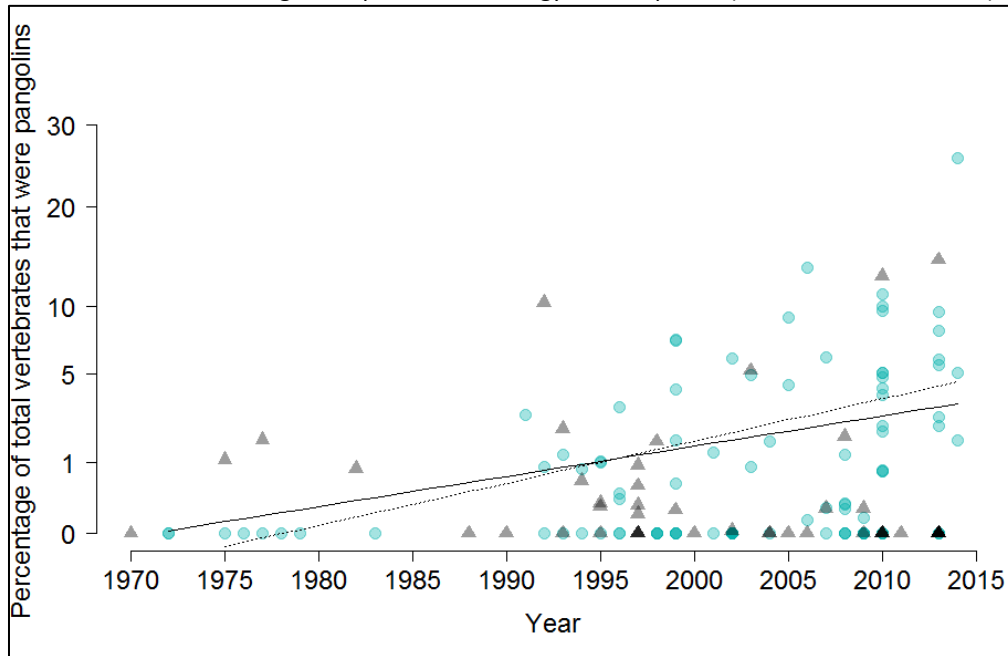


Figure 2. Change over time in the proportion of pangolins (Manidae) hunted (circles) or sold at markets (triangles) from 166 studies across Sub-Saharan Africa. Proportion of pangolins given as percentage pangolins of the total number of individual vertebrates hunted or sold at markets. Trend lines for all of the hunting data (solid) and Congo Basin hunting data (dotted) are fitted using linear mixed effects models (Ingram *et al.* 2016).

5.3 Deforestation

Africa has one of the highest global rates of primary forest loss (FAO 2010), and deforestation is thought to be an additional driver for pangolin population decline, particularly in west and central parts of the continent. Three pangolin species are found in west Africa where it is estimated that 80% of original forest has been converted to an agricultural mosaic with an estimated loss of 10 million ha of forest in the twentieth century (Norris *et al.* 2015). According to their CITES Management Authority Cote d'Ivoire has lost an estimated 80% of forest since the early 1900's (S. Kone, Director of Wildlife and Hunting, Cote d'Ivoire, *pers. 10omm.* Feb. 2016). Nigeria also has high rates of deforestation with 250,000–400,000 ha of forest lost per year (annual rate of 3.5%) due to development (E. Ehi-Ebewele, Deputy Director, Federal Dept. of Forestry, Nigeria, *pers. 10omm.* Feb. 2016). Drivers of deforestation include human population growth and the subsequent growth in urban food demands. In particular, monocultures of farmed cocoa have driven deforestation in many parts of west and central Africa which produces 70% of the world's cocoa. Reductions in pangolin densities and distribution are believed to be most pronounced in areas converted for agriculture (Pietersen, McKechnie and Jansen 2014).

5.4 Electrocutation

Pietersen *et al.* (2014b) found that electrocution on electrified fences posed one of the greatest threats to *M. temminckii* in South Africa. Mortality rates were estimated at one individual per 11 km of electrified fence per year. Male pangolins reach sexual maturity later than females and also establish a fixed home range at a later age. Therefore, males cover larger distances than females before

establishing a home range and so are more likely to encounter electrified fences. South Africa has extensive areas with electrified fences. For example, Kruger National Park has one of the densest pangolin distribution areas and has close to 1000 km of electrified fences (Fergusenand Hanks 2010).

6. Utilization and trade

6.1 National utilization

All African pangolin species are heavily harvested from the wild for bushmeat and traditional medicine. Bushmeat surveys showed that pangolins are among the mammals most commonly hunted, especially in central Africa. The meat is highly regarded and in the 1990's was among the most expensive meat sold in Nigerian and Gabonese bushmeat markets. The animals are generally collected and provided alive by hunters, but also caught by timber dealers and forest reserve employees (Gaubert 2011). In Tanzania, *M. temminckii* is named "Bwana mganga", or doctor, since each portion of its body is believed to have a specific healing power (Gaubert 2011). In Zimbabwe, the same species is offered to local or spiritual authorities as an omen of good luck (Gaubert 2011).

6.2 Legal trade

Since 2001, the only legal international trade for primarily commercial purposes in wild-sourced pangolin specimens is from African species. All extant species of pangolin are listed in Appendix II of CITES; international trade is permitted but regulated through the issuance of export permits subject to non-detriment and legal acquisition findings. There are no voluntary CITES export quotas established for African species.

An examination of data in the UNEP-WCMC CITES Trade Database, 2000-2014, revealed that specimens of African pangolin were traded internationally for commercial purposes (Table 3). There is some amount of trade recorded in the database that is not identified to the species level but recorded as *Manis* spp. This demonstrates the difficulty of distinguishing between species in trade and lending further support for listing the genus *Manis* in CITES Appendix I. Additionally, 500 live *M. tricuspis* were shipped from Togo to Italy in 2008 and categorized with source code R (Ranch specimen) despite no known ranching operations for pangolins anywhere in the world. Table 3 provides a summary of international trade in African pangolins between 2000 and 2014. Annex 1 provides more detailed information including a breakdown by year, exporting and importing countries, and the source of specimens.

According to the CITES Management Authority of Nigeria, there has been a large increase in CITES requests for pangolins and their scales, particularly from Chinese companies. Between 2014 and 2015, 30,000kg of scales were requested for export as well as 400 live specimens. The total volume of these permit requests is believed to exceed the population of pangolins in Nigeria, indicating that exporters are using Nigeria as a transit site (E. Ehi-Ebewele, Deputy Director, Federal Dept. of Forestry, pers. 110mm.. Feb. 2016).

Table 3. Recorded trade of *M. temminckii*, *M. 110mm.11ean*, *M. tricuspis*, *M. tetradactyla*, and unknown *Manis* sp. from 2000 to 2014. *Manis* sp. identifies animals not classified to the species level.

Species	Live	Bodies/ skeletons/ skulls	Scales (kg)	Loose Scales	Trophies	Skins
<i>M. temminckii</i>	10	1				
<i>M. gigantea</i>	68		325	72	2	245
<i>M. tricuspis</i>	1066		60		4	406
<i>M. tetradactyla</i>	20	25				3
<i>M. sp.</i>		4		50		50

6.3 Parts and derivatives in trade

In local use, pangolin scales have been reported as having the most significant spiritual and cultural importance, followed by bones, the head, and meat. However, up to 22 pangolin body parts have been documented as used for a variety of ailments ranging from convulsions, spiritual protection, rheumatism, stomach disorders, and back pain among others (Boakyeet *al.* 2015a,b). In Sierra Leone, pangolins are used for the treatment of 59 different diseases and ailments (Boakyeet *al.* 2015a). Based on confiscations of internationally trafficked wildlife, whole pangolins and scales are most likely to be traded (Chandler and Hywood 2012). In Chinese pharmacopeia, roasted pangolin scale is believed to detoxify, relieve palsy and stimulate lactation (Zhao *et al.* 2014). In Viet Nam, the high prices obtained for pangolin meat have led to its consumption as a form of status (Shairpeet *al.* 2016; Newton *et al.* 2008).

6.4 Illegal trade

As Asian populations have declined, the market has begun to source pangolins and their parts from African species (Challenderet *al.* 2014). While African pangolins were used historically and are used today by locals for food and medicine, an “alarming trend” has developed in the increased trade in parts of all four African pangolin species, mainly scales, from Africa to Asia (Challenderet *al.* 2014). A CITES EU report found that the majority of pangolin seizures in the EU in 2012 and 2013 were African pangolins with 85% involving pangolins illegally exported from west and central Africa (SC65 Doc. 27 and SC65 Doc. 27.1 Annex 4). The EU also reported that 80% of seized pangolin specimens were destined for China. Numerous seizures totaling thousands of kilograms of confiscated pangolin parts, primarily scales, have been recorded since 2013 (see Table 1). However, illegal trade had also been documented in earlier years. In 2012, for example, an unknown quantity of *M. 12omm.12ean* scales was seized in Belgium, *en route* from Guinea to China (Waterman *et al.* 2014c). And, in 2011, a shipment of *M. tricuspis* skins with scales attached was seized *en route* from Guinea to Thailand (Waterman *et al.* 2014b). Increasing trade to Asia may be facilitated by a growing Chinese presence on the continent as a result of growing economic links (Challender and Hywood 2012). Additionally, the price of pangolins has increased in some parts of Africa, especially in areas where species are becoming scarcer. In Nigeria, for instance, the cost of pangolins has increased by 10 times from prices of five years ago (E. Ehi-Ebewele, Deputy Director, Federal Dept. of Forestry, *pers. 12omm.. Feb.* 2016). Such price increases can further incentivize poaching.

Pangolins are generally protected by national laws although a common concern raised by range States is a lack of enforcement capabilities and effective regulatory tools that would allow officials to deal with illegal trade (First Pangolin Range States Meeting 2015). According to the Somalia CITES Management Authority, wildlife authorities cannot efficiently protect species because of a lack of funding for salaries and law enforcement. Based on information gathered by Somali wildlife agents, wildlife traffickers are evading detection by increasingly using ports that are difficult to access by government authorities (A. Osman, Director of Somali Wildlife, *pers. 12omm.. Feb.* 2016).

6.5 Actual or potential trade impacts

All four African pangolin species are declining and listed as ‘Vulnerable’ by the IUCN due, in part, to increased intercontinental trade to Asia (Waterman *et al.* 2014a, b, c; Pietersen *et al.* 2014). Trade in pangolin 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. Trade in pangolins is shifting from Asian to African species as populations of *M. pentadactyl* and *M. javanica* have become commercially extinct in China and southeast Asia (Challenderet *al.* 2015; Wu *et al.* 2007). In addition, CITES zero export has made it more challenging for traffickers to trade in Asian species, thus creating a higher demand for those in Africa that are not regulated by such quotas. Additionally, pangolin derivatives, namely scales, can be difficult to distinguish between species

particularly if scales have been modified such as when they are ground into a smaller pieces or a powder.

7. Legal instruments

7.1 National

The table below lists national legal instruments of African pangolin range States. Legislation information was primarily compiled by Dr. Dan Challender (IUCN Pangolin Specialist Group co-Chair). Additional sources also noted in last column under 'Explanation'.

Country	Law/Regulation/Action	Year	Explanation
Angola	Ruling on the protection of land, flora and fauna – Decree no 40.040 of 1955	1955	<i>M. tricuspis</i> protected although uncertain for <i>M. tetradactyla</i> and <i>M. 13omm.13ean</i> . Hunting prohibited without a permit. A fine not exceeding USD 5,000 may be imposed for contraventions.
Benin	Wildlife Conservation and Hunting Act, Act no. 87-014 of 1984 and Hunting and Tourism Act, Act no. 93-011 of 1993	1983 1994	<i>M. tricuspis</i> protected; uncertain for <i>M. tetradactyla</i> . Fully protects species from hunting unless for scientific research. Contraventions are punishable with a fine of XOF 2,000-300,000 [USD 4-632], imprisonment for 2-12 months or both.
Botswana	Wildlife Conservation and National Parks Act of 1992	1992	<i>M. temminckii</i> : A BWP 10,000 [USD 1,160] fine and imprisonment for seven years.
Cameroon	Order No. 1262/A/MINEF/DFAP/CEP/SAN bearing additive Order No. 565 A / MINEF / DFAP / SDF / SRC listing the animals of classes A, B, and C and specifying regulations trade and movement of goods Wildlife and Forestry, Wildlife and Fisheries Regulations, Law 94-1 of 1994	1994	<i>M. 13omm.13ean</i> , <i>M. tricuspis</i> and <i>M. tetradactyla</i> : It is unclear what level of protection pangolins have in Cameroon, but they are at least protected due their listing on CITES Appendix II (Cameroon Class B). If they are viewed as Rare or Endangered, or listed on CITES Appendix I, they would have Total Protection (Cameroon Class A), with a zero trade and hunting quota. At a listing of Class B, they are fully protected but may be hunted or traded under permit. Any illegal hunting or trade in these species could result in a XOF 3,000,000–10,000,000 [USD 6,320–21,068] fine, or imprisonment for 1–3 years, or both a fine and a prison term. These penalties are to be doubled for repeat offenders or government officials.
Central African Republic	Protection of Wildlife and Hunting Ordinance, Ordinance 84-045 of 1984 and Ordinance no. 84-062 establishing the conditions for the capture and exportation of live wild animals and Commercial Hunting Regulations, Act no. 61/281 of 1961	1984	<i>M. 13omm.13ean</i> : Fully Protected Species. Hunting, capture and trade prohibited unless the person is in possession of a commercial capture permit. Contraventions are punishable with a fine of XOF 200,000–1,000,000 [USD 421–2,107], a term of imprisonment of 3–12 months, or both such a fine and imprisonment. In the case of government officials or researchers committing these offences, the penalties will be doubled. <i>M. tricuspis</i> and <i>M. tetradactyla</i> : Game Species. May be hunted for subsistence purposes by indigenes or foreigners subject to a valid hunting license being obtained. If these species are hunted for commercial purposes, a fine of XOF 100,000–200,000 [USD 211–421], a term of imprisonment of 1–3 months, or both such a fine and period of imprisonment may be imposed. Hunting these species by an outsider without a valid hunting permit may result in a fine of XOF 100,000–300,000 [USD 211–632], a prison term of 1–6 months, or both such a fine and prison term. In all cases all carcasses and equipment used to commit the offence will be forfeited to the state. In the case of government officials or researchers committing these offences, the penalties will be doubled.
Chad	Hunting and Wildlife Conservation Regulations, Ordinance no. 14-63 of 1963 and Forestry, Wildlife and Fisheries Resources Act, Act no. 08/PR/14 of 1998	1963 1998	<i>M. temminckii</i> : Fully Protected. Hunting, capture, transport and exportation is strictly prohibited, unless conducted under a special scientific permit and for <i>bona fide</i> research. Species may also be captured and exported under a special 'commercial capture' permit. The legislation covers all four pangolin species, although only <i>M. temminckii</i> is known to occur in this country. Contraventions may be punished with

			a fine of XOF 100,000–500,000 [USD 211–1,053], a prison sentence of 1–3 years, or both such a fine and prison sentence.
Congo Republic	Decree No. 6075 of 9 April 2011 Laying Down Animal Species that are Fully and Partially Protected and Act No. 37-2008 on Wildlife and Protected Areas	2011	<i>M. 14omm.14ean</i> and <i>M. tricuspis</i> : Fully Protected Species. A fine of XOF 100,000–5,000,000 [USD 211–10,534], imprisonment for 2–5 years, or both may be imposed on transgressors.
Cote d'Ivoire	Act no. 65-225 of 1965: Wildlife Protection and Hunting Act and Act No. 94-442 of 1994 Amending Act No. 65-225: Wildlife Protection and Hunting Act	1965 1994	<i>M. 14omm.14ean</i> : Fully Protected Species (Annex I). Collection only allowed for scientific research. Contraventions are punishable with a XOF 3,000–300,000 [USD 6–632] fine, imprisonment for 2–12 months, or both. In addition all materials and equipment used during the act can be confiscated. Penalties can be doubled if the infringement occurred in a reserve or national park, or for repeat offenders. Penalties can be tripled if both of the aforementioned conditions are met. The prison term is mandatory for repeat offenders if the contravention occurred in a national park. <i>M. tricuspis</i> and <i>M. tetradactyla</i> : Partially Protected (Annex II). Hunting and capture only allowed under permit. Contraventions are punishable with a XOF 3,000–300,000 [USD 6–632] fine, imprisonment for 2–12 months, or both. In addition all materials and equipment used during the act can be confiscated. Penalties can be doubled if the infringement occurred in a reserve or national park, or for repeat offenders. Penalties can be trebled if both of the aforementioned conditions are met. The prison term is mandatory for repeat offenders if the contravention occurred in a national park. However, since 1974, by the order of 003 / SEPN / CAB of 20, hunting is officially closed and prohibited in Côte d'Ivoire until present time. This closure protects all species in general of the Ivory Coast and pangolins whatever Annex. Also, Law No 94-442 of 16 August amending Law No 65-255 of 4 August 1965 on the protection of wildlife and hunting is being revised, and could improve the legal status of pangolins in alignment with their status in CITES. There are also several other laws governing the possession, acquisition and trade. (Additional Information provided by the CITES Management Authority of Cote d'Ivoire).
Democratic Republic of the Congo	Ministerial decree No. 003/CAB/MIN/ECN-EF/2006 of 13 June 2006 laying down the rates of duty, taxes and fees to be charged in respect of fauna and flora, on the initiative of the Ministry of Environment, Conservation, Water and Forests and Order No. 014/CAB/MIN/ENV/2004 of 29 April 2004 on implementation of Law No. 82-002 of 28 May 1982 concerning measures hunting regulations	2004 2006	<i>M. 14omm.14ean</i> and <i>M. tricuspis</i> : Fully Protected Species. A fee of XOF 129,380 [USD 272] is payable to capture, and a fee of XOF 25,880 [USD 55] is payable to keep individuals in captivity. <i>M. temminckii</i> and <i>M. tetradactyla</i> : Partially protected species. A fee of XOF 8,630 [USD 18] is payable to capture and an additional fee of XOF 8,630 [USD 18] to kill an individual. A fee of XOF 17,250 [USD 36] is payable to maintain an individual in captivity.
Equatorial Guinea	Wildlife, Hunting and Protected Areas Act, Act no. 8/1.988 of 1988	1988	<i>M. 14omm.14ean</i> , <i>M. tetradactyla</i> and <i>M. tricuspis</i> : Fully Protected Species. It is illegal to hunt, capture, kill, transport or in any way disturb any of these species. Contraventions may result in a jail term of unspecified duration [but in the context of the preceding article in the legislation believed to be less than two years], or a fine of XOF 2,500–50,000 [USD 5–105].
Ethiopia	Proclamation no. 414/2004: The Criminal Code of the Federal Democratic Republic of Ethiopia and Council of Ministers Regulations No.	2004	<i>M. temminckii</i> : Protected species. Killing is only allowed for scientific purposes. Penalties for contraventions are to be determined by a court of law on an individual case basis.

	163/2008: Wildlife Development, Conservation and Utilization		
Gabon	Protection of Wildlife Act, Act 189/PR/MEFCR of 1987 and Hunting Regulations no. 190/PR/MEFCR of 1987 and Regulations Regarding Hunting and The Bearing of Arms for Hunting, Law no. 46/60 of 1960	1960 1987	<i>M. 15omm.15ean</i> : Fully Protected. Capture, killing, trade, transport and trafficking are strictly prohibited, except under a special research permit. Infractions are punishable with a fine of XOF 3,000–100,000 [USD 6–211], a prison term of 5 days–12 months, or both such a fine and prison term. The carcass may also be confiscated, and a fine imposed that is equal to the value of the animal. <i>M. tricuspid</i> and <i>M. tetradactyla</i> : Listed as ordinary game species. They may be hunted, killed, captured, traded, trafficked and exported without the need for a permit [Hunting Regulation no. 190/PR/MEFCR of 1987 states that a permit is required for the export of these species if they were obtained during a hunt].
Ghana	Act 43: Wild Animals Preservation Act, 1961 and Wildlife Conservation Act 1971 (LI 685); Schedule I	1961 1971	<i>M. 15omm.15ean</i> , <i>M. tricuspid</i> and <i>M. tetradactyla</i> : Completely protected. No individuals may be hunted, killed or traded (except for <i>bona fide</i> research, museums and zoological gardens). The young and females with young are specially protected. Legislation does allow for a limited number of pangolins to be killed per annum. Contraventions are punishable with a fine of GHS 200 [USD 72] or a prison term of six months, and the forfeiture of the poached animals. Additional Source: Boakyeet <i>al.</i> 2015
Guinea	Protection of Wildlife and Hunting Regulations Act, Ordinance no. 007/PRG/SGG/90 of 1990 and Law no. U97/038/An Adopting and Enacting the Protection of Wildlife and Hunting Regulations Act	1990	<i>M. 15omm.15ean</i> , <i>M. tricuspid</i> and <i>M. tetradactyla</i> : Fully Protected Species. Hunting and capture strictly prohibited. Permits are only issued for scientific purposes. Anyone who hunts, captures or kills a fully protected species is subject to a fine of GNF 70,000–150,000 [USD 10–22] and a mandatory prison sentence of 6–12 months.
Guinea-Bissau	Hunting Regulations, Act 21/80 of 1980	1980	<i>M. 15omm.15ean</i> and <i>M. tricuspid</i> : The legislation refers to <i>Manis longicauda</i> – Tree Pangolin [= <i>Phataginus tetradactyla</i>]. As this species is not known to occur in Guinea-Bissau this legislation may in fact refer to <i>P. tricuspid</i> , or the legislation may not distinguish between the two species. Both species are fully protected species, as are the females and young of both species. Transgressions are punishable with a PG 10,000 (ca. XOF 154) [USD 211] fine. The hunting license is also suspended for a year. In the case of a repeat offence, the fine is to be doubled.
Kenya	The Wildlife Conservation and Management Act, Act no. 47 of 2013	2013	<i>M. temminckii</i> : Unprotected species. Subsistence hunting without a permit is punishable with a fine of not less than KES 30,000 [USD 345], or imprisonment for not less than six months, or to both such fine and prison sentence. Hunting for the bushmeat trade, or a person in possession of derivatives for the bushmeat trade, is liable to a fine of not less than KES 200,000 [USD 2,302], a prison sentence of not less than one year, or to both such a fine and prison sentence.
Liberia	Regulation on Revised Administrative Fees for Wildlife Conservation (FDA Regulation No. 25)		<i>M. 15omm.15ean</i> : Fully protected. Contraventions are punishable with 15omm.15 of USD 250–500, or 4–5 month imprisonment.
Malawi	National Parks and Wildlife Act, Act 11 of 1992 and National Parks and Wildlife (Protected Species) (Declaration) Order, 1994	1992 1994	<i>M. temminckii</i> : A fine of MWK 10,000 [USD 25] and imprisonment for a term of five years. The value of the fine may not be less than the value of the specimen involved.
Mozambique	MZ Law, Act. Nr. 10/99 – Forest and Wildlife Act	1999	<i>M. temminckii</i> : A fine of MZN 1,000–20,000 [USD 30–670]. If it is deemed a rare species, or one threatened with extinction, the fine may be up to MZN 200,000 [USD 6,700]. This law does not apply to subsistence consumption. (It is unclear 15omm.15e. <i>Temminckii</i> is considered a rare species and / or

			a species threatened with extinction in Mozambique. If it is not, then this law would not apply and it would not be protected in Mozambique).
Namibia	Nature Conservation Ordinance 4 of 1975 and Controlled Wildlife Products and Trade Act of 2008	1975	<i>M. temminckii</i> : No trade permitted. <i>M. temminckii</i> is classified as a protected species under the Nature Conservation Ordinance of 1975 and its regulations; where hunting and possession of protected game species is prohibited except under a permit granted by Cabinet. Furthermore, the Controlled Wildlife Products and Trade Act of 2008 and its regulations also addresses possession, trade (domestic or international), and acquisition of any controlled wildlife products. A fine of NAD 300 [USD 30] for a first-time offence. In the case of a second offence, a prison term may be imposed.
Nigeria	Endangered Species (Control of International Trade and Traffic) Act, 1985 Appendix I under the Endangered Species Act Cap E9, Law of Federation of Nigeria (LFN) 2004	1984 2004	No capture, local or international trade is allowed. For a first offence a fine of NGN 1,000 [USD 6] may be imposed and for a second and subsequent offences, imprisonment for one year without the option of a fine. According to Nigeria consultation letter (2016) trade in these species internationally is absolutely prohibited
Rwanda	Ministerial Order No. 007/2008 of 15/08/2008: Establishing the List of Protected Animal and Plant Species And Ministerial Order No. 04/2005 of 08/04/2004: Organic Law Determining the Modalities of Protection, Conservation and Promotion of Environment in Rwanda	2005 2008	<i>M. tricuspis</i> and <i>M. temminckii</i> but unknown for <i>M. tetradactyla</i> : Protected species. If killed in a protected area, offences are punishable with a prison term of 2–24 months and a fine of RWF 300,000–2,000,000 [USD 442–2,950], or either a fine or prison term. No penalties are stipulated for areas that are not protected.
Senegal	Hunting and Wildlife Regulations, Law no. 86-04 of 1986 and Hunting and Protection of Wildlife Act, Act no. 86-844 of 1986	1986	Manidae: Fully protected species. Hunting, capture and killing is strictly prohibited, unless under a scientific permit. In areas where the population is deemed to be sufficiently large, the Minister of Water, Forests and Wildlife is authorized to make a limited number of individuals of a protected species available for offtake (hunting). Contraventions are punishable with a fine of XOF 240,000–2.4 million [USD 507–5,072], and imprisonment for 1–5 years. All materials used during the contravention (including modes of transport) may be confiscated.
Sierra Leone	The Wild Life Conservation Act, Act no. 27 of 1972	1972	<i>M. temminckii</i> , <i>M. 16omm. 16ean</i> , All Manidae young: On a first conviction, a fine not exceeding SLL 100 [USD 0.02] or to a prison term not exceeding six months, or both the fine and the prison term. For a second and subsequent convictions a fine not exceeding SLL 150 [USD 0.03] or a prison term not exceeding 12 months, or both, may be imposed.
Somalia	Law on Fauna (Hunting) and Forest Conservation and Law no. 15 of 1969	1969	<i>M. temminckii</i> : Prohibited [Fully Protected] Game Species. No person may hunt, kill, possess or trade a Prohibited Game Species. Any person found in contravention of this Act is liable to a fine of SOS 500–3001 [USD 0.50–3], a prison term of six months, or to both such a fine and prison term. The court may also rule that any weapon, vehicle, animal or animal parts should be forfeited to the State.
South Africa	National Environmental Management: Biodiversity Act, Act 10 of 2004 (with 2013 revisions)	2004	<i>M. temminckii</i> : A fine not exceeding ZAR 10 million [USD 1,002,000] or imprisonment for a period not exceeding ten years, or both such a fine and prison sentence.
Sudan	The Preservation of Wild Animals Ordinance and Ordinance no. 5 of 1935	1935	<i>M. temminckii</i> : Specially Protected Species. Hunting, trade and possession of such species and their derivatives are only allowed under a special ministerial license. Any person in breach of these regulations is liable to a fine not exceeding SDG 200 [USD 35] or to a prison term not exceeding two years, or to both such fine and imprisonment. The court may

			also cancel the perpetrators' permit and confiscate the animal(s) in question.
Swaziland	Game Act of 1953 and Game (Amendment) Act, Act 4 of 1991	1953 1991	<i>M. temminckii</i> : Royal Game. Possession of a Royal Game species without the relevant permits is punishable with a prison term of 5–15 years, without the option of a fine. Trading in a Royal Game species without a permit is punishable with a prison term of 7–15 years, without the option of 170mm. 17. Hunting of a Royal Game species without the necessary permits is punishable with a fine of SZL4,000–30,000 [USD 376–2,821], or in default of payment, a prison term of 1–5 years. Fines may not be less than the replacement value of the animal.
Tanzania	Wildlife Conservation (National Game) and Order of 1974 Wildlife Act, 2013	1974 2013	Manidae: National Game. No person may hunt, kill, capture, wound or molest any National Game, unless prior written permission has been obtained from the Director of Wildlife. Any person that hunts, kills or captures a National Game species is liable to a fine of not less than twice the value of the animal that was hunted, killed or captured, or to a prison term of 1–5 years. Any other offences relating to National Game are liable to a fine of TZS 300,000–1,000,000 [USD 183–609], or to a prison term of 1–3 years. A trapping fee of TZS 500 [USD 0.30] is payable for the capture of any Manidae individual.
Togo	Wildlife Protection and Hunting Ordinance of 1968 and Decree no. 80-171 of 4 June 1980 on the application procedures of ordinance no. 4 of 16 January 1968 regulating the protection of wildlife and the exercise of hunting in Togo	1968 1980	<i>M. 170mm. 17</i> <i>lean</i> , <i>M. tricuspis</i> and <i>M. tetradactyla</i> : Partially protected. A fee of XOF 5,000 [USD 11] is payable to obtain a permit to capture, hunt or kill an individual. [The 1980 regulations only make provision for a XOF 2,000 [USD 4] fine for <i>M. tricuspis</i> and <i>M. tetradactyla</i> .]
Uganda	Uganda Wildlife Statute, Statute Number 14 of 1996 and Game (Preservation and Control) Act, 1959 [Schedules]	1959 1996	Manidae: Both the Wildlife Policy 2014 and Wildlife Act 2000, permit wildlife trade: Specifically, Part VI, sections 29 – 44 mandate the Uganda Wildlife Authority (UWA) to handle wildlife trade including issuance of a Wildlife Use Right to any person or company that applies and meets the conditions of the use right under section 29 and 31 including export of wildlife/wildlife products within the terms and condition so prescribed. If a CITES species is involved, an exporter must acquire CITES Export Permit from CITES Management Authority and an International Veterinary Health Certificate issued by Commissioner Livestock Health and Entomology. At UWA, live animal collection is controlled through the issuance of annual quotas approved by the Ministry of Tourism, Wildlife and Antiquities. However, the disposal of Wildlife trophies by the Uganda Wildlife Authority is guided by the stocks held at any one time. Contraventions are liable to a fine of not less than UGX1,000,000 [USD 398] or to a prison sentence not exceeding five years, or both; and in either case the fine shall not be less than the value of the poached animal. The poached animal, as well as any materials or possessions used during the illegal act, may be confiscated by the state.
Zambia	Zambia Wildlife Act, Act 12 of 1998 and The National Parks and Wildlife (Protected Animals) Order, Statutory Instrument no. 80 of 1993; and Section 130(1) of the Zambia Wildlife Act. No. 14 of 2015.	1993 1998 2015	<i>M. temminckii</i> and <i>M. tricuspis</i> : Pangolins are protected species in Zambia. The government has taken a cautious and deliberate approach to the consumptive use of Pangolin and its products by adopting a zero harvest quota. Imprisonment for a period not exceeding seven years, without the option of paying a fine. Hunting is prohibited without a valid permit. Domestic and international trade is prohibited, except for scientific purposes using a CITES export permits issued by Zambia Management authority, and a research permit authorized by the Director of the Dept of National Parks and Wildlife.

Zimbabwe	Parks and Wildlife Act, 1975 (with 2012 Statutory Instruments)	1975 2012	Specially Protected species. Imprisonment for not less than nine years (first offence) or 11 years (second offence), and / or a fine equal to four times the economic value of the poached animal [approximately USD28,000].
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7.2 International

For more than 40 years, pangolin species have been the subject of significant CITES attention and action because of their exceptionally high risk of overexploitation associated with international and illicit trade. Pangolins were recognized as a taxa of conservation concern in the 1970's when CITES was first established. All Asian species (*Manis crassicaudata*, *M. javanica* [including *M. javanicaculionensis* which later became *M. culionensis*], and *M. pentadactyla*) were included in Appendix II, and one African species (*M. temminckii*) was included as Appendix I. The remaining three African species (*M. tetradactyla*, *M. tricuspis*, and *M. 18omm.18ean*) were listed as Appendix III in 1976 (Ghana). In 1994 at CoP9 (Fort Lauderdale), the four African species were included in or transferred to Appendix II (IUCN-WCMC 2015 a,b,c,d). In 2000, at CoP11 (Gigiri), all Asian pangolins were maintained in Appendix II with an annotation of a zero quota for species taken from the wild for trade for primarily commercial purposes (Refer to Table 2 for a complete chronology of CITES actions).

In 2013, the 1st IUCN Pangolin Specialist Group Conservation Conference convened to assess knowledge gaps in pangolin conservation. At that conference it was established that populations of all four African species, which are now classified as 'Vulnerable' by the IUCN, are in decline and threatened with extinction (IUCN 2015). In 2014, at the twenty-seventh Animal Committee (AC27, Vera Cruz), the Animals Committee recommended the inclusion of *M. 18omm.18ean* and *M. tricuspis* as species of priority concern for Review of Significant Trade ([AC27 Sum.4 \(Rev.1\)](#)).

No voluntary CITES export quotas have been established for African species of pangolins

Table 2: Summary of CITES actions on pangolin trade.

Year	Meeting	Document no.	Action
2015	SC66	SC66 Com. 4	Proposed Resolution on pangolins for consideration at CoP17.
2014	SC65		Standing Committee established an intersessional working group on pangolins.
2014	AC27		AC27 added the inclusion of <i>M. 18omm.18ean</i> and <i>M. tricuspis</i> as species of priority concern for review of Significant Trade (AC27 WG Doc. 1).
	CoP 16	Res. 16.41 and 16.42	(16.41) All range States for Asian pangolin spp. Requested to compile information on the conservation of and illegal trade in Asian pangolins. (16.42) 65 th SC shall review the information provided by Asian pangolin range States and develop recommendations to address the illegal trade in pangolin spp. And report at CoP 17.
2014			EU CITES scientific review group banned import of <i>M. tricuspis</i> from Guinea into the EU based on concerns about the sustainability of trade (IUCN-WCMC) No. 2015/736
2007			EU CITES scientific review group banned import of <i>M. temminckii</i> from Democratic Republic of the Congo into the EU based on concerns about the sustainability of trade (IUCN-WCMC) No. 2015/736

2000	CoP11		India, Nepal, Sri Lanka, and U.S. proposed to transfer all Asian pangolin species from Appendix II to I. The proposal, amended to zero quotas for specimens removed from the wild and traded for primarily commercial purposes, passed. African species not included in proposal.
1994	CoP9	Prop. 7	Transfer of <i>M. temminckii</i> from Appendix I to Appendix II and inclusion of <i>M. 19omm.19ean</i> , <i>M. tetradactyla</i> and <i>M. tricuspis</i> in Appendix II.
1994	CoP9		Transfer of <i>M. temminckii</i> from Appendix I to Appendix II
1992	CoP8		Botswana, Malawi, Namibia and Zimbabwe proposed to delete <i>M. temminckii</i> from Appendix I, the proposal was withdrawn
1976			3 African spp. (<i>M. tetradactyla</i> , <i>M. tricuspis</i> , <i>M. 19omm.19ean</i>) listed as CITES Appendix III (Ghana)
1975	Plenipotentiary meeting		All Asian species included in CITES Appendix II: including <i>M. crassicaudata</i> , <i>M. javanica</i> (including <i>M. javanicaculionensis</i> which later became <i>M. culionensis</i>), and <i>M. Pentadactyla</i> . One African sp., <i>M. temminckii</i> , included in CITES Appendix I.

8. Species managements

8.1 Management measures

There are no management measures in range States for the protection and study specific to pangolins.

8.2 Population monitoring

No official in-country monitoring programs have been established. The African Pangolin Working Group, established in 2011, includes data collection as part of its mission and has released several publications relating to African pangolin threats, population status and behavior (see Boakyeet *al.* 2015, Boakyeet *al.* 2014, Pietersenet *al.* 2014b, ChallenderandHywood 2012 for examples).

8.3 Control measures

8.3.1 International:

None known except for CITES which controls export trade for all species covered in this proposal.

8.3.2 Domestic:

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

8.4 Captive breeding and artificial propagation

Primarily because of their specialized dietary needs, pangolins do not fare or breed well in captivity. Although they have been kept and bred in zoos (rarely), pangolins are among the rarest of zoo specimens. Historically European zoos have exhibited the greatest variety of species, but only a few individuals have been successfully maintained for more than a few years (Wilson 1994). The Taipei Zoo has had the most success, although limited, with maintaining and breeding pangolins, particularly since 1995 with the development of a new diet for captive animals (Yang *et al.* 2007). Due to the fact that pangolins have never been successfully 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 (Challenderet *al.* 2014). There has been no documented successful captive breeding of any African pangolin species.

8.5 Habitat conservation

Several species of African pangolins benefit from protected areas although none are specifically reserved for pangolin conservation. For example, the largest density of *M. temminckii* is found within the boundaries of Kruger National Park (Pietersen *et al.* 2014a).

Coulson (1989) found pangolins to be absent from areas used for crop agriculture and areas of dense human habitation. Habitat loss has probably had an effect on the current distribution of pangolins, but

because quantitative data on this species' past and present distribution are lacking, it is difficult to estimate the magnitude of the effect of land transformation (Pietersen *et al.* 2014b). According to the Uganda CITES Management Authority, 50% of Uganda's wild fauna is found outside protected areas on private land, 37% of which is cultivated for subsistence agriculture. All four African pangolin species are found in Uganda. For the forest dependent species, of the 43,200km² of forested land found in Uganda (18% of total land area), only 27% are protected and known to contain *M. 21omm.21ean*. For savannah species, 18,247km² of Uganda's savannah is protected by the Uganda Wildlife Act. The remaining area, 36,494km², has been increasingly converted for agriculture (J. Lutelo, Director of Tourism, Wildlife and Antiquities, *pers. 21omm.* Feb. 2016).

8.6 Safeguards Not applicable

9. Information on Similar Species

There are four pangolin species found in Asia, and although very similar in appearance to African species there are some morphological differences. Species in Asia include:

- *Manispentadactyla* (Chinese pangolin)
- *Manisjavanica* (Sunda or Malayan Pangolin)
- *Manisculionensis* (Philippine or Palawan pangolin)
- *Maniscrassicaudata* (Indian or Thick-tailed pangolin)

The differences between African and Asian species are important when considering identification of pangolins found in international trade, either legal or illegal. Whole pangolins can be identified to their continent of origin based on several characteristics. For instance, scale patterning in *M. tricuspis* are three-cusped while Asian species have V-shaped scales. Other African pangolin species have scale morphology consisting of thick scales with rounded 'free edges' (D. Pietersen, Univ. of Pretoria, *pers. 21omm.* April 2016). Additionally, African species do not have hairs between the scales whereas in Asian species hairs are present. Scales found on the mid-line of the tail do not reach the tip in African species but do in Asian ones. Asian species have ear flaps (pinnae) whereas African species do not. Less apparent is the difference in the chest bone (sternum) which is branched and elongated in African species but shorter and spade-shaped in Asian ones (Gaubert 2011). Such morphological differences can be diagnostic and aid in identifying whether whole pangolins originated from Africa or Asia. However most trade involved scales, and although scales between African and Asian species vary in shape, scales can either become naturally worn over time or are intentionally crushed prior to export for commercial purposes. Therefore, genetic analyses are also necessary for definitive identification (Hsieh *et al.* 2011). Such lab analyses require time to complete and are less useful to customs officials who must often make rapid assessments of trafficked wildlife.

10. Consultations

Consultation letters were sent to the 40 African range countries. Range State responses regarding *Manis sp.* (with respect to species found in that country) were received from the following countries: Côte d'Ivoire, Ghana, Malawi, Mozambique, Namibia, Nigeria, Somalia, Uganda, and Zambia. Information from the country responses have been incorporated into the relevant sections of the proposal. Support of the transfer from Appendix II to Appendix I are indicated below:

Country	Support listing to transfer the African pangolin species to Appendix I (Yes/No); explanation (if given)
Cote d'Ivoire	Yes
Ghana	Yes
Ivory Coast	Yes
Kenya	Yes
Malawi	Yes
Mozambique	Yes
Namibia	No: do not support CoP17 transfer to Appendix I because: 1) the local and regional

	wild population of this species is not well researched and documented; 2) there is no verifiable literature and data as evidence of the decline of the wild population of the species locally or regionally; 3) except for an average of 3 skins per year seized by the PRU within the Namibian territory, there is inadequate verifiable recorded hunting and trade cases of the species.
Nigeria	Yes
Somalia	Yes
South Africa	Yes
Uganda	Yes; because of the increase demand for scales and the threats of dangers from overexploitation
Zambia	Yes; so that all commercial trade in the species if any is stopped. In Zambia the pangolin is already a protected species which is not being commercially traded, therefore, the uplisting will reinforce the protection status of the species and thus make law enforcement on a global scale that much easier. The various scientific authorities would not need to find out which species of pangolin is involved first before establishing whether commercial trade is allowed or not for a particular species. Support listing <i>M. tricuspis</i> and <i>M. temminckii</i> to App. I

In addition to the consultation letters, a CITES CoP 17 Coordination Workshop between West and Central African countries was held in Senegal March 15-17, 2016. Senegal and Nigeria presented a draft proposal to transfer African pangolins from Appendix II to Appendix I. Representatives from West and Central Africa, many of which are range states for *Manis sp.*, provided feedback on the draft proposal during the workshop.

11. Additional remarks

International Workshops/Congresses:

In June of 2015, Viet Nam and the United States of America co-hosted a meeting of 95 delegates representing 29 or the 48 African and Asian pangolin range countries. The meeting, which was held in Viet Nam, gave pangolin range States an opportunity to develop a unified action plan to protect pangolin species 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. Among other things, participants of the meeting evaluated each pangolin species and agreed that they all qualify 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 meeting report which was provided to AC28 (Tel Aviv 2015) as information document AC28 Inf. 23 and to 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). The full report can also be found at <http://www.fws.gov/international/pdf/first-pangolin-range-states-meeting-report-8-3-2015.pdf>.

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Annex 1: UNEP-WCMC trade data: 2000 – 2014 for African pangolin spp. 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 = ranch specimen.

Species/ Year	Importer	Exporter	Origin	Importer reported quantity	Exporter reported quantity	Term	Unit	Purpose	Source
<i>M. temminckii</i>									
2004	Italy	Dem. Rep. Congo			10	live		T	W
2005	United States	Netherlands	NA		1	bodies		T	O
2009	Georgia	Tanzania		1		live		Z	W
<i>M. gigantea</i>									
2011	Japan	Togo			10	live		T	W
2011	Thailand	Togo			50	scales	kg	T	W
2011	Thailand	Togo			20	scales		T	W
2011	Thailand	Togo		10		skins		T	R
2012	Spain	Togo			5	live		T	W
2012	Japan	Togo			3	live		T	W
2012	Lao	Togo			50	live		T	W
2012	Great Britain	Gabon		0.14		scales	kg	L	I
2012	Great Britain	Gabon			7	scales		L	W
2012	Thailand	Togo			135	scales	kg	T	W
2012	Thailand	Togo		45		scales		T	W
2012	Viet Nam	Uganda			70	scales	kg	T	W
2013	Viet Nam	Uganda		70		scales	kg	T	W
2013	Mexico	Thailand	Togo		10	skin pieces		T	W
2013	Thailand	Togo		51		skin pieces		T	W
2013	Mexico	Thailand	Togo	10		skins		T	R
2013	Mexico	United States	Togo	225	225	skins		T	W
2013	United States	Togo		225		skins		T	W
2013	United States	Liberia		1		trophies		H	W

2014	United States	Liberia		1		trophies		H	I
<i>M. tricuspis</i>									
2000	Japan	Cameroon			5	live		T	W
2001	United States	Cote d'Ivoire		1	1	live		P	W
2002	United States	Togo			16	live		T	W
2007	Czech Republic	Cameroon			10	live		T	W
2007	Italy	Togo			15	live		T	W
2007	Netherlands	Togo			1	live		T	W
2007	United States	Cameroon		10		live		T	I
2007	France	Cameroon			1	trophies		H	W
2008	Italy	Togo		500	5	live		T	R
2008	Tonga	Togo			20	live		T	W
2008	France	Cameroon		2		trophies		P	W
2009	Japan	Cameroon			4	live		T	W
2009	Korea	Nigeria		10		live		Z	W
2010	Arab Emirates	Benin		2		live		T	W
2011	United States	Thailand	Guinea	50		skins		T	I
2011	United States	Thailand	Guinea		50	skin pieces		T	W
2011	Arab Emirates	Benin			2	live		T	W
2011	Japan	Togo			12	live		T	W
2011	France	Cameroon		6		skins		T	W
2011	Thailand	Guinea		250		skins		T	W
2012	Spain	Togo			5	live		T	W
2012	Japan	Togo			3	live		T	W
2012	Lao	Togo			250	live		T	W
2012	Viet Nam	Togo			200	live		T	W
2013	Hong Kong	Togo		60		scales	kg	T	W
2013	Mexico	Thailand	Guinea		100	skin pieces		T	W
2013	Oman	Thailand	Guinea		100	skin pieces		T	W
2013	Mexico	Thailand	Guinea	100		skins		T	W
2013	United States	Liberia		1		trophies		H	I
<i>M. tetradactyla</i>									
2000	Poland	France			1	bodies		L	I
2000	Germany	Cote d'Ivoire			1	skins		Q	W

2002	United States	Togo			8	live		T	W
2004	United States	Togo			3	live		T	W
2007	Netherlands	Togo			1	live		T	W
2007	United States	Cameroon		4		skulls		T	I
2007	United States	Cameroon		10		skulls		T	W
2007	United States	Cameroon		10		skeletons		T	I
2011	France	Cameroon		2		skins		T	W
2012	Spain	Togo			5	live		T	W
2012	Japan	Togo			3	live		T	W
2000	Great Britain	Cameroon		2		bodies			I
2000	Great Britain	Djibouti		1		bodies			I
2009	United States	Uganda		50		scales		T	I
2010	United States	Cote d'Ivoire		1		skins		T	I
2011	United States	Thailand	Guinea	50		skins		T	I
2012	United States	Equatorial Guinea		1		bodies		T	I