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

Eighteenth meeting of the Conference of the Parties
Colombo (Sri Lanka), 23 May – 3 June 2019

CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II

A. Proposal

The Proponents propose the transfer of the smooth-coated otter *(Lutrogale perspicillata)* from CITES Appendix II to CITES Appendix I, in accordance with Article II, paragraph 1, of the Convention. The species qualifies for listing on CITES Appendix I because it is considered to be facing a high risk of extinction and is detrimentally affected by international trade, as well as habitat loss and degradation and persecution associated with conflict with people (and fisheries). The 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 C: a marked decline in the population size in the wild, which has been:

ii) inferred on the basis of:

a decrease in area of habitat

a decrease in quality of habitat

a high vulnerability to extrinsic factors (high levels of poaching)

B. Proponent

Bangladesh, India and Nepal*:

C. Supporting statement

1. Taxonomy

1.1 Class: Mammalia

1.2 Order: Carnivora

1.3 Family: Mustelidae (Fischer de Waldheim 1817)
Sub-family: Lutrinae (Bonaparte 1838)

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

Genus: *Lutrogale*
Species: *Lutrogale perspicillata*

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

Subspecies: *Lutrogale perspicillata maxwellii* (Maxwell's Otter) occurs as an isolated subpopulation in Iraq (de Silva et al. 2015).

1.5 Scientific synonyms: *Lutra perspicillata*

1.6 Common names:

English:	Smooth-coated Otter
French:	Loutre d'Asie
Spanish:	Nutria Lisa; Nutria Simung

1.7 Code numbers: N/A

2. Overview

Lutrogale perspicillata, the smooth-coated otter, once common in the wetlands and low-lying areas of South Asia and Southeast Asia, is now restricted to a few protected areas. The population of *L. perspicillata* is inferred to have declined by more than 30 percent in the last 30 years (Pacifici *et al*. 2013), due in large part to exploitation for the global trade in otters skins and the pet trade and significant reductions in its range and quality of habitat; *L. perspicillata* is listed as vulnerable by IUCN.

3. Species characteristics

3.1 Distribution

Lutrogale perspicillata is found in Java, Sumatra and Borneo, northward to southwestern China, east through Nepal and Bhutan and India to Pakistan, excluding the Indus Valley. There is an isolated population in the marshes of Iraq *(L. p. maxwelli*), indicating the range must once have been wider (Pocock 1941; Hussain 1993). Its presence has been confirmed in Nepal, India, Bangladesh, Bhutan, southwest China, Myanmar, Singapore, Thailand, Viet Nam, Malaysia, Sumatra, Java, Borneo, Indonesia (Mason & Macdonald 1986; Hussain 1993; Melisch 1994) and southern Iraq (Al-Sheikhly*et al*. 2015).*Lutrogale perspicillata* in Singapore are *L. perspicillata* and *A. cinereus* hybrids with *A. cinereus* mtDNA, the first reported case of hybridization amongst wild otters based on molecular studies (Moretti *et al*. 2017).

3.2 Habitat

Lutrogale perspicillata is an otter of lowlands and floodplains; it uses a wide variety of habitats (Hussain & Choudhury 1997). They use large rivers and lakes, peat swamp forests, mangroves and estuaries, as well as rice fields, for foraging (de Silva *et al*. 2015). The species likes large rivers, lakes, peat swamp forests, coastal mangroves, estuaries and rice fields (Foster-Turley 1992), provided there is ample riverbank vegetation for cover and escape and rocky areas or deep soil for digging natal dens. Along large rivers, *L. perspicillata* prefer rocky stretches (because these provide sites for denning and resting), and in rice fields and pond areas, they prefer sites with a moderate diversity of vegetation. They may move among habitat types seasonally in accordance with changes in prey availability – for example, in the upper Gangetic plains, otters occupy seasonally flooded swamps during the monsoon and in early winter but move to permanent rivers when the swamps begin to dry in spring (Hussain & Choudbury 1997). They have been seen swimming out to sea, but these otters need adequate fresh water to wash the salt from their fur. Along the northern Singapore coast, *L. perspicillata* are currently using partially disturbed environments and are increasingly using semi-urban areas in certain areas, showing a remarkable resilience to human activity (Theng & Sivasothi 2016).

In the Indian subcontinent, the species is adapted to live in the semi-arid region of northwestern India and the Deccan Plateau (Prater 1971). In the Punjab plains of India, it occurs along some stretches of the Beas, Sutlej, and Ravi Rivers and the Harike wetlands (Khan 2015). In Pakistan, it occurs in the floodplains of Sindh, some parts of Pakistan Punjab, and a few places in Khyber-Pakhtunkhwa along the Indus River (Rais 2009; Khan *et al*. 2010).

In Nepal, *L. Perspicillata* is found along the braided channels of Narayani River, with its slow current and shallow depth (Acharya & Lamsal 2010). Along the large rivers in India, the species prefers rocky stretches, which provide sites for denning and resting (Hussain 1993; Hussain & Choudhury 1995, 1997). In the terai areas of the upper Gangetic plain, *L. Perspicillata* uses seasonally flooded swamps during monsoon season and early winter. In the winter breeding season, swamps are extensively used as natal den sites and nurseries.

In Southeast Asia, rice fields appear to be one of the most suitable habitats (Foster-Turley 1992; Melisch *et al*. 1996). *L. perspicillata* is more abundant in mangroves than rainforest rivers in Kuala Gula, Malaysia (Shariff 1984). In the inner Gulf of Thailand, otters also use the cover of traditional aquaculture ponds, but not agriculture and urban cover. In west Java, *L. perspicillata* prefer mangroves, tidal stretches of the rivers, and rice fields (Melisch *et al*.1996). Remaining natural patches seem to be critical refuges for otter, allowing them to persist in an otherwise heavily transformed landscape. Recent studies in Thailand suggest that *L. perspicillata* are able to persist in highly modified fragmented habitats if patches of natural habitats (e.g. mangroves) are still available (Kamjing *et al*. 2017).

3.3 Biological characteristics

Lutrogale perspicillata is a gregarious species. They often live in large groups of different age and sex, hunt in groups and defecate in common latrine sites which are used traditionally over many years (Hussain 1996; Hussain & Choudhury 1997). The basic family group consists of an adult female and her offspring, the father of the offspring, and older siblings (Lekagul & McNeely 1988; Hussain 1996). Along the Chambal River in central India the group size ranges from 1 to 9 animals, but a group of 41 animals has been reported in the Corbett Tiger Reserve, in north India (Nawab 2007). On the Chambal River in central India, the home range of otters overlapped substantially (Hussain & Choudhury 1995); the home range of females with cubs was estimated to be 5.5 km of river, and about 17 km for adult males. Group sizes of up to 13 have been observed in Singapore (Theng & Sivasothi 2016).

Lutrogale perspicillata is mainly a fish eater, taking larger prey than other otter species that share its range. It also eats shrimp, crayfish, crabs, frogs, mudskippers, and birds (Foster-Turley 1992; Hussain & Choudhury 1998; Anoop & Hussain 2005). The percentage of fish in the diet range from 75-100% (Melisch *et al*.1996, Hussain & Choudhury 1998, Anoop & Hussain 2005). Foraging mainly occurs in water near obstructions such as fallen trees, rocks, fishing net,s and rapids (Shariff 1984). In the Periyar Tiger Reserve, India, the exotic European carp constitutes the major prey. By consuming large amounts of exotic fish species, otters may contribute to the control of their rapid expansion in the water bodies of the reserve (Anoop & Hussain 2005).

Lutrogale perspicillata may compete for resources with small-clawed otters, *A. cinereus*, where they co-exist. *Aonyx cinereus*, however, mostly forage in rice fields and small muddy streams, eating primarily crabs, whereas *L. perspicillata* mostly uses large bodies of water, eating primarily fish (Sabrina 1985). *L. perspicillata* is also sympatric with the Eurasian otter, *Lutra lutra*, which consumes smaller fish and more amphibians (Kruuk *et al*. 1994).

Lutrogale perspicillata mating takes place in water, with prolonged playful bouts between partners (Desai 1974; Naidu & Malhotra 1989). Males are polygamous, mating with up to 4 females (Desai 1974). In northern India, mating occurs in August and September, and litters of 2 to 5 are born several months later (Desai 1974; Hussain 1993). Dens are made under tree roots, between piles of boulders, or in dense vegetation (Shariff 1984).

3.4 Morphological characteristics

Lutrogale perspicillata is large, stoutly built, and has short, dark brown velvety fur with a paler underside. The final half of the tail is markedly flattened and the paws are relatively large and webbed, with short, sharp, strong claws. The skull is rounded, with massive teeth and a short muzzle. They are characterized by a shorter, very smooth, sleek (“almost velvety”) pelage, the colour of which varies from dark to reddish brown, with the undersides slightly lighter. Upper lip, cheeks, sides of neck, and throat are whitish or gray. The rhinarium is black and hairless (Krupa *et al*. 2017).

3.5 Role of the species in its ecosystem

All otters are top predators in the wetland ecosystem and serve as important indicators of healthy aquatic environments (Kruuk 2006).

4. Status and trends

4.1 Habitat trends

In the last decade, loss of mangroves to aquaculture, reclamation of wetlands for settlements and aquaculture, stone quarrying and sand mining, large-scale hydroelectric projects, and other habitat

alterations outside protected areas have increased, leading to reduced habitat for *L. perspicillata* (Otter Specialist Group 2018).

Southeast Asia has the highest rate of forest loss in the tropics (e.g. Sodhi *et al*. 2004). Tropical peat swamp forests are cleared for oil palm plantations, food crops (rice, corn and soya bean), and fish farming. In fact, “peat swamp and flooded forests have been drastically degraded and shrunken in all range countries” (Sasaki *et al*. 2009). In Indonesia, natural wetlands have been converted to palm oil plantations at an accelerated rate (Rode-Margono *et al*. 2014 as cited in Aadrean & Usio 2017). In Vietnam, about 80% of the Mekong Delta is used for rice production reducing native habitats to a few pockets (Wassman *et al*. 2004). To some extent, otters will use rice fields which may provide important habitat in human-modified landscapes, but the impacts of further modernization (e.g. use of agrochemicals and large machinery) on habitat suitability are unknown (Aadrean & Usio 2017). Improved production systems for rice (that involve the use of less water) may also have detrimental impacts on aquatic biodiversity, including otters (Aadrean & Usio 2017). In Thailand, rapid economic development and expansion of Bangkok has caused extensive destruction and fragmentation of mangrove forests along the coast: between 1961 and 2009 the coverage of mangrove forest decreased by half (references in Kamjing *et al*. 2017).

4.2 Population size

Because of the secretive and nocturnal behaviour of *L. perspicillata*, reliable estimates of its population are not available (de Silva *et al.* 2015).

4.3 Population structure

In southeast Asia, *L. perspicillata* is found in large groups consisting of an adult female and her offspring, the father of the offspring, and often older siblings (Lekagul & McNeely 1988; Hussain 1996). The group size varies considerably between months and seasons, the group being largest during the monsoon period (Hussain 1996). Along the Chambal River in central India the group size ranges from 1-9 individuals (mean=4.62). During a study conducted in the Corbett Tiger Reserve, in north India an estimate of 41 individuals (35 adults and 6 juveniles) with a mean of 5.1±1.55 was recorded from the 85 km of river stretch within the Reserve (Nawab & Hussain 2007).

4.4 Population trends

The population is decreasing. A reduction in the population size of *L. perspicillata* has been observed in many parts of its range due to intense poaching and the extent of loss of habitat in south and southeast Asia (Hussain 1993, Melisch *et al*. 1996, Hussain 2002, Nawab & Hussain 2012). As a result, marked reductions in otter populations have been observed in many parts of its range (de Silva *et al*. 2015 and references therein).

The recent (2015) IUCN Red List assessment states that “although the quantitative data on population sizes and trends are lacking, it is inferred that the global population of the *L. perspicillata* has declined by more than 30% over the past 30 years” (Pacifici *et al.* 2013) (de Silva *et a*l. 2015).They are listed by IUCN as vulnerable due to an inferred population decline due to habitat loss and exploitation.

4.5 Geographic trends

Lutrogale perspicillata remains distributed throughout south Asia and southeast Asia, though it is now restricted to a few protected areas (de Silva *et al*. 2015).

Lutrogale perspicillata formerly occurred in the tropical and subtropical regions of Chinabut there are no confirmed recent records there (Li & Chan 2017).

Previously the species occurred throughout Myanmar; however, it was not photographed in extensive camera trap survey, and it is considered to be very rare in the lowlands, with very low populations in the Hukaung Valley (where there is extensive ideal habitat for otters) although a few may persist in the remote Naga Hills sector; evidence of hunters hunting otters in previous years, at which point otter signs were patchy with complete absence in some waterways; no evidence that otters were previously rare in Myanmar. *L. perspicillata*, in particular, was considered to be common in the Chindwin, so the current paucity of records in that river system now represent a major decline. (From Zaw *et al*. 2008).

L. perspicillata were formerly widely distributed and found in all major wetlands in Bangladesh, they are now locally extinct from much natural habitat in the country due to rapid habitat degradation and food scarcity (Feeroz *et al*. 2011a). Aziz (2018) found only the small-clawed otter in the wild in Bangladesh Sundarbans, although fishermen in the Sundarbans in Bangladesh still maintain a semi-captive population of *L. perspicillata* (176 otters in 2011) that they use for traditional fishing methods (Feeroz *et al*. 2011a, 2011b).

Confirmed in several sites in Pakistan in 2008/9 but thought to be declining at all sites where it was detected (and only at 5 of 25 sites year-round) and currently existing in scattered populations in fragmented habitats (Khan *et al*. 2009, 2010) – the authors also refer to otters having disappeared from some large lakes due to pollution levels.

Surveys of five protected areas in the southern Western Ghats, India, found *L. perspicillata* at three (with percentage occurrence, respectively, of 39.3%, 20% and 16.7%) (Raha & Hussain 2016).

After 3 decades of absence, *L. perspicillata* reappeared in U in the mid-1990s and are now widespread and breeding along the northern shores of Singapore (Theng *et al*. 2016; Theng & Sivasothi 2016).

The Iraq subspecies has recently (surveys during 2005 to 2012) been found to be thriving in the southern marshes of Iraq, and has been sighted in the Kurdistan region in the north (Al-Sheikhly & Nader 2013) [formerly feared to be extinct following drainage of marshes in the 1990s].

5. Threats

For otters, generally, all man-made changes to aquatic habitats (including canalisation of rivers, water abstraction, wetland drainage, dam construction and removal of bank-side vegetation) tend to be unfavourable (Roos *et al*. 2015). Construction of hydroelectric dams is a major threat to several otter species (e.g. Palmeirim et al. 2014), and all otters are impacted either directly or indirectly by aquatic pollution. Acidification of rivers and lakes (due to acid drainage from coal mines) eliminates otter prey (fish, e.g. Serfass *et al*. 2015), as does eutrophication caused by fertiliser runoff (e.g. Roos *et al*. 2015). Fisheries (both large- and small-scale) carry a risk of causing accidental death to otters getting caught in nets, and most otter species are subject to some level of illegal killing due to their interference in fishing activities (see Harrington *et al*. 2017).

The major threat to Asian otters is the burgeoning human population across Asia. The associated increase in human activity and pressure on natural resources is leading to loss of wetland habitatdue to construction of hydroelectric damns and reclamation of wetlands for settlements and agriculture, overfishing, contamination of waterways with pesticides (de Silva et al. 2015; Roos et al. 2015; Wright et al. 2015),decline in prey biomass, , and poaching. In the last decade, loss of mangroves to aquaculture, reclamation of wetlands, stone quarrying and sand mining, and other habitat alterations outside protected areas have increased, leading to reduced habitat for *L. perspicillata*.

Across South and Southeast Asia, increased aquaculture activities lead to indiscriminate killing of otters. Small-scale fishermen are quite tolerant of otters, but commercial fishermen kill them as pests. The practices of dynamite fishing in the Nepal foothills (Prakash *et al.*2013), and electrofishing in Iraq (Al-Sheikhly & Nader 2013) kill otters. Otters entangled in fishing nets drown. And although technically protected throughout its range, laws are laxly enforced, with some local authorities even actively encourage otter killing by fishery interests.

Wildlife trade poses a direct threat to *L. perspicillata*. From 1980 to 2017, 5881 otter pelts were seized across 15 countries in Asia, with about half of the pelts coming from India and most cases involving *L. perspicillata* and *L. lutra* (Gomez *et al*. 2016). Otters are also coveted for use in traditional medicine in some countries of Southeast Asia and China (Poole 2003).

There is inadequate data on the trends of otter mortality due to road kills, but there are records of frequent road kills in India and Southeast Asian countries. An insufficient reporting system hampers an understanding of the level of otter mortality from vehicles.

Captive and wild populations of otters are susceptible to diseases such as rabies, canine distemper, canine hepatitis, and parvovirus, which may be contracted by *L. perspicillata* from feral dogs or other species of otters.

Climate change will take a serious toll on otter populations worldwide. *L. perspicillata*, like all otters, depend on rivers, lakes and streams, which face dramatic alteration under a warming scenario, reducing water levels in long-term droughts and affecting prey densities.

6. Utilization and trade

6.1 National utilization

Asian river otters are primarily exploited either for their fur or as pets. Most of the demand for skins is in China, where populations have declined and are now likely found only in protected areas (Lau *et al*. 2010). In China, otter fur is used for the outer linings of coats and to make hats. In the Tibetan Autonomous Region, otter pelts are used to decorate chupas, a traditional garment (Banks *et al*. 2006). According to one garment-maker, it takes three otters to decorate one chupa (Banks pers. comm. 1 July 2018). It appears that most of the otter pelts used to make coats, hats, and traditional garments originate from outside of China.

Investigations focusing on online otter trade and increasing seizures of live otters suggests that the demand for live, juvenile otters as pets is increasing (Gomez *et al*. 2016). *Aonyx cinereus* appear to the most popular otter to keep as a pet, but *L. Perspicillata* are also found in the pet trade. Analysis of social media in Vietnam and Indonesia, for example, suggest the popularity of keeping otter pups as pets. (Gomez & Bouhuys 2018). Pet otters are also popular in Thailand, but the greatest demand seems to be in Japan.

Otters are also used for medicinal purposes. For example, where otters are believed to have a wide range of therapeutic effects, the skin is considered to relieve labour pains (Ashwell & Walston 2008), and the penis is crushed and mixed with coconut milk for use as an aphrodisiac (Dong *et al*. 2010). In India, otter blood is believed helpful for epilepsy (Kruuk, 2006) and otter fat is used to treat joint pain and lung infections (Meena 2002). In China, otter bile was historically used to treat anemia and menstruation irregularities (Wang & Carey 2014). *L. Perspicillata* blood is used to treat epilepsy (Gomez *et al*. 2016).

L. Perspicillata are also sometimes kept and trained by fisherman to herd fish into baskets or nets (Otter Specialist Group 2018).

6.2 Legal trade[1]

L. perspicillata: The CITES Trade Database includes very little legal trade since 1983. The only aberration is the export of 3058 skins from Germany in 1993. Otherwise, exports since 2000 have been limited to live specimens for scientific or zoological purposes, as the table below demonstrates.

Exporting Country	**Summary**
Cambodia	Two live specimens each in 2008 and 2009 to Great Britain for zoological purposes, with source code F
China	One live specimen in each 2001 and 2002 to Japan for zoological purposes, coded as F in 2001 and as C in 2002.
Czech Republic	One live specimen re-exported (origin Great Britain) to United Arab Emirates for zoological purposes using source code C.

[1] Where possible, attempts have been made to correct for duplications in the CITES Trade Database.

Great Britain	4 live specimens exported to Singapore in 2014 for zoological purposes, using source code F.
Italy	Re-export of one wild-sourced specimen originally from Indonesia to the U.S. for scientific purposes
Malaysia	Export of one live specimen to Great Britain for zoological purposes, coded as C by Malaysia and F by Great Britain.
Singapore	Singapore exported 1 wild-sourced specimen in 2010 to the United States for scientific purposes and two wild-sourced specimens to Japan in 2016, also for scientific purposes.
United States of America	The U.S. re-exported a total of 8 wild-sourced specimens for scientific purposes to Italy: 4 in 2014 originally from Lao PDR; 1 in 2015 originally from Indonesia; 2 in 2015 from Malaysia; 1 in 2015 originally from Nepal; and 1 originally from Viet Nam.
Viet Nam	In 2012, 1 live specimen exported from Viet Nam to Great Britain for zoological purposes, using source code C.

6.3 Parts and derivatives in trade

L. perspicillata: live specimens, whole specimens, skin, tail, stomach, feet.

6.4 Illegal trade

Poaching and illegal trade for use as pets, for the fur trade, and for the trade in parts for traditional medicine poses a significant and growing threat to all four tropical Asian otter species. Commercial exploitation of otters is taking place both domestically and internationally in clear violation of national laws and Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (Gomez & Bouhuys 2018). Incidental discovery of significant quantities of otter pelts during investigations into the big cat skin trade revealed that international criminal networks are involved in moving otter pelts, along with specimens of species such as tigers and leopards. During this investigation, no fewer than 1800 otter pelts were observed in a single market over two years (Banks *et al*. 2006). Prior to this discovery, little attention was paid to illegal trade in Asian otter species.

Information on the overall scale of illegal trade in tropical Asian otter species is scarce, due in part at least to relatively little attention paid to enforcement for these species (Gomez *et al.* 2016). Thus, the seizures that are reported likely represent only a small fraction of the overall illegal trade in otters in the region (Gomez *et al.* 2016; Gomez & Bouhuys 2018; Savage & Shretha *in press*). Worldwide, between 1980 and 2018, there were over 250 seizures that included otter specimens reported, representing a total of 6010 individual otters (Otter Specialist Group 2018).

Poaching and illegal trade are driven in large part by demand for otter pelts, mostly centered in China, including the Tibet Autonomous Region (TAR). At least 50 percent of the otter skins in China originate in India (Ghosh 2005; Duckworth 2013). In fact, Lhasa, TAR, is a hub for trade in pelts; from Lhasa, pelts are moved to Nagchu, TAR and to Linxsia in Gansu Province, China (Banks *et al*. 2006). According to researchers, Chinese and Western tourists in TAR buy skins for home decor and possibly good luck but Tibetans are a large consumer base for pelts from otters poached in India and Nepal (Banks *et al*. 2006; Savage & Shrestha *in press*). Across TAR, Tibetans wear otter skins, as well as

leopard and tiger skins, as part of their traditional dress, known as a chupa (Banks *et al*. 2006). Skins, including otter skins, are also used as trophies for display purposes during festivals (Gomez *et al*. 2016).

Lutrogale perspicillata are hunted in India, Nepal, and Bangladesh for their pelts. Between 1980 and 2015, 2949 otter pelts were seized in India (Gomez *et al*. 2016); although few are identified down to the species level, given that *L. perspicillata* pelts are desirable, a significant number are likely *L. perspicillata* (WPSI 2018). Of these, 787 were seized in Delhi, a northern Indian city that serves as a hub for wildlife traders moving goods into Nepal. In fact, some of the otter pelts seized in Delhi were already marked with Tibetan script, suggesting that they were destined for the TAR, China (Savage & Shrestha 2018). In 1993, 40 skins were identified as *L. perspicillata* amongst the 234 total skins seized that year in India (WPSI 2018).In Nepal, a total of 756 otter pelts were seized between 1989 and 2017, either in Kathmandu or near an international border (Savage & Shretha *in press*). In Pakistan, fisherman target *L. perspicillata* for their pelts as they fetch high prices for the fishermen from middlemen who move the pelts into Russia and China (Qasim *et al*. 2010). In Iraq, *L. perspicillata* are hunted for their pelts and sold to smugglers who operate along Iraq's borders, fetching between 100 and 300 USD per pelt (Al-Sheikhly & Nadar 2013).

In addition to this trade across India, Nepal, and China, otter pelts also move out of Southeast Asia into China, including from Myanmar, Vietnam, Cambodia, Lao PDR, and Thailand (Gomez *et al*. 2016). Pelts have been observed for sale in well-known wildlife markets. In Cambodia and Lao PDR, all of the specimens seized between 1980 and 2015 were dead specimens, mostly skins, suggesting that poaching is largely motivated by demand for pelts, although pet trade appears to be increasing (Gomez *et al*. 2016). In Cambodia, big pelts in particular are said to be sold to middlemen who take the skins to Vietnam (Ashwell & Walston 2008). A quality pelt can sell for 200 USD, a strong incentive for the catch of otters (Heng *et al*. 2016).

Almost 99% of the seizures analyzed by TRAFFIC in its 2016 report on illegal otter trade were of otter skins (Gomez & Bouhuys 2016). The large majority (82%) of seized otter skins could not be identified down to species level owing to the difficulty of distinguishing between the skins of the different species once in trade (Gomez & Bouhuys 2016). In addition, poachers do not differentiate amongst otter species as the pelts of any otter species are valuable in trade.Thus, it is difficult to associate a particular conservation risk to a specific level of trade for any particular otter species; however, what is clear is that poaching and illegal trade are a major threat to all Asian tropical river otter species and demand appears persistent. Of the 6010 otter specimens reported seized through 2018, 90 could clearly be identified as *L. perspicillata* (Otter Specialist Group 2018).

According to TRAFFIC, seizures of otter skins have declined since 2005; however, the reason for this decline is not clear. Similar declines were witnessed between 1996 and 2000, and seizures then spiked again between 2003 and 2005 (Gomez *et al*. 2016). The recent decline in seizures of otter skins could signal weaker enforcement efforts and a corollary increase in undetected trade, or worryingly, declining otter populations and thus less frequent encounters by would-be poachers (Gomez *et al*. 2016). The decline in seized skins is not likely due to a decrease in demand as the fur trade generally appears to be flourishing in the region (Banks *et al*. 2006; Verheij *et al*. 2010; Stoner & Pervushina, 2013).

The pet trade has emerged in recent years as a growing threat to tropical Asian otters, underpinned by a flourishing online trade to feed the exotic pet industry, particularly in Thailand, Japan, Malaysia, Vietnam, and Indonesia (Gomez & Bouhuys 2018).

Seizures of live otters were virtually unknown prior to 2002 but have steadily increased as seizures of otter skins have decreased (Gomez & Bouhuys 2018). In just two years, between 2015 and 2107, 59 live otters, mostly juveniles, were confiscated in four countries (Indonesia, Malaysia, Thailand and Viet Nam) (Gomez & Bouhuys 2018). Moreover, tropical Asian otters are increasingly advertised for sale online. Over just a four month period, between 734 and 1189 otters were advertised for sale online in 560 advertisements in Thailand, Indonesia, Vietnam, and Malaysia (Gomez & Bouhuys 2018). Although small-clawed otters appear to the most desired as a pet, *L. perspicillata* are also advertised for sale online. Eight *L. perspicillata* were identified amongst those viewed during the TRAFFIC study (Gomez & Bouhuys 2018).

Most of the seizures of live otters occurred in Thailand, followed by Indonesia, Vietnam and Malaysia. *A. cinereus* are especially susceptible to exploitation for the pet trade, along with *L. perspicillata*. Claims have been made that otters are being bred in captivity for the pet trade in Indonesia and Thailand,

though the veracity of those claims have not been verified and no captive breeding centers have been confirmed in either country. There were at least five incidents in 2017 alone that indicate the international trafficking of otters for the pet market. Four of these occurred in international airports in Thailand and Vietnam and one involved a Japanese national who claimed to have bought the animals at the notorious Chatuchak weekend market, which is known for the availability of illegal wildlife, with the intention of raising them as pets back home in Japan. Of the 59 live otters seized between 2015 and 2017, at least 32 were en route to Japan from Thailand (Gomez & Bouhuys 2018). In data collected through June 2018, over 25% of the otter specimens identified as *L. perspicillata* were live otters (Otter Specialist Group 2018).

6.5 Actual or potential trade impacts

The illegal wildlife trade poses a direct threat to *L. perspicillata*. The threat of poaching, driven by trade, is a "major threat", according to the IUCN Red List (IUCN 2018). In particular, the inability to distinguish amongst otter pelts and the high percentage of unidentified skins amongst seizures could mean that trade is an even more significant threat than is currently known. Additionally, the pet trade is a growing threat to *L. perspicillata.* Increasing demand for otters as pets poses a new and growing threat to the species, and the extent to which live otters are advertised online suggests a flourishing and likely expanding market; when looked at in conjunction with the increases in live otter seizures in recent years, the pet trade is likely to be a significant impact. While trade is not the only significant threat to the survival of *L. perspicillata*, it is a compounding threat that merits heightened international attention, especially cooperative attention between source and demand countries. Any level of trade is unsustainable given the contraction of range and massive, pervasive habitat loss, and likely high levels of poaching.

7. Legal instruments

7.1 National

Lutrogale perspicillata is generally protected in range States, except in Cambodia and Brunei Darussalam. Cambodia removed protections for *A. cinereus* and *L. perspicillata* in 2007 (Gomez & Bouhuys 2018).

Range State	Legislation	Protected Status
Bangladesh		Not Protected
Bhutan		Protected
Brunei Darussalam	Wildlife Protection Law of 1978	Not protected
Cambodia	Forestry Law (2002)	Not Protected
China	Law of the People's Republic of China on the Protection of Wildlife (1989) – Class II (China);	Protected
India	The Indian Wildlife (Protection) Act 1972 – Schedule I & II	Protected

Indonesia	Government Regulation No. 5/1990 on Conservation of Natural Resources and the Ecosystem, Government Regulation No. 7/1999 on Preservation of Flora and Fauna	Protected
Lao PDR	Wildlife and Aquatic Law (2007)	Protected
Malaysia	Wildlife Conservation Act (2010), Wildlife Protection Ordinance (1998) (Sarawak), Wildlife Conservation Enactment (1997) (Sabah)	Protected
Myanmar	Protection of Wildlife and Wild Plants and Conservation of Natural Areas Law (1994)	Protected
Nepal	Aquatic Life Protection Act 1961, National Parks and Wildlife Conservation Act, 1973	Protected
Pakistan	Punjab Wildlife Protection, Preservation, Conservation and Management Act, 1974. The North Western Frontier Province *Wild-Life* (Protection, Preservation, Conservation and Management) A*ct,* 1975	Protected
Thailand	Wild Animals Preservation and Protection Act (1992)	Protected

Viet Nam	Decree No. 32/2006 Decree No. 59/2005 Decree 157/2013	Protected

7.2 International

Lutrogale perspicillata is listed on Appendix II of CITES (1977). It is not protected by any other international agreement.

8. Species management

8.1 Management measures

Lutrogale perspicillata has legal protection in range states except Cambodia and Brunei Darussalam. No management plans or species-specific conservation measures are in place for *L. perspicillata* in range States, although development of a management plan is suggested under the Pakistan 2018 National Biodiversity Strategy and Action Plan (Government of Pakistan 2018).

8.2 Population monitoring

There is a paucity of data on *L. perspicillata* populations across the species' range (de Silva *et al*. 2015). Populations were assessed in the following areas: Bhutan (Chettri & Savage 2014);Nepal, where *L. perspicillata* are nationally endangered and rapid population declines have been observed (Jnawali *et al*. 2011); Pakistan, where otters remain under "extreme pressure" from illegal hunting in Khyber Pakhtunkhwa, Kashmir, Punjab and Balochistan provinces (Kahn & Bhagat 2014); Iraq, where researchers call for urgent action to prevent hunting, trapping and habitat loss from pushing the species into extinction in the nation (Al-Sheikhly *et al*. 2015); India, where declining populations are isolated in fragmented habitats in Gujarat (Suthar *et al*. 2017) and where Krishna River populations are subject to targeted killing by fish farmers and organized gangs of poachers (Kantimahanti & Allaparthi 2017); in Myanmar the species was once reportedly common, but populations are now very low with only a few signs found in surveyed areas (Zaw *et al*. 2008); in Cambodiasurvey records are similarly rare despite high survey effort, indicating decline and risk of extinction within the country (Wilcox *et al*. 2016); and in China, where the otters were previously both widespread and common, the species is now facing extinction, and recent surveys found no confirmed records of *L. perspicillata* (Li & Chan 2017).

8.3 Control measures

8.3.1 International

L. perspicillata is listed on CITES Appendix II.

8.3.2 Domestic

L. perspicillata is illegal to hunt or trade in all range countries except Brunei and Cambodia.

8.4 Captive breeding and artificial propagation

Lutrogaleperspicillata are bred in many zoos across South and Southeast Asia. They are also known to breed in zoos in Thailand, Cambodia, Viet Nam, Malaysia, and Singapore. Few European or American Zoos hold or breed *L. perspicillata*. The Twycross Zoo in the United Kingdom was the first in the Western Hemisphere to breed *L. perspicillata* in 1972. Breeding for reintroduction purposes has not been attempted. (Otter Specialist Group 2018).

8.5 Habitat conservation

Lutrogale perspicillata inhabits protected areas in numerous countries and some, including India and Nepal, provide enhanced protection for otters. In Nepal, the National Parks and Wildlife Conservation Act of 1973 was amended to include buffer zones and revenues to implement habitat and conservation activities relevant to otters (Acharya & Rajbhandari 2011). India created the first ever sanctuary dedicated to otters, the Tungabhadra Otter Reserve Sanctuary, was created in 2016 in Hospet in Karnataka State in the south of the country (Otter Specialist Group 2018). Identification of wetlands of national and international importance under the Ramsar Convention in several countries has also helped to halt some degradation of the species' habitat (ibid).

9. Information on similar species

Lutra lutra whiteleyi, the Japanese otter (previously believed to be a subspecies of the Eurasian otter) was officially declared extinct in 2012. It was previously found throughout Japan but largely wiped out through trapping for fur, last photographed in the wild in 1979 (IOSF; Waku *et al*. 2016).

10. Consultations

India has circulated the draft proposal of smooth-coated otter (*Lutrogale perspicillata*) to the Range Countries of Nepal, Bangladesh, Bhutan, Myanmar, Singapore, Thailand, Vietnam, Malaysia, Indonesia, Iraq and Brunei Darussalam on 20th December, 2018.

12. References

Aadrean & Usio, N. (2017). Small-clawed otters (*Aonyx cinereus*) in Indonesian rice fields: latrine site characteristics and visitation frequency. *Ecological Research***32**: 899-908.

Acharya, P. & Rajbhandari, S.L. (2011). Status of Otters in Nepal. A Report for IUCN/SSC Asian Secretariat, Sri Lanka. Tribhuvan University, Nepal.

Al-Sheikhly, O.F. & Nader, I.A. (2013). The status of the Iraq smooth-coated otter *Lutrogale perspicillata maxwelli* Hayman 1956 and Eurasian otter *Lutra lutra* Linnaeus 1758 in Iraq. *IUCN Otter Specialist group Bulletin***30**(1).

Al-Sheikhly, O.F., Haba, M.K., & Barbanera, F. (2015).Recent Sighting Of Smooth-Coated Otter *Lutrogale perspicillata maxwelli* In Hawizeh Marsh (Southern Iraq). *IUCN Otter Specialist Group Bulletin***32** (1): 30 – 32.

Anoop, K.R. and S.A. Hussain. (2005). Food and feeding habits of Smooth-coated otters (*Lutra perspicillata*) and their significance to the fish population of Kerala, India. Journal of Zoology London, 266: 15-23.

Ashwell, D. & Walston, N. (2008). An overview of the use and trade of plants and animals in traditional medicine systems in Cambodia. TRAFFIC Southeast Asia, Greater Mekong Programme, Ha Noi, Viet Nam.

Aziz, M.A. (2018). Notes on population status and feeding behavior of Asian small-clawed otter (*Aonyx cinereus*)in the Sundarbans mangrove forest of Bangladesh. *IUCN Otter Specialist Group Bulletin* **35**(1).

Banks, D., Desai, N., Gosling, J., Joseph, T., Majumdar, O., Mole, N., Rice, M., Wright, B., & Wu, V. (2006). Skinning the Cat: Crime and Politics of the Big Cat Skin Trade. Environmental Investigation Agency, London UK and Wildlife Protection Society of India, New Delhi, India.

Chettri, P. & Savage, M. (2014). A Distribution Survey for Otters along a River in Central Bhutan. *IUCN Otter Specialist Group Bulletin***31** (2): 65 – 74.

Desai, J.H. 1974. Observations on the breeding habits of the Indian Smooth Otter. International Zoo Yearbook 14: 123-124.

de Silva, P., Khan, W.A., Kanchanasaka, B., Reza Lubis, I., Feeroz, M.M. & Al-Sheikhly, O.F. (2015). *Lutrogale perspicillata*. The IUCN Red List of Threatened Species 2015: e.T12427A21934884.http://dx.doi.org/10.2305/IUCN.UK.2015-2.RLTS.T12427A21934884.en. Downloaded on 1 August 2018.

Dong, T., Tep, M., Lim, S., Soun, S. and Chrin, T. (2010).Distribution of Otters in the Tropeang Roung, Koh Kong Province, Cambodia. *IUCN Otter Spec. Group Bull.***27** (2): 63 – 77.

Duckworth, W. (2013).Otter Fur Trade in Asia. In: Anon, eds. Asian Otter Conservation Workshop 25th-30th November 2013, International Union for the Conservation of Nature Species Survival Commission – Otter Specialist Group and the National Centre for Biological Sciences, Bengaluru, India. Pp. 7-8.

Feeroz, M.M., Aziz, M.A. & Thanchanga, P.K. (2011a). Breeding activities of *Lutra perspicillata* in Bangladesh. *IUCN Otter Specialist Group Bulletin***28**(A): 38-44

Feeroz, M.M., Begum, S. & Hasan, M.K. (2011b). Fishing with otters: a traditional conservation practice in Bangladesh. *IUCN Otter Specialist Group Bulletin***28**(A): 14-21

Foster-Turley, P. (1992). Conservation ecology of sympatric Asian otters *Aonyx cinerea* and *Lutra perspicillata*. Ph.D. Dissertation, University of Florida.

Ghosh, A. (2005). Otters: Dressed to Kill. The Times of India.Viewed 29th September 2015.

Gomez, L., Leupen, B., Theng, M., Fernandez, K. & Savage, M. (2016). Illegal Otter Trade: An Analysis of Seizures in Selected Asian Countries (1980-2015). TRAFFIC Report. TRAFFIC, Petaling Jaya, Selangor, Malaysia.

Gomez, L. & Bouhuys, J. (2018). Illegal Otter Trade in Southeast Asia. TRAFFIC, Petaling Jaya, Selangor, Malaysia.

Government of Pakistan. (2018). Pakistan National Biodiversity Strategy and Action Plan for achieving Aichi Biodiversity Targets and Sustainable Development Goals 2017 - 2030.

Harrington, L.A., Marino, J. & King, C.M. (2017). People and wild native musteloids. In: Biology and Conservation of Musteloids Edited by: Macdonald, D.W., Newman, C. and Harrington, L.A. pp. 189-215 Oxford University Press.

Heng, S., Dong, T., Hon, N. & Olsson, A. (2016). The hairy-nosed otter *Lutra sumatrana* in Cambodia: distribution and notes on ecology and conservation. *Cambodian Journal of Natural Histor*y **2016** (2):102–110

Hussain, S.A. (1996). Group size, group structure and breeding in Smooth-coated otter *Lutra perspicillata* Geoffroy in National Chambal Sanctuary. Mammalia 60(2): 289-297.

Hussain, S.A. (1993). Aspects of the ecology of Smooth-coated otters *Lutra perspicillata* in National Chambal Sanctuary. Unpublished PhD. Thesis. Centre for Wildlife and Ornithology. Aligarh Muslim University. Aligarh, India.

Hussain, S.A. (2002). *Status of otter in the Tarai and lower Himalayas of Uttar Pradesh*. IUCN Otter Specialist Group Bulletin.

Hussain, S.A. and B.C. Choudhury. (1995). Seasonal movement, home range and habitat utilization by Smooth-coated otter in National Chambal Sanctuary. Proceedings of the VI International Otter Symposium, September 6-10, 1993, Pietermaritzburg, South Africa. Habitat No. 11, Germany.

Hussain, S.A. and B.C. Choudhury. (1997). Status and distribution of Smooth-coated otter *Lutra perspicillata* in National Chambal Sanctuary. Biological Conservation 80: 199-206.

Khan, M.S. (2015). Occurrence of the Smooth-Coated Otter Lutrogale perspicillata (Geoffroy, 1826) in Punjab, India. IUCN Otter Spec. Group Bull. 32 (1): 3 - 7

Jnawali, S.R., Baral, H.S., Lee, S., Acharya, K.P., Upadhyay, G.P., Pandey, M., Shrestha, R., Joshi,D., Lammichhane, B.R., Griffiths, J., Khatiwada, A. P., Subedi, N. & Amin, R. (compilers). (2011). The Status of Nepal Mammals: The National Red List Series. DNPWC, Kathmandu.

Kamjing, A., Ngoprasert, D., Steinmetz, R., Chutipong, A., Savini, T. & Gale, G.A. (2017). Determinants of smooth-coated otter occupancy in a rapidly urbanizing coastal landscape in Southeast Asia. *Mammalian Biology***87**: 168-175.

Kantimahanti, M. & Allaparthi, A.R. (2017).Records of Smooth-Coated Otter *Lutrogale perspicillata* (Geoffroy, 1826) from the Krishna River Delta of South India. *IUCN Otter Specialist Group Bulletin***34** (1): 58 – 63.

Khan, W.A., Qasim, M., Ahmad, E., Chaudhry, A.A., Bhaagat, H.B. & Akhtar, M. (2010). Status of smooth-coated otter (*Lutrogale perspicillata sindica*) in Pakistan. *Pakistan Journal of Zoology***42**(6); 817-824.

Khan, W.A., Qasim, M., Ahmad, E., Akbar, G., Habib, A.H., Ali, H., Mueen, F., Chaudhry, A.A., Iqbal, S., Bhaagat, H.B., Akhtar, M. and Ahmad, M.S. (2009). A survey of smooth coated otters (*Lutrogale perspicillata sindica*) in the Sindh province of Pakistan. *IUCN Otter Specialist Group Bulletin***26**(1).

Koesoemadinata, S., and B.A. Costa-Pierce. (1992). Status of rice-fish culture in Indonesia. In: C.R. de la Cruz, C. Lightfoot, B.A. Costa-Pierce, V.R. Carangall and M.P. Bimbao, eds. Rice-fish research and development in Asia. Pp. 45-62. ICLARM, Manila, Philippines.

Krupa, H., Borker, A. & Gopal, A. (2017). Photographic Record of Sympatry between Asian Small-Clawed Otter and Smooth-Coated Otter in the Northern Western Ghats, India. *IUCN Otter Specialist Group Bulletin***34** (1): 51 – 57

Kruuk, H. (2006). Otters: Ecology, Behaviour and Conservation. Oxford University Press.

Kruuk, H., B. Kanchanasaka, S. O'Sullivian, S. Wanghongsa. (1994). Niche separation in three sympatric otters *Lutra perspicillata*, *Lutra lutra* and *Aonyx cinerea* in Huai Kha Khaeng, Thailand. Biological Conservation 69: 115-210.

Lau, M.W., Fellowes, J.R., Chan, B.P.L. (2010). Carnivores (Mammalia: Carnivora) in South China: a status review with notes on the commercial trade. *Mammal Review* 40(4):247–292.

Lekagul, B and McNeely, J.A. (1988). Mammals of Thailand. Second ed. Darnsutha Press, Bangkok, Thailand.

Li, F. & Chan, B.P.L. (2017). Past and present: the status and distribution of otters (Carnivora: Lutrinae) in China. *Oryx* 1-8.

Mason, C.F. and S.M. Macdonald. (1986). Otters: Ecology and Conservation. Cambridge University Press, Cambridge.

Meena, V. (2002). Otter poaching in Palni Hills. *Zoos' Print Journal***17** (2): 696-698.

Melisch, R., P.B. Asmoro, L. Kusumawardhami. (1994). Major steps taken towards otterconservation in Indonesia. IUCN Otter Specialist Group Bulletin 10: 21-24.

Melisch, R., L. Kusumawardhani, P.B. Asmoro, I.R. Lubis. (1996). The otters of west Java - a survey of their distribution and habitat use and a strategy towards a species conservation programme. PHPA/Wetlands International – Indonesia Programme, Bogor, Indonesia.

Moretti, Al-Sheikhly, O.F., M. Guerrini, M. Theng, B.K. Gupta, M.K. Haba, W.A. Khan, A.A. Khan, F. Barbanera. (2017). Phylogeography of the smooth-coated otter (*Lutrogale perspicillata*): Distinct evolutionary lineages and hybridization with the Asian small-clawed otter (*Aonyxcinereus*). Scientific Reports: 7, 41611.

Naidu, M.K. and A.K. Malhotra. (1989). Breeding biology and status of the Smooth Indian otter *Lutra perspicillata* in captivity. Asian Otter Specialist Group Newsletter 1(2): 6.

Nawab, A. (2007). Ecology of Otters in Corbett Tiger Reserve, Uttarakhand; India. Ph.D. Thesis, Forest Research Institute, Dehradun, India.

Nawab, A. and S.A. Hussain. (2012). Factors affecting the occurrence of smooth-coated otter (*Lutrogale perspicillata*) in aquatic systems of the Upper Gangetic Plains, India. Aquatic Conservation: Marine and Freshwater Ecosystems 22: 616-625.

Otter Specialist Group (2018), database of global seizures of Asian otter species. Available athttp://www.otterspecialistgroup.org/osg-newsite/resources/useful-publications/.

Otter Specialist Group (2018). Global strategy for the conservation of otters (*in press*).

Pacifici, M., L. Santini, M. Di Marco, D. Baisero, L. Francucci, G. Grottolo Marasini, P. Visconti, C. Rondinini. (2013). Generation length for mammals. Nature Conservation 5: 87-94.

Palmeirim, A. F., C.A. Peres, F.C. Rosas. (2014). Giant otter population responses to habitat expansion and degradation induced by a mega hydroelectric dam. Biological Conservation 174: 30-38.

Pocock, R.I. (1941). The fauna of British India, including Ceylon and Burma. Volume 2, Mammals. Pp. 265-317. Taylor and Francis, London.

Poole, C.M. (2003). The first records of hairy-nosed otter *Lutra sumatrana* from Cambodia with notes on the national status of three other otter species. Natural Histtory Bulletin -- Siam Society 51(2): 273-280.

Nisarg Prakash, N., Perinchery, A., and R.R (2013). Monitoring Otter Populations and Combating Poaching Through Stakeholder Participation in India. Report. Nature Conservation Foundation. Available at http://www.conservationleadershipprogramme.org/media/2014/12/0392612_India_Final-Report_Monitoring-Otters_15thNov2014.pdf.

Qasim, M., Ahmad, E. & Akhtar, M. (2010). Status of Smooth Coated Otter (Lutrogale perspicillata Sindica) in Pakistan. *Pakistan Journal of Zoology***42**(6), 817-824.

Raha, A. & Hussain, S.A. (2016). Factors affecting habitat selection by three sympatric otter species in the southern Western Ghats, India. *Acta Ecologica Sinica***36**: 45-49.

Rais, M., M.Z. Khan, S.A. Ghalib, D. Abbass, W.A, Khan, Saeed-ul-Islam, A. Husnain. (2009). Recent Records of Smooth-Coated Otter (Lutrogale perspicillata) from Sindh, Pakistan. Pakistan Journal of Zoology 41(5): 413-414.

Roos, A., A. Loy, P. de Silva, P. Hajkova, B. Zemanová. (2015). *Lutra lutra*. The IUCN Red List of Threatened Species 2015: e.T12419A21935287.

Sabrina, M.S. (1985). Journal of Wildlife and Parks 4: 20-24.

Sasaki, H., B.M. Nor, B. Kanchanasaka. (2009). Past present distribution of the hairy-nosed otter *Lutra sumatrana* Gray 1865. Mammal Study 34: 223-229.

Savage, M. & Shrestha, M. B. (*in press*). The Illegal Trade in Otter Pelts in Nepal.

Serfass, T., Evans, S.S. & Polechla, P. (2015). Lontra canadensis. The IUCN Red List of Threatened Species 2015: e.T12302A21936349.

Shariff, S. 1984. Some observation on otters at Kual Gula, Perak and National Park, Pahang. Journal of Wildlife and National Parks 3: 75-88.

Sodhi, N.S., Pin Koh, L., Brook, B.W, & Ng, P. (2004). Southeast Asian biodiversity: an impending disaster. *Trends in Ecology and Evolution* **19** (12): 654-660. https://doi.org/10.1016/j.tree.2004.09.006

Stoner, S.S. & Pervushina, N. (2013). Reduced to Skin and Bones Revisited: An Updated Analysis of Tiger Seizures from 12 Tiger Range Countries(2000-2012). TRAFFIC Southeast Asia, Petaling Jaya, Selangor, Malaysia.

Suthar, A.R., Rathod, J.Y., Patel, I.B., Gavali, D.J. & Lakhmapurkar, J. (2017). Historical and Current Distribution of Smooth Coated Otter *Lutrogale perspicillata* in Gujarat, India. *IUCN Otter Specialist Group Bulletin***34** (2): 95 – 103.

Theng, M., Sivasothi, N. & Heok Hui, T. (2016). Diet of the smooth-coated otter *Lutrogale perspicillata* (Geoffroy, 1826) at natural and modified sites in Singapore. *Raffles Bulletin of Zoology***64**: 290-301.

Theng, M & Sivasothi, N (2016). The Smooth-Coated Otter *Lutrogale perspicillata* (Mammalia: Mustelidae) in Singapore: Establishment and Expansion in Natural and Semi-Urban Environments. *IUCN Otter Specialist Group Bulletin***33** (1): 37 - 49.

Verheij, P.M., Foley, K.E. & Engel, K. (2010). Reduced to Skin and Bones: An Analysis of Tiger Seizures from 11 Tiger Range Countries (2000-2012). TRAFFIC International, Cambridge, U.K.

Waku D, Segawa T, Yonezawa T, Akiyoshi A, Ishige T, Ueda M, et al. (2016). Evaluating the Phylogenetic Status of the Extinct Japanese Otter on the Basis of Mitochondrial Genome Analysis. PLoS ONE 11(3): e0149341. https://doi.org/10.1371/journal.pone.0149341

Wang, D. & Carey, M. (2014). Therapeutic uses of animal biles in traditional Chinese medicine: An ethnopharmacological, biophysical chemical and medicinal review. *World Journal of Gastroenterology***20** (29): 9952–9975.

Wassmann, R., Hien, N.X., Hoanh, C.T., & Tuong, T.P. (2004). Sea Level Rise Affecting the Vietnamese Mekong Delta: Water Elevation in the Flood Season and Implications for Rice Production. Climate Change 66: 89-107. https://doi.org/10.1023/B:CLIM.0000043144.69736.b7

Wilcox, D., Visal, S. & Mahood, S.P. (2016). The Conservation Status Of Otters In Prek Toal Core Area, Tonle Sap Lake, Cambodia. *IUCN Otter Specialist Group Bulletin***33** (1): 18 – 31.

Wright, L., de Silva, P., Chan, B. & Reza Lubis, I. (2015). *Aonyx cinereus*. The IUCN Red List of Threatened Species 2015: e.T44166A21939068.http://dx.doi.org/10.2305/IUCN.UK.2015-2.RLTS.T44166A21939068.en

Zaw, T., Htun, S., Po, S.H.T., Maung, M., Lynam, A.J., Latt, K.T. & Duckworth, J.W. (2008). Status and distribution of small carnivores in Myanmar. *Small Carnivore Conservation***38**: 2-28.