

CONSIDERATION OF PROPOSALS FOR AMENDMENT OF APPENDICES I AND II

A. Proposal

The Proponents propose the transfer of the small clawed otter (*Aonyx cinereus*) 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. 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 of that Resolution, 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. Proponents

India

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:

*Aonyx cinereus* (Illiger 1815)

1.5 Scientific synonyms:

*Amblonyx cinereus* (Illiger 1815)

*Aonyx cinerea* (Illiger 1815) [orth. error]

*Lutra cinerea* (Illiger 1815)

1.6 Common names (in French, Spanish and English)

English	French	Spanish
Asian Small-clawed Otter; Oriental Small-clawed Otter; Small-clawed Otter; Short-clawed Otter	Loutre cendrée	Nutria Cenicienta; Nutria Inerme Asiatica

## 1.7 Code numbers (From CITES ID Manual)

N/A

## 2. Overview:

*Aonyx cinereus* is the smallest otter. Although widespread in Southeast Asia, it is now declining rapidly due to the wetland habitat loss, poaching for local and international markets, and, more recently, as pets sold via the internet. According to IUCN, it can be inferred that the global population of *A. cinereus* has declined by greater than 30% over the past 30 years (three generations based on Pacifici *et al.* 2013). Additionally, evidence exists of significant loss of populations as well as extirpations in range States (1) *A. cinereus* are believed to be extirpated or extremely rare throughout much of their range in southern China due to large scale commercial hunting of all otter species prior to the 1980s (Li & Chan 2017); (2) recent surveys in India/Nepal suggest that *A. cinereus* have disappeared from the western Himalayan foothills (Hussain 2002; Hussain *et al.* 2011) and perhaps the Indian part of the Sundarbans (Manjreker & Prabu 2014); (3) in Myanmar, *A. cinereus* were historically considered to occur throughout the country (Pocock 1933 as cited in Zaw *et al.* 2008) but are now considered to be extremely rare (Zaw *et al.* 2008). *A. cinereus* is listed as vulnerable by IUCN.

## 3. Species characteristics:

### 3.1 Distribution:

*Aonyx cinereus* has a broad distribution range, extending from India in South Asia eastwards through Southeast Asia, including Lao PDR, Malaysia, Myanmar, Cambodia, Bangladesh and Indonesia to Palawan, Philippines, and southern China (Mason & Macdonald 1986; Wozencraft 1993; Hussain 2000; Hussain *et al.* 2011). In India it occurs in West Bengal, Assam, Himachal Pradesh, and Arunachal Pradesh as well as in southern Indian hill ranges of Coorg (Karnataka), Ashambu, Nilgiri and Palini Hills (Tamil Nadu) and Kerala (Pocock 1941; Prater 1971; Hussain 2000; Hussain *et al.* 2011) and in Odisha in eastern India (Mohapatra *et al.* 2014). It also inhabits the lowland rivers and wetlands in the foothills of the Himalayas in Bhutan and Nepal.

The species is native to Bangladesh, Bhutan, Brunei Darussalam, Cambodia, China, India, Indonesia, Lao People's Democratic Republic, Malaysia, Myanmar, Nepal; Philippines (Palawan), Singapore, Taiwan, Thailand, and Vietnam, and has been introduced to the United Kingdom.

### 3.2 Habitat:

All otter species are semi-aquatic carnivores that require aquatic habitats for foraging and sheltered terrestrial areas for resting and denning.

*Aonyx cinereus* occurs in a range of aquatic habitats from coastal wetlands to mountain streams, including human modified habitats such as rice fields and coffee/tea plantations, wherever there is prey and adequate shelter. Wright *et al.* (2015) suggest that they prefer slow-flowing and shallow water. Typical habitats in west Java, for example, are shallow stretches of water (< 1 m deep) with pools and stagnant water (Wright *et al.* 2015). In Bangladesh, they occur in the mangrove forests of the Bangladesh Sundarbans in the southwest of the country (Aziz 2018). Other suitable aquatic habitats include freshwater swamps, rivers (slow-flowing broad lowland streams as well as fast-flowing narrow rocky mountain creeks) and tidal pools. For example, in the northern Western Ghats, India, *A. cinereus* appears to prefer narrow, fast flowing and rocky streams with tall and dense shoreline herb cover (in this area, these types of streams are found only at higher elevations; Raha & Hussain 2016). *A. cinereus* uses irrigated rice fields and the irrigation channels within them in Malaysia, Thailand, the Philippines, and Indonesia (Aadreaan & Usio 2017). They use streams running through coffee and tea plantations adjoining protected

areas in the Western Ghats, India (Prakesh *et al.* 2012). In Java, Indonesia, *A. cinereus* uses the local drainage system and appear to feed on crabs (Meijaard 2014). Of the four otter species in Asia, this species is most likely to be found foraging furthest from rivers.

### 3.3 Biological characteristics:

*Aonyx cinereus*, as with the other *Aonyx* species, feeds mainly on crabs, snails, and other molluscs, insects, and small fish but supplements its diet with rodents, snakes, and amphibians. In Vietnam, in U Minh Ha National Park, observations by local people suggest that *A. cinereus* has changed its diet from crabs that are no longer present due to salt water incursions to fish and snakes and now consume the same diet as *L. sumatrana* (Wright *et al.* 2008). *A. cinereus* is diurnal (Ross *et al.* 2017) but nocturnal where it occurs near people in northern Malaysia (Hussain *et al.* 2011). They are social, living in large family groups based around a breeding pair (average group size in a study in Bangladesh = 4, range = 1-12 (Aziz 2018); groups of up to 16 observed in Java (Meijaard 2014);

### 3.4 Morphological characteristics:

*Aonyx cinereus* is the smallest of all otter species. Their pelage is typically brown but sometimes cream coloured or with a reddish tinge; their undersides are paler brown, and the edge of upper lips, chin, throat, and sides of neck and face are grayish white. In South India, the pelage is darker than elsewhere. The rhinarium is bare (Krupa *et al.* 2017). Their claws are reduced to small rudiments ('clawless') that do not project beyond the tips of the digits, and therefore their tracks can be distinguished from those of other otters by the absence of claw marks (Hussain *et al.* 2011). Females are a little smaller, although sexual dimorphism is not pronounced (Krupa *et al.* 2017)

### 3.5 Role of species in 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:

Southeast Asia has the highest rate of forest loss in the tropics (e.g. Sodhi *et al.* 2004). Tropical peat swamp forests are being cleared for oil palm plantations, food crops (rice, corn and soya bean) and fish farming (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 had decreased by half (references in Kamjing *et al.* 2017).

### 4.2. Population size:

Unknown. *Aonyx cinereus* is exhibited in zoos the most frequently of all the otters but there are no reliable estimates of population size in the wild (Wright *et al.* 2015).

#### 4.3. Population structure:

*Aonyx cinereus* tend to be nocturnal or crepuscular near human settlements. They are highly social, foraging and traveling in groups up to 12 or more (Lekagul & McNeely 1988). *A. cinereus* in captivity breed year-round and mating usually takes place in the water, but also on land. They appear to be monogamous (Wilson & Mittermeier 2009), but little is known of their behavior or reproduction outside of captivity. In captivity, a pair will build a nest together and raise the litter, ranging from 2 to 7 cubs (Foster-Turley 1986). In the Sundarbans, Aziz (2018) estimated approximately 1 otter per 30 km river of river surveyed which, the author suggests, should be considered preliminary and an underestimate of the actual otter population in the area.

#### 4.4. Population trends:

Populations are inferred to be declining steeply. The species has undergone a dramatic decline in China with only 3 records from 2006 to the present (Li & Chan 2017). In India, its distribution range has decreased, for example, in the Sunderbans (Sanyal 1991) and in Cambodia, they are only found near Virachey National Park (Heng *et al.* 2016). Massive destruction of wetland forests in Indonesia has reduced the species' habitat (Rode-Margono *et al.* 2014), as has habitat conversion to oil palm plantations in Sabah.

*Aonyx cinereus* are listed as Vulnerable due to an inferred past population decline because of habitat loss and exploitation. Given the extent of loss of habitat that is occurring in south and southeast Asia and the intensity of poaching, a reduction in population has been observed in many parts of its range (Hussain *et al.* 2011 and references therein), including significant losses and even extirpations in range States.

The recent (2015) IUCN Red List assessment states that: "although quantitative data on population sizes or trends are lacking, it is inferred that the global population of the Asian *A. cinereus* has declined by >30% over the past 30 years (three generations based on Pacifici *et al.* 2013) (Wright *et al.* 2015)."

#### 4.5. Geographic trends:

The IUCN Red List assessment states: "In the last few decades, the range of Asian *A. cinereus* has shrunk particularly in its western portion, as evident from the published literature." (Wright *et al.* 2015).

They have disappeared or declined in many parts of their range. They are believed to be extirpated or extremely rare throughout much of their range in southern China (due to large scale commercial hunting of all otter species prior to the 1980s (Li & Chan 2017). Recent surveys (field surveys, camera trapping, interviews with locals and with otter experts) found *A. cinereus* at only two sites (Li & Chan 2017) and although other relict populations could exist in remote parts of China, these authors suggest that all three otter species are on the verge of extinction in China.

Recent surveys suggest that they have disappeared from the western Himalayan foothills (Hussain *et al.* 2011) and perhaps the Indian part of the Sundarbans (Manjreker & Prabu 2014). Surveys of five protected areas in the southern Western Ghats, found *A. cinereus* only at three with percentage occurrence of 66.7%, 40% and 16.7%, respectively. (Raha & Hussain 2016). Hussain *et al.* (2011) suggest that "[in the] last 60 years its western range has shrunk considerably moving west to east from Himachal Pradesh to Assam. Once common in the mangroves of east Calcutta and Sunderbans, now it is believed to be locally extinct. It is likely

that the present range boundary at the western limit is Assam and in the Western Ghats of South India.

In Myanmar, *A. cinereus* were historically considered to occur throughout the country (Pocock 1933 as cited in Zaw *et al.* 2008) but are now considered to be extremely rare (Zaw *et al.* 2008).

The species is present in 3 of 11 states in Peninsular Malaysia, but it is not known whether they are in decline (Abdul-Patah *et al.* 2014). Aziz (2018) suggests that a large population of *A. cinereus* is probably present in the Sundarbans, Bangladesh, and that the mangrove forests there probably provide a stronghold for the species long-term survival. A healthy population was reported in Nakai-Nam Theun National Protected Area in Lao PDR in 2016 (Coudrat 2016). Also found to be relatively widespread in Puerto Princesa City in Palawan, Philippines (Egana *et al.* 2016). *A. cinereus* have established in the wild in England after escaping from captivity (Jefferies 1991).

#### 5. Threats:

Throughout its range, *A. cinereus* is threatened by human development and activities. Widespread human activities - aquaculture; swamp reclamation; siltation due to deforestation; pollution by pesticides; mining; quarrying; slash-and-burn agriculture; and loss of habitat to agricultural conversions, such as coffee, tea and palm oil plantations and rice fields - all take their toll on otter habitat.

Likewise, a common threat to otters is reduced prey base from overfishing, although the species preference for crabs and other invertebrates makes water contamination from organochlorides, heavy metals, and other pollutants an important concern. The common practice of dumping garbage in wetlands is also a threat to otters, whose scat has been observed to contain plastics (Castro & Dolorosa 2006, Egana *et al.* 2016). Fishermen are known to kill otters as a competitor for fish. Fish-kill practices are common in the Western Ghats -- dynamite fishing, bleach fishing and electric-rod based fishing and the use of pesticides in banana plantations and rice fields. In China, the construction of hydropower dams is causing substantial habitat loss in hill streams, a habitat of *A. cinereus* (L. Fei pers. comm. DATE).

Poaching is still a very significant threat to *A. cinereus*, and poachers rarely differentiate between otter species (Gomez *et al.* 2016). India, Cambodia, Viet Nam, Lao PDR, and Myanmar are source countries for otter pelts that then travel to markets in East Asia (Gomez *et al.* 2016; Coudrat 2016; Gomez & Bouhuys 2018). Otters are used in traditional medicines in Southeast Asia, particularly in Lao PDR, and China (Li & Chan 2017; Gomez & Bouhuys 2018). International criminal networks traffic otter pelts with other valuable species such as tiger and leopard, and most range countries have weak control over the clandestine trade in otters (Wright *et al.* 2015).

A growing threat to *A. cinereus* is the illegal trade in pets. *A. cinereus* are particularly charming looking, and they are popular attractions in zoos and increasingly in pet shops, pet fairs, and even in coffee shops (Gonzalez 2010; Aadrean 2013; Gomez & Bouhuys 2018). Much of the pet trade has moved online and is difficult to control (Gomez & Bouhuys 2018.).

A less-significant threat is accidental road-kill, which has been recorded in Philippines (Bernardo 2011), Indonesia, and Malaysia. Otters are also occasionally caught in traps set for other bushmeat targets, and killed by feral dog packs.

Recent modelling research suggests that climate change will significantly impact the *A. cinereus* habitat, forecasting up to 40% loss of suitable areas by 2070. This scenario is made worse for *A. cinereus* by the marginality of its climatic niche (Cianfrani *etal.* 2018).

#### 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 (D. 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). *A. cinereus* appear to be the most popular otter to keep as a pet. Analysis of social media in Vietnam and Indonesia, for example, similarly 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. In 2017 alone, 32 live *A. cinereus* were seized in Thailand en route to Japan (Gomez & Bouhuys 2018). At least one “otter café” exists in Tokyo, where three *A. cinereus* are kept for customers wanting to hold and pet them. The owners claim that the otters were legally bred in Japan (Allen & Sasaki 2017).

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).

## 6.2 Legal trade<sup>1</sup>:

*A. cinereus*: Most of the trade reflected in the CITES Trade Database is in live, captive-bred specimens for non-commercial purposes (primarily zoological purposes). However, 541 live, captive-bred specimens were traded for commercial purposes since 2000. The Czech Republic reports the most trade in live, captive-bred *A. cinereus* at 153 specimens. The Netherlands reported exports of 79 live, captive-bred specimens between 2000 and 2017, and Tanzania reported the export of 100 live, captive-bred specimens in 2015.

Exporting Country	Summary
Australia	6 live specimens from captive-bred specimens, all for non-commercial purposes.
Austria	20 live specimens exported between 2002-2017 all with source code C, 13 of which were exported to China with purpose code B, 3 for commercial purposes (U.S. and Switzerland), and 4 for zoological purposes to Brazil.
Belgium	52 live captive-bred specimens, of which 50 specimens were for commercial trade, and 41 of which were re-exports.
Bulgaria	Between 7 and 10 live captive-bred specimens in 2012 exported to China for zoological purposes from “various sources.” (country code: XV).
Canada	approximately 12 exports and re-exports between 2007 and 2013 of live specimens to the U.S., all coded as captive-bred by the U.S. but 3 identified by Canada as “Farmed” and one as Wild. 5 coded as commercial trade.

<sup>1</sup> Where possible, attempts have been made to correct for duplications in the CITES Trade Database.

Czech Republic	A total of 157 captive-bred live otters, most re-exports (Germany, Netherlands, Hungary, France, United Kingdom, Switzerland, and Cyprus). All reported by Czech Republic as commercial trade, but 34 of those reported as non-commercial trade by importing countries.
Denmark	3 live captive-bred specimens between 2009 and 2010, 1 to Israel and 2 to Australia, all for zoological purposes; 2 specimens exported in 2011 to South Africa for scientific purposes (source: C).
France	22 live otters between 2002 and 2010, all for zoological purposes using source code C; 1 derivative re-exported in 2014 back to Switzerland as part of a travelling exhibition (source: C).
Germany	At least 21 live specimens (source C) exported, mostly for zoological purposes, but 7 for commercial purposes; 1 leather product in 2016 for commercial purposes.
Hong Kong, SAR	1 live, captive-bred specimen in 2011 to Japan for zoological purposes
Hungary	22 live, captive-bred specimens; 4 exported to the U.S. for commercial purposes, the rest exported for zoological purposes
Indonesia	2 live captive-bred specimens in 2001 to UAE (Q) and 10 live captive-bred specimens in 2016, of which 6 went to China for commercial purposes and 4 went to Japan (coded as commercial by Japan but as personal by Indonesia)
Japan	73 live specimens, all either captive-bred or farmed, 4 exported for commercial purposes, the remainder either for zoological purposes or as travelling exhibitions.
Jersey	In 2013, 3 live specimens exported to Spain for zoological purposes, source code C; in 2016, 3 live specimens to the United Kingdom for zoological purposes, source code C and 1 body to the United Kingdom for scientific purposes, source code listed as C by Jersey and as F by the U.K.
Republic of Korea	9 exports of live specimens, all for non-commercial purposes and all captive-bred.
Lao PDR	4 live, wild-caught specimens in 2015 to Korea for zoological purposes
Malaysia	14 live specimens exported; 10 of which were wild-caught and exported to Japan for zoological purposes
Namibia	1 live, captive-bred specimen re-exported to Austria for commercial purposes
Netherlands	93 live specimens, all captive-bred, except one farmed specimen, exported or re-exported; 74 exported for commercial purposes and 19 for zoological purposes.
New Zealand	7 live, captive-bred specimens exported to Australia, one for commercial purposes and the remainder for zoological purposes
Poland	1 live captive-bred specimen to France for zoological purposes in 2003
Serbia	5 live, captive-bred specimens, all to the Czech Republic and all for commercial purposes.
Singapore	6 specimens identified as "hair" exported to Italy in 2016 (5 listed as "farmed" and 1 as source unknown); 28 live specimens exported between 2000 and 2016, 8 of which were traded for commercial purposes, the remainder non-commercial purposes (B, Z, E, S). All coded as captive-bred or farmed. Singapore exported 2 wild-sourced specimens to the U.S. for scientific purposes in 2012. An additional

	captive-bred specimen was exported in 2007 to the U.S. for scientific purposes.
Slovakia	12 live, captive-bred specimens re-exported for commercial purposes (3 to China in 2014, 6 to Philippines and 3 to Russian Federation in 2017)
Spain	43 captive-bred, live specimens; at least 22 exported for commercial purpose.
Sri Lanka	2 live, captive-bred specimens to Japan for zoological purposes
Switzerland	1 derivative in 2013 to France as part of a traveling exhibition with source code C; in 2013, between 2013 and 2016, at least 11 live specimens exported to Czech Republic, Hungary, and France (source: C); and 1 specimen exported to France as part of a travelling exhibition, using source code C.
Tanzania	100 live, captive-bred specimens to Uzbekistan for commercial purposes in 2015.
United Arab Emirates	1 live specimen re-exported to Czech Republic for commercial purposes (origin: Czech Republic, source: C).
United Kingdom	23 live, captive-bred specimens, all but one sourced from United Kingdom and all traded for non-commercial purposes.
United States	18 live specimens (5 exported with source code F (farmed), the rest captive-bred), 8 exported for commercial purposes.
Uzbekistan	46 live, captive-bred specimens re-exported; 10 for zoological purposes and the remainder for commercial purposes.
Unknown	5 live specimens of unknown origin exported during 2014-2015.

### 6.3 Parts and derivatives in trade:

Live specimens, skins, derivatives, leather products, bodies, hair

### 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 & Bouhuys 2016). Thus, the seizures that are reported likely represent only a small fraction of the overall illegal trade in otters in the region (Gomez & Bouhuys 2018; Gomez & Bouhuys 2016; Savage & Shretha 2018). Between 1980 and 2018, there were over 250 seizures that included otter specimens recorded in the CITES UNEP-WCMC database and other databases representing a total of 6,010 individual otters (Gomez & Bouhuys 2016; 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 2018). 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). *Aonyx cinereus* are targeted to supply these markets, along with *Lutrogale perspicillata* and *Lutra lutra* (Wright *et al.* 2015). Although few otter pelts that have been seized are identified down to the species, nine *A. cinereus* skins were seized in Himachal Pradesh, India, demonstrating that they are in fact in trade in order to sate demand for otter pelts (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 & Shrestha 2018). Between 1980 and 2015, 2949 otter pelts were seized in India (Gomez *et al.* 2016). 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 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, and 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 (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. However, of the 940 seized otter skins that could be identified and were analyzed for TRAFFIC's 2016 report, 31 of the skins were *A. cinereus*.

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). In just a four-month period during 2018, a TRAFFIC study focused on Indonesia, Malaysia, Thailand, and Vietnam found 560 advertisements for live otters, with an average of 960 live otters observed for sale (Gomez & Bouhuys 2018), with a maximum of 1189 live otters observed for sale.

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).

Most of the seizures of live otters occurred in Thailand, followed by Indonesia, Vietnam and Malaysia. *Aonyx cinereus* are especially susceptible to exploitation for the pet trade, along with some *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 there are no verified captive breeding centers 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 and all were *A. cinereus* (Gomez & Bouhuys 2018). In data collected through June 2018, 127 live *A. cinereus* were identified amongst seized specimens (Otter Specialist Group 2018).

#### 6.5 Actual and potential trade impacts:

The illegal wildlife trade poses a direct threat to *A. cinereus*. The threat of poaching, driven by trade, is a “major threat” for *A. cinereus*, according to the IUCN Red List (Wright *et al.* 2015). 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. Furthermore, the increasing demand for *A. cinereus* 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 *A. cinereus*, it is a compounding threat that merits heightened international attention, especially cooperative attention between source and demand countries.

### 7. Legal instruments:

#### 7.1 National:

*A. cinereus* is generally protected in their range States, except in Cambodia, which removed protections for *A. cinereus* and *L. perspicillata* in 2007; Indonesia, where *A. cinereus* is not protected by domestic legislation; Nepal; and Brunei Darussalam.

Range State	Legislation	Protected Status
Bangladesh	Wildlife (Conservation and Security) Act, 2012	Protected
Bhutan		Protected
Brunei Darussalam		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		Protected

	The Indian Wildlife (Protection) Act 1972 – Schedule I & II	
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	Not 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		Not Protected
Philippines	Wildlife Resources Conservation and Protection Act RA9147 (2001)	Protected
Singapore	Wild Animals and Birds Act, 1965	Protected
Taiwan, Province of China	Wildlife Conservation Law (1989)	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:

*Aonyx cinereus* listed on Appendix II of CITES (1977). It is not protected by any other international agreement.

## 8. Species Management:

### 8.1 Management measures:

*Aonyx cinereus* have legal protection from hunting in range States except Cambodia, Brunei Darussalam, Nepal and Indonesia. No management plans or species-specific conservation measures are in place for *A. cinereus* in range States.

## 8.2 Population monitoring:

*A. cinereus* is not monitored throughout its range, but isolated surveys suggest steep declines. The *A. cinereus* has been surveyed in Singapore in 2014, where it is considered possibly extinct (Rosli *et al.* 2014). In Bhutan a 2013 survey found no otter signs although some had been sighted in the preceding years (Chettri & Savage 2014). Surveys in Myanmar between 1995 and 2005 found no otters, although there is no evidence they were previously rare (Zaw *et al.* 2008). In China, the species has declined dramatically, with only 3 records of its presence from 2006 to the present (Li and Chan 2017). In Bangladesh, surveys in 2014-2015 highlight risks from rising salinity (Aziz 2018). In Cambodia, *A. cinereus* are only found near Virachey National Park (Heng *et al.* 2016). In Indonesia, where *A. cinereus* was once common, forest destruction has reduced the species' natural habitat, and it has been heavily persecuted by commercial fisheries and local people who considered it a pest (Rode-Margono *et al.* 2014; Meijaard 2014).

## 8.3 Control measures:

### 8.3.1 International:

*A. cinereus* is listed on CITES Appendix II.

### 8.3.2 Domestic:

*A. cinereus* is not protected in Cambodia, Brunei Darussalam, Indonesia and Nepal. Hunting and trade is banned in all other range States.

## 8.4 Captive breeding:

In captivity, successful breeding occurs at about 2 years old, but sometimes younger (Wright *et al.* 2015); they breed year-round and gestation is believed to be 60-86 days (Wright *et al.* 2015 and references therein). Litter size (in captivity) is 1-7 (up to 16; with a mean of 3 to 4, Hussain *et al.* 2011 and references therein), and longevity (in captivity) is around 11 years (Wright *et al.* 2015 and references therein).

*A. cinereus* are exhibited in over 226 zoos. No captive breeding for reintroduction purposes has been attempted. The studbook lists over 977 individuals living from 48 founders (Otter Specialist Group 2018). In Thailand, *A. cinereus* cannot be legally owned or bred under current law, but there are numerous unverified accounts of illegal captive-breeding facilities. The Thailand Department of National Parks, Plants and Wildlife Conservation (DNP) indicates there are no legal otter farms and no permits for captive otters outside zoos (Gomez & Bouhuys 2018). The CITES Trade Database shows three records of captive bred *A. cinereus* from Indonesia. However, no captive breeding facilities have been verified or registered and with no harvest quotas for the species it is unclear how parent stock would have been collected (Gomez & Bouhuys 2018). The CITES Trade Database reports a minimum of 637 *A. cinereus* traded under source code "C" for commercial purposes. All excepting 8 otters from Singapore and 14 from Indonesia were from non-range countries. The largest numbers were exported from the Czech Republic (157; mostly re-exports), Tanzania (100), Japan (73), the Netherlands (93), Belgium (52; mostly re-exports), Uzbekistan (46; all re-exports), and Spain (43).

## 8.5 Habitat conservation:

*A. cinereus* is present in the Sundarbans Ramsar site in Bangladesh and India and in Cambodia's Virachey National Park. The species is also present in mountainous nature

reserves in China, but at very low densities. Diaoluoshan National Nature Reserve on Hainan Island, Hainan Province, China is home to the species. There is a large *A. cinereus* population in Nakai-Nam Theun National Protected Area in Lao PDR. The species is present in national parks of Sumatra, Java, and Kalimantan, Indonesia, because they are not on protected species lists in the country the hunting pressure is very high (see Meijaard 2014). The Lower Kinabatangan Wildlife Sanctuary in Sabah, Malaysia, is a key conservation area for *A. cinereus*. Malaysian Borneo's Yayasan Sabah Conservation Area (Maliau Basin, Imbak Canyon, Danum Valley), also hosts viable populations of *A. cinereus*.

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 small clawed otter (*Aonyx cinereus*) to the Range Countries of Nepal, Bangladesh, Bhutan, China, Myanmar, Singapore, Thailand, Vietnam, Malaysia, Indonesia, Brunei Darussalam, Cambodia, Lao People's Democratic Republic, Philippines, and United Kingdom (species has been introduced there and is not native) on 20<sup>th</sup> December, 2018.

11. Additional Remarks:

12. References:

Aadrean, A. (2013). An Investigation of Otters Trading as Pet in Indonesian Online Market. *Journal Biologika*, 2(1): 1-6.

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

Abdul-Patah, P., Nur-Syuhada, N., Md-Nor, S., Sasaki, H. & Md-Zain, B.M. (2014). Habitat and Food Resources of Otters (Mustelidae) in Peninsular Malaysia. AIP Conference Proceedings 1614, 693; doi: 10.1063/1.4895286. <https://doi.org/10.1063/1.4895286>.

Allen, J. & Sasaki, S. (2017). Otters Take Tokyo Cafe by Storm. *Kyodo News*. <https://english.kyodonews.net/news/2017/09/b411b15edf77-otter-story-draft.html>.

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 Behaviour of Asian Small-Clawed Otter (*Aonyx cinereus*) in the Sundarbans Mangrove Forest of Bangladesh *IUCN Otter Specialist Group Bulletin* 35 (1): 3-10.

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.

Bernardo Jr., A.A. (2011). Vehicle-induced mortalities of birds and mammals between Aborlan and Puerto Princesa City National Highway. 2011. *The Palawan Scientist*. 5(1): 1-10.

- Castro, L.S.G. and R.G. Dolorosa. (2006). Conservation status of Asian small-clawed otter *Amblyonyx cinereus* (Illiger, 1815) in Palawan, Philippines. *The Philippine Scientist* 43: 69-76.
- 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.
- Cianfrani, C., O. Broennimann, A. Loy, A. Guisan. (2018). More than range exposure: Global otter vulnerability to climate change. *Biological Conservation* 221: 103-113. <https://doi.org/10.1016/j.biocon.2018.02.031>
- Coudrat, C.N.Z. (2016). Preliminary camera-trap otter survey in Nakai-Nam Theun National Protected Area Nov-Dec 2015. Final report, January 2016. [http://www.conservationlaos.com/documents/Coudrat\\_2016\\_Otters\\_Nakai-Nam%20Theun\\_FinalReport.pdf](http://www.conservationlaos.com/documents/Coudrat_2016_Otters_Nakai-Nam%20Theun_FinalReport.pdf).
- Dong, T., Tep, M., Lim, S., Soun, S. & Chrin, T. (2010). Distribution of Otters in the Tropeang Rong, Koh Kong Province, Cambodia. *IUCN Otter Specialist group Bulletin* 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.
- Egana, J.Q., Cutay, M.A.Q., Castro, L.S., Warrior, A.F., Pinder, S., Matthams, A., Saleiko, K.M. & Ponzio, A. (2016). Understanding the population of Asian small-clawed otter (*Aonyx cinereus*) in Puerto Princesa City, Palawan, Philippines: ecology and conservation. Otter Specialist Group 13<sup>th</sup> International Otter Congress, Singapore - Conference Paper 10.13140/RG.2.1.4914.5842.
- Foster-Turley, P. (1986). A progress report on the species survival plan for Asian small-clawed otters in United States zoos. *IUCN Otter Specialist Group Bulletin* 1: 19–21.
- 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*.
- Gomez, L. & Bouhuys, J. (2018). Illegal Otter Trade in Southeast Asia. TRAFFIC, Petaling Jaya, Selangor, Malaysia.
- Gonzalez, J.B. (2010). Distribution, exploitation and trade dynamics of Asian Small-clawed Otter *Amblyonyx cinereus* Illiger 1815 in Mainland Palawan, Philippines. BSc Thesis. Western Philippines University Puerto Princesa Campus.
- Heng, S., Dong, T., Han, N. & Olsson, A. (2016). The Hairy-nosed otter *Lutra sumatrana* in Cambodia: Distribution and Notes on Ecology and Conservation. *Cambodian Journal of Natural History* 2: 102-110.
- Hussain, S.A. (2000). Status of otter conservation in India. *ENVIS Bulletin on Wildlife and Protected Areas* 2(2): 92-97.
- Hussain, S.A. (2002) Status of the otter in the Tarai and lower Himalayas of Uttar Pradesh, India. *IUCN Otter Specialist Group Bulletin*, 19A: 131-42.
- Hussain, S.A., Gupta, S.K. and Silva, P.K. (2011). Biology and ecology of Asian small-clawed otter *Aonyx cinereus* (Illiger, 1815): A review. *IUCN Otter Specialist Group Bulletin* 28(1).

Jefferies, D.J. (1991). Another record of an Asian short-clawed otter living free in Oxford with notes on its implications. *Journal of the Otter Trust* 2(5): 9-12

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.

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.

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.

Manjreker, M.P. & Prabu, C.I. (2014). Status of otters in the Sundarbans Tiger Reserve, West Bengal, India. *IUCN Otter Specialist Group Bulletin* 31(2):61-64.

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.

Meijaard, E. (2014). A Review of Historical Habitat and Threats to Small-Clawed Otters on Java. *IUCN Otter Specialist Group Bulletin* 31(1): 40-43.

Mohapatra, P., Palei, S. H., Hussain S. A. (2014). Occurrence of Asian small-clawed otter *Aonyx cinereus* (Illiger, 1815) in Eastern India. *Current Science*. 107(3): 367-370

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

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

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

Pocock, R.I. (1941). *The Fauna of British India, including Ceylon and Burma*. Taylor & Francis, Ltd., London, UK.

Prakesh, N., Mudappa, D., Raman, T.R.S. & Kumar, A. (2012) Conservation of the Asian small-clawed otter (*Aonyx cinereus*) in human-modified landscapes, Western Ghats, India. *Tropical Conservation Science* 5(1): 67-78.

Prater, S. (1971). *The Book of Indian Animals*. Bombay Natural History Society, Bombay, India.

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.

- Rode-Margono, E.J., Voskamp, A., Spaan, D., Lehtinen, J.K., Roberts, P.D., Nijman, V. & Nekaris, K.A.I. (2014). Records of small carnivores and of medium-sized nocturnal mammals on Java, Indonesia. *Small Carnivore Conservation* **50**: 1–11.
- Rosli, M.K.A., Syed-Shabthar, S.M.F., Abdul-Patah, P., Abdul-Samad, Z., Abdul, S.N., Burhanuddin, M.N., Zulkifli, N.A., Shukor, M.N., Budsabong, K., Changtragoon, S., Sekiguchi, T., Sasaki, H. & Md-Zain, B.M.A. (2014). New Subspecies Identification and Population Study of the Asian Small-clawed Otter (*A. Cinereus*) in Malay Peninsula and Southern Thailand Based on Fecal DNA Method. *The Scientific World Journal* **14**.
- Ross, J., Hearn, A. J., and Macdonald, d. W. (2017) The Bornean carnivore community: lessons from a little-known guild. In: *Biology and Conservation of Musteloids*. Edited by david W. Macdonald, Chris Newman, and Lauren A. Harrington. Oxford University press.
- Sanyal, P. (1991). Otters of West Bengal, India, with special reference to a study area near Calcutta. *Habitat* **6**.
- Sasaki, H., Mohd. Nor, B. and Kanchanasaka, B. (2009). Past and 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.
- 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.
- 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.
- 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>
- Wilson, D.E. and R.A. Mittermeier. (2009). *Handbook of the Mammals of the World - Volume 1*. Lynx Edicions, Barcelona
- World Protection Society of India (2018). *Wildlife Crime Database* (on file with author).
- Wozencraft, W. C. (1993). Order Carnivora, Family Mustelidae. Pp. 309-325 In D. E. Wilson and D. M. Reeder, eds. *Mammal Species of the World: A Taxonomic and Geographic Reference* Smithsonian Institution Press, Washington, District of Columbia. 1206 pp.
- Wright, L.C., Olsson, A. & Kanchanasaka, B. (2008). A Working Review of the Hairy-Nosed Otter (*Lutra sumatrana*). *IUCN Otter Specialist Group Bulletin* **25** (1): 38-59.

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.