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TRADING FACES

Utilisation of Facebook to Trade Live Reptiles in the Philippines

Emerson Y. Sy





TRAFFIC REPORT

TRAFFIC, the wildlife trade monitoring network, is the leading non-governmental organization working globally on trade in wild animals and plants in the context of both biodiversity conservation and sustainable development. TRAFFIC works closely with its founding organizations, IUCN and WWF.

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Front cover photograph: A Butaan *Varanus olivaceus*, confiscated from an attempt to smuggle it via FedEx.

Credit: Emerson Sy/TRAFFIC

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A Butaan *Varanus olivaceus*, confiscated from an attempt to smuggle it via FedEx.

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SCRATCHING THE SURFACE

Key findings of live reptile trade in Facebook groups in the Philippines

34%
of species
are native
or endemic

7
CITES
Appendix I
species

115
taxa

9
venomous
snakes

52%
of the species are
internationally
regulated by
CITES



359 328

initial membership
in 90 groups

40 640

additional members
in 3 months



2245

advertisements

748

average
reptile ads
per month



5082

minimum number
of live individuals

Valued at

PHP 26 451 345
(USD 570 148)

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ABBREVIATIONS AND ACRONYMS

AFP	Armed Forces of the Philippines
ASAP	Asian Species Action Partnership
BMB	Biodiversity Management Bureau; a staff bureau of the DENR
BOC	Bureau of Customs
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CWR	Certificate of Wildlife Registration
DA	Department of Agriculture
DENR	Department of Environment and Natural Resources
DOJ	Department of Justice
DND	Department of National Defense
DOT	Department of Transportation
DILG	Department of Interior and Local Government
HKD	Hong Kong Dollar
IUCN	International Union for Conservation of Nature
NBI	National Bureau of Investigation
NCR	National Capital Region; also known as Metro Manila
OP-NICC	Office of the President-National Intelligence Coordinating Council
PCSD	Palawan Council for Sustainable Development
PCG	Philippine Coast Guard
PNP	Philippine National Police
POGI	Philippine Operations Group on Ivory and Illegal Wildlife Trade
PHP	Philippine Peso
PAWB	Protected Areas and Wildlife Bureau; renamed to Biodiversity Management Bureau
USD	United States Dollar
WFP	Wildlife Farm Permit

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EXECUTIVE SUMMARY

The trade in live reptiles as pets has increased significantly in the last three decades with Asian countries playing an increasing role as important trade hubs and consumers. In the Philippines, all non-native and native reptile species are protected under the Wildlife Act of 2001 and enthusiasts are required to obtain permits to keep reptiles legally. Physical markets were traditionally the main source of live reptiles, but some illegal wildlife traders suspected to have been displaced by successful enforcement actions have increasingly turned to online platforms to continue their illicit trading activities. Facebook is an immensely popular social networking website with more than 47 million active monthly users in the Philippines. Recognising the increasing importance of Facebook in live reptile trade, TRAFFIC researchers conducted a three-month survey from June–August 2016 to elucidate current trade dynamics, analyse trends, and identify areas for future work. CITES trade data for non-native reptiles imported to the Philippines from 2005–2016 were also analysed to determine species and quantities imported into the country over the 12-year period.

A total of 2245 unique live reptile advertisements representing 115 taxa and a minimum of 5082 individuals were posted by 1046 traders in 90 pre-selected Facebook groups. The cumulative membership (i.e. summed membership without removing people who were members of multiple groups) in the 90 Facebook groups at the beginning of the survey was 359 328, but quickly increased by 11% within three months. The estimated potential value of all advertised reptiles recorded during this study was PHP26 451 345 (USD570 148). The results of this study were shared by TRAFFIC with the Biodiversity Management Bureau (BMB) and Facebook to augment their trade data and for follow-up action.

The top 10 most commonly-traded species alone accounted for 82% of all animals recorded to be offered for sale on Facebook. Thirty four percent of traded taxa are native and legally protected in the Philippines, including the two Critically Endangered Philippine Forest Turtles *Siebenrockiella leytensis* offered. Practically all available native specimens found for sale were likely collected illegally from the wild since there are no credible commercial captive breeding programmes in the country. Based on current Philippine wildlife law and regulations, at least 80% of documented online traders in this study were deemed involved, knowingly or otherwise, in illegal trading activities. Research also showed that within Metro Manila, the preferred method of parties to finalise a transaction is to meet at a pre-arranged place such as at the trader's residence, pet center or train station.

Philippines also reported the import of 6078 live non-native reptiles representing 72 taxa, from 25 countries between 2005–2016. Fifty two percent of taxa (n = 60) available in trade were internationally regulated by the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Five non-native CITES Appendix I-listed reptiles, representing 36 animals were also recorded for trade in the 90 Facebook groups. None of them had importation records, according to the BMB, and were therefore traded illegally. This includes the 20 Critically Endangered Radiated Tortoises *Astrochelys radiata* endemic to Madagascar and the seven Endangered Big-headed Turtles *Platysternon megacephalum*. Further, 33 non-native CITES Appendix II-listed species were also offered for sale on Facebook. Of these, 28 individuals from eight species had no importation records since 1981, meaning they were very likely acquired and being traded illegally.

The availability of non-native species, including CITES Appendix I-listed taxa, without legal

importation records suggests smugglers exploited loopholes in the implementation of Philippine wildlife and Customs rules and regulations. The weak implementation of wildlife law and corruption, where there have been recent reported cases with airport personnel facilitating trade, are factors affecting wildlife trade governance at seaports and airports. The Department of Environment and Natural Resources (DENR) anti-illegal wildlife trade efforts will continue to be undermined unless import/export loopholes are addressed and those individuals involved are held accountable to the full extent of the law. The trade also directly threatens native and endemic reptiles due to unabated wildlife poaching throughout the country.

TRAFFIC makes the following recommendations based on the findings of this study:

FOR GOVERNMENT

Monitoring

Wildlife trade monitoring should be conducted continuously by Philippine authorities in collaboration with wildlife researchers and conservationists to determine trade dynamics such as scale of the trade over time, availability of wildlife traded illegally, species composition, species of special concern, and persons involved.

Continuous monitoring of wildlife trade in physical and online markets is essential to immediately detect shifting dynamics and to formulate timely and appropriate responses to emerging wildlife trade issues.

Regulation and Enforcement

Forming a national multi-sectoral task force on illegal wildlife trade including, as a priority, to work closely with Facebook to aid investigations, suspend accounts of illegal traders and shutting down groups involved in illegal wildlife trade.

The Philippine Customs and other enforcement authorities should be more vigilant in preventing smuggling of live reptiles into and out of the country. More attention and scrutiny is needed at airports where live animals are smuggled in and out of the country, and corruption, where it has been recorded, must be considered in any effort to effectively stem illegal wildlife trade in the country.

The ability of traders to ship nationally and internationally without required permits should be addressed promptly by the authorities to effectively mitigate illegal wildlife trade. The task requires allocation of additional resources and collaborative efforts by the authorities, conservation organisations, and the public.

The BMB and Palawan Council for Sustainable Development (PCSD) should conduct regular physical and paper audits on wildlife inventories based on Certificates of Wildlife Registration (CWR) and Wildlife Farm Permits (WFP) issued to detect fraudulent activities such as adding illegally-acquired specimens into existing private collections and wildlife laundering. The prevalent practice of using legal documents by permit holders as a cover to conduct illicit trading activities warrants in-depth investigation.

The BMB and PCSD should require infallible and verifiable proof of reported captive breeding

successes, particularly of hard-to-breed species, by wildlife enthusiasts and farms to avoid validating fraudulent claims. Wildlife laundering by breeding farms and private enthusiasts has been identified as a mechanism to circumvent national and international laws and regulations.

Enforcement actions and successful prosecutions on illegal traders should be timely and sustained to serve as deterrents. Media coverage of enforcement actions and prosecutions will help educate stakeholders and the public on consequences of engaging in illegal wildlife trade.

Collaboration and Advocacy

Wildlife authorities, conservation organisations, and advocates should engage and educate stakeholders and the public on the ramifications of illegal wildlife trade on biodiversity conservation, including on social networking platforms where the trade is currently active.

The BMB and conservation groups should encourage public reporting of suspected illicit wildlife trading activities directly to the DENR at +632 925-8952 or 925-8953 or via the Wildlife Witness App which can be downloaded for iPhone (<https://itunes.apple.com/us/app/wildlife-witness/id738897823?mt=8>) or Android (<https://play.google.com/store/apps/details?id=com.taronga.wildwitness>).

FOR BUSINESSES

Airline and cargo employees suspected to be colluding with traders to trade in or transport illegal wildlife should be thoroughly investigated and dismissed from the service if found guilty. This would also go a long way in sending a strong deterrent message for other would-be offenders.

For Facebook

Facebook should include the sale of illegal and endangered wildlife and derivatives in their security filtering to prevent unscrupulous traders from operating unregulated on their platform. Facebook is encouraged to monitor and review content, and if found to violate laws and Facebook's Terms of Service, groups and individual accounts involved in illegal wildlife trading activities should be suspended or shut down permanently. We also recommend that Facebook continues to work with the NGO community including TRAFFIC to develop training materials around endangered species content.

For Freight and On-call Transportation Business Operators

Capacity building in detecting fraudulent paperwork and shipments of illegal wildlife for airline, airport, seaport, and cargo personnel should be conducted regularly. This would prevent illegally acquired wildlife from entering the market and deter other would-be smugglers from attempting to import or export wildlife without proper permits.

Personnel working in freight service and on-call transportation companies should keep abreast with wildlife trade regulations and remain vigilant to prevent traders from utilising their services to illegally ship wildlife.

INTRODUCTION

The international wildlife trade has been implicated as one of the major threats to species survival (Rosen and Smith, 2010; Herrel and Van der Meijden, 2014) notably in biodiversity-rich regions such as Southeast Asia (Sodhi *et al.*, 2004; Nijman, 2010). Among vertebrates, reptiles as a group have more limited distributional ranges and niches, thus making them particularly vulnerable to disturbances and are of higher conservation concern (Böhm *et al.*, 2013). The voluminous worldwide trade in reptiles to supply the demand for ingredients in traditional medicine, food, skin, ornaments, and pets often involves unsustainable extractive practices of wild populations that directly contribute to the decline of targeted species (Gibbons *et al.*, 2000; Van Dijk *et al.*, 2000; Zhou and Jiang, 2004; Chen *et al.*, 2009; Nijman *et al.*, 2012; Mali *et al.*, 2014; Nijman and Shepherd, 2015). The legal and illegal trade in live reptiles as pets have increased significantly both in quantity and number of species within the last three decades (Hoover, 1998; Smith *et al.*, 2009) with Asian countries playing an increasing role as important trade hubs and consumers (Shepherd and Nijman, 2008; Gong *et al.*, 2009; Ishihara *et al.*, 2010; Stengel *et al.*, 2011; Sy, 2015a).

Poaching of wildlife for the pet trade is one of the major threats confronting Philippine reptiles. A recent exercise undertaken by the Amphibian and Reptile Technical Working Group under the auspice of the Biodiversity Management Bureau (BMB) to assess the threat status of Philippine herpetofauna showed that 47 out of 54 (87%) listed terrestrial reptiles are threatened by the on-going illegal wildlife trade (BMB, in prep.). Unsustainable collection can result in ecological imbalance and disrupt ecological services provided by keystone species such as snakes.

Cognisant of the urgency to strengthen mechanisms to address the increasing illegal wildlife trade in the Philippines, the Department of Environment and Natural Resources (DENR) issued DENR Special Order No. 2013-354 on 21 June 2013 forming the Philippine Operations Group on Ivory and Illegal Wildlife Trade (POGI) with the Bureau of Customs (BOC), National Bureau of Investigation (NBI), Office of the President-National Intelligence Coordinating Council (OP-NICC), and Philippine National Police (PNP). The specific tasks of the POGI are to investigate ivory smuggling, poaching, and illegal trading of wildlife and to file appropriate cases against violators in court. In August 2016, the DENR Secretary signed an agreement with the Department of Interior and Local Government (DILG), Department of Transportation (DOT), Department of National Defense (DND), Department of Justice (DOJ), Armed Forces of the Philippines (AFP), PNP, and Philippine Coast Guard (PCG) to form the National Anti-environmental Crimes Task Force (*Task Force ng Kalikasan*) aiming to intensify concerted efforts in addressing environmental crimes in the country.

Physical markets were traditionally the main source of live reptiles in the Philippines (Sy, 2015a). In an effort to stamp out illegal wildlife trade, the BMB conducted numerous raids over the years in markets conducting illegal wildlife trade, resulting in confiscation of wildlife and arrest of suspected illegal traders. From 2014–2016, the BMB reported 45 confiscation cases of wildlife being traded as pets (BMB, unpubl. report). Some traders suspected to have been displaced by successful enforcement actions in physical markets increasingly turned to online platforms to continue their illicit trading activities.

Numerous studies have reported increasing utilisation of online platforms to trade wildlife, particularly in social networking websites such as Twitter and Facebook (Todd, 2011; Sy, 2012; Hastie and McCrea-Steele, 2014; Chng and Bouhuys, 2015; Krishnasamy and Stoner, 2016; Nguyen and Willemsen, 2016). Facebook is an immensely popular social networking website with over 1.7 billion monthly active users worldwide. With more than 47 million active monthly users as of September 2016, the Philippines is ranked as the 2nd most active Facebook user in Southeast Asia and the number is projected to increase to 55.4 million in 2021 (Statistica, 2016). Recognising the increasing importance of Facebook in live reptile trade in the Philippines, TRAFFIC researchers conducted this study to elucidate current trade dynamics, analyse trends, and identify areas for future work.



A Facebook advertisement for Indian Star Tortoises *Geochelone elegans*, which are often mixed and smuggled with legal ornamental freshwater fish shipments.

INTERNATIONAL AGREEMENT AND NATIONAL LEGISLATION

CITES

The Philippines became a signatory to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in 1981 with the BMB as the lead CITES Management Authority in the country. Under the CITES National Legislation Project, the Philippines is considered a Category 2, with its legislation “believed generally not to meet all of the requirements for the implementation of CITES” (CITES, 2016).

Wildlife Act of 2001 (RA No. 9147)

The Wildlife Resources Conservation and Protection Act of 2001/Republic Act No. 9147 also commonly known as the Wildlife Act of 2001 prohibits the collection, possession, transport, export, import, and introduction into the wild of wildlife without proper permits (Anon, 2001). This Act is the country’s CITES-implementing legislation. While the Act was signed by the then Philippine President in July 2001, the implementation only started after the issuance of a joint Administrative Order among the DENR, Department of Agriculture (DA), and Palawan Council for Sustainable Development (PCSD) (DENR-DA-PCSD) No. 01, series of 2004 on 18 May 2004 to articulate the implementing rules and regulations (Anon, 2004).

Chapter IV Section 27 specifically pertains to illegal wildlife trade. A person who violates the Act may be imprisoned up to 12 years and/or fined up to PHP1 000 000 (USD21 555) depending on the threat status of the species involved. Under Article 3 Section 26 of the Act, all threatened and exotic (non-native) wildlife in the possession of private individuals are required to be registered with the DENR within the prescribed period. The wildlife/wildlife product registration process was initiated with the issuance by the DENR Secretary of Administrative Order No. 2004-58 in August 2004 to allow individuals, zoos, and enterprises to register the possession of wildlife and wildlife products, including those that may have been acquired illegally prior to the Act. Administrative Order No. 2004-67 was issued in December 2004 to extend the registration period by another 60 days to accommodate wildlife enthusiasts/enterprises. Unregistered wildlife can be confiscated in favour of the State with corresponding penalties for possession of unregistered wildlife up to PHP300 000 (USD6466) and four years of imprisonment. The initial registration period (August 2004 to March 2005) was also regarded as the amnesty period since specimens with unknown or dubious origin were given legal status upon registration without further question. Certificates of Wildlife Registration (CWR) were issued to non-commercial keepers, and Wildlife Farm Permits (WFP) were granted to technically and financially capable commercial captive-breeding enterprises. Subsequent acquisitions of wildlife by individuals were required to be accompanied by evidence of legal local purchases, such as receipts from DENR-registered wildlife farms or importation, before the BMB will allow specimens to be added to new or existing private collections or commercial facilities.

METHODOLOGY

TRAFFIC researchers conducted a three-month online survey in Tagalog and English from June to August 2016 by monitoring the activities in 90 pre-selected Facebook groups. The groups were selected to cover the online reptile trade as comprehensively as possible, based on previous reptile advertisements observed within the 12 months prior to the start of this study. All advertisements by group members offering to sell or barter live reptiles were documented. Advertisements offering endemic, rarely-traded or endangered species were screen captured. Advertisements without photographs or additional information on total number of available specimens were counted as one individual each to avoid inflating the total available animals in the trade. Duplicate advertisements posted in several groups by the same trader were removed from the dataset.

Every reptile advertisement and accompanying photographs were reviewed to document species, the minimum quantity and price range. The total value of traded reptiles was calculated by using the advertised prices as indicated by traders. Advertisements that did not indicate prices were assigned the lowest known retail price in the Philippine market for each taxon. Reptile species that are extensively bred in captivity and widely available are considered captive-bred in this study. All information recorded was based on actual wording of advertisements and no animals were purchased during the study. The results of this study were shared by TRAFFIC with the BMB and Facebook to augment their trade data and for follow-up action.

To better understand if the CITES listed non-native species documented during the Facebook assessment were legally imported or not, import data from 2005–2014 were retrieved from the CITES trade database while 2015–2016 import data which were not yet available in the database were requested directly from the BMB. The dataset was analysed to determine species and quantity imported into the Philippines during the 12-year period.

Scientific names follow Uetz *et al.* (2016). The Philippine Peso (PHP) fluctuated between 45.8823 and 47.2464 against the USD during this study, but a conversion rate of PHP46.3938 = USD1 (as of 31 August 2016; <http://www.oanda.com>) was used throughout this report for uniformity.



Green Tree Python *Morelia viridis* for sale

RESULTS

A total of 2245 unique live reptile advertisements from 115 taxa involving a minimum of 5082 individuals were posted within a three-month period by 1046 users in the 90 pre-selected Facebook groups (Annex 1). On average, 748 advertisements a month were documented. The majority of the posted advertisements offered only one individual per advertisement (65%, n = 1473) while 16% (n = 647) and 19% (n = 420) of advertisements had two and three, or more individuals per advertisement, respectively.

Overall, non-native taxa dominated the trade, involving 4141 (81.5%) individuals in contrast to 463 (9.1%) native and 478 (9.4%) endemic individuals offered for sale during the three-month period. Of the 2245 advertisements, only 17 explicitly mentioned legality of their specimens while two offered specimens with permits, but also offered other specimens of the same species without permits at a discounted price. Based on the premise that traders were offering to sell some specimens with permits but not all, involving the same species, it is highly likely that they are using legal documents as a cover to fraudulently trade in animals that may have been acquired illegally.

Species in the Trade

Out of the 115 taxa documented, 13 have not been previously documented in the Philippine reptile trade including the non-native and CITES Appendix I-listed Black Spotted Turtle *Geoclemys hamiltonii* and three venomous snakes, namely Malayan Pit Viper *Calloselasma rhodostoma*, Russell's Viper *Daboia russelii*, and Luzon Barred Coral Snake *Hemibungarus calligaster* (Sy, 2015a; Sy, unpubl. data). All native and non-native species are protected nationally by the Wildlife Act of 2001. An inventory of all species recorded in trade is provided in Annex 1.

Top 10 Species in the Trade

The 10 most commonly-traded species collectively involved 4168 individuals or 82% of the total animals observed (Figure 1). The Ball Python *Python regius*, a non-native species, accounted for 964 specimens or 19% of the total quantity offered during this study. The snake has been imported regularly since 1993 and captive-bred locally, however, many sellers admitted voluntarily or when asked by potential buyers to not having DENR permits to keep or sell exotic pets which render their specimens illegal according to the Wildlife Act of 2001.

The majority of advertisements featuring the native Reticulated Python *Malayopython reticulatus* (n = 307) were most likely illegally-collected hatchling and juvenile specimens from the wild, based on the appearance of individuals and low asking prices (as low as PHP350/USD7.54 each). Very few imported captive-bred morphs (n = 11) were documented during the study period.

Fig. 1: Top 10 Commonly Traded Reptiles in Philippine Facebook Groups

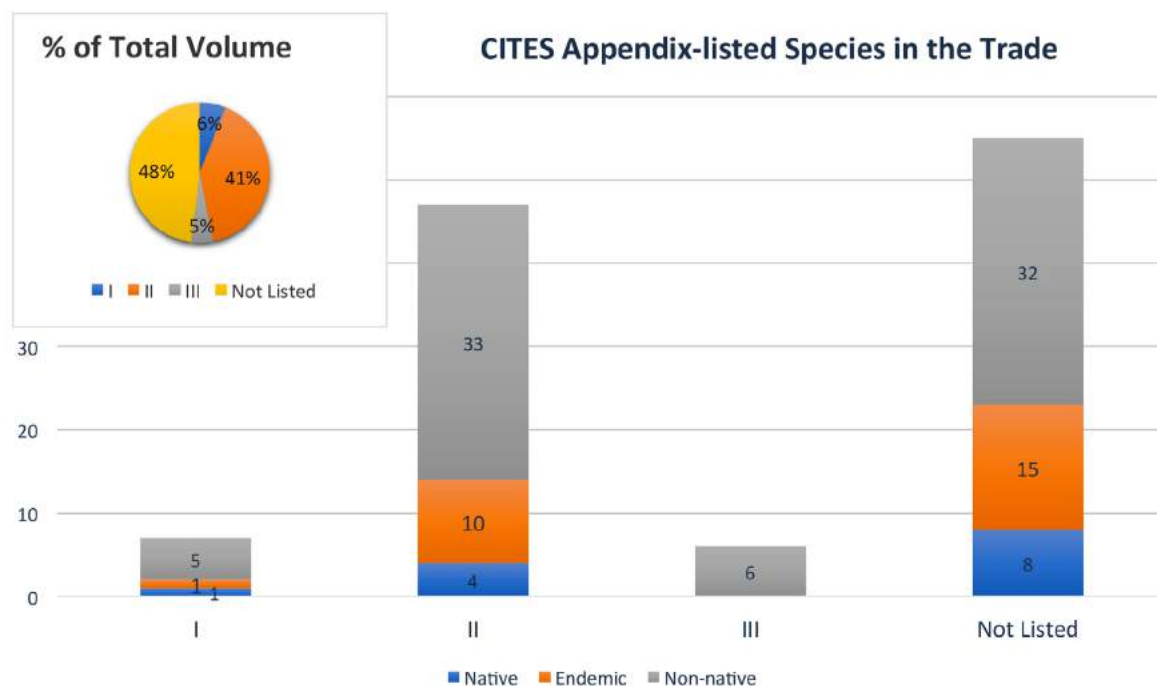


Two endemic species, the Philippine Crocodile *Crocodylus mindorensis* and Philippine Forest Turtle *Siebenrockiella leytensis* are assessed under the IUCN Red List as Critically Endangered. Both species are covered under the Asian Species Action Partnership (ASAP), which was established to address the extinction risk among the most threatened land and freshwater vertebrates of Southeast Asia (ASAP, 2017). More endemic lizards that were recorded in this survey will undergo IUCN Red List re-assessment. The Philippine Sailfin Lizard *Hydrosaurus pustulatus* (n = 161) and Philippine Keeled Water Skink *Tropidophorus grayi* (n = 133) are endemic and heavily-traded in the Philippines. Claims of captive breeding successes of these two and other Philippine endemic species by private individuals and zoological parks in the Philippines should be considered with great caution since illegally collected specimens are readily available in the market and are routinely being laundered or smuggled for the lucrative international reptile market (Agence France-Presse, 2016; Sy, pers. obs.).

CITES-listed Species

Sixty out of 115 taxa (52%) are listed in one of the CITES appendices (Figure 2), of which eight are assessed Critically Endangered or Endangered by the IUCN (2016).

Fig. 2: CITES Appendix-listed Species in the Trade



The analysis of the CITES trade dataset (2005–2016) showed that the Philippines imported 6078 live non-native reptiles representing 72 taxa from 25 countries. In addition, exporting countries reported an additional 1923 live reptile individuals of 10 other taxa including 30 CITES Appendix I-listed Siamese Crocodiles *Crocodylus siamensis* in 2005. The discrepancies may be attributed to incomplete reporting of CITES national authorities, specimens were legally exported from source countries but without corresponding Philippine import permits and thus making it illegal, or that reports were based on permits issued by exporting countries instead of actual exported taxa and quantities. Out of 44 non-native CITES-listed taxa documented in this study, only 25 had legal import records in the last 12 years.



Green Iguana *Iguana iguana*

Out of the seven CITES Appendix I-listed reptiles documented in the trade (Figure 3), five are not native to the Philippines. Checks on import records against information in the CITES trade database shows that the Big-headed Turtle *Platysternon megacephalum* was the only CITES Appendix I-listed species that had an importation record, for one individual in 2005, when the species was still listed in Appendix II. Based on this, the seven Big-headed Turtles observed during this study were most likely recently smuggled into the Philippines and traded online illegally, especially since the BMB had not issued any import permits for the species after 2005. None of the other non-native CITES Appendix I-listed species recorded in trade in the 90 Facebook groups (Annex 1) had importation records and are therefore presumed to be illegal to trade.

Fig. 3: CITES Appendix I-listed species offered for sale in 90 Philippine Facebook groups from June–August 2016



The 47 CITES Appendix II-listed species were composed of 14 native or endemic and 33 non-native species. Analysis of live reptile import data showed that the eight non-native species, totalling 28 individuals, all had no legal importation records since 1981 and therefore are illegal to trade (Table 1).

Table 1. CITES II-listed species without importation records into the Philippines

Taxon	Number of Individuals
Solomon Island Ground Boa <i>Candoia paulsoni</i>	4
Pig-nosed Turtle <i>Carettochelys insculpta</i>	7
Chaco Tortoise <i>Chelonoidis chilensis</i>	3
Earless Monitor Lizard <i>Lanthanotus borneensis</i> *	3
Indian Flap-shelled Turtle <i>Lissemys punctata andersoni</i>	8
Diamondback Terrapin <i>Malaclemys terrapin</i>	1
Monocled Cobra <i>Naja kaouthia</i>	1
Four-eyed Turtle <i>Sacalia quadriocellata</i>	1

* This species was not listed in CITES during the study period; however, it is totally protected in its Bornean range countries. CITES Appendix II listing of this species came into effect on 2 January 2017, after widespread evidence that the species was being illegally collected and traded internationally (Anon, 2016; Stoner, 2016).

Valuation of Traded Reptiles

Prices were indicated in 1517 of 2245 (or 68%) advertisements ranging from PHP100 (USD2.16) for a Southeast Asian Box Turtle *Cuora amboinensis* to PHP150 000 (USD3233) for an Earless Monitor Lizard *Lanthanotus borneensis*. The total potential value of all advertised reptiles recorded during this study was at least PHP26 451 345 (USD570 148).

Groups

The cumulative membership (total membership without removing people who were members of multiple groups) in the 90 Facebook groups at the beginning of the survey was 359 328 and ranged from 124 to 60 093 (mean = 3993) registered members per group. Since most enthusiasts were members of several groups, the total membership may be considered as the maximum number of members. The total membership increased by 40 640 (11%) users within three months. This indicates the rapid increased utilisation of Facebook by enthusiasts to trade in live reptiles.

DISCUSSION

Native vs. Non-native Species

The vast majority, if not all, of native and endemic species in the trade were illegally collected from the wild since the BMB reported that they have never issued permits to collect reptiles intended for commercial purposes (J. de Leon, pers. comm.). Reptiles with widespread distribution in the country (e.g. Southeast Asian Box Turtle, Philippine Sailfin Lizard, Reticulated Python) are routinely collected in large quantities to supply the illegal domestic trade (Sy, 2015b). It is therefore not surprising that large numbers were found for sale on Facebook.



Endemic Philippine Sailfin Lizards *Hydrosaurus pustulatus* advertised for sale.



Philippine Yellow-spotted Pit Viper *Trimeresurus flavomaculatus* advertised for sale.

The stronger preference for non-native species (81.5% of the total quantity), may be due to ease of fulfilling minimum husbandry requirements to keep animals alive, availability of various morphs, prestige of owning exotic species, opportunity to breed and produce new colours and patterns, and ability to make money selling offspring in the near future. The seven non-native species in the top 10 most commonly-traded reptiles noted in Figure 1 were most likely captive-bred and have a long history of captive breeding successes (Ross and Marzec, 1990; de Vosjoli and Ferguson, 1995; de Vosjoli, 1996; de Vosjoli and Mailloux, 1997; de Vosjoli *et al.*, 1998). However, trade of wildlife in the Philippines is only allowed when enthusiasts acquire specimens from legal sources and duly register their collections with the BMB. Animals with legal documentations command higher prices in the market, but very few advertisements (NB = 17 / 0.76%) mentioned legality of the animals being offered for sale. Traders also may have offered registered reptiles, but failed to mention the legal status in the advertisements.



Endemic Philippine Marbled Water Monitor Lizard *Varanus marmoratus*.

Although nationally protected, the Southeast Asian Box Turtle is the most commonly traded native turtle species and is particularly threatened by illegal and unsustainable collecting practices (Sy, 2015b). Novice and impulse buyers are the main consumers of such inexpensive (< PHP500 / USD10.78) animals. In November 2015, the Philippine National Police (PNP) recovered approximately 500 Southeast Asian Box Turtles in the Municipality of Patnanungan, Quezon Province, but no suspects were linked to the illegally-collected wildlife (PNP-Patnanungan, unpubl. data). The 59 individuals documented in this study were most likely purchased from any of the three major pet markets in the National Capital Region (NCR or also known as Metro Manila) and offered for sale online.



Endemic Cuming's Water Monitor Lizard *Varanus cumingi* advertised for sale.

Philippine endemic reptiles such as pit vipers and monitor lizards are particularly targeted by illegal traders since there is a growing demand in both national and international black markets (Sy, 2012). In January 2016, an airport security personnel at the Ninoy Aquino International Airport was caught attempting to smuggle animals including 11 Philippine Marbled Water Monitor Lizards *Varanus marmoratus* and eight Philippine Sailfin Lizards to Japan (Agence France-Presse, 2016; Dimacali, 2016). Another illegal trader was able to successfully smuggle two unidentified pit vipers, *Trimeresurus* or *Tropidolaemus*, by post in March 2016. The illegal shipment was only detected when the package arrived at the post office in Pennsylvania in the United States (US) (Associated Press, 2016). Although the intended recipient of the package was thoroughly investigated by the US authorities, the illegal trader who sent the package from the Philippines was not pursued further by the Philippine authorities after it was learned that the person used a fictitious name.

Species of Special Concern

Collection of wild individuals for the live reptile trade is one of the major causes of population declines (Lau and Shi, 2000; Shepherd and Ibarrondo, 2005; Ramahaleo and Virah-Sawmy, 2013). Some of the world's most endangered reptile species documented in this study are the following six:

SPECIES OF SPECIAL CONCERN

01

Philippine Crocodile

Crocodylus mindorensis

- Endemic to Philippines
- CITES Appendix I
- Critically Endangered



Population and trade status

One of the most threatened crocodiles in the world, the remaining wild population was estimated to consist of 500–1000 individuals, is distributed in severely fragmented habitats, occurring in extremely low densities, and is declining (Manalo and Alcala, 2015; Ross, 1998; van Weerd *et al.*, 2006).

Survey findings

The trader who advertised the sole recorded Philippine Crocodile for sale claimed to have permits, but based on BMB records, he is neither a CWR nor WFP holder.

Population and trade status

Heavy exploitation of the Big-headed Turtle for the food and pet markets in the last two to three decades resulted in significant population decline in its range countries (Lau and Shi, 2000; Sung *et al.*, 2015).

Survey findings

Since the BMB had not issued import permits, the seven individuals offered by the two online traders were brought into the country and traded illegally.

02

Big-headed Turtle

Platysternon megacephalum

- Non-native to Philippines
- Native to Indochina and southern China
- CITES Appendix I
- Endangered



03

Black Spotted Turtle

Geoclemys hamiltonii

- Non-native to Philippines
- Native to South Asia (protected)
- CITES Appendix I
- Vulnerable



Population and trade status

In recent years, increased seizures of smuggled individuals destined for Asian markets have been reported (Chng, 2014).

Survey findings

There are no legal importations of this species to the Philippines and the six individuals documented in this study represents the first records in the Philippine pet trade. The price range of PHP20 000–22 500 (USD431–485) is almost double the price of USD250 in Kuching, Malaysia (Das and Bhupathy, 2010), but is comparable to a recently documented asking price of USD412 in Indonesia in 2016 (TRAFFIC, unpubl. data).

Population and trade status

Poaching from the wild to supply the international pet trade is one of the biggest threats to the survival of the species (Ramahaleo and Virah-Sawmy, 2013). This species has been documented in the black markets in Asia (Shiau *et al.*, 2006; Shepherd and Nijman, 2007; Shepherd and Nijman, 2008; Stengel *et al.*, 2011; Todd, 2011; Sy, 2015b).

Survey findings

While there are no records of legal importations of Radiated Tortoise to the Philippines, several keepers legalised individuals in private collections during the DENR amnesty period in 2004–2005. To date, only one individual from captive breeding (in 2016) was documented in the Philippines (Sy, unpubl. Data); the 20 individuals documented in this study were most likely smuggled recently. In the past few years, prices for the species have also seen an almost five-fold increase: for example, the lowest asking price for a 8–10cm individual was PHP18 000 (USD388) in 2008–2013 (Sy, 2015a), but during this study, the lowest asking price was PHP85 000 (USD1832) per individual.

04

Radiated Tortoise

Astrochelys radiata

- Non-native to Philippines
- Endemic to Madagascar (protected)
- CITES Appendix I
- Critically Endangered



05

Philippine Forest Turtle

Siebenrockiella leytensis

- Endemic to Philippines
- CITES Appendix II
- Critically Endangered



Population and trade status

Poaching to supply the national and international black markets is the greatest threat to the survival of this species (Diesmos *et al.*, 2012; Schoppe and Shepherd, 2013). Over 4600 individuals had been confiscated from poachers and illegal traders in the Philippines and Hong Kong from 2005–2016 (Sy and Schoppe, in prep.). The trade of this turtle had also been documented in the United States, Belgium, Czech Republic, Germany, United Kingdom, China, Hong Kong, Japan, Malaysia, and Thailand (Diesmos *et al.*, 2012; Sy, unpubl. data).

Survey findings

The two animals recorded on Facebook during this study during this study illustrates that illegally collected collected specimens from the wild remained available in the black market in Metro Manila despite enforcement efforts of the BMB and PCSD. Several enthusiasts in the Philippines have legalised Philippine Forest Turtles in private collections, but to date, no credible evidence of captive breeding successes is known (Sy, 2014). Legally exported individuals were most likely wild caught and fraudulently declared as captive bred individuals by unscrupulous traders (Schoppe *et al.*, 2013; TRAFFIC, 2015).

Population and trade status

Endemic to the island of Borneo and legally protected throughout its range, the trade of illegally collected individuals surged after the publication of two scientific papers providing enough detail on localities (Nijman and Stoner, 2014). At least 95 individuals involving 35 traders in 10 countries were offered for sale from May 2014 to October 2015, and no legal trade has been permitted by any of the range States (Stoner, 2016).

Survey findings

The three individuals offered for sale during this study, at PHP150 000 (USD3233) each by a trader, were therefore illegally sourced and smuggled into the country. The availability of totally protected species such as the Earless Monitor Lizard illustrates the challenges in detecting illegal wildlife at international ports of entry.

06

Earless Monitor Lizard

Lanthanothus borneensis

- Non-native to Philippines
- Endemic to Borneo (protected)
- CITES Appendix II
- Not Assessed



Venomous Snakes

The availability of venomous snakes in the Philippine wildlife trade is a cause for concern. A total of 17 individuals from six native and three non-native venomous snake species of medical importance (e.g. deadly) were documented during this study (Table 2). Based on CITES trade database analysis, the three live non-native venomous snakes documented in this study had no legal import records since the Philippines became a party to CITES in 1981. Poachers and traders are known to procure venomous snakes illegally and sell to anyone willing to pay, usually targeting novice snake enthusiasts, regardless of the buyer's reptile husbandry experience or

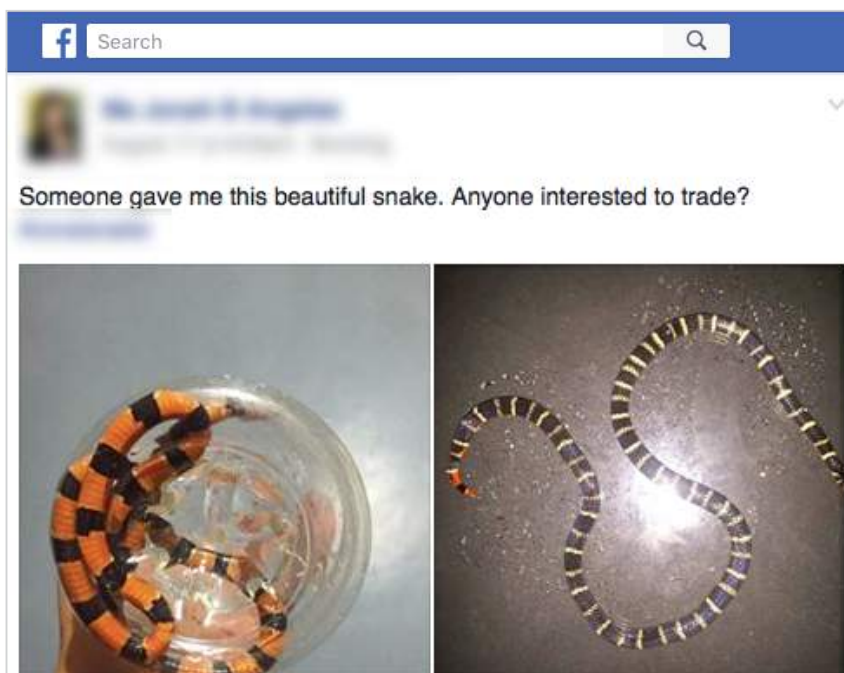
Table 2. Venomous Snakes for sale in Philippine Facebook Groups

Scientific Name	Natural Range
Malayan Pit Viper <i>Calloselasma rhodostoma</i>	Southeast Asia
Russell's Viper <i>Daboia russelii</i>	South Asia
Luzon Barred Coral Snake <i>Hemibungarus calligaster</i>	Philippines
Monocled Cobra <i>Naja kaouthia</i>	South Asia, Southeast Asia
Northern Philippine Cobra <i>Naja philippinensis</i>	Philippines
Philippine Yellow-throated Cobra <i>Naja samarensis</i>	Philippines
King Cobra <i>Ophiophagus hannah</i>	South Asia, Southeast Asia, Philippines
Philippine Yellow-spotted Pit Viper <i>Trimeresurus flavomaculatus</i>	Philippines
Keel-scaled Pit Viper <i>Tropidolaemus subannulatus</i>	Southeast Asia, Philippines



Keel-scaled Pit Viper *Tropidolaemus subannulatus*, a venomous species.

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Luzon Barred Coral Snake *Hemibungarus calligaster*, a venomous species advertised for sale.

capacity to keep venomous snakes in a secured enclosure and facility. Venomous snakes in the market are also a public health issue since some unpublished envenomation cases have been documented in the past few years due to improper handling of venomous pet snakes. For instance, an enthusiast was envenomated by a pet Philippine Keel-scaled Pit Viper *Tropidolaemus subannulatus* requiring a surgical procedure to relieve pressure (fasciotomy) (Sy, unpubl. data). Furthermore, most hospitals in the Philippines are not equipped to handle snake envenomation cases specially of exotic species. In 2012, a zookeeper was envenomated by a wild King Cobra *Ophiophagus hannah* in Cebu City, but no hospitals within the Province had anti-venom in stock (Borromeo, 2012).



Philippine Yellow-throated Cobra *Naja samarensis*, a venomous species advertised for sale.



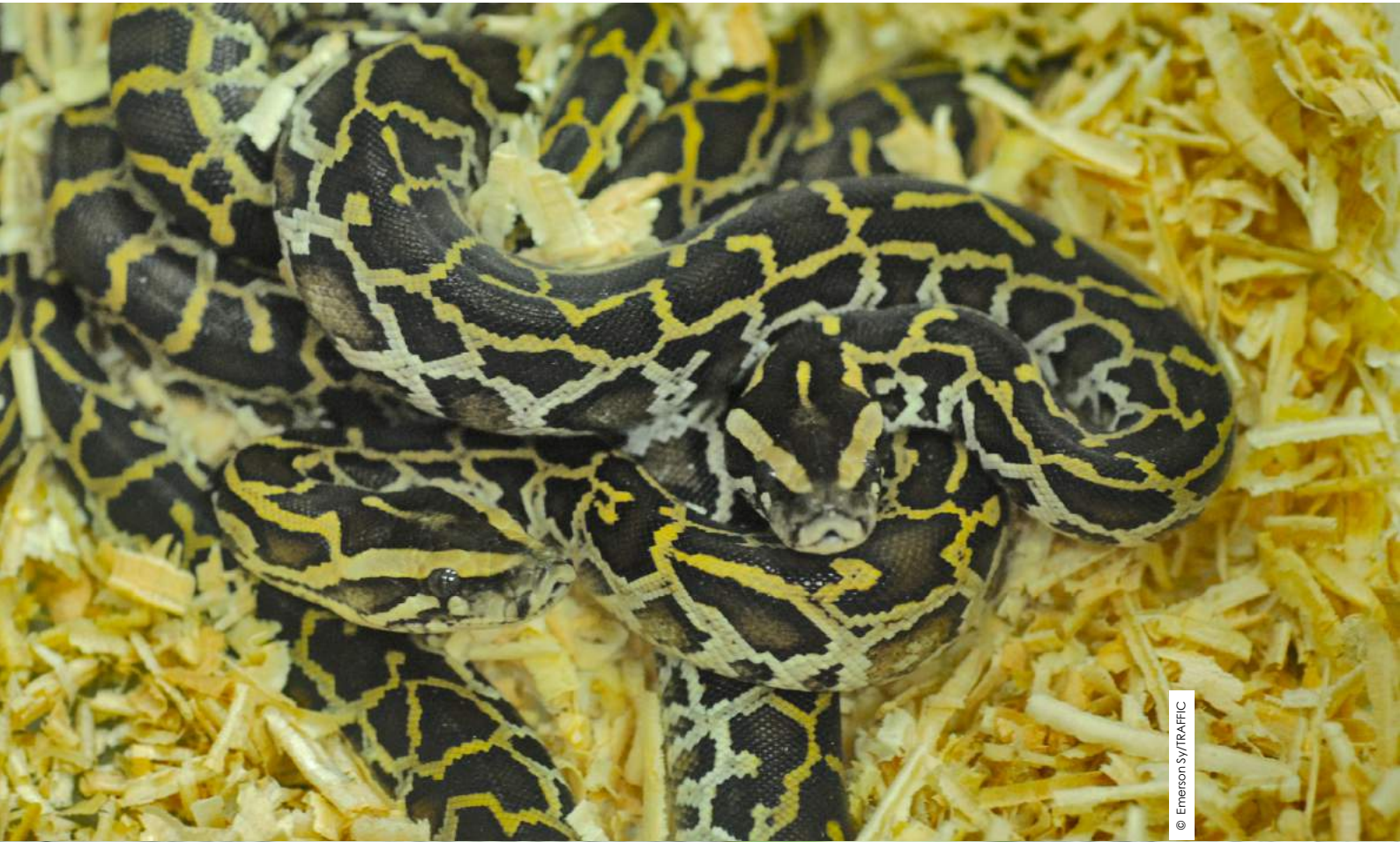
Philippine Crocodile *Crocodylus mindorensis*

Traders and Modus Operandi

From the 1046 online traders, activity can be categorized into two groups based on species they offered for sale. Traders in Group 1 (n = 629) were individuals who offered commonly available captive bred species while Group 2 (n = 417) composed of individuals who offered both captive bred and wild caught reptiles. The vast majority (98%; n = 615) of traders in Group 1 posted between one and five unique advertisements each within the study period and offered commonly available captive bred species such as the Ball Python, Burmese Python, African Spurred Tortoise, Leopard Gecko, and Bearded Dragon. Traders in Group 2 offered a more diverse reptile selection including endangered, wild caught, CITES-listed, and species without importation records. A summary of selected key online traders from this group illustrates the activities and possible illegal reptile species offered online (Figure 4).

Fig. 4. Summary of the Trade Activity Profile of 10 Key Online Traders

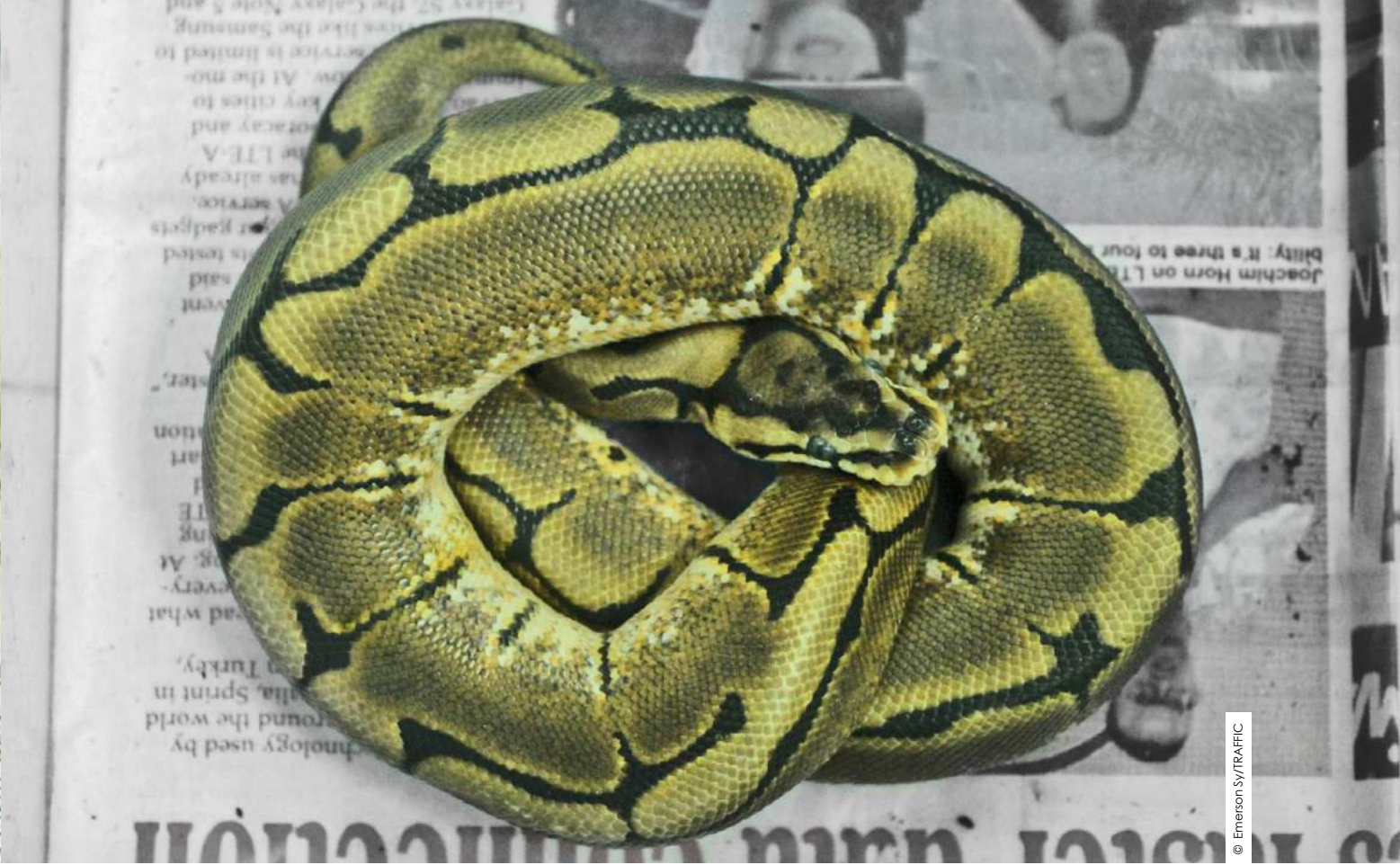
SUMMARY OF THE TRADE ACTIVITY PROFILE OF 10 KEY ONLINE TRADERS				
Trader	Key species and CITES listing in parenthesis	Number of unique advertisements	Number of species	Minimum volume of animals
1	<i>Boiga dendrophila latifasciata</i> (NL=Not Listed), <i>Malayopython reticulatus</i> (II), <i>Naja samarensis</i> (II), <i>Ophiophagus hannah</i> (II), <i>Tropidolaemus subannulatus</i> (NL)	7	7	14
2	<i>Hydrosaurus pustulatus</i> (NL), <i>Ophiophagus hannah</i> (II), <i>Varanus marmoratus</i> (II)	9	6	11
3	<i>Hydrosaurus pustulatus</i> (NL), <i>Malayopython reticulatus</i> (II), <i>Tropidophorus grayi</i> (NL), <i>Varanus dalubhasa</i> (II), <i>Varanus marmoratus</i> (II), <i>Varanus nuchalis</i> (II)	9	6	25
4	<i>Hydrosaurus pustulatus</i> (NL), <i>Varanus exanthematicus</i> (II), <i>Varanus marmoratus</i> (II), <i>Varanus nuchalis</i> (II)	16	8	60
5	<i>Chrysopelea paradisi variabilis</i> (NL), <i>Gonyosoma oxycephalum</i> (NL), <i>Malayopython reticulatus</i> (II), <i>Varanus cumingi</i> (II), <i>Varanus marmoratus</i> (II), <i>Varanus nuchalis</i> (II), <i>Varanus samarensis</i> (II)	20	11	57
6	<i>Aldabrachelys gigantea</i> (II), <i>Chelonoidis carbonaria</i> (II), <i>Chelonoidis chilensis</i> (II), <i>Salvator merianae</i> (II), <i>Tupinambis rufescens</i> (II)	12	10	25
7	<i>Geochelone elegans</i> (II), <i>Geoclemys hamiltonii</i> (I), <i>Platysternon megacephalum</i> (I), <i>Chelus fimbriata</i> (NL), <i>Podocnemis unifilis</i> (II)	17	14	84
8	<i>Boiga dendrophila divergens</i> (NL), <i>Hydrosaurus pustulatus</i> (NL), <i>Lanthanotus borneensis</i> (II), <i>Tropidophorus grayi</i> (NL), <i>Varanus bengalensis</i> (I), <i>Varanus marmoratus</i> (II), <i>Varanus olivaceus</i> (II)	23	15	157
9	<i>Aldabrachelys gigantea</i> (II), <i>Astrochelys radiata</i> (I), <i>Carettochelys insculpta</i> (II), <i>Chelus fimbriata</i> (NL), <i>Geochelone elegans</i> (II), <i>Geoclemys hamiltonii</i> (I), <i>Platysternon megacephalum</i> (I), <i>Podocnemis unifilis</i> (II), <i>Stigmochelys pardalis</i> (II)	25	16	53
10	<i>Astrochelys radiata</i> (I), <i>Carettochelys insculpta</i> (II), <i>Chelonoidis carbonaria</i> (II), <i>Crocodylus mindorensis</i> (I), <i>Crocodylus porosus</i> (I), <i>Geochelone elegans</i> (II), <i>Stigmochelys pardalis</i> (II), <i>Varanus nuchalis</i> (II)	60	25	148



Species from a July 2016 confiscation carried out by BMB from a shop in Cartimar Pet Center. Clockwise from top left: Burmese Python *Python bivittatus*, Philippine Yellow-spotted Pit Viper *Trimeresurus flavomaculatus*, Redfoot Tortoise *Chelonoidis carbonarius*, and Ball Python *Python regius*.



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Reptile enthusiasts and traders in the country are generally aware of the Wildlife Act particularly on the DENR wildlife registration requirement to legally own reptiles. Many traders admitted voluntarily or when asked by potential buyers about legality that reptiles being offered for sale were “wild-caught” or had “no DENR permit/paper.” Online traders appeared to knowingly ignore the law and posted advertisements for their illicit trading activities without hesitation or fear of detection by wildlife authorities.

Communication between traders and interested buyers is usually conducted through the Facebook private messaging system and mobile phones. Within Metro Manila, the preferred method of parties to finalise a transaction is to meet at a pre-arranged place such as at the trader’s residence, pet center or train station. Traders from other regions or provinces use freight courier and airport cargos to ship reptiles (Lopez, 2017; this study). These methods involve concealing illegal wildlife inside bulky items (e.g. radio speaker, bulky toy, PVC pipe) and misdeclaring the contents (Ong, 2017). Weak law enforcement, including corruption at seaports and airports may also facilitate illegal trade. A few traders routinely ship from airport to airport, both nationally and internationally, neither concealing illicit wildlife nor providing appropriate DENR permits (Sy, unpubl. data). The possible involvement of corrupt airport personnel in facilitating illegal cargoes to bypass security checks have been reported in the last few years (Dizon, 2006; Anon, 2012; Agence France-Presse, 2016). The DENR anti-illegal wildlife trade efforts will continue to be undermined unless import/export loopholes (e.g. not inspecting contents thoroughly) are addressed and individuals involved are held accountable to the full extent of the law. A trader was also documented to utilise Uber, a on-call transportation company, to deliver illegal wildlife to a buyer. Personnel working in freight service and on-call taxi or ride-sharing companies should keep abreast with wildlife trade regulations and remain vigilant to prevent traders from using their services to illegally ship wildlife.



The Asian Leaf Turtle *Cyclemys dentata* is illegally collected in Palawan Province and transported and traded in Metro Manila.



Philippine Forest Turtle *Siebenrockiella leytensis*

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Pet Markets

Increased enforcement activities by the BMB and deputized wildlife enforcement officers since the enactment of the Wildlife Act resulted in significantly fewer traders willing to risk being caught with illegal wildlife in physical markets. A previous study (Sy, 2015a) and recent rapid physical pet market surveys conducted between June and December 2016 in the three major pet centers in the NCR confirmed that fewer traders openly displayed and offered illegal wildlife. However, illegal traders continue to utilise physical shops that sell domesticated pets as a cover for their illicit wildlife trading activities as exemplified by a recent confiscation on 6 July 2016 of Ball Python (3 individuals), Burmese Python (8), Green Iguana (5), Redfoot Tortoise *Chelonoidis carbonarius* (1), Philippine Marbled Water Monitor Lizard (1), and Philippine Yellow-spotted Pit Viper (1) from a shop selling dogs in Cartimar Pet Center (BMB, unpubl. report). A few known traders without physical shops were also often observed in the vicinity of Cartimar Pet Center offering wildlife to potential consumers in the area (pers. obs.).

Increased utilisation of online platforms such as Facebook to trade in illegal wildlife is projected to continue and gain more widespread patronage among consumers. Traders benefit from a certain degree of anonymity since they can use pseudonyms, screen potential buyers, and set conditions favorable to them such as specifying meeting place and time before a transaction transpires.

Successful enforcement actions against illegal online traders

Based in part on findings from this study, the BMB carried out two raids on online traders offering illegal wildlife on 29 May 2017 and 14 July 2017. In the first case, one suspect was arrested for possessing 18 individuals of various reptile and bird species, while in the second case one suspect was arrested for possessing one Butaan (*Varanus olivaceus*; a protected Philippines endemic species) and one Burmese Python without permits. Such enforcement actions send an important deterrent message to wildlife traders online that they must abide by national legislations.

CONCLUSION AND RECOMMENDATIONS

This report demonstrates the magnitude of online live reptile trade in the Philippines, and that the vast majority of native and endemic reptile individuals were likely illegally captured from the wild and traded illegally, based on the premise that no permits were issued by the BMB. The potential participation of nearly 400 000 registered Facebook users illustrates the popularity and increasing demand for live reptiles as pets among enthusiasts. Traders benefit from a certain degree of anonymity since they can use pseudonyms, screen potential buyers, and set conditions favorable to them such as specifying meeting place and time before a transaction is consummated.

Based on current Philippine wildlife law and regulations, at least 80% of documented online traders in this study was deemed involved, knowingly or otherwise, in illegal trading activities. While 60% of the traders offered commonly available captive bred species, it does not exempt them from the need to secure permits to possess, trade, and transport pet reptiles within the country.

Furthermore, 52% of taxa available in the trade were internationally regulated by CITES. The availability of non-native species, including CITES-listed taxa, without legal importation records suggests smugglers exploited loopholes in the implementation of Philippine wildlife and customs rules and regulations. The DENR anti-illegal wildlife trade efforts will continue to be undermined unless import/export loopholes are addressed and involved individuals are held accountable to the full extent of the law.

TRAFFIC makes the following recommendations based on the findings of this study:

For Government

Monitoring

Wildlife trade monitoring should be conducted continuously by Philippine authorities in collaboration with wildlife researchers and conservationists to determine trade dynamics such as scale of the trade over time, availability of wildlife traded illegally, species composition, species of special concern, and persons involved.

Continuous monitoring of wildlife trade in physical and online markets is essential to immediately detect shifting dynamics and to formulate timely and appropriate responses to emerging wildlife trade issues.

Regulation and Enforcement

Forming a national multi-sectoral task force on illegal wildlife trade including, as a priority, to work closely with Facebook to aid investigations, suspend accounts of illegal traders and shutting down groups involved in illegal wildlife trade.

The Philippine Customs and other enforcement authorities should be more vigilant in preventing smuggling of live reptiles into and out of the country. More attention and scrutiny is needed at airports where live animals are smuggled in and out of the country, and corruption, where it has been recorded, must be considered in any effort to effectively stem illegal wildlife trade in the country.

The ability of traders to ship nationally and internationally without required permits should be addressed promptly by the authorities to effectively mitigate illegal wildlife trade. The task requires allocation of additional resources and collaborative efforts by the authorities, conservation organisations, and the public.

The BMB and Palawan Council for Sustainable Development (PCSD) should conduct regular physical and paper audits on wildlife inventories based on Certificates of Wildlife Registration (CWR) and Wildlife Farm Permits (WFP) issued to detect fraudulent activities such as adding illegally-acquired specimens into existing private collections and wildlife laundering. The prevalent practice of using legal documents by permit holders as a cover to conduct illicit trading activities warrants in-depth investigation.

The BMB and PCSD should require infallible and verifiable proof of reported captive breeding successes, particularly of hard-to-breed species, by wildlife enthusiasts and farms to avoid validating fraudulent claims. Wildlife laundering by breeding farms and private enthusiasts has been identified as a mechanism to circumvent national and international laws and regulations.

Enforcement actions and successful prosecutions on illegal traders should be timely and sustained to serve as deterrents. Media coverage of enforcement actions and prosecutions will help educate stakeholders and the public on consequences of engaging in illegal wildlife trade.

Collaboration and Advocacy

Wildlife authorities, conservation organisations, and advocates should engage and educate stakeholders and the public on the ramifications of illegal wildlife trade on biodiversity conservation, including on social networking platforms where the trade is currently active.

The BMB and conservation groups should encourage public reporting of suspected illicit wildlife trading activities directly to the DENR at +632 925-8952 or 925-8953 or via the Wildlife Witness App which can be downloaded for iPhone (<https://itunes.apple.com/us/app/wildlife-witness/id738897823?mt=8>) or Android (<https://play.google.com/store/apps/details?id=com.taronga.wildwitness>).

For Businesses

Airline and cargo employees suspected to be colluding with traders to trade in or transport illegal wildlife should be thoroughly investigated and dismissed from the service if found guilty. This would also go a long way in sending a strong deterrent message for other would-be offenders.

For Facebook

Facebook should include the sale of illegal and endangered wildlife and derivatives in their security filtering to prevent unscrupulous traders from operating unregulated on their platform. Facebook is encouraged to monitor and review content, and if found to violate laws and Facebook's Terms of Service, groups and individual accounts involved in illegal wildlife trading activities should be suspended or shut down permanently. We also recommend that Facebook continues to work with the NGO community including TRAFFIC to develop training materials around endangered species content.

For Freight and On-call Transportation Business Operators

Capacity building in detecting fraudulent paperwork and shipments of illegal wildlife for airline, airport, seaport, and cargo personnel should be conducted regularly. This would prevent illegally acquired wildlife from entering the market and deter other would-be smugglers from attempting to import or export wildlife without proper permits.

Personnel working in freight service and on-call transportation companies should keep abreast with wildlife trade regulations and remain vigilant to prevent traders from utilising their services to illegally ship wildlife.

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ANNEX 1

List of reptiles advertised for sale in Philippine Facebook groups from June–August 2016

Taxon	Number of advertisements featured	Minimum number of individuals	CITES Appendix	IUCN Conservation Status	Native (A), Endemic (B) or Non-native (C)
CROCODILIAN					
<i>Caiman crocodilus</i>	21	40	II	LC	C
<i>Crocodylus porosus</i>	3	3	I	LC	A
<i>Crocodylus mindorensis</i>	1	1	I	CR	B
TURTLE/TORTOISE					
<i>Centrochelys sulcata</i>	58	299	II	VU	C
<i>Cuora amboinensis</i>	44	59	II	VU	A
<i>Geochelone elegans</i>	11	56	II	VU	C
<i>Trachemys scripta elegans</i>	29	49	NL	NA	C
<i>Chelydra serpentina</i>	18	30	NL	LC	C
<i>Chelonoidis carbonarius</i>	11	26	II	NA	C
<i>Astrochelys radiata</i>	7	20	I	CR	C
<i>Macrochelys temminckii</i>	10	19	III	VU	C
<i>Aldabrachelys gigantea</i>	5	13	II	NA	C
<i>Cyclemys dentata</i>	4	12	II	NT	A
<i>Indotestudo elongata</i>	5	11	II	EN	C
<i>Sternotherus odoratus</i>	11	11	NL	LC	C
<i>Mauremys sinensis</i>	6	10	III	EN	C
<i>Lissemys punctata andersoni</i>	2	8	II	NA	C
<i>Chelus fimbriata</i>	7	8	NL	NA	C
<i>Pelodiscus sinensis</i>	5	8	NL	VU	C
<i>Geoclemys hamiltonii</i>	6	7	I	VU	C
<i>Mauremys reevesii</i>	4	7	III	EN	C
<i>Platysternon megacephalum</i>	2	7	I	EN	C
<i>Carettochelys insculpta</i>	7	7	II	VU	C
<i>Stigmochelys pardalis</i>	6	6	II	LC	C
<i>Podocnemis unifilis</i>	5	5	II	VU	C
<i>Testudo hermanni</i>	4	5	II	NT	C
<i>Chrysemys picta bellii</i>	4	4	NL	NA	C
<i>Testudo horsfieldii</i>	1	4	II	VU	C
<i>Graptemys ouachitensis</i>	3	3	III	LC	C

Taxon	Number of advertisements featured	Minimum number of individuals	CITES Appendix	IUCN Conservation Status	Native (A), Endemic (B) or Non-native (C)
TURTLE/TORTOISE					
<i>Graptemys pseudogeographica kohnii</i>	2	3	NL	NA	C
<i>Kinosternon baurii</i>	1	3	NL	LC	C
<i>Trachemys scripta scripta</i>	3	3	NL	NA	C
<i>Chelonoidis chilensis</i>	1	3	II	VU	C
<i>Siebenrockiella leytensis</i>	2	2	II	CR	B
<i>Sternotherus carinatus</i>	2	2	NL	LC	C
<i>Chelodina oblonga</i>	2	2	NL	NT	C
<i>Pelusios castaneus</i>	1	1	NL	NA	C
<i>Emydura subglobosa</i>	1	1	NL	LC	C
<i>Graptemys pseudogeographica</i>	1	1	III	LC	C
<i>Kinosternon scorpioides</i>	1	1	NL	NA	C
<i>Malaclemys terrapin</i>	1	1	II	NT	C
<i>Rhinoclemmys pulcherrima</i>	1	1	NL	NA	C
<i>Sacalia quadriocellata</i>	1	1	II	EN	C
LIZARD					
<i>Eublepharis macularius</i>	281	563	NL	NA	C
<i>Pogona vitticeps</i>	234	513	NL	NA	C
<i>Iguana iguana</i>	105	307	II	NA	C
<i>Hydrosaurus pustulatus</i>	73	161	NL	VU	B
<i>Tropidophorus grayi</i>	18	133	NL	LC	B
<i>Chamaeleo calyptratus</i>	28	92	II	LC	C
<i>Varanus marmoratus</i>	44	55	II	LC	B
<i>Varanus exanthematicus</i>	6	16	II	LC	C
<i>Salvator rufescens</i>	7	15	II	NA	C
<i>Varanus cumingi</i>	9	13	II	LC	B
<i>Varanus nuchalis</i>	6	10	II	NT	B
<i>Gekko gecko</i>	6	8	NL	NA	A
<i>Uromastix geyri</i>	5	5	II	NA	C
<i>Eutropis multifasciata</i>	4	4	NL	NA	A
<i>Tiliqua gigas</i>	3	4	NL	NA	C
<i>Broncochella marmorata</i>	3	3	NL	NA	B
<i>Calotes versicolor</i>	2	3	NL	NA	C

Taxon	Number of advertisements featured	Minimum number of individuals	CITES Appendix	IUCN Conservation Status	Native (A), Endemic (B) or Non-native (C)
LIZARD					
<i>Lanthanotus borneensis</i> *	1	3	II	NA	C
<i>Varanus samarensis</i>	3	3	II	NA	B
<i>Salvator merianae</i>	2	2	II	LC	C
<i>Varanus dalubhasa</i>	1	2	II	NA	B
<i>Varanus olivaceus</i>	2	2	II	VU	B
<i>Tiliqua scincoides</i>	1	1	NL	NA	C
<i>Varanus bengalensis</i>	1	1	I	LC	C
<i>Varanus palawanensis</i>	1	1	II	NA	B
SNAKE					
<i>Python regius</i>	297	964	II	LC	C
<i>Python bivittatus</i>	310	829	II	VU	C
<i>Malayopython reticulatus</i>	227	307	II	NA	A
<i>Boa constrictor</i>	32	46	II	NA	C
<i>Pantherophis guttatus</i>	30	42	NL	NA	C
<i>Lycodon capucinus</i>	41	42	NL	LC	A
<i>Ahaetulla prasina preocularis</i>	12	21	NL	NA	B
<i>Gonyosoma oxycephalum</i>	18	21	NL	LC	A
<i>Dendrelaphis luzonensis</i>	16	19	NL	NA	B
<i>Coelognathus erythrus manillensis</i>	13	13	NL	NA	B
<i>Morelia spilota</i>	10	10	II	LC	C
<i>Chrysopelea paradisi variabilis</i>	8	8	NL	NA	B
<i>Naja samarensis</i>	5	8	II	LC	B
<i>Cerberus schneiderii</i>	5	5	NL	NA	B
<i>Lampropeltis californiae</i>	2	5	NL	NA	C
<i>Candoia paulsoni</i>	3	4	II	NA	C
<i>Morelia viridis</i>	2	4	II	LC	C
<i>Rhabdophis spilogaster</i>	4	4	NL	LC	B
<i>Boiga dendrophila divergens</i>	3	3	NL	NA	B
<i>Lampropeltis getula nigrita</i>	3	3	NL	NA	C
<i>Lampropeltis triangulum hondurensis</i>	2	3	NL	NA	C
<i>Lampropeltis triangulum nelsoni</i>	2	3	NL	NA	C

Taxon	Number of advertisements featured	Minimum number of individuals	CITES Appendix	IUCN Conservation Status	Native (A), Endemic (B) or Non-native (C)
SNAKE					
<i>Trimeresurus flavomaculatus flavomaculatus</i>	3	3	NL	LC	B
<i>Boiga cynodon</i>	2	2	NL	LC	A
<i>Boiga philippina</i>	2	2	NL	LC	B
<i>Heterodon nasicus</i>	2	2	NL	LC	C
<i>Lampropeltis getula brooksi</i>	1	2	NL	NA	C
<i>Lampropeltis triangulum triangulum</i>	2	2	NL	NA	C
<i>Naja philippinensis</i>	2	2	II	NT	B
<i>Oligodon ancorus</i>	2	2	NL	NT	B
<i>Ophiophagus hannah</i>	2	2	II	VU	A
<i>Acrantophis dumerili</i>	1	1	I	LC	C
<i>Acrochordus granulatus</i>	1	1	NL	LC	A
<i>Boiga dendrophila latifasciata</i>	1	1	NL	NA	B
<i>Calloselasma rhodostoma</i>	1	1	NL	LC	C
<i>Candoia carinata</i>	1	1	II	NA	C
<i>Daboia russelii</i>	1	1	III	NA	C
<i>Dendrelaphis marenae</i>	1	1	NL	NA	A
<i>Pantherophis obsoletus</i>	1	1	NL	NA	C
<i>Epicrates cenchria</i>	1	1	II	NA	C
<i>Eryx colubrinus</i>	1	1	II	NA	C
<i>Hemibungarus calligaster</i>	1	1	NL	LC	B
<i>Lampropeltis mexicana thayeri</i>	1	1	NL	NA	C
<i>Lampropeltis triangulum campbelli</i>	1	1	NL	NA	C
<i>Bothrochilus albertisii</i>	1	1	II	NA	C
<i>Naja kaouthia</i>	1	1	II	LC	C
<i>Tropidolaemus subannulatus</i>	1	1	NL	LC	A
TOTAL	2245	5082			

* This species was not listed in CITES during the study period; however, it is totally protected in its Bornean range countries. CITES Appendix II listing of this species came into effect on 2 January 2017, after widespread evidence that the species was being illegally collected and traded internationally (Anon, 2016; Stoner, 2016).

NL = Not Listed
NA = Not Assessed



Southeast Asian Box Turtle *Cuora amboinensis*

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TRAFFIC, the wildlife trade monitoring network, is the leading non-governmental organization working globally on trade in wild animals and plants in the context of both biodiversity conservation and sustainable development.

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