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SCALY NEXUS:

Mapping Indonesian pangolin seizures
(2010–2015)

Lalita Gomez, Boyd T.C. Leupen, Kanitha Krishnasamy and Sarah Heinrich





TRAFFIC REPORT

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Front cover photograph: One of 455 pangolins seized in Surabaya, East Java, Indonesia in June 2015

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*Lalita Gomez, Boyd T.C. Leupen, Kanitha
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One of 455 pangolins seized in Surabaya, East Java, Indonesia in June 2015.





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ACRONYMS AND ABBREVIATIONS

ASAP	Asian Species Action Partnership
BKSDA	Nature Conservation Agency (Indonesia)
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CM	Cameroon
CN	China—mainland China and Hong Kong
CoP	Conference of Parties
ID	Indonesia
IDR	Indonesian Rupiah
IUCN	International Union for Conservation of Nature
kg	Kilogramme
KKH	Department of Forest Protection and Nature Conservation (Indonesia)
LA	Lao People's Democratic Republic
LIPI	Indonesian Institute of Sciences (Indonesia)
MA	(CITES) Management Authority
MY	Malaysia
n	Number
NGO	Non-governmental organization
PH	Philippines
PDR	People's Democratic Republic (Lao)
RU	Russian Federation
SAR	Special Administrative Region (Hong Kong)
sd	Standard deviation
se	Standard error
SG	Singapore
SSC	Species Survival Commission
TH	Thailand
UNESCO	United Nations Educational, Scientific and Cultural Organization
US	United States of America
USD	US Dollar
VN	Viet Nam
WRS	Wildlife Reserves Singapore

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EXECUTIVE SUMMARY

Indonesia is home to one species of pangolin, the Sunda Pangolin *Manis javanica*, which can be found from Sumatra, Java and adjacent islands to Kalimantan. Currently listed as Critically Endangered on The IUCN Red List of Threatened Species™, this species is suspected to be in severe decline due to illegal trade. While little is known about the population of pangolins in Indonesia, it is likely that current trade and hunting levels are unsustainable. There is evidence of professional and industrial-scale hunting for the purposes of commercial international trade. This report provides an insight into the illegal trade of pangolins involving Indonesia by analysing seizure data between 2010 and 2015. The report discusses the country's role in the illicit trade of pangolins in the region and the impact it is likely to have on the conservation of the Sunda Pangolin.

Most of the seizures recorded took place in Indonesia (83%) and point to Sumatra being a hotspot in the so-called Sundaland connection—linking Indonesia, Malaysia and Singapore—with Medan in North Sumatra appearing to be a major collection site before export. The majority of the Indonesian seizures occurred in Sumatra (n=55), followed by Java (n=26) and Kalimantan (n=11). In terms of estimated whole pangolins, however, Java and Sumatra appear equally involved in pangolin trafficking. The remaining records involved seizures in six other countries/territories, namely China (mainland China and Hong Kong), Lao PDR, Malaysia, the Philippines, the US, and Viet Nam. China, Malaysia and Viet Nam were the top three locations most closely linked to Indonesia based on the number or frequency of seizure incidents. China and Viet Nam were implicated as destinations (involving an estimated 10 491 pangolins and 9852 pangolins respectively) while Malaysia emerged as the most prominent transit country in the movement of pangolins from Indonesia to end use destinations in East Asia. These seizure numbers may also be a reflection of (more) effective enforcement efforts in these locations. Only one record involving a shipment originating from outside of Indonesia was found in the country, which concerned a seizure of pangolin scales from Cameroon.

Very little is known about the Sunda Pangolin's population size in Indonesia. However, considering the large number of seizures and animals involved, and the fact that the average generation span of the Sunda Pangolin is seven years, pangolin populations in Indonesia are likely to be in decline as a result of illegal trade. Such decline is expected to continue unless immediate measures to counter this problem are put into place. With Chinese Pangolin *M. pentadactyla* populations all but depleted due to the illegal trade, other Asian pangolin populations, including the Sunda Pangolin in Indonesia may likely face a similar fate. The illegal international Asian pangolin trade is therefore of high and immediate concern. The IUCN Species Survival Commission (SSC) Pangolin Specialist Group, IUCN Asian Species Action Partnership (ASAP), and Wildlife Reserves Singapore (WRS), recently organized the Pangolin Regional Conservation Planning Workshop, between 28–30 June 2017, to develop a more detailed, regional conservation strategy for the Sunda Pangolin that would guide investment in pangolin conservation and catalyse support for implementation of such strategies. Based on some of the key outcomes from the workshop discussions, it was revealed that saving pangolins from extinction will require engaging local communities in their conservation and addressing the demand for pangolin products, as well as strengthening domestic legislation and policy to combat the illegal wildlife trade. In light of this, TRAFFIC recommends the following:

Law enforcement

- Law enforcement capacity should be enhanced to improve proactive investigation into the international pangolin trade. Multi-agency collaboration, both at a local (provincial), national and international level, should be established and/or intensified to tackle the international and organized criminal networks involved in smuggling pangolins across Indonesia's borders. Knowledge and capacity of law enforcers should be enhanced, especially at important

international wildlife trade hubs at land, sea and airports. Efforts to monitor and investigate this problem should be enhanced and increased at the hotspots identified by this study, particularly within Sumatra and Kalimantan as source hotspots as well as the trade hotspots in Java, Kalimantan and Sumatra.

- Better co-operation and co-ordination between enforcement agencies, including Customs and police, is needed on the national and international levels. On an international level, such co-operation, especially between Indonesia and Malaysia, will be crucial in order to increase detection rates, disrupt the movement of pangolin shipments across international boundaries and dismantle organized wildlife crime syndicates. These are perhaps most needed to tackle trafficking between Sumatra and Peninsular Malaysia, as well as within Borneo, particularly between Kalimantan and Sarawak.
- Prosecutors and the judiciary should be made aware of the legal and environmental consequences of the illicit pangolin trade as part of a wider effort in prioritizing attention to wildlife crime. This is expected to contribute to increased and more successful prosecution rates and penalties for pangolin and other wildlife trafficking.
- To support global pangolin conservation efforts, Indonesia's revision of its wildlife legislation should list all eight pangolin species at the highest protection level. This will enable the country effectively to comply with CITES and ban all international pangolin trade.

Monitoring

- Conservation organizations and research institutions should continue monitoring and reporting the trafficking of pangolins in and out of Indonesia. This will aid in the effort to understand better and gauge levels of illegal trade and detect emerging trends (e.g. Indonesia's potential involvement as a transit country in the intercontinental trade of pangolins). This will help guide and shape enforcement interventions, conservation actions, decision making, and policies to overcome smuggling.
- Reporting to CITES by Indonesia, in adherence to the new annual illegal trade reporting requirements of CITES Notification 007 that was issued in February 2016, will complement global efforts to monitor and tackle the illegal international pangolin trade. The CITES Notification calls for reporting to the CITES Secretariat, which involves a comprehensive account of actions and outcomes of seizure and prosecution information. This level of reporting is needed to improve analysis of the country's pangolin trade level and trends, which would feed towards improved law enforcement efforts.

Further research

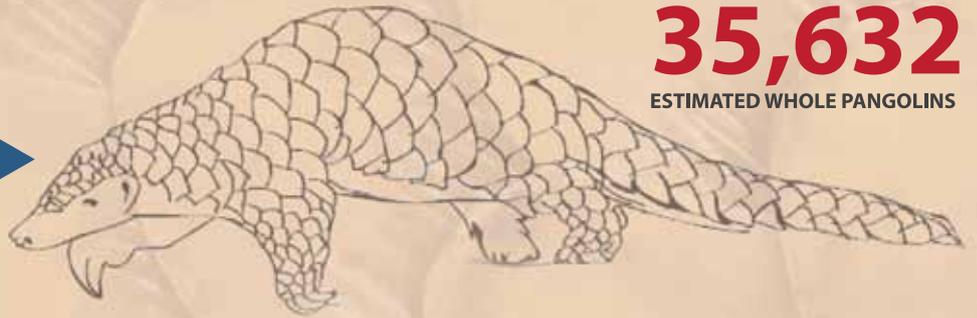
- In Indonesia, a Sunda Pangolin population status overview is needed in order to establish national conservation threat levels and guide enforcement and prosecution reforms.
- Research into pangolin trade drivers and potential substitutes for pangolin products is needed not only in major destinations such as China and Viet Nam, but across the Southeast Asian region, where local consumption of pangolin products still occurs, albeit on a smaller scale. Such research will help us to understand trade dynamics better and would form the basis for future awareness-raising efforts.

Behaviour change

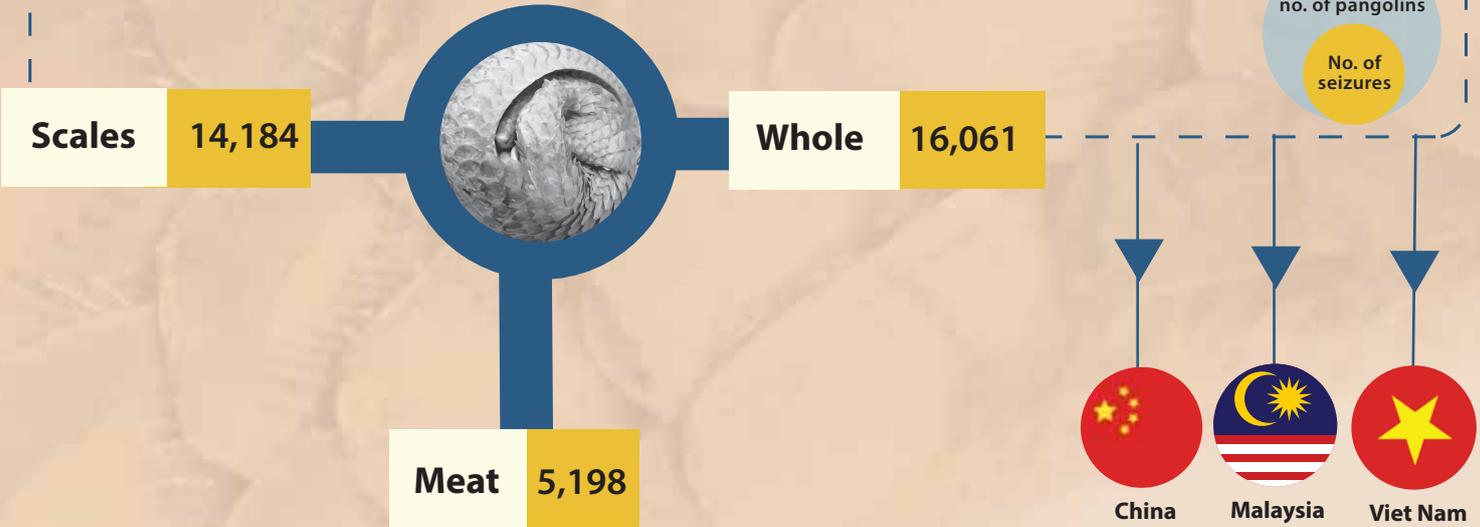
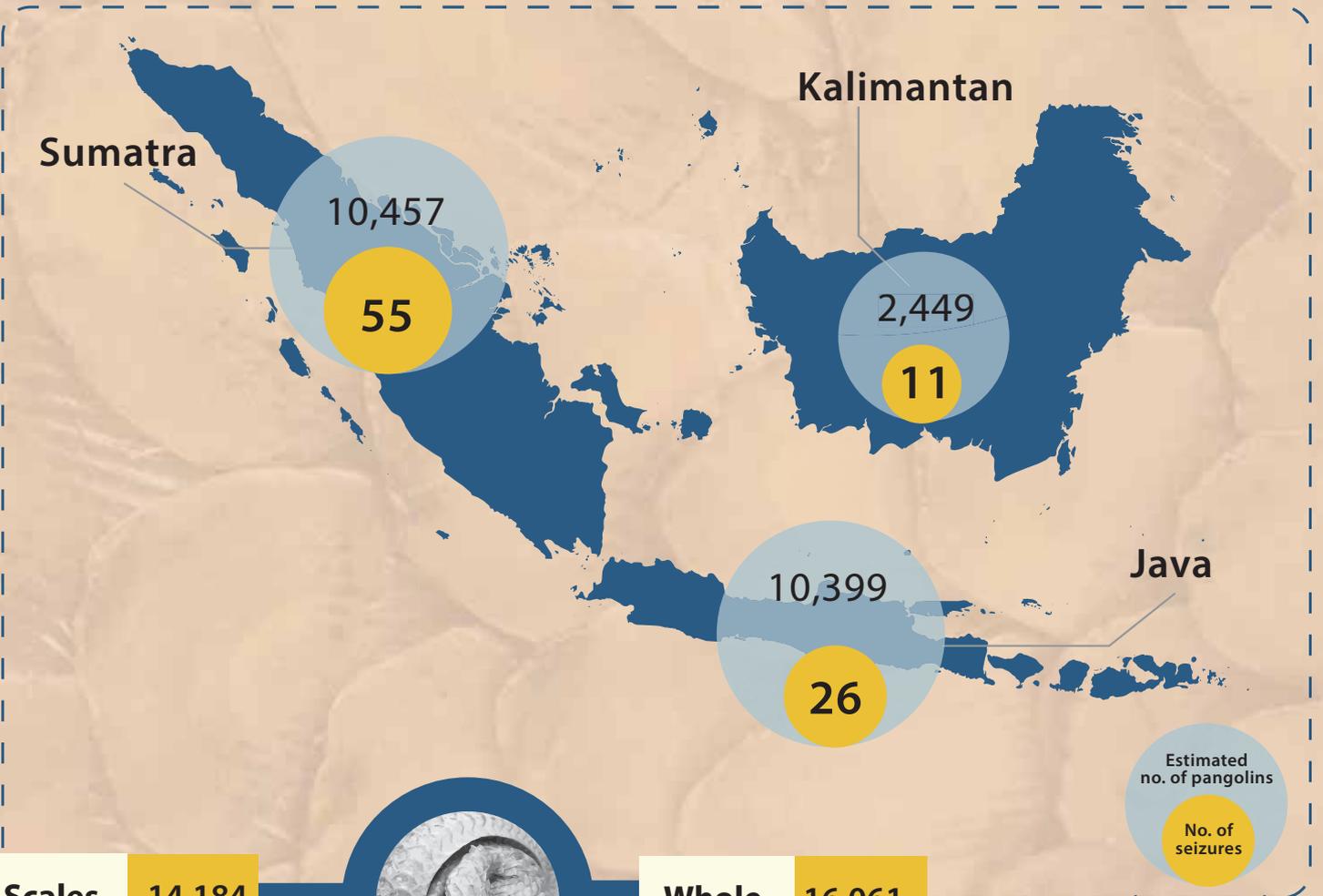
- By inducing behaviour change in consumption countries, the demand for pangolin products can be decreased. Best practice approaches to social behaviour change communications need to be explored and pursued. Such communications should include awareness raising campaigns and consumer education. Further behaviour change can be brought about by enhanced law enforcement efforts.
- In addition to behaviour change among consumers, there should be similar efforts to influence local communities and hunters involved in poaching and trading of pangolins. This may be achieved by educating them on the illegality of the trade and the importance of protecting pangolins.

INDONESIAN PANGOLIN SEIZURES 2010-2015

111
SEIZURE
RECORDS



35,632
ESTIMATED WHOLE PANGOLINS



ESTIMATED NUMBER OF PANGOLINS BY MAIN COMMODITY SEIZED

MAIN COUNTRIES LINKED TO INDONESIAN PANGOLIN SEIZURES



INTRODUCTION

Indonesia is among the most biodiverse countries in the world. Unfortunately, and notwithstanding management efforts to conserve this natural richness, the country has long been recognized as a significant illegal wildlife trade hub (Chng *et al.*, 2015; Nijman, 2015; Auliya *et al.*, 2016). Traders use the country to source illegal wildlife products from key species including Tigers *Panthera tigris*, various primates, Sun Bears *Helarctos malayanus* and birds (Shepherd, 2000; Anon., 2001; Shepherd and Magnus, 2004; Nijman and Shepherd, 2009; Schoppe, 2009; Semiadi *et al.*, 2009; Nijman, 2010; Altherr *et al.*, 2011; Chng *et al.*, 2015; Nijman, 2015; Auliya *et al.*, 2016). Illicit trade in endangered floral and faunal species in, from and to Indonesia is widespread and concerns both national and international trade chains. A recent report assessing wildlife crime in Indonesia indicates a growing pattern, with illegal trade increasingly involving organized criminal networks (Anon., 2015). Among the myriad species of wildlife that are traded in and out of Indonesia, are pangolins.

Pangolins are currently among the most heavily trafficked mammals in the world (Newton *et al.*, 2008; Challender *et al.*, 2014). Analysis of seizure records between 1999 and 2017 show that a minimum of 192 567 pangolins were involved in illegal trade, based on 1557 seizure incidents globally and involving all species of pangolins (Challendar and Waterman, 2017). Increasing and persisting East Asian demand continues to put pressure on all eight existing pangolin species (Sunda Pangolin *Manis javanica*, Chinese Pangolin *M. pentadactyla*, Indian Pangolin *M. crassicaudata* and Philippine Pangolin *M. culionensis* in Asia and Giant Ground Pangolin *M. gigantea*, Temminck's Ground Pangolin *M. temminckii*, White-bellied Pangolin *M. tricuspis* and Black-bellied Pangolin *M. tetradactyla* in Africa) (Challender, 2011; Challender and Hywood, 2012; Gomez *et al.*, 2016a; Nijman *et al.*, 2016; Xu *et al.*, 2016). The four Asian species in particular are considered to be in rapid decline (Challender, 2011; Challender *et al.*, 2014; Nijman *et al.*, 2016).

Pangolins are especially sought after for their meat and scales, with the latter used for traditional medicinal purposes (Wu *et al.*, 2004; Wu and Ma, 2007; Zhang and Yin, 2014; Nijman, 2015; Gomez *et al.*, 2016a; 2016b), while their meat is consumed as a luxury dish or local source of protein (Mohapatra *et al.*, 2015; Shairp *et al.*, 2016). The growth of Chinese wealth since the country's economic liberation in the 1980s has found consumers willing and able to afford highly valuable pangolin products and has further intensified demand (Challender, 2011). As pangolin populations in China (and in neighbouring countries) have dwindled over the years, harvesting for the trade has moved southwards across the Asian continent, with Malaysia and Indonesia currently being among the most important regional suppliers in the international trade chain (Semiadi *et al.*, 2009; Sopyan, 2009; Tuuga, 2009; Challender, 2011; IUCN SSC Pangolin Specialist Group, 2016). Increasingly there has also been a shift in trade from Asian species (likely due to dwindling populations) to African species, with intercontinental trade records involving large quantities of pangolin scales (i.e. several tonnes) (Challender and Hywood, 2012; Challender *et al.*, 2016; Gomez *et al.*, 2016a; Heinrich *et al.*, 2016).

Indonesia is home to one species of pangolin, the Sunda Pangolin, which can be found from Sumatra, Java and adjacent Indonesian Islands to Kalimantan (Challender *et al.*, 2014) (Figure 1).

It has been protected in the country since 1931, dating back to the time of the Dutch administration, under the previous Wildlife Protection Ordinance No 266 (CITES, 2017), but illegal trade continues to occur at alarming levels. Indonesia's involvement in the international pangolin trade dates back to at least the early 20th century, with records of large shipments of scales from Java to China from as early as 1925 (Semiadi *et al.*, 2009; Nijman, 2015). Between 1958 and 1964 there was documented trade of pangolin scales from Kalimantan on the island of Borneo to Hong Kong, amounting to an estimated 25 000 pangolins per year (Nijman, 2015). During the 1990s, trade in pangolins out of Indonesia mostly involved skins which were used to make leather products such as bags, wallets and other accessories (Sopyan, 2008). By the early 2000s, the skin trade was replaced by the more profitable international trade in pangolin scales which was coveted for use in Traditional Chinese Medicine. Since 2002, demand has increased not only for scales but also for pangolin meat and internal organs, the trade in which has continued unabated until today.



While little is known about the population status of the Sunda Pangolin in Indonesia, it is known that the species has an average generation span of seven years, making current trade and hunting levels of the species likely to be unsustainable (Challender *et al.*, 2014). The Sunda Pangolin is currently listed as Critically Endangered on the International Union for Conservation of Nature (IUCN) Red List of Threatened Species, largely due to the threat trade poses, and is suspected to be in severe decline in Indonesia (Challender *et al.*, 2014).



National legislation

With at least five key legislations governing the use and trade of wildlife since 1990, Indonesia's national wildlife legislation relating to the protection and regulation on the harvest and trade of native species is generally adequate. However, the list of protected species requires reviewing and updating. At a national level, the Ministry of Environment and Forestry's Department of Forest Protection and Nature Conservation (KKH) is responsible for implementing the country's wildlife legislation. At a sub-national level, this responsibility falls on the Nature Conservation Agency (BKSDA). The Indonesian Institute of Sciences (LIPI) provides relevant scientific advice, for example with regards to setting quotas for harvest and export.

The Act of the Republic of Indonesia No.5 of 1990 concerning conservation of living resources and their ecosystems, widely known as the *Conservation Act (No.5) 1990*, is the principal legislation pertaining to the regulation of wildlife trade in Indonesia. Under this Act, species are categorized as "Protected" or "Unprotected" whereby species listed as Protected are classified as "Endangered" or "Rare". Chapter V Article 21 states that Protected species are not allowed to be caught, injured, killed, kept, possessed, cared for, transported, or traded whether alive or dead. Exceptions in this regard are permitted by the Government for the purposes of research, science and/or safeguarding a species. Violation of this Act can result in imprisonment for a maximum of five years and a fine of up to IDR100 million (USD7519). Chapter V also states that only Unprotected wildlife may be traded, and traders must submit trade records annually. All trade of plants and animals must be accompanied by legal documents.

That said, under *Government Regulation No. 8, 1999 concerning the utilization of wild plants and animals* of this Act, the trade of a Protected species is permitted if the specimens are captive-bred. Captive-bred animals are subject to regulations under the *Decree of the Ministry of Forestry, No.P.19/Ministry of Forestry-II/2005 concerning captive management of wild plant and animal species* and Article 10 in *Government Regulation No. 8, 1999*, which defines that only second and subsequent generations of captive-bred Protected animals may be traded, and that all breeders must be registered with KKH (for exporters) and BKSDA (supplying to exporters but not exporting themselves). Currently, this is not permitted for pangolins.

Protected species are listed under *Government Regulation No.7, 1999, Concerning the preservation of flora and fauna*. This list has not been updated since it was first gazetted, and therefore does not include newly-recognized species and species that have since become of conservation concern. Sunda Pangolins are listed as a Protected species under this regulation, which technically means that all trade and harvest of wild-caught specimens is prohibited. The Indonesian Government is also in the midst of a revision of its wildlife protection legislations (Conservation Act (No.5) 1990 and Government Regulation No.7, 1999).

Under the Decree of the Minister of Forestry Number 447/Kpts-II/2003 concerning the administration directive of harvest and capture and distribution of the specimens of wild plant and animal species, a quota system regulates the collection and trade of unprotected animals. Harvest and export quotas are set by KKH annually for native species, except for Protected species or species listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), which are prohibited from being harvested at all.

CITES

Indonesia has been a party to CITES since 1978. The Directorate of Biodiversity of the Ministry of Environment and Forestry functions as the national CITES Management Authority and is responsible for the implementation of CITES in Indonesia, while LIPI functions as the country's official Scientific Authority for CITES. Indonesia's CITES-implementing legislations however, specifically the *Government Regulation No.7, 1999*, has fundamental flaws in that it does not protect a vast number of non-native species and therefore effectively renders it meaningless when it concerns the trade of non-native species. In the year 2000, a zero annual CITES export quota was established for the four Asian pangolin species (Anon., 2000) but not for the African species. However, as of January 2017, all eight existing pangolin species were transferred from Appendix II to Appendix I of CITES, a decision that was adopted during the 17th Conference of the Parties (CoP) to CITES in Johannesburg, South Africa, in 2016. This effectively means that all international commercial trade in wild caught pangolins is prohibited.





METHODOLOGY

To assess Indonesia's role in the international pangolin trade, a comprehensive seizure analysis was conducted. For this, pangolin seizure data for transactions involving Indonesia were collected for the period between 2010 and 2015. These data were extracted from various sources, including TRAFFIC publications, Customs, police, CITES, and media reports, grey literature and records from other non-governmental organizations (NGOs). It should be noted that non-English media reports were not specifically searched during the collation of the dataset, but were included when they were provided by a third party.

Only seizure data that involved Indonesia as a source, transit or destination country were included in the analysis. A “seizure country” was defined as the country where the seizure took place and could be either a source, transit or destination country. A “source country” was defined as the first known point of a trade route, a “transit country” was defined as a country which had functioned or was intended to function as both an importing and a re-exporting country in the trade route, and a “destination country” was defined as the last known or reported point of a trade route. For the purpose of this analysis the reported seizure data were assumed to be correct and complete; it is acknowledged, however, that seizure data are inherently influenced by a number of biases. The acquired seizure data were analysed for summary statistics, general trends relating to the commodity types being traded, and the countries involved during the research period. The analyses were conducted in the R software environment version 3.3.2 (R Core Team, 2016).

Apart from one incident where scales reportedly came from Africa, this analysis assumed that the pangolins involved belonged to the Sunda Pangolin *Manis javanica* given that the reported origin of the pangolin and/or parts was Indonesia. Where the weight of an animal was given, but no count, a minimum and a maximum figure of whole estimated animals of the Sunda Pangolin were calculated, following Gaubert (2011) i.e. 3–10 kg/animal. For scales it was assumed that the Sunda Pangolin would have 0.361 kg of scales per animal, following Zhao-Min *et al.* (2012).

In one incident where the quantity of specimens was described as “hundreds of dead pangolins”, a minimum of 200 and a maximum of 999 pangolins was assumed. In three incidents where skins were reported but only a weight was given, it was assumed that the reported commodity was actually scales. In another incident where the number of scales was reported as 146 pieces it was



Indonesian Forestry Department destroys seized pangolins in Jakarta in June 2012

assumed that a minimum of one pangolin and a maximum of 146 pangolins were involved. In one incident where three “pax” of meat were reported, it was assumed that one to three pangolins were involved. In one incident where the seized scales originated from Africa, a minimum scale weight of the heaviest African pangolin (Giant Ground Pangolin *M. gigantea*) and the maximum scale weight of the lightest African pangolin (White-bellied Pangolin *M. tricupis*) (assuming scales make up 30% of a pangolins body weight and following Gaubert (2011) for a species body weight) were used to estimate the quantity of pangolins involved. In one incident where meat was reported and both a count and a weight were given, it was assumed that the count involved the number of dead pangolin bodies and was used as such to determine the number of pangolins involved.

In all incidents, the minimum and maximum estimated number of individual animals was calculated, and a rounded up average used for subsequent analysis. In three incidents, the information provided was not sufficient to convert the quantity into whole estimated pangolins and they were therefore excluded from the analysis. In three other incidents only parts of the seized items could be converted due to insufficient information. These six included quantities of reported “tons of scales” in one incident, “legs” and “heads”, “medicinals”, and several kilogrammes of “body parts” in other incidents, and “meat” and a further “sack of scales”.

Commodity types were consolidated into six categories for analysis, with the first three categories of “live”, “dead” and “individuals” calculated as whole animals (Table 1).

Table 1: Commodity types used in the analysis

Commodity type	Description
Live	Reported as live animals seized.
Dead	Reported as dead or frozen animals without further description of the state these animals were found i.e. parts or whole, with or without scales, etc. Assumed to involve whole animals.
Individuals	Assumed to be whole animals that were seized but insufficient information reported to discern whether these involved live or dead specimens.
Meat	Usually reported by weight without further description on whether this involved whole dead/frozen specimens or body parts, etc.
Scales	Reported as scales.
Skins	Reported as skins seized.
Body Parts	Reported as body parts and assumed to involve any pangolin part excluding scales and skin.

Given the inconsistent manner in which seizures, enforcement action and effort are reported and recorded by the different countries, it is unlikely that this dataset is representative of the complete set of seizures involving Indonesia. Due to the inherently covert nature of the (international) illegal pangolin trade, its true extent is unlikely to be reflected by the reported seizure data alone. Seizure records are an indirect measure of trafficking levels, but the data are inherently biased. This is due to a number of factors, including varying levels of law enforcement in each country, different reporting and recording practices of both law enforcement and media, variability in NGO behaviour and advocacy, different levels of corruption, language biases etc. Therefore, more seizures in one country may not necessarily translate into higher wildlife trafficking levels in comparison to other countries. It is acknowledged that the above mentioned factors, among others, will ultimately influence the results of any seizure analysis, however, there is currently no comparable approach to gauge wildlife trafficking levels (but see Ingram *et al.*, 2017 for a different approach, using local scale hunting and market data).

RESULTS AND DISCUSSION

A total of 111 pangolin seizure records in which Indonesia was indicated as either a source country or a seizure country was found for the period between 2010 and 2015. These records involved live and dead pangolins, scales, meat and body parts. The number of seizures per year were generally constant throughout the research period (Figure 2a; estimate=0.14, standard error (se)=0.62, $t=0.23$, $p=0.83$), averaging around 18.5 (standard deviation (sd)=2.4) (with a peak of 22 seizures in 2013). The trafficked volumes (i.e. estimated whole pangolins) fluctuated through time (Figure 2b; [log10] Estimate=-0.01, SE=0.08, $t=0.101$, $p=0.92$). The total number of seizure records was estimated to involve about 35 632 seized pangolins over the six-year period (averaging 4421 (min=2436, max=10 857) pangolins per year), with the greatest quantities seized in 2011 (10 857 estimated whole pangolins) and 2013 (10 776 estimated whole pangolins).

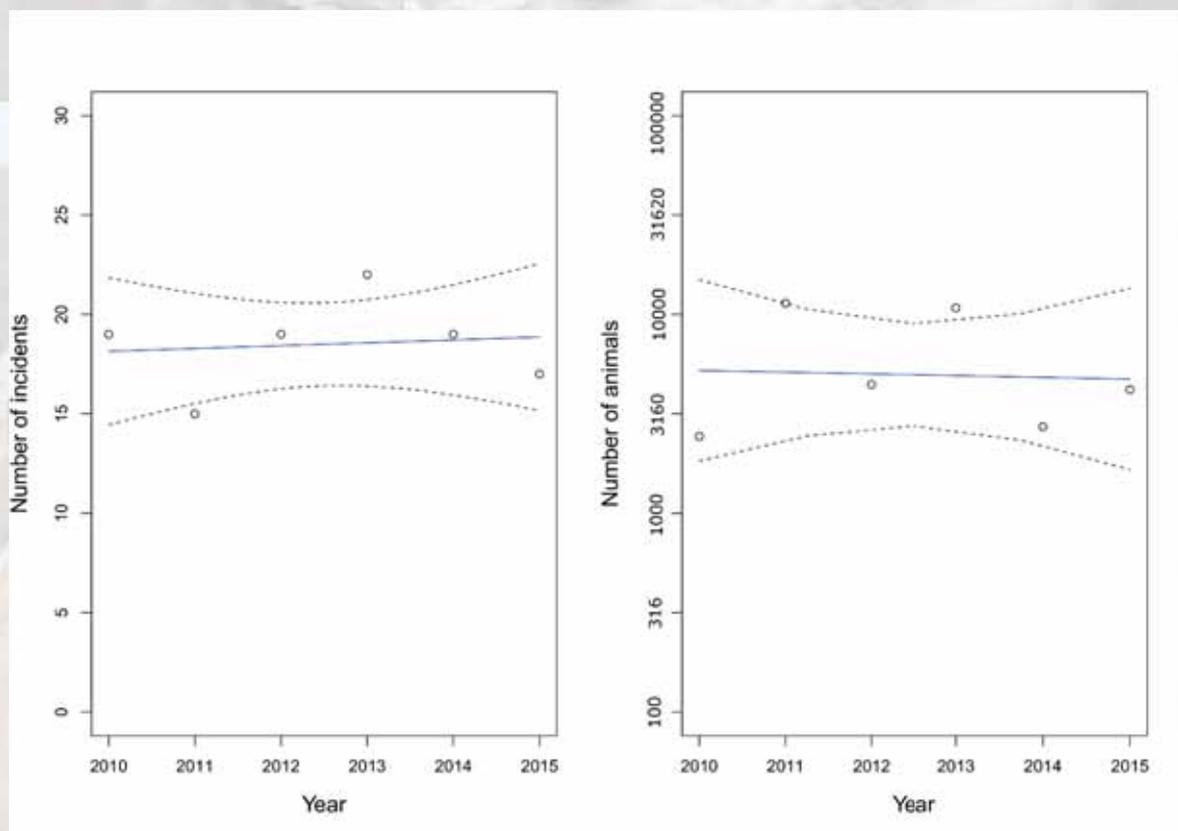


Figure 2: (a) The number of pangolin seizure incidents (*Manis* spp.) and (b) estimated number of whole pangolins, 2010–2015.

Most seized commodities (79%) involved dead pangolins in the form of bodies, meat, scales and skins which accounted for an estimated 27 960 whole pangolins (Table 2). Even though 37% of seizures involved at least some live animals, the total number of seized live pangolins was no more than 2884 (although this excludes “individuals” recorded which may involve live or dead animals). Nevertheless, it should be noted that regardless of whether these animals were seized alive, not all of them will survive in captivity or will be able to be released back into the wild. The seized commodity that represented the highest volume of whole pangolins involved were scales.

Table 2: Seized quantities and estimated whole pangolins of trafficked pangolin commodities from 2010–2015.*

Commodity Seized	Number of Seizures**	Quantity	Whole Pangolins (Estimate)
Live	41	1540+6200 kg	2884
Dead	17	2681 + 23 566 kg	8389
Individuals	40	4788	4788
Meat	8	23 969.45 kg	5198
Scales	29	5218.57 kg + 146 pieces	14 184
Skins	1	189	189

* Note: Quantities were not reported in all seizure incidents. These, as well as incidents that could not be converted, as described in the methodology, may not be reflected in the above table. Quantities are reported as a number of the commodity, unless otherwise marked (e.g. kg).

**Note that each seizure may involve more than one type of commodity seized.

Seizures in Indonesia

Of the 111 recorded seizures, the majority (83%) was found to have taken place in Indonesia (n=92), while the remaining records, which involved seizures in six other locations (China, Lao PDR, Malaysia, Philippines, USA and Viet Nam) (Table 3), implicated Indonesia as a source country. Of the 92 seizures occurring in Indonesia, most were found to have taken place in Sumatra (n=55, followed by Java (n=26) and Kalimantan (n=11)) (Table 4). In one case the precise seizure location within Indonesia was unclear. Of the 19 seizures that occurred outside of Indonesia, at least eight were reportedly from Sumatra, while in the remaining 11 cases, the shipments were said to have originated from Indonesia, without any further details being given as to the specific place of origin. Only one record specifically indicated a source country other than Indonesia. This concerned a shipment of pangolin scales originating from Cameroon that was seized in Jakarta in January 2015.

Table 3: The number of seizure records linked to Indonesia per country and the associated number of whole estimated pangolins per seizure from 2010–2015.

Country	CM	CN	ID	LA	MY	PH	RU	SG	TH	US	VN
Number of seizures	0	2	92	1	11	1	0	0	0	1	3
Whole Pangolins ¹	0	6665	23 305	81	1046	2167	0	0	0	0	2368
Number of cases with link to country ²	1	14	111	2	22	1	1	4	3	1	7

Notes: ¹ estimation as described in the methodology; ² implicated either as a source, transit or destination country.

*CM – Cameroon, CN – China (including mainland China and Hong Kong), LA – Lao PDR, MY – Malaysia, PH – Philippines, RU – Russian Federation, SG – Singapore, TH – Thailand, US – United States and VN – Viet Nam.

Table 4: Total number of pangolin seizures in Indonesia—Java, Kalimantan and Sumatra, 2010–2015.

Seizure Location	Min number of pangolins	Number of seizures
Java	10 399	26
Kalimantan	2449	11
Sumatra	10 457	55
Total	23 305	92

Recorded seizures involved as few as one pangolin to as many as 6307 pangolins. There were at least 11 incidents where the seizures involved over a 1000 estimated whole pangolins, seven of which occurred in Indonesia i.e. Sumatra (3 seizures), Java (3 seizures) and Kalimantan (1 seizure). The largest of these Indonesian seizures in terms of number of pangolins seized was one of 5.9 tonnes of pangolin meat and 790 kg of scales (amounting to an estimated 3474 whole pangolins) at the Belawan International Container Terminal in Medan, Sumatra, which was reportedly headed for Viet Nam. These were smuggled amongst several tonnes of snakehead fish *Channa* spp. and Asiatic Softshell Turtle *Amyda cartilaginea* meat. In terms of weight, the heaviest seizure was of a container with over 8500 kg of dead pangolins and close to 350 kg of pangolin scales (which was estimated to amount to 2812 whole pangolins), which occurred at the Tanjung Priok Port, Jakarta (Java). It is striking that even though the amount of seizures in Sumatra was approximately twice as high as in Java, the amount of trafficked pangolins was approximately the same for both islands.



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The Indonesian Forestry department destroys tonnes of illegal pangolins that were confiscated from 2011 until early 2012.

Seizures outside Indonesia

Besides Indonesia, 10 other countries were found to have been involved in the pangolin trade with Indonesia (Table 3), serving either as source, transit or destination countries. The top three locations that have the closest ties with Indonesia, based on either estimated number of whole pangolins or frequency, are China, Viet Nam and Malaysia. These are based either on reported seizure location (where Indonesia was named as a source), or where the locations were part of the trade chain in relation to where the seizure occurred or where a shipment was reportedly destined for.

China, although implicated in only 12 of the 111 seizure records, accounted for the largest volume of pangolins smuggled (these 12 seizures are estimated to involve 10 491 whole pangolins). It was found to serve only as a destination. Of the 12 seizures, only two occurred in China (one in mainland China and the other in Hong Kong) involving shipments originating from Indonesia. The total number of pangolins seized in these two incidents was estimated at 6665 largely due to one seizure of 232 boxes containing 2041 frozen pangolins and 1540 kg of pangolin scales (a total of 6307 estimated whole pangolins). Also seized were 11 boxes of python skins and 23 boxes of frozen tortoises. This was the largest seizure recorded for the study period, 2010–2015. Of the 12 incidents implicating China, the most frequently seized commodity was pangolin scales (n=7 incidents). In three incidents these scales were found in combination with live and/or dead pangolins.

Viet Nam was linked to seven seizures involving Indonesia from 2010–2014; no seizures were reported to have occurred in 2015. These seven seizures combined accounted for the second highest total volume of pangolins seized (9852 animals). Three of these seizures occurred within the country (amounting to 2368 animals) and a further four seizure records implicated Viet Nam as a destination country. The commodities seized included meat, scales and live pangolins, although the most abundant in terms of volume seized was meat i.e. 18.1 tonnes from three seizures.

Malaysia emerged as the most prominent country implicated in the Indonesian pangolin seizure data, based on the frequency of reported incidents (a minimum of 22 cases involving a minimum of 3204 pangolins). There were 11 recorded seizures (involving 1046 animals) in Malaysia—all of which were seized on vessels by the marine police with the source of pangolin shipments reportedly from Indonesia. A further 11 seizures, which occurred in Indonesia (n=10 seizures) and Lao PDR (n=1 seizure) and accounted for a minimum of 2158 pangolins, involved shipments being transported to or through Malaysia. It is believed that the country largely functions as an export and transit hub through which Malaysian and Indonesian pangolins are shipped to end use destinations in Indochina and East Asia (Semiadi *et al.*, 2009; Sopyan, 2009; Nijman *et al.*, 2016; Xu *et al.*, 2016). With demand coming predominantly from East Asian countries, shipments are likely to be transported through Malaysia. That said, this is a data gap that warrants further investigation. The seizures in Malaysia took place in three main States (Johor (n=4), Melaka (n=3) and Perak (n=4)) on the west coast of Peninsular Malaysia and generally involved shipments of live pangolins (ranging between 15 and 100 pangolins in each shipment) by sea. Similarly, the seizure records implicating Malaysia as a destination and transit country mostly involved shipments of live pangolins (n=11), a mix of both live and dead pangolins (n=3; including scales, n=1 seizures), or individuals (n=3). Pangolin parts are known to be consumed in selected locations in the country, sourced by local hunters and served to exotic meat restaurants and therefore the country's role as a consumer requires further investigation (Pantel and Anak, 2010; Yuen, 2013; Arumugam, 2015; Chan, 2017; Anon, 2017; TRAFFIC wild meat surveys, unpublished).

The Philippines was implicated in one large seizure which involved an estimated 2167 whole pangolins (10 000 kg pangolin meat), although in this case, the pangolins were only discovered after a Chinese vessel ran aground in a coral reef within the Philippine Tubbataha National Marine Park, a UNESCO-designated World Heritage Site on Palawan Island (Cerojano, 2013). According to the crewmen arrested, the pangolins were from Indonesia.

There was only one incident where the source of the seized shipment was reportedly an African country – 200 kg of pangolin scales from Cameroon were seized at the Soekarno-Hatta International Airport in Jakarta in 2015. It is likely the scales were intended for a destination other than Indonesia as it primarily functions as a source of pangolins, rather than a consumer.

In at least 21 seizures, pangolins were confiscated along with other wildlife products and contraband. Other wildlife most frequently seized alongside pangolins included birds (live and parts) (n=9 seizures) and snakes (mostly pythons, live and skins, n=6 seizures). Of the nine seizures that included birds, at least five involved hornbill casques, amounting to almost 500 pieces, although the bulk of this was mostly attributed to two seizures. In the first, authorities confiscated pangolin scales along with 229 pieces of Critically Endangered Helmeted Hornbill *Rhinoplax vigil* beaks and bear parts (44 bear claws and one canine) in Kalimantan, reportedly for a Taiwanese buyer (Anon, 2013). The second incident involved the confiscation of 189 pangolin skins and 248 pieces of Helmeted Hornbill beaks in Jakarta, although these items were reportedly sourced from Kalimantan (Anon., 2013a; 2013b). Authorities arrested four Chinese nationals who were heading to Hong Kong on a China Airline flight. These cases demonstrate that pangolin shipments from Southeast Asia are sometimes accompanied by other high-value wildlife commodities destined for the East Asian market.

As mentioned, seizure data are biased and the records are likely to represent only part of the illegal pangolin trade. Due to the trade's inherently covert nature and the possibility of insufficient or incomplete reporting, its true extent will remain unclear. Although the data found in this study may not present us with a complete picture, they are indicative of certain trade trends and dynamics.





Indonesia as a source country

The number of seizures associated with Indonesia that were found to have taken place during the research period is indicative of the potentially important role the country plays in the international pangolin trade. Of the 111 seizure records for Indonesia over the study period, only 42 records included data on international trade routes (Figure 3).

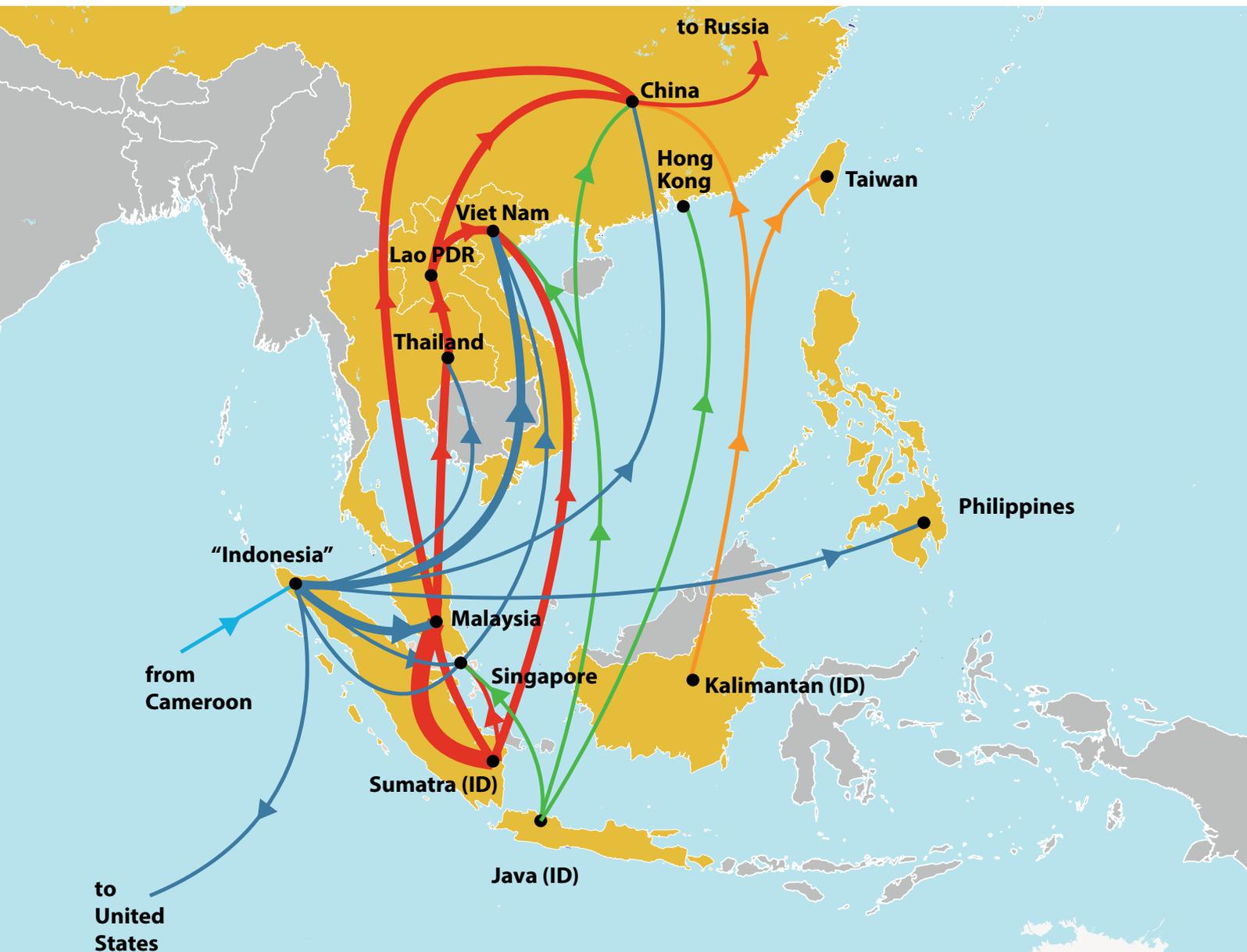


Figure 3. Pangolin trade routes involving Indonesia—thickness of lines indicates number (frequency) of recorded shipments per route, with the thinnest lines representing one shipment. Blue lines mark shipments originating from “Indonesia” (unspecified location), red lines mark shipments originating from Sumatra, green lines mark shipments originating from Java, orange lines mark shipments originating from Kalimantan, light blue lines mark shipments originating from outside of Indonesia.

This dataset shows that, aside from one seizure record, all those reported by the seven countries in which seizures were made were of shipments originating from Indonesia. This confirms that Indonesia functions mainly as an important source country. The data show that Indonesia has remained a key link in the black market trade of the Sunda Pangolin (see also Shepherd, 2009; Pantel and Anak, 2010; Challender, 2011).

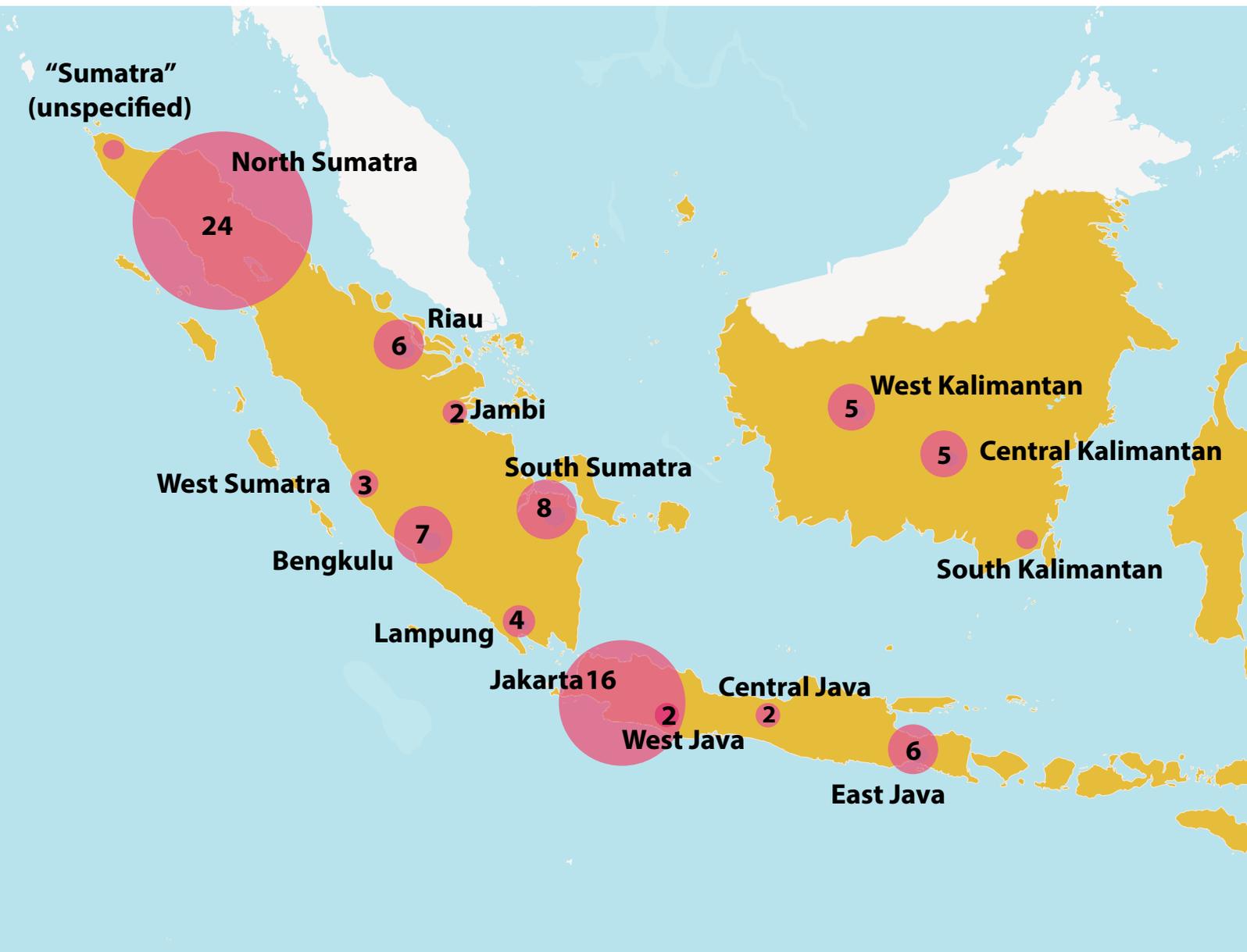


Figure 4: Seizure hotspots within Indonesia based on seizure data between 2010 and 2015. Numbers indicate the amount of seizures made during the research period, with those circles not containing a number representing a single seizure.

Sumatra and the Sundaland connection

Sumatra appears to be home to the highest number of pangolin trade hotspots, with most trade passing through the North Sumatra province (Figure 4). The island's trade volumes can (at least partly) be explained by what can be called the "Sundaland connection". This refers to the strong trade links between Indonesia, Singapore and Malaysia and its role as a central distribution point. Due to its proximity to both Malaysia and Singapore, Sumatra appears to be the most important Indonesian island in the Sundaland connection. Of the incidents involving Malaysia (n=22 seizures) and Singapore (n=4 seizures), 19 were reported to be linked to Sumatra. Pangolin trade out of Sumatra was found to have Peninsular Malaysia as a (first) destination, with Medan in North Sumatra being a major collection site before export. Information from confidential sources single Medan out as such. Similar findings are reported by Tankandjandji and Sawitri (2016) who report that pangolins from Aceh, North Sumatra and West Sumatra are exported through Belawan Port, Medan, while pangolins from Riau Province and South Sumatra are exported through Palembang.

Information received by TRAFFIC over the years has yielded additional insight into this trade. In 2016, collectors in Curup, Bengkulu have been said to obtain around one to two pangolins from local hunters per day and sell them to middlemen in Medan (with the price of a live pangolin reportedly being around IDR350 000 (USD26) and the price of pangolin scales being around IDR3 000 000 (USD223) per kg). Similarly, collectors in Muara Bahan, Logas Subdistrict, Kuansing, Riau have been said to sell live pangolins, collected from local villages, to middlemen in Medan (and Padang) for around IDR200 000 (USD15) per kg. Another collector noted that Sijunjung, Kiliran Jao and Dharmasraya in West-Sumatra were notable locations targeted for the poaching of pangolins and other wildlife such as Helmeted Hornbills, stored in small numbers at a time (no more than two or three pangolins at a time) to minimize risk. The specimens are then transported overland to Medan, using couriers, although middlemen have been known to come pick up their shipments when these are larger than normal. From Medan, Peninsular Malaysia is easily reachable by boat and plane. According to Challender and Waterman (2017), interviews with poachers in 2012 revealed an average of 25–30 pangolins were collected a month in Indonesia (Challendar and Waterman, 2017). Outside the assessed period, between 2016 and June 2017, there have been at least a further 11 seizures in Sumatra, which reiterates the island's significance in this trade connection. The most recent incident occurred in June 2017, when a Malaysia-bound shipment of at least 225 pangolins (alive, dead and scales) was seized at the Belawan Port in Medan (Anon., 2017).

In the international wildlife trade, Malaysia and Singapore have been known to function as gateways for some key illicit wildlife commodities that are being transported into the greater Southeast Asian (and eventually East Asian) region (Pantel and Chin, 2009; Shepherd *et al.*, 2012; Milliken *et al.*, 2013; Milliken *et al.*, 2016). This also seems to be the case in the pangolin trade and is therefore a priority for law enforcement interventions. In 2015, Singapore intercepted 324 kg of African pangolin scales, along with 505 kg of ivory from Nigeria that was on its way to Lao PDR (Agri-food and Veterinary Authority of Singapore and Singapore Customs, 2015). Between May and June 2017, Malaysia similarly has intercepted close to 1.4 tonnes of African pangolin scales en route to China (TRAFFIC, 2017).

Java and Kalimantan

Pangolin shipments out of Java were almost always reportedly destined for Hong Kong (n=5 seizures) or Viet Nam (n=1 seizure) and Singapore (n=2) and smuggled by both air and sea. Additional information from outside the study period, included one incident in August 2016, in which 657 frozen pangolins were seized from a house in East Java, wrapped in plastic and stored in five large freezers. These pangolins were said to have been sourced from Sumatra and Borneo (Topsfield and Rosa, 2017). It is assumed that, in cases like these, private premises function as collection centres, with the pangolins being packed and shipped out of the country once these

locations have reached their storage limits (Sopyan, 2009). Information collected by TRAFFIC over the years (2015–2017) indicates that collectors from Sijunjung in West Sumatra source pangolins from a number of locations (such as Bengkulu, Lampung, Aceh and Kalimantan) which are then sold to clients in Jakarta. According to Takandjandji and Sawitri (2016), hunting of pangolins in Java, based on interviews with 25 local hunters, are done by communities living around forested areas, both opportunistically (55%) as well as intentionally (23%) to supplement their income. Generally, the hunting of pangolins is co-ordinated by the collecting party and local traders.

While fewer seizure records were found for Kalimantan, the trade route between West Kalimantan and China has been thought to be of key importance in the international pangolin trade (Anon., 2016). Pangolins are collected throughout the Bornean Island and smuggled via Jakarta or Sarawak, often mixed in with large shipments of legal products such as crops of various kinds (Anon., 2016; Takandjandji and Sawitri, 2016). The remoteness of most areas in Borneo, as well as the extensive shared border between Kalimantan and Sarawak, provides advantages to smugglers while inhibiting effective monitoring/control by relevant authorities. Some local communities, such as the Dayak in Kalimantan, are reportedly involved in the hunting of wild animals (TRAFFIC, unpublished). While the bulk of such wildlife is used for their own subsistence, high value products like pangolins are reportedly sold to middlemen. One reported trade route involves poached pangolins being sent to a warehouse in Ketapang, West Kalimantan, from where they are transported to Entikong, West Kalimantan and then smuggled into Sarawak, Malaysia. Elsewhere, local people in Sambas were reportedly aware of a phone number to call if pangolin scales were obtained, though the destination of the scales were not known beyond that it was believed to serve “an export market” (TRAFFIC, *in prep*). In 2016, pangolin collectors were also reported to be operating out of Serimbu in the Landak district in West Kalimantan, where these pangolins were either consumed in the local villages or sold for around IDR40 000 (USD3). The involvement of middlemen in Entikong in the Sanggau district has also been reported, where scales were said to be transported across the border into Sarawak, concealed amongst crops, and sold to dealers in the border town of Tebedu, which is then shipped to China. Information on these trade routes operating within Borneo requires further investigation and verification.



Intercontinental trade

With Asian pangolin populations dwindling, the intercontinental trade in African pangolins now appears to be on the rise (Challender and Hywood, 2012; Challender *et al.*, 2016; Gomez *et al.*, 2016a; TRAFFIC, 2017). In previous studies it was found that both European and Southeast Asian countries function as transit hubs in the intercontinental pangolin trade (Challender and Hywood, 2012; Gomez *et al.*, 2016a). While most of the seizure records indicate Indonesia as a source country, the country may also function as a transit hub in the intercontinental pangolin trade. Only one Indonesian seizure record, concerning a shipment of 200 kg of pangolin scales from Cameroon, supports this possibility. In previous studies into the intercontinental pangolin trade, the country has not been indicated as a transit hub (Challender and Hywood, 2012; Gomez *et al.*, 2016a). The exact extent to which Indonesia should be seen as a re-exporting country of African pangolin species remains unclear but should be monitored and investigated further, considering that new trade routes are constantly evolving in the smuggling of illicit wildlife products (Heinrich *et al.*, 2017). According to Heinrich *et al.* (2017), on average 27 new and previously undetected unique trade routes were formed each year in the international pangolin trade between 2010 and 2015. Further, this study identified Indonesia as one of the top 10 countries involved in illegal, international pangolin trade, based on the number of incidents it was implicated in (frequency), and regardless of the role it played, either as an origin, transit, or destination.

Impacts of the international pangolin trade

The primary threat to the Asian pangolin species is illegal hunting and poaching for international trade that is largely driven by demand from East Asian markets; between July 2000 and 2015, at least 153 434 trade records involving the Sunda and Chinese Pangolins have occurred (CITES, 2017). The precise impact of the international pangolin trade on Indonesian pangolin populations cannot be determined through seizure analysis alone. The inherent secretive nature of illegal trade means seizure data are unlikely to represent the full magnitude/scale of the trade and may reflect the variance in enforcement levels. Of the 35 632 pangolins seized between 2010 and 2015, only 2884 involved live animals (the remaining either involving dead specimens and/or parts), but given their low rate of survival under captive conditions, it is unlikely all these survived captivity or were able to be released back into the wild.

In a previous study it was found that between 2002 and 2008, 18 seizures were reported for Indonesia, involving an estimated total of 49 662 pangolins and averaging about 2759 pangolins per seizure (Semiadi *et al.*, 2009). The current study reports on 111 seizures (more than six times in comparison), involving an estimated 35 632 pangolins over a similar timespan, averaging about 321 pangolins per seizure. The smaller volume of pangolins per average seizure could, among other possible scenarios, potentially be an indication of a declining population. The smaller volumes per seizure may also be explained by the smugglers' attempts to avoid big losses in case of a seizure by spreading their valuable contraband over several smaller shipments. However, considering the high number of seized specimens found in this study (and in previous ones) and the fact that the average generation span of the Sunda Pangolin is seven years (Challender *et al.*, 2014), populations are likely to shrink unless immediate countermeasures are put into place. Captive-breeding of pangolins for commercial trade is not an option as pangolins are not suited to life in captivity considering their specialized behaviours, diet and high dependence on the natural environment (Hua *et al.*, 2015). With Chinese Pangolin populations depleted due to the illegal trade, other Asian pangolin populations, including the Sunda pangolin in Indonesia may likely face a similar fate. The illegal international Asian pangolin trade is therefore of high and immediate concern.



CONCLUSION AND RECOMMENDATIONS

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Illegal international trade is the greatest threat to wild pangolins, which are already thought to be in severe decline. Indonesia clearly plays a significant role as a key source of pangolins in the international trade chain. With continuing high demand in China and Viet Nam, the Sunda Pangolin in Indonesia is facing certain demise as it is persistently harvested throughout the country to supply this demand. Despite the existence of sufficient wildlife laws to protect this native species, the illegal poaching of—and trade in—pangolins continues unhindered. However, the relatively large amount of seizures that have taken place here may also hint at improved enforcement efforts, particularly with the arrests of key players in the illegal pangolin trade disrupting trafficking networks (a minimum of 127 suspects were identified and/or arrested from the 111 incidents). Nevertheless, these efforts may be undermined by corruption and insufficient conviction rates (with convictions often involving low fines (maximum of IDR100 million (USD7500))). Urgent measures are needed in order to put a halt to the rampant pangolin trade from Indonesia. The IUCN Species Survival Commission (SSC) Pangolin Specialist Group, IUCN Asian Species Action Partnership (ASAP), and Wildlife Reserves Singapore (WRS) recently organized the Sunda Pangolin Regional Conservation Planning Workshop, 28–30 June 2017 in Singapore, to develop a more detailed, regional conservation strategy for the Sunda Pangolin that would guide investment in pangolin conservation and catalyse support for implementation of such strategies. Based on some of the key outcomes from the workshop discussions, it was revealed that saving pangolins from extinction will require engaging local communities in their conservation and addressing the demand for pangolin products, as well as strengthening domestic legislation and policy to combat the illegal wildlife trade. In light of this, TRAFFIC recommends the following:

Law enforcement

- Law enforcement capacity should be enhanced to improve proactive investigation into the international pangolin trade. Multi-agency collaboration, both at a local (provincial), national and international level, should be established and/or intensified to tackle the international and organized criminal networks involved in smuggling pangolins across Indonesia's borders. Knowledge and capacity of law enforcers should be enhanced, especially at important international wildlife trade hubs at land, sea and airports. Efforts to monitor and investigate this problem should be enhanced and increased at the hotspots identified by this study, particularly within Sumatra and Kalimantan as source hotspots as well as the trade hotspots in Java, Kalimantan and Sumatra.

- Better co-operation and co-ordination between enforcement agencies, including Customs and police, is needed on the national and international levels. On an international level, such co-operation, especially between Indonesia and Malaysia, will be crucial in order to increase detection rates, disrupt the movement of pangolin shipments across international boundaries and dismantle organized wildlife crime syndicates. These are perhaps most needed to tackle trafficking between Sumatra and Peninsular Malaysia, as well as within Borneo, particularly between Kalimantan and Sarawak.
- Prosecutors and the judiciary should be made aware of the legal and environmental consequences of the illicit pangolin trade as part of a wider effort in prioritizing attention to wildlife crime. This is expected to contribute to increased and more successful prosecution rates and penalties for pangolin and other wildlife trafficking.
- To support global pangolin conservation efforts, Indonesia's revision of its wildlife legislation should list all eight pangolin species at the highest protection level. This will enable the country effectively to comply with CITES and ban all international pangolin trade.

Monitoring

- Conservation organizations and research institutions should continue monitoring and reporting the trafficking of pangolins in and out of Indonesia. This will aid in the effort to understand better and gauge levels of illegal trade and detect emerging trends (e.g. Indonesia's potential involvement as a transit country in the intercontinental trade of pangolins). This will help guide and shape enforcement interventions, conservation actions, decision making, and policies to overcome smuggling.
- Reporting to CITES by Indonesia, in adherence to the new annual illegal trade reporting requirements of CITES Notification 007 that was issued in February 2016, will complement global efforts to monitor and tackle the illegal international pangolin trade. The CITES Notification calls for reporting to the CITES Secretariat, which involves a comprehensive account of actions and outcomes of seizure and prosecution information. This level of reporting is needed to improve analysis of the country's pangolin trade level and trends, which would feed towards improved law enforcement efforts.

Further research

- In Indonesia, a Sunda Pangolin population status overview is needed in order to establish national conservation threat levels and guide enforcement and prosecution reforms.
- Research into pangolin trade drivers and potential substitutes for pangolin products is needed not only in major destinations such as China and Viet Nam, but across the Southeast Asian region, where local consumption of pangolin products still occurs, albeit on a smaller scale. Such research will help us to understand trade dynamics better and would form the basis for future awareness-raising efforts.

Behaviour change

- By inducing behaviour change in consumption countries, the demand for pangolin products can be decreased. Best practice approaches to social behaviour change communications need to be explored and pursued. Such communications should include awareness raising campaigns and consumer education. Further behaviour change can be brought about by enhanced law enforcement efforts.
- In addition to behaviour change among consumers, there should be similar efforts to influence local communities and hunters involved in poaching and trading of pangolins. This may be achieved by educating them on the illegality of the trade and the importance of protecting pangolins.

REFERENCES

- Agri-food and Veterinary Authority of Singapore (AVA) and Singapore Customs (2015). AVA and Singapore Customs seize shipment of illegal ivory and pangolin scales. Online at: http://www.ava.gov.sg/docs/default-source/default-document-library/joint-media-release-by-ava-and-singapore-customs_17-dec-2015.pdf?sfvrsn=0. Accessed on 4 June 2017.
- Altherr, S., Goyenechea, A. and Schubert, D. (2011): *Canapés to extinction—the international trade in frogs’ legs and its ecological impact*. Pro Wildlife, Washington, D.C., USA.
- Anon. (2000). *Amendments to Appendices I and II of the Convention adopted by the Conference of the Parties at its 11th meeting in Gigiri, Kenya, from 10 to 20 April 2000*. CITES, Geneva, Switzerland.
- Anon. (2001). *An overview of the trade in live South-east Asian freshwater turtles (AC17 Inf. 7): an information paper for the 17th meeting of the CITES Animals Committee Hanoi, Viet Nam, 30 July to 3 August 2001*. TRAFFIC Southeast Asia, Petaling Jaya, Selangor, Malaysia.
- Anon. (2013a). Indonesia arrests 4 Chinese suspected of smuggling hornbill beaks, pangolins for medicines. Fox News (USA), 7 January. Online at: <http://www.foxnews.com/world/2013/01/07/indonesia-arrests-4-chinese-suspected-smuggling-hornbill-beaks-pangolins-for.html>. Accessed on 2 August 2017.
- Anon. (2013b). Empat WN China ditangkap di Bandar Soetta. *Poskota News* (Indonesia), 4 January. Online at: <http://poskotanews.com/2013/01/04/empat-wn-china-ditangkap-di-bandara-soetta/>. Accessed on 2 August 2017.
- Anon. (2015). *Wildlife crime in Indonesia: A rapid assessment of the current knowledge, trends and priority actions*. USAID, Washington, D.C., USA.
- Anon. (2016). Pangolin trade ring in Indonesian Borneo busted. *Malaysiakini* (Malaysia), 27 October. Online at: <https://www.malaysiakini.com/letters/360773#ixzz4QzJtjxBF>. Accessed on 8 August 2017.
- Anon. (2017). Indonesia seizes pangolins, scales worth \$190,000. *The Star Online* (Malaysia), 14 June. Online at: [http://www.thestar.com.my/news/regional/2017/06/14/indonesia-seizes-pangolins-scales-worth-\\$190000/](http://www.thestar.com.my/news/regional/2017/06/14/indonesia-seizes-pangolins-scales-worth-$190000/). Accessed on 9 October 2017.
- Arumugam, T. (2015). Endangered wildlife species on the plate. *New Straits Times* (Malaysia), 15 December. Online at: <https://www.nst.com.my/news/2015/12/117382/endangered-wildlife-species-plate>. Accessed on 2 August 2017.
- Auliya, M., Altherr, S., Ariano-Sanchez, D., Baard, E.H., Brown, C., Brown, R., Cantu, J., Gentile, G., Gildenhuis, P., Henningheim, E., Hintzmann, J., Kanari, K., Kravavac, M., Lettink, M., Lippert, J., Luiselli, L., Nilson, G., Nguyen, T.Q., Nijman, V., Parham, J.F., Pasachnik, S.A., Pedrono, M., Rauhaus, A., Cordova, D.R., Sanchez, M., Schepp, U., Schingen, M., Schneeweiss, N., Segniagbeto, G., Somaweera, R., Emerson, Y.S., Turkozan, O., Vinke, S., Vinke, T., Vyas, R., Williamson, S. and Ziegler, T. (2016). Trade in live reptiles, its impact on wild populations and the role of the European market. *Biological Conservation*. DOI:10.1016/j.biocon.2016.05.017.
- Cerojano, T. (2013). Bad ride for wildlife: Chinese boat filled with meat of protected species hits Philippine reef. *Calgary Herald* (Canada), 15 April. Online at: <http://www.calgaryherald.com/technology/ride+wildlife+Chinese+boat+filled+with+meat+protected+species+hits+Philippine+reef/8244006/story.html>. Accessed on 9 May 2017.
- Challender, D. (2011). Asian pangolins: increasing affluence driving hunting pressure. *TRAFFIC Bulletin* 23(3):92–93 .
- Challender, D. and Hywood, L. (2012). Under increased pressure from poaching and intercontinental trade. *TRAFFIC Bulletin* 24(2):53–55.
- Challender, D., Nguyen Van, T., Shepherd, C.R., Krishnasamy, K., Wang, A., Lee, B., Panjang, E., Fletcher, L., Heng, S., Seah Han Ming, J., Olsson, A., Nguyen The Truong, A., Nguyen Van, Q. and Chung, Y. (2014). *Manis javanica*. Online at: <http://dx.doi.org/10.2305/IUCN.UK.2014-2.RLTS.T12763A45222303.en>. Accessed on 23 April 2017.
- Challender, D., Baille, J., Waterman, C., Pietersen, D., Nash, H., Wicker, L., Parker, K., Thomson, P., Nguyen, T.V., Hywood, L. and Shepherd, C.R. (2016). On scaling up pangolin conservation. *TRAFFIC Bulletin* 28(1):19–21.
- Challender, D and Waterman, C. (2017). Implementation of CITES Decision 2 17.239 b) and 17.240 on Pangolins (*Manis* spp.). Prepared by IUCN for the CITES Secretariat. SC69 Doc.57 Annex 1.
- Chan, J. (2017). Illegal and exotic meat on Sabah’s menu. *Malay Mail Online* (Malaysia), April 26. Online at: <http://www.themalaymailonline.com/malaysia/article/illegal-and-exotic-meats-on-sabahs-menus#V5tZJ78PMVWYzey6.97>. Accessed on 2 August 2017.

- Chng, S.C.L., Eaton, J.A., Krishnasamy, K., Shepherd, C.R. and Nijman, V. (2015) *In the market for extinction: An inventory of Jakarta's bird markets*. TRAFFIC Southeast Asia, Petaling Jaya, Selangor, Malaysia.
- Gaubert, P. (2011). Family Manidae (Pangolins). In: Wilson, D. E. and Mittermeier, R. A. (Eds) *Handbook of Mammals of the World*. Lynx Edicions, Barcelona, Spain.
- Gomez, L., Leupen, B.T.C. and Tian, K.H. (2016a). The trade of African pangolins to Asia: a brief case study of pangolin shipments from Nigeria. *TRAFFIC Bulletin* 28(1):3–5.
- Gomez, L., Leupen, B.T.C., Heinrich, S. (2016b). *Observation of the illegal pangolin trade in Lao PDR*. TRAFFIC Southeast Asia, Petaling Jaya, Selangor, Malaysia.
- Heinrich, S., Wittmann, T.A., Prowse, T.A.A., Ross, J.V., Delean, S., Shepherd, C.R. and Cassey, P. (2016). Where did all the pangolins go? International CITES trade in pangolin species. *Global Ecology and Conservation* 8:241–253.
- Heinrich, S., Wittman, T.A., Ross, J.V., Shepherd, C.R., Challender, D.W.S., and Cassey, P. (2017). Global Trafficking of Pangolins: A comprehensive summary of seizures and trafficking routes from 2010–2015. TRAFFIC, Southeast Asia Regional Office, Petaling Jaya, Selangor, Malaysia.
- Hua, L., Gong, S., Wang, F., Li, W., Ge, Y., Li, X. and Hou, F. (2015). Captive breeding of pangolins: current status, problems and future prospects. *ZooKeys* 507:99–114.
- Ingram, D.J., Coad, L., Abernethy, K.A., Maisels, F., Stokes, E.J., Bobo, K.S., Breuer, T., Gandiwa, E., Ghiurghi, A. and Greengrass, E. (2017). Assessing Africa-wide pangolin exploitation by scaling local data. *Conservation Letters*.
- IUCN SSC Pangolin Specialist Group (2016). *Status, trade and conservation of pangolins (Manis spp.): information document for the 17th Meeting of the Conference of Parties to CITES. 24 September–5 October 2016, Johannesburg South Africa*. IUCN SSC Pangolin Specialist Group, London, UK.
- Milliken, T., Underwood, F.M., Burn, R.W. and Sangalakula, L. (2013). *Interpretation and implementation of the Convention species trade and conservation elephants: monitoring of illegal trade in ivory and other elephant specimens*. CoP16 Doc. 53.2.2 (Rev. 1), Gland, Switzerland.
- Milliken, T., Underwood, F.M., Burn, R.W. and Sangalakula, L. (2016). *The Elephant Trade Information System (ETIS) and the illicit trade in ivory: A report to the 17th meeting of the Conference of the Parties to CITES*. CoP17 Doc. 57.6 (Rev. 1), Gland, Switzerland.
- Mohapatra, R.K., Panda, S., Acharjyo, L., Nair, M. and Challender, D. W. (2015). A note on the illegal trade and use of pangolin body parts in India. *TRAFFIC Bulletin* 27(1):33–40.
- Newton, P., Nguyen, V.T., Robertson, S. and Bell, D. (2008). Pangolins in peril: using local hunters' knowledge to conserve elusive species in Vietnam. *Endangered Species Research* 6:41–53. DOI: 10.3354/esr00127.
- Nijman, V. (2010). An overview of international wildlife trade from Southeast Asia. *Biodiversity Conservation* 19:1101–1114.
- Nijman, V. (2015). Pangolin seizure data reported in the Indonesian media. *TRAFFIC Bulletin* 27(2):44–46.
- Nijman, V. and Shepherd, C. R. (2009). *Wildlife trade from ASEAN to the EU: issues with the trade in captive-bred reptiles from Indonesia*. TRAFFIC Europe Report for the European Commission, Brussels, Belgium.
- Nijman, V., Zhang, M. and Shepherd, C.R. (2016). Pangolin trade in the Mong La wildlife market and the role of Myanmar in the smuggling of pangolins into China. *Global Ecology and Conservation* 5:118–126.
- Pantel, S. and Chin, S.Y (Eds) (2009). *Proceedings of the workshop on the trade and conservation of pangolins native to South and Southeast Asia: 30 June–2 July 2008, Singapore Zoo*. TRAFFIC Southeast Asia, Petaling Jaya, Malaysia.
- Pantel, S. and Anak, N.A. (2010). *A preliminary assessment of pangolin trade in Sabah*. TRAFFIC Southeast Asia, Petaling Jaya, Selangor, Malaysia.
- R Core Team (2016). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing, Vienna, Austria. Online at: <https://www.R-project.org/>. Accessed on 12 April 2017.
- Schoppe, S. (2009). *Status, trade dynamics and management of the Southeast Asian Box Turtle in Indonesia*. TRAFFIC Southeast Asia, Petaling Jaya, Selangor, Malaysia.

- Semiadi, G., Darnaedi, D. and Arief, A.J. (2009). Sunda Pangolin *Manis javanica* conservation in Indonesia: status and problems. In: Pantel, S. and Chin, S.Y. (Eds). *Proceedings of the workshop on trade and conservation of pangolins native to South and Southeast Asia: 30 June–2 July 2008, Singapore Zoo*. TRAFFIC Southeast Asia, Petaling Jaya, Selangor, Malaysia.
- Shairp, R., Verissimo, D., Fraser, I., Challender, D. and MacMillan, D. (2016). Understanding urban demand for wild meat in Vietnam: implications for conservation actions. *PLoS ONE* 11(1):e0134787.
- Shepherd, C.R. (2000). Export of live freshwater turtles and tortoises from North Sumatra and Riau, Indonesia: a case study. In: van Dijk, S and Rhodin (Eds), *Asian Turtle Trade: Proceedings of a workshop on conservation and trade of freshwater turtles and tortoises in Asia*. Chelonian Research monographs 2.
- Shepherd, C.R. (2009). Overview of pangolin trade in Southeast Asia. In: Pantel, S. and Chin, S.Y. (Eds), *Proceedings of the workshop on trade and conservation of pangolins native to South and Southeast Asia, 30 June–2 July 2008, Singapore Zoo*. TRAFFIC Southeast Asia, Petaling Jaya, Selangor, Malaysia.
- Shepherd, C.R., Stengel, C.J., and Nijman, V. (2012). *The export and re-export of CITES-listed birds from the Solomon Islands*. TRAFFIC Southeast Asia, Petaling Jaya, Selangor, Malaysia.
- Shepherd, C.R. and Magnus, N. (2004). *Nowhere to hide: the trade in Sumatran Tiger*. TRAFFIC Southeast Asia, Petaling Jaya, Selangor, Malaysia.
- Sopyan, E. (2009). Malayan Pangolin *Manis javanica* trade in Sumatra, Indonesia. In: Pantel, S. and Chin, S.Y. (Eds), *Proceedings of the workshop on trade and conservation of pangolins native to South and Southeast Asia, 30 June–2 July 2008, Singapore Zoo*. TRAFFIC Southeast Asia, Petaling Jaya, Selangor, Malaysia.
- Tankandjandji, M. and Sawitri, R. (2016). Analisis Penangkapan dan Perdagangan Trenggiling Jawa (*Manis javanica* Desmarest, 1822) di Indonesia (Analysis of capture and trade of Sunda Pangolin in Indonesia). *Jurnal Analisis Kebijakan* Vol. 13 No. 2, Agustus 2016: 85–101.
- Topsfield, J. and Rosa, A. (2017). The hunt for the pangolin, the world's most trafficked mammal. *The Sunday Morning Herald* (Australia), 19 February. Online at: <http://www.smh.com.au/world/the-hunt-for-the-sunda-pangolin-the-worlds-most-trafficked-mammal-20170218-gufx5g.html>. Accessed on 19 February 2017.
- TRAFFIC. (2017). Malaysia makes third pangolin scale seizure in a month. *TRAFFIC Press Release*, 13 June. Online on: <http://www.traffic.org/home/2017/6/13/malaysia-makes-third-major-pangolin-scale-seizure-in-a-month.html>. Accessed on 15 June 2017.
- Tuuga, A. (2009). Pangolin trade in Sabah, Malaysia. In: Pantel, S. and Chin, S.Y. (Eds), *Proceedings of the Workshop on Trade and Conservation of Pangolins Native to South and Southeast Asia, 30 June–2 July 2008, Singapore Zoo*. TRAFFIC Southeast Asia, Petaling Jaya, Selangor, Malaysia.
- Wu, S.B. and Ma, G.Z. (2007). The status and conservation of pangolins in China. *TRAFFIC East Asia Newsletter* 4:1–5.
- Wu, S.B., Liu, N.F., Zhang, Y.M. and Ma, G.Z. (2004). Assessment of threatened status of Chinese Pangolin (*Manis pentadactyla*). *Chinese Journal of Applied and Environmental Biology* 10:456–461.
- Xu, L., Guan, J., Lau, W. and Xiao, Y. (2016). An overview of pangolin trade in China. *TRAFFIC Briefing Paper*, TRAFFIC, Cambridge, United Kingdom.
- Yuen, M.K. (2013). *Outlet in hot water over exotic menu*. The Star (Malaysia), 22 August. Online at: <http://www.thestar.com.my/news/nation/2013/08/22/outlet-in-hot-water-over-exotic-menu-restaurant-serves-bears-foot-and-tapirs-nose/>. Accessed on 2 August 2017.
- Zhang, L. and Yin, F. (2014). Wildlife consumption and conservation awareness in China: a long way to go. *Biodiversity Conservation* 23:2371–2381.
- Zhao-min, Z., Hong, Z., Zhang, Z.X., Ze-hui, W. & Han, W. (2012). Allometry of scales in Chinese pangolins (*Manis pentadactyla*) and Malayan pangolins (*Manis javanica*) and application in judicial expertise. *Zoological Research* 33(3):271–275.

ANNEX 1: SEIZURE RECORDS INVOLVING INDONESIA BETWEEN 2010 AND 2015

No.	Date	Year	Seizure Location	Origin of Shipment	Destination of shipment	Item Seized	Quantity	Source
1	19-Feb	2010	Malaysia	Indonesia (Sumatra)	Malaysia	live	35	Media
2	unknown	2010	Malaysia	Indonesia (Sumatra)	Malaysia	individuals	92	Media
3	2-Mar	2010	Malaysia	Indonesia (Sumatra)	Malaysia	live	15	ASEAN-WEN
4	16-Dec	2010	Malaysia	Indonesia (Sumatra)	Malaysia	individuals	153	Media
5	1-Jun	2010	Indonesia	Indonesia (Sumatra)	Singapore	live	60	Media
6	20-Apr	2010	Indonesia	Indonesia (Sumatra)	Malaysia	live	106	Media
7	22-Jul	2010	Indonesia	Indonesia (Sumatra)	-	live	8	Media
8	27-Oct	2010	Malaysia	Indonesia (Sumatra)	Malaysia	individual	23	TRAFFIC
9	12-May	2010	Viet Nam	Indonesia	Vietnam	scales	x	ASEAN-WEN
10	3-Sep	2010	Indonesia	Indonesia (Java)	-	individuals	1	TRAFFIC
11	September	2010	Indonesia	Indonesia (Sumatra)	-	individuals	34	ASEAN-WEN
12	25-Jan	2010	USA	Indonesia	USA	medicinals	1	LEMIS
13	unknown	2010	Indonesia	Indonesia (Sumatra)	-	individuals	1	CITES MA Indonesia
14	unknown	2010	Indonesia	Indonesia (Kalimantan)	-	individuals	1795	CITES MA Indonesia
15	unknown	2010	Indonesia	Indonesia (Sumatra)	-	individuals	6	CITES MA Indonesia
16	15-Sep	2010	Indonesia	Indonesia (Sumatra)	-	individuals	39	CITES MA Indonesia
17	3-Sep	2010	Indonesia	Indonesia (Sumatra)	-	individuals	25	CITES MA Indonesia
18	April	2010	Indonesia	Indonesia (Sumatra)	Malaysia	live	30	NGO
19	28-Sep	2010	Indonesia	Indonesia (Kalimantan)	-	scales	4.6 kg	ASEAN-WEN
20	24-Jan	2011	Viet Nam	Indonesia	Viet Nam, via Singapore	meat	4726 kg	TRAFFIC
21	2-Aug	2011	Indonesia	Indonesia (Sumatra)	-	body	x (hundreds of frozen pangolin)	Media
22	July	2011	Indonesia	Indonesia (Kalimantan)	-	individuals	16	TRAFFIC
23	9-Jul	2011	Indonesia	Indonesia (Java)	Singapore	meat/ scales	1732 kg/ 380 kg	Media
24		2011	Indonesia	Indonesia (Sumatra)	Viet Nam	individuals`	1700	TRAFFIC
25		2011	Indonesia	Indonesia (Sumatra)	Viet Nam	meat/ scales	5929.25 kg / 790 kg	TRAFFIC
26	15-Feb	2011	Indonesia	Indonesia (Sumatra)	-	individuals	6	CITES MA Indonesia

27	8-Mar	2011	Indonesia	Indonesia (Sumatra)	-	individuals/ meat	12/x	CITES MA Indonesia
28	30-Jan	2011	Indonesia	Indonesia (Java)	-	individuals	3	CITES MA Indonesia
29	unknown	2011	Indonesia	Indonesia (Sumatra)	-	individuals	3	CITES MA Indonesia
30	unknown	2011	Indonesia	Indonesia (Java)	-	individuals/ meat	12/ 3 packs	CITES MA Indonesia
31	unknown	2011	Indonesia	Indonesia (Sumatra)	-	individual	1	CITES MA Indonesia
32	28-Sep	2011	Indonesia	Indonesia (Sumatra)	Malaysia	individuals	111	TRAFFIC
33	23-May	2011	Indonesia	Indonesia (Java)	Vietnam	meat/ scales	7453.08/ 64.6 kg	Media
34	unknown	2011	Indonesia	Indonesia (Sumatra)	-	scales/ live	241 kg/ 2	CITES MA Indonesia
35	21-Feb	2012	Malaysia	Indonesia (Sumatra)	Malaysia	live	67	Media
36	24-Apr	2012	Indonesia	Indonesia (Sumatra)	-	live	3	TRAFFIC
37	28-Jan	2012	Indonesia	Indonesia (Sumatra)	-	live	1	TRAFFIC
38	1-Dec	2012	Indonesia	Indonesia (Sumatra)	Malaysia	live	24	ASEAN-WEN
39	19-Jul	2012	Indonesia	Indonesia (Sumatra)	-	live/ scales	8/ 1 sack	ASEAN-WEN
40	28-Jul	2012	Indonesia	Indonesia (Sumatra)	Hong Kong, China, via Malaysia	live/body	68/17	Media
41	August	2012	Indonesia	Indonesia (Sumatra)	-	dead/ meat/ scales	14/ 5 kg/ 1.5kg	Media
42	May	2012	Indonesia	Indonesia (Java)	-	meat/ scales	4124.12 kg/ 31.36 kg	Media
43	1-Oct	2012	Indonesia	Indonesia (Sumatra)	-	individuals	3	Media
44	1-Dec	2012	Indonesia	Indonesia (Java)	Hong Kong, China	individual	288	Media
45	6-Dec	2012	Indonesia	Indonesia (Java)	Hong Kong, China	live	72	Media
46	26-Jun	2012	Indonesia	Indonesia (Sumatra)	-	live	35	Media
47	28-May	2012	Malaysia	Indonesia	Malaysia	live	26	Media
48	11-Jan	2012	Indonesia	Indonesia (Sumatra)	-	individual	8	CITES MA Indonesia
49	3-Nov	2012	Indonesia	Indonesia (Kalimantan)	-	individuals	24	CITES MA Indonesia
50	unknown	2012	Indonesia	Indonesia (Sumatra)	-	individuals	78	CITES MA Indonesia
51	unknown	2012	Indonesia	Indonesia (Sumatra)	-	individuals	24	CITES MA Indonesia
52	unknown	2012	Indonesia	Indonesia (Kalimantan)	-	individuals	102	CITES MA Indonesia
53	November	2012	Indonesia	Indonesia (Java)	-	dead/scales	8500 kg /350 kg	TRAFFIC
54	4-Jan	2013	Indonesia	Indonesia (Kalimantan)	-	skins	189	Media
55	18-Sep	2013	Indonesia	Indonesia (Java)	-	individual	1	Media
56	1-Dec	2013	Indonesia	Indonesia (Java)	-	scales/ dead/ body parts/ scales (fresh)	4.3 kg/ 16/ 5.12 kg/ 2.73 kg	Media

57	8-Apr	2013	Philippines	Indonesia?	Philippines	dead	10 000 kg	Media
58	1-Aug	2013	Viet Nam	Indonesia	Vietnam	live	6200 kg	Media
59	21-Aug	2013	Indonesia	Indonesia (Sumatra)	-	live	33	Media
60	23-Feb	2013	Indonesia	Indonesia (Sumatra)	Malaysia	live/ dead	127/ 1	Media
61	18-Jan	2013	Indonesia	Indonesia (Sumatra)	Malaysia	live	100	TRAFFIC
62	25-Apr	2013	Indonesia	Indonesia (Kalimantan)	-	scales	27.3 kg	Media
63	20-Sep	2013	Malaysia	Indonesia (Sumatra)	Malaysia	live	70	Media
64	29-Jul	2013	Malaysia	Indonesia	Thailand	live	15	Media
65	unknown	2013	Indonesia	Indonesia (Java)	-	Individuals/1ive	18/13	CITES MA Indonesia
66	unknown	2013	Indonesia	Indonesia (Sumatra)	-	individuals	31	CITES MA Indonesia
67	unknown	2013	Indonesia	Indonesia (Java)	-	individuals	4	CITES MA Indonesia
68	unknown	2013	Indonesia	Indonesia (Sumatra)	-	individuals	4	CITES MA Indonesia
69	unknown	2013	Indonesia	Indonesia (Sumatra)	-	individuals	16	CITES MA Indonesia
70	unknown	2013	Indonesia	Indonesia (Sumatra)	-	individuals	90	CITES MA Indonesia
71	9-Oct	2013	Indonesia	Indonesia (Kalimantan)	-	individual	29	Media
72	December	2013	Indonesia	Indonesia (Sumatra)	-	individuals	5	Media
73	23-Oct	2013	China	Indonesia	China	dead/ scales	2041/ 1540 kg	Media
74	May	2013	Indonesia	Indonesia (Sumatra)	-	live	26	Media
75	unknown	2013	Indonesia	Indonesia (Sumatra)	-	scales	146 pieces	CITES MA Indonesia
76	13-Sep	2014	Malaysia	Indonesia (Sumatra)	China, Vietnam, via Malaysia, Thailand, Lao PDR	live/ scales	100/ 150 kg	Media
77	23-Jan	2014	Indonesia	Indonesia (Sumatra)	-	live	1	Media
78	10-Mar	2014	Indonesia	Indonesia (Kalimantan)	-	scales	73 kg	Media
79	21-May	2014	Indonesia	Indonesia (Sumatra)	-	Live/Body	39/7	Media
80	January	2014	Indonesia	Indonesia (Kalimantan)	Mainland China and Taiwan (through East Java)	individual	90	Media
81	4-Jan	2014	Indonesia	Indonesia (Kalimantan)	-	dead	86	Media
82	18-Feb	2014	Indonesia	Indonesia (Sumatra)	-	live	15	Media

83	24-Feb	2014	Indonesia	Indonesia (Sumatra)	-	live	1	Media
84	3-Mar	2014	Indonesia	Indonesia (Sumatra)	Malaysia	live/ dead	5/ 3	Media
85	4-Apr	2014	Indonesia	Indonesia (Sumatra)	-	individuals	5	Media
86	1-May	2014	Indonesia	Indonesia (Sumatra)	-	live/ dead/ scales	4/ 5/ 6 kg	Media
87	13-May	2014	Indonesia	Indonesia (Sumatra)	-	individual	1	Media
88	21-Oct	2014	Indonesia	Indonesia (Sumatra)	-	live	1	Media
89	27-Oct	2014	Indonesia	Indonesia (Sumatra)	-	live	1	Media
90	26-May	2014	Indonesia	Indonesia (Sumatra)	-	individual	35	Media
91	2-Jun	2014	Indonesia	Indonesia (Sumatra)	-	live	21	Media
92	31-Oct	2014	Indonesia	Indonesia (Sumatra)	-	scales	300 kg	Media
93	November	2014	Indonesia	Indonesia (Sumatra)	-	scales	300 kg	TRAFFIC
94	16-Dec	2014	Indonesia	Indonesia (Java)	-	Live	1	TRAFFIC
95	30-Oct	2015	Lao PDR	Indonesia (Sumatra)	China, via Malaysia, Thailand, Lao PDR	live	81	Media
96	unknown	2015	Indonesia	Indonesia (Sumatra)	-	individual/ scales	3/ 1.5 kg	Media
97	23-Apr	2015	Indonesia	Indonesia (Sumatra)	China, Malaysia, Russia	body/live/ scales	5000 kg/ 96/77 kg	Media
98	24-Nov	2015	Indonesia	Indonesia (Sumatra)	-	dead/ scales	27/ 65 kg	Media
99	November	2015	Indonesia	Indonesia (Sumatra)	Malaysia	live/ dead	82/ 9	Media
100	January	2015	Indonesia	Indonesia (Java)	Hong Kong, China	scales	263.78 kg	Media
101	6-Apr	2015	Malaysia	Indonesia	Malaysia	live	34	Media
102	13-Jan	2015	Indonesia	Indonesia (Java)	Hong Kong, China	scales	188 kg	Media
103	25-Jan	2015	Indonesia	Indonesia (Java)	Hong Kong, China	scales	17 kg	Media
104	26-Jan	2015	Indonesia	Cameroon	Indonesia	scales	200 kg	Media
105	6-May	2015	Hong Kong	Indonesia	Hong Kong, China	scales	129 kg	Media
106	8-Jul	2015	Indonesia	Indonesia	Singapore	dead	455	Media
107	30-Jul	2015	Indonesia	Indonesia (Java)	-	body parts	x	TRAFFIC
108	12-Aug	2015	Indonesia	Indonesia (Sumatra)	-	live	3	Media
109	January	2015	Indonesia	Indonesia (Sumatra)	-	scales	10 kg	Media
110	29-May	2015	Indonesia	Indonesia (Sumatra)	-	individuals/ scales	7/ 1 kg	Media
111	30-Dec	2015	Indonesia	Indonesia	-	dead	66 kg	Media

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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