

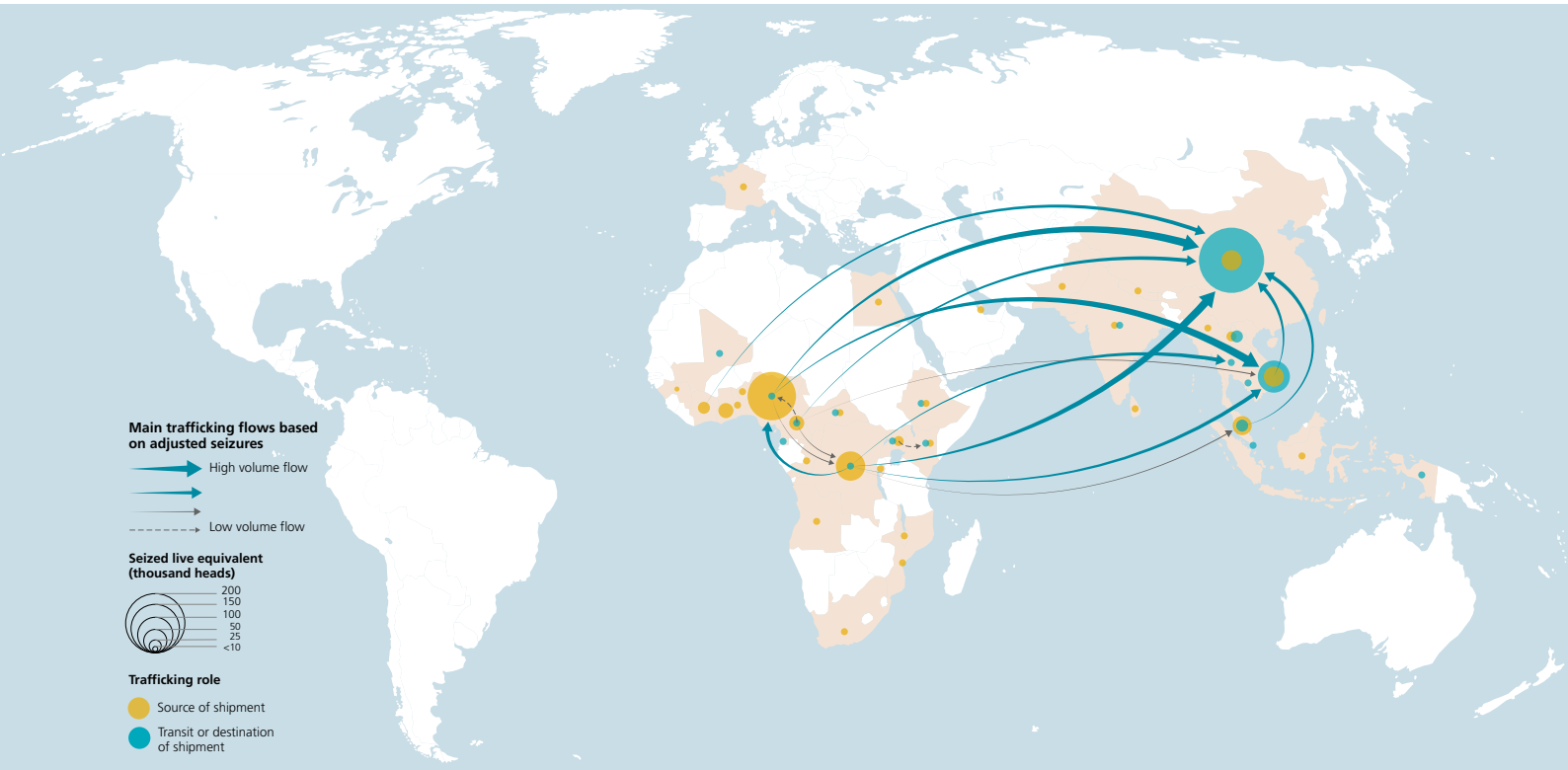


PANGOLIN SCALES

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Map 1

Trafficking flow map - Pangolin scales (2007-2018)*



Sources: UNODC World WISE Database *The year 2018 is based on partial data.

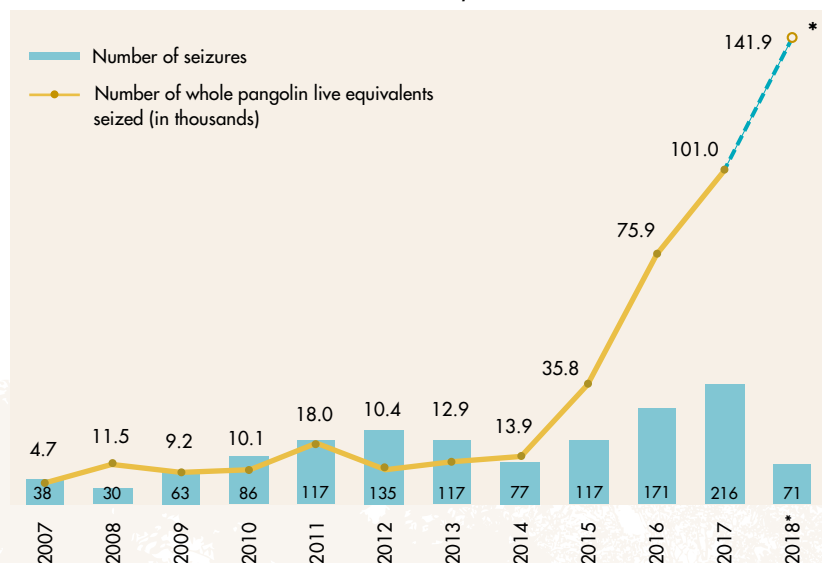
The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

Pangolins are reclusive nocturnal creatures and the only mammal wholly covered in scales. They remain elusive, with researchers having limited knowledge of their ecology, yet they are now arguably the most heavily trafficked wild mammal in the world.¹ There has been a sustained increase in seizures of the species since 2014 (Figure 1). Due largely to their exploitation in illegal trade, all species of pangolin were transferred from CITES Appendix II to Appendix I at the CITES Conference of the Parties in 2016.²

There are eight species of pangolin: four found in Asia and four found in Africa. They have traditionally been consumed in both regions, but only recently have the two markets met.

Fig. 1 Number of whole pangolin equivalents³ seized and number of seizures annually, 2007-2018



Source: UNODC World WISE Database

*The year 2018 is based on partial data.

Live, bodies, scales, meat and trophies



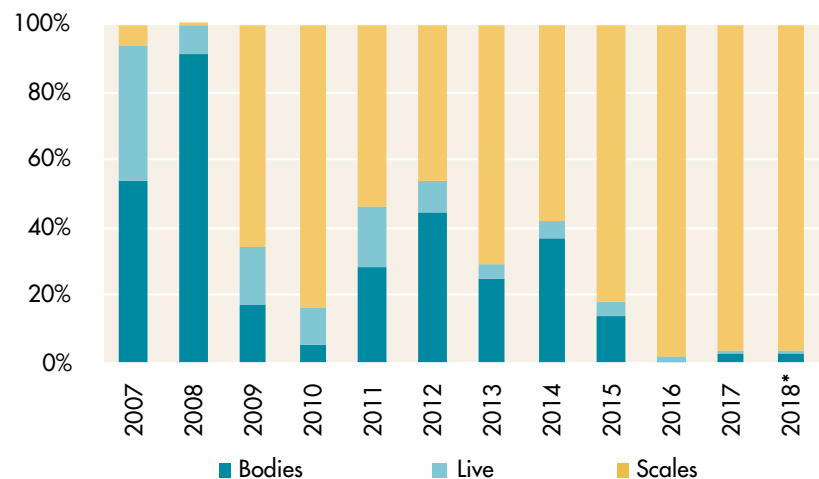
Today, demand for pangolins in Asia is being supplied by pangolins from Africa. In both regions, pangolins are killed for their meat⁴ and their scales, which have been used medicinally.⁵ Pangolin products have been used in traditional Chinese medicine for thousands of years to treat a wide range of ailments. The scales are said to promote blood circulation and increase lactation in pregnant women, while the meat is used as a tonic.⁶ They are also used as medicine in Africa. In Nigeria, for example, pangolin parts are used to treat a wide range of physical and psychological conditions.⁷

All eight species of pangolins are believed to be in decline,⁸ but since exact population counts are unavailable, it is difficult to determine the conservation impact of the illegal trade.⁹ The sheer volume of seizures, though, suggests unsustainable harvesting, a hypothesis corroborated by hunters interviewed by UNODC in Uganda and Cameroon in 2018, who reported that pangolins are becoming harder to find.¹⁰

Since 2014, there has been a 10-fold increase in the number of whole pangolin equivalents seized globally. The inclusion of all pangolin species on Appendix I in 2016 likely had some role in this trend, especially as it increased awareness, but there are several reasons why the listing is unlikely to be solely responsible for the increase:

- The increase started in 2015, two years before the listing took effect.
- The size of individual seizures has increased, alongside the increase in overall seizure quantity.
- Before the Appendix I listing, the amount of pangolins seized was much larger than the legal trade, implying that the industries where pangolins are used have long drawn on illegal sources.

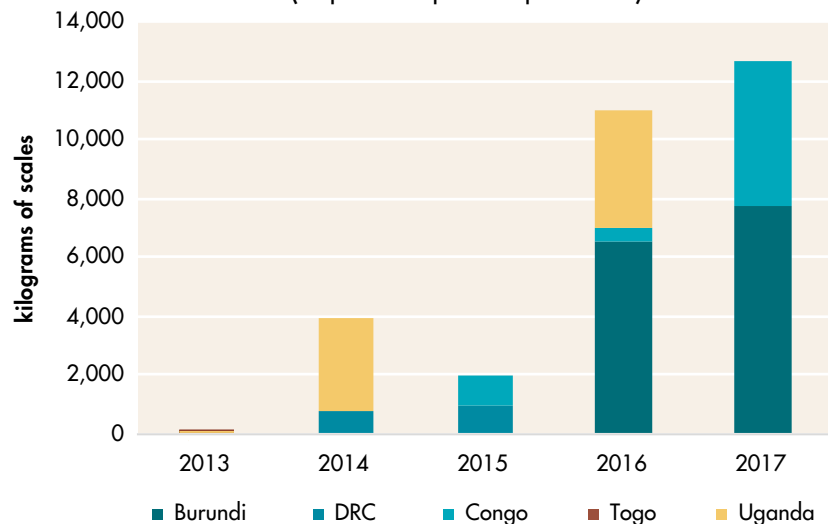
Fig. 2 Shares of whole pangolin live equivalents seized globally by product type, 2007-2018



Source: UNODC World WISE Database

*The year 2018 is based on partial data.

Fig. 3 Kilograms of pangolin scales legally traded, 2013-2017 (importer reported quantities)



Source: CITES Trade Database

Sizable shipments of whole (often live) pangolins have been seized in Asia, but most of the largest recent seizures have involved pangolin scales sourced from Africa. Prior to 2009, the international trade involved mostly pangolin meat and scales, sourced in Asia (Figure 2).¹¹ The reasons for the shift to African sources is unclear, but may be due to declining Asian populations. There have been very few seizures of pangolin meat from Africa. The reasons for this are also unclear, but almost all the World WISE pangolin seizures coming from Africa have been comprised of scales.

Most of the large African scale shipments originated in West and Central Africa,¹² where three out of the four African pangolin species are found.¹³ Four pangolin species are also found in South-East, South and East Asia. Most of the trade for all species is destined for East and South-East Asian countries.¹⁴ Before 2016, the largest seizures intercepted amounted to less than 10,000 live pangolin equivalents. In 2019, the three major seizures made by Singapore were equivalent to more than twice that number.

In 2000, CITES Parties adopted a zero-export quota for wild-caught Asian pangolins traded for primarily commercial purposes. The legal trade in African pangolin species was rare until about 2014.¹⁵ Between 2013 to 2017 (when the up-listing of all pangolin species to Appendix I came into force), the amount of pangolin scales legally imported went from almost zero to nearly 13 tons, with four countries being responsible for the bulk of the shipments: Burundi, the Democratic Republic of the Congo, Congo (Brazzaville) and Uganda (Figure 3). China was the importer of 99 per cent of this volume.

Demand for pangolin meat persists, but it appears to be satisfied regionally. For example, Malaysian authorities raided two illegal high-volume pangolin meat facilities in February 2019, confiscating 29.8 tons of pangolins in the form of live and frozen animals, including frozen meat.¹⁶ Intercontinental meat seizures, though, remain rare, and the short geographic distance of trafficking may be one reason why meat seizures are not detected at the same level as scale seizures in recent years. Based on World WISE data, meat seizures represented 15 per cent of pangolin seizures in 2015, compared to only 1-2 per cent of pangolin seizures from 2016 to 2018. There were 4,355 live pangolin equivalents' worth of meat seized in 2018, out of 187,256 live pangolin equivalents seized overall that year.¹⁷

There is some debate as to how much of the large increase in scale trafficking could be coming from stockpiles that existed prior to pangolins' CITES Appendix I listing, and therefore, how much poaching is taking place. Nineteen countries have declared pangolin scale stockpiles to CITES.¹⁸ China reports regularly releasing these stockpiled scales for domestic use by designated hospitals and manufacturers of patented Chinese medicines.¹⁹ The volume of declared stockpiles in source and destination countries is far smaller than the tens of thousands of

whole pangolin equivalents seized over the past decade (Figure 3). It is therefore unlikely that leakage from declared government stockpiles contributes significantly to the illegal trade; most sourcing is likely coming from the wild and most from African source countries, and not from stockpiles.

The magnitude of the illegal trade - based on seizure records - suggests that this wild sourcing is unsustainable. Breeding of pangolins in captivity at commercial scale is currently not possible. Highly specialized diets combined with extreme sensitivity to capture-induced stress mean that pangolins fare poorly in captivity. Pangolins generally give birth to one cub at a time²⁰ with gestation periods that range from about 65 to 370 days.²¹ Only a few births have been reported in captivity, with high infant mortality rates.²² At present, sourcing from captive-bred populations does not seem to be possible to meet demand and/or replace the wild population of pangolins harvested by hunters.

Given that the scales from one pangolin weigh anywhere between 0.36 to 3.60 kg,²³ multi-ton seizures of scales represent far larger numbers of pangolins killed than meat shipments of a similar weight. Estimates of how many pangolins have been illegally traded in recent years are difficult to calculate given that:

- seizures represent only a small fraction of the animals killed;
- size and weight of scales vary between species; and
- incomplete seizure records that make it difficult to know what species was seized.

According to pangolin hunters and traders interviewed by UNODC in Cameroon and Uganda, giant pangolins are relatively rare. If each pangolin killed for illegal trade in

Africa produced an average of 500 grams of scales, the 185 tons of scales seized between 2014 and 2018 would represent about 370,000 pangolin equivalents.

Sourcing

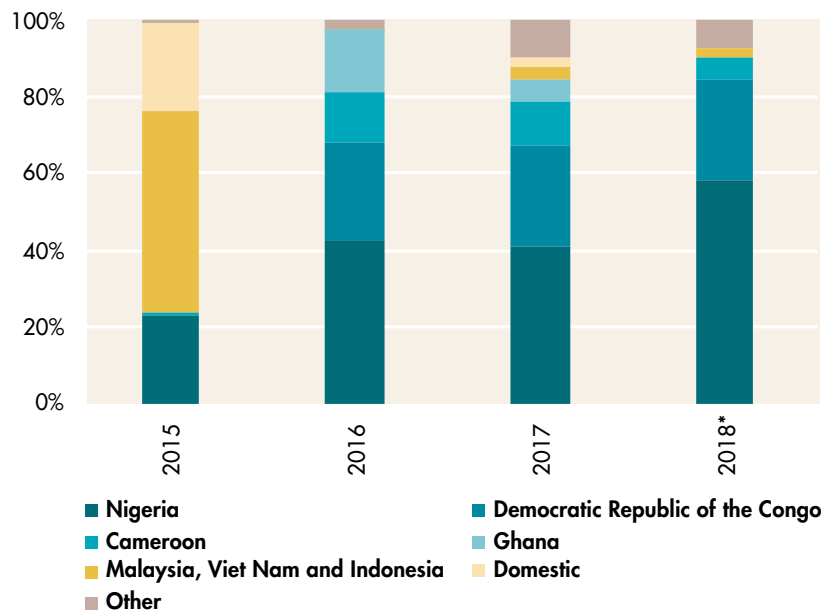
In 2000, zero export quotas were established for Asian pangolin species whose populations were seriously depleted from the skin and meat trade.²⁴ These zero quotas may have contributed to the decline in the skin trade,²⁵ but despite population depletion, sourcing from South-East Asia (primarily from Indonesia, Malaysia and Thailand) continued in large quantities until 2013, at which point it dropped off significantly.

Based on World WISE seizure data, it appears that, starting in 2013, the source of seized pangolins shifted to the African continent, primarily to West and Central Africa. Seizures were made first on shipments coming from Cameroon, then Nigeria, and then (in 2016) from the Democratic Republic of the Congo (Figure 4). Other source countries mentioned by pangolin traders during fieldwork include the Central African Republic, Congo, Gabon and Uganda. Recent large seizures in Côte d'Ivoire involve Guinea and Liberia as additional source countries for trafficked pangolins.²⁶

Nigeria, Uganda and the Democratic Republic of the Congo act as transit countries and logistical hubs for pangolin and wildlife trafficking more generally. Illegal pangolin trade in Nigeria seems to have grown significantly in recent years, and the country was the reported provenance of at least 51 tons of pangolin scales seized in 2019 (Figure 5)

Based on UNODC fieldwork in Cameroon and Uganda in 2018, it appears that the initial hunting of pangolins for the trade is done by local community members. Wealthier local traders and intermediaries then consolidate their catch into

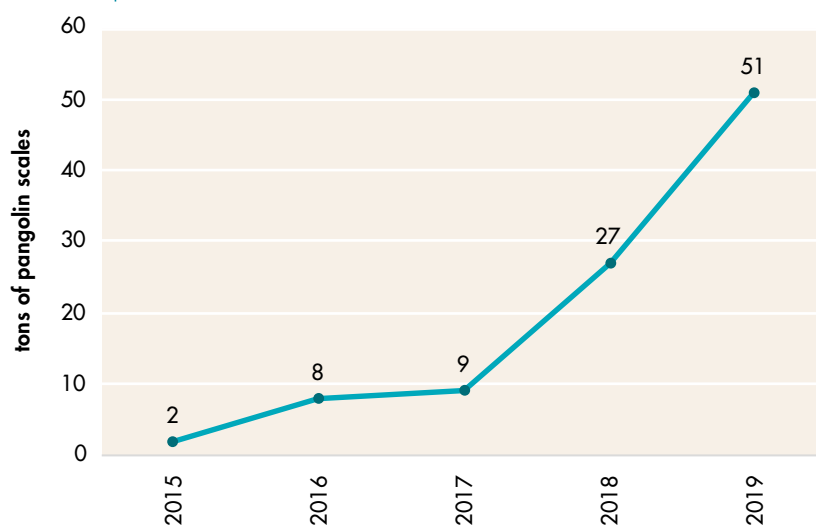
Fig. 4 Shares of global pangolin scale seizures by reported source of shipment, 2015-2018



Source: UNODC World WISE Database

* The year 2018 is based on partial data.

Fig. 5 Pangolin scale shipments involving Nigeria as a source or destination, 2015-2019 (tons)



Source: UNODC World WISE Database and CITES

bulk batches and transport them to urban centres where they are trafficked onward by Asian expatriates.²⁷ In some locations, it is not unusual for a large number of members of a community to be involved in hunting pangolins, often in addition to their main job as farmers.²⁸ As a result, there are large numbers of suppliers dispersed throughout rural areas. These suppliers seem to be primarily part-timers.

Entering the illicit trade chain is easy. Without the need for the heavy guns and specialized equipment required for big game hunting, anyone can participate. UNODC fieldwork in Cameroon found that prospective new entrants only need supplies costing US\$3 to US\$5, with hunters making anywhere from US\$8 to US\$13 for a small live pangolin and US\$25 to US\$30 for a large one. In Uganda, hunters report being able to

catch anywhere from one to 20 pangolins per day.²⁹

Hunters in Uganda track the animals and set traps while hunters in Cameroon use wire traps or hunting dogs. Pangolins, once dead, are immersed in hot water or fire and descaled with a knife. The scales are then dried in the sun in centralized 'drying camps' set up by hunters in the forest. Some hunters reported keeping the meat to eat. In Cameroon, scales were also recovered from open bushmeat markets in the region or from restaurants selling the meat. According to UNODC fieldwork, most people seem to understand that pangolins can be sold for profit, which encourages local hunters to catch them whenever possible. Most hunters and even traders interviewed knew very little about the animal itself and had radically different and often misguided ideas of what consumers used the animals for, including making bullet-proof vests out of their scales. Local traders and intermediaries consolidate scales until at least 10 kg are ready for transit to urban centres. These operators – some of whom are women – tend to be local residents. They are in contact with international traffickers, who sometimes pay for their services by wire transfer.

The first buyers are often small business owners, local authorities or transportation workers that have enough cash to buy stock from local hunters and pay for transit to urban areas. In fieldwork in Cameroon and Uganda, it was reported that Congolese and Nigerian citizens act as traders and intermediaries.³⁰ In the urban areas, the goods are sold to international traffickers, primarily Chinese, but also some Nigerians and Vietnamese.³¹

International traffickers tend to be individuals with enough wealth and political connections to ensure protection from the authorities. These include high-level government officials and wealthy business people but

Table 1 Actors involved in pangolin scale trafficking and their costs and income (Uganda)

	HUNTER	→	TRADER	→	INTERMEDIARY	→	TRAFFICKER
Income	US\$ 2.5 - 9/kg scales US\$ 4-14 per live pangolin		US\$ 13-40/kg scales (consolidate to 10 kg)		US\$ 135 commission per delivery (10-16 sacks, 50 kg each)		No data available
Costs	<i>Supplies:</i> US\$ 3 to 5 per hunter (or per pangolin?)		<i>Storage:</i> US\$ 40 per month <i>Car to city:</i> US\$ 100-134 <i>Driver:</i> US\$ 27 <i>Bribes:</i> US\$ 27-100		No data available		No data available

Source: UNODC fieldwork

can also be foreign workers based in the country for development projects. The number of actors involved in the trafficking from source to destination ranges from five to more than 15 people, with prices paid to each actor increasing the closer one gets to the consumer. For example, in Uganda, traders who consolidate scales are paid quadruple the price per kg than that paid to the hunters.

Traders order pangolin scales by the kg, with a preference for the large scales from giant pangolins, *Manis gigantea*, which hunters report are harder to find. Several hunters described traders seeking them out and requesting they switch to hunting pangolin rather than other species. Table 1 provides an overview of the actors involved in the trafficking of pangolin scales from source to the international trafficker in major urban centres. It includes associated costs along the way, where known, using data collected through field interviews in Uganda as an example.³²

Trafficking

Trafficking is done by sea, air and land, and parcel post is also sometimes used. Shipments may not be well concealed, but they have been found under frozen meat and ice,³³ hidden in logs using candle wax³⁴ and stuffed inside steel barrels of other goods.³⁵ Large illegal consignments of pangolin scales in shipping containers are either misdeclared or concealed under 'cover loads' such as plastic waste. International seizures have shown that traffickers are using the

same techniques repeatedly, including regular air shipments of relatively small amounts of scales. For example, authorities in the Netherlands have repeatedly seized similarly packaged consignments of about 20 kg of scales from Nigeria in parcel post. Malaysia also seized a series of similarly packed shipments in air cargo from Ghana in 2017.³⁶ Some are even smuggled in luggage³⁷ and sent via parcel post declared as wood chips or other commodities.

Traders reported that pangolin traffickers often use the same routes to export and import pangolin scales as they do ivory.³⁸ A third of hunters and traders interviewed in Uganda reported that traffickers take advantage of the weak border controls and security challenges in northern Uganda, Democratic Republic of the Congo and South Sudan to offload the scales they collected, sometimes concealing themselves as impoverished locals to avoid detection at known checkpoints.³⁹ Traders and traffickers also store stockpiles of scales in countries where the rule of law is weaker and wildlife crime enforcement limited before moving the scales for immediate sale to buyers in more high-risk locations.

The development of logging operations in previously wild areas, bringing with it an influx of people and infrastructure like roads, facilitates hunters' access to wild pangolin populations, making areas near logging operations particularly vulnerable to pangolin poaching. In fact, two-thirds of the interviewees in Cameroon noted

that traders often transport scales to larger cities on logging trucks, with the scales concealed as wood chips or foodstuffs.⁴⁰ A third of the traders interviewed in Uganda mentioned using motorbikes for local transport, although several choose "fancier" vehicles that belong to official organizations when possible to limit the chances that they will be searched.

Very large individual seizures in 2019 show that Nigeria is the primary point of export of pangolin shipments, while Viet Nam has emerged as the primary destination (Table 2). In October 2019, the Chinese government announced having seized 23 tons of pangolin scales in China in a series of operations. These shipments were coming from Nigeria via the Republic of Korea.⁴¹

Ivory traffickers appear to be involved in the pangolin scale trade, often transporting shipments of ivory and pangolin specimens together. Recent large seizures of pangolin scales are often mixed shipments of both pangolin scales and ivory.

The interviewed hunters also seem to be of the view that authorities consider crimes associated with pangolins as less serious than other forms of poaching, for example elephant poaching. Fear of enforcement action did not appear to play much of a role in their decision-making.

Currently, the market for ivory appears to be in decline, while, according to interviews with hunters in Cameroon and Uganda, pangolin prices

**Table 2** Notable pangolin seizures in 2019

DATE	VOLUME OF PANGOLIN SCALES SEIZED (TONS)	REPORTED ORIGIN	SEIZING COUNTRY	REPORTED DESTINATION
January	1.4 (with 100 kg ivory)	Nigeria	Viet Nam	–
January	8.3 (with 2.1 tons ivory)	Nigeria	China (Hong Kong SAR)	Viet Nam
March	8.3	Nigeria	Viet Nam	
April	12.9 (with 175 kg ivory)	Nigeria	Singapore	Viet Nam
April	12.8	Nigeria	Singapore	Viet Nam
April	4 (with 3.4 tons ivory)	Democratic Republic of the Congo	Viet Nam	–
May	5.3	Nigeria	Viet Nam	–
July	11.9 (with 8.8 tons ivory)	Democratic Republic of the Congo	Singapore	Viet Nam
July	1.2	Democratic Republic of the Congo	Turkey	–
October	1.5	–	Nigeria	Malaysia
December	1.7 (with 330 kg ivory)	Nigeria	Viet Nam	–

Source: CITES

have been going up since 2017.⁴² UNODC fieldwork in Cameroon and Uganda suggests that some ivory traders may be entering the pangolin scale trade in response to lower risk. For example, hunters interviewed in Uganda reported that while they used coded language to discuss transactions involving ivory and rhino horn over the phone, they did not feel the need to take such measures when trading in pangolin products and openly discussed the number of kg of pangolin scales that they wanted to buy or sell. If those involved in the ivory trade are now selling pangolin scales, this would imply that the pangolin trade can now build on the supply chain of the well-established ivory market.

Demand

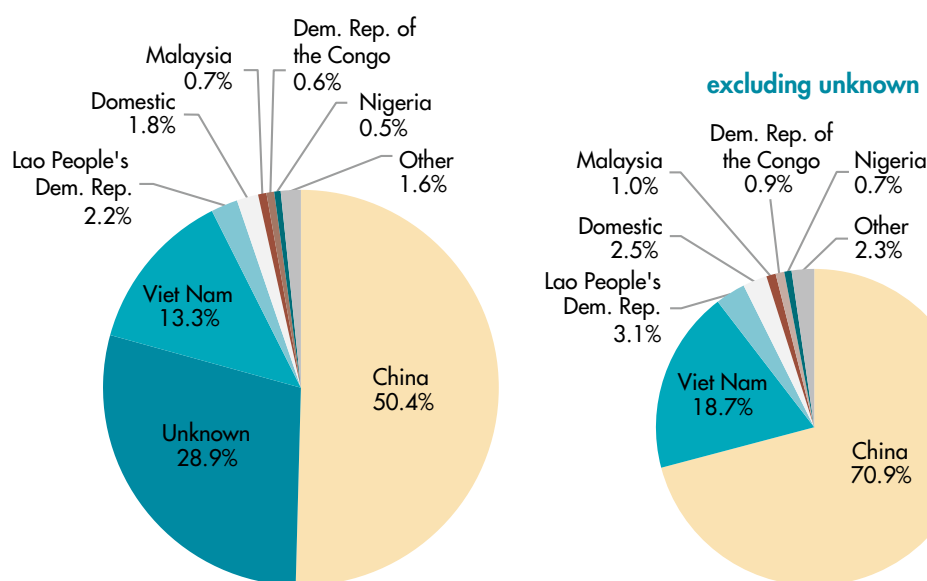
Based on seizures, most pangolin scales are destined for traditional medicine use in China, followed by other South-east Asian countries. Some 71 per cent of seizures of whole pangolin equivalents recorded in World WISE between 2007 and 2018, where the destination was known, were destined for China, with 19 per cent bound for Viet Nam

(Figure 6). As noted above, this routing seems to have changed dramatically in 2019, where all the major seizures were destined for Viet Nam.

In China, the cities of Fangchengang, Guangzhou and Kunming are key nodes for pangolin trafficking according to a 2016 study of 206 Chinese seizures.⁴³ In a survey of five major Chinese cities in 2012, Guangzhou residents reported the highest rates of wildlife consumption for food and as ingredients for traditional medicine.⁴⁴ Consumer surveys in 2018 of 1,800 people living in Chinese cities with active markets for wildlife products (Beijing, Guangzhou, Harbin, Kunming, Nanning and Shanghai,) support the increased demand argument, especially for scales.⁴⁵ The number of people who reported they had bought pangolin products in the last 12 months increased by 12 per cent from previous studies in both Beijing and Shanghai and remained stable in Kunming and Nanning while decreasing only slightly in Guangzhou and Harbin (4 and 3 per cent, respectively). Some 68 per cent of that group reported that they

intended to rebuy pangolin products in the future, suggesting that there is a stable base of buyers⁴⁶ regardless of campaigns against the practice. The government announcement in August 2019 that pangolin products would no longer be covered by China's state insurance funds could reduce purchases overall.⁴⁷

A 2018 survey of 1,500 wildlife product consumers in key Vietnamese cities (Can Tho, Da Nang, Hai Phong, Hanoi and Ho Chi Minh City) found similar results and consumer profiles for pangolin scales and powder.⁴⁸ About 60 per cent of the sampled buyers who bought pangolin products in the last 12 months and 54 per cent of all buyers of pangolin products surveyed indicated that they would purchase these again, suggesting a strong continuing consumer demand.⁴⁹ In addition, 52 per cent of these buyers, who mostly buy from private sellers, reported making an unplanned purchase of pangolin products influenced by the seller's recommendation. This suggests that sales pressure drives about half of consumer purchases.

Fig. 6 Destinations of seizures in whole pangolin equivalents,* 2007-2018

Source: UNODC World WISE Database

* Includes seizures of live pangolins, bodies, and scales.

Endnotes

- Challender, D. W. S., Waterman, C. and Baillie, J. E. M., *Scaling up pangolin conservation*, IUCN SSC Pangolin Specialist Group Conservation Action Plan, Zoological Society of London, 2014.
- In 1975, all four Asian pangolins species, including *M. crassicaudata*, *M. culionensis*, *M. javanica* and *M. pentadactyla* were included in CITES Appendix II and one African species (*M. temminckii*) was listed in Appendix I. In 1995, all species of pangolins (including the African species) were included in Appendix II under the species listing *Manis spp.* In 2000, there was a proposal to transfer *M. crassicaudata*, *M. javanica* and *M. pentadactyla* to Appendix I. However, the proposal was not accepted, noting that the species were at that time under the Review of Significant Trade process. Following this process, a zero annual export quota for specimens removed from the wild and traded for primarily commercial purposes was established for all Asian pangolin species. In 2016, all eight species (Asian and African) were transferred to Appendix I.
- The figure refers to seizures of pangolin bodies, scales, meat, trophies as well as live pangolins. For conversion factors, see Annex 1 of Challender, D. and Waterman, C., *Implementation of CITES Decisions 17.239b and 17.240 on pangolins* (Manis spp.), Cambridge: IUCN, 2017. Where the species is not specified in the seizures, the conversion factor of 360 grams of scale per pangolin (recommended by Challender and Waterman) is adopted for cases where Asian countries are reported as origin, whereas the conversion factor of 500 grams is adopted for the cases originating from African countries (UNODC Fieldwork). In cases of unknown origin, the conversion factor adopted is the average of the above conversion factors, that is 430 grams. These estimates should be regarded as liberal when taken on an annual basis, but consistent across time.
- Krishnasamy, K. and Shepherd, C.R., 'Seizures of African pangolin scales in Malaysia in 2017', *TRAFFIC Bulletin*, 29(2), 52-55, 2017.
- Challender, Waterman and Baillie 2014, op. cit.
- Hua, L. et al., 'Captive breeding of pangolins: Current status, problems, and future prospects', *ZooKeys*, 507, 99-114, 2015.
- Soewu, D.A. and Ayodele I.A., 'Utilisation of pangolin (*Manis* spp) in traditional Yorubic medicine in Ijebu Province, Ogun State, Nigeria', *Journal of Ethnobiology & Ethnomedicine*, 5, 39, 2009; Soewu, D.A. & Adekanola, T.A., 'Traditional-medical knowledge and perception of pangolins (*Manis* spp) among the Awori People, Southwestern Nigeria', *Journal of Ethnobiology & Ethnomedicine*, 7, 25-36, 2011.
- Challender, Waterman and Baillie 2014, op. cit.
- CITES SC69 Doc 57; IUCN, *The IUCN red list of threatened species*, Version 2019-2, see: <http://www.iucnredlist.org>, accessed on 30 August 2019.
- UNODC fieldwork in 2018, see Methodological Annex for details.
- Annex 1 of Challender, D. and Waterman, C., *Implementation of CITES Decisions 17.239b and 17.240 on pangolins* (Manis spp.), IUCN, 2017.
- UNODC, *West and Central Africa Transnational Organized Crime Threat Assessment*, 2018.
- The fourth species, Temmick's ground pangolin, is found primarily in East, Central, and Southern Africa. IUCN SSC Pangolin Specialist Group, *The status, trade, and conservation of pangolins (Manis spp.)*, Information document for the 17th meeting of the conference of the Parties to CITES (CoP17 Inf.59), CITES, 2016.
- See, for example, Annex 1 of Challender, D. and Waterman, C., *Implementation of CITES Decisions 17.239b and 17.240 on pangolins* (Manis spp.), IUCN, 2017.
- UNODC, *West and Central Africa Transnational Organized Crime Threat Assessment*, 2018.
- Papachristou, L., 'TRAFFIC: 30 Tonnes of Rare Pangolin Meat Seized in Malaysia', *Organized Crime and Corruption Reporting Project*, 15 February 2019.
- World WISE. See note 4 above for conversion factors.
- In response to Notifications to the Parties No. 2017/035 and 2014/059, as included in table 13 in Annex 1 of Challender, D. and Waterman, C., *Implementation of CITES Decisions 17.239b and 17.240 on pangolins* (Manis spp.), IUCN, 2017.
- Challender, D. and Waterman, C., *Implementation of CITES Decisions 17.239b and 17.240 on pangolins* (Manis spp.), IUCN, 2017.
- Hua, L. et al. (2015).
- This range is very approximate and debated by contradicting studies. Research is still ongoing to get more exact figures. See, f.ex. Hua et al. 2015, op. cit.; Chin, S.C. et al., 'Monitoring the gestation period of rescued Formosan pangolin (*Manis pentadactyla*) with progesterone radioimmunoassay', *Zoo Biology*, 31, 479-489, 2011; Yang, C.W.



- et al., 'History and dietary husbandry of pangolins in captivity', *Zoo Biology*, 26, 223–230, 2007.
- 22 Hua et al. 2015, op. cit.; World Association of Zoos and Aquariums (WAZA), *WAZA statement in response to the pangolin trade crisis*, September 20, 2016.
- 23 Challender and Waterman 2017, op cit.; Zhou, Z.M. et al., 'Allometry of scales in Chinese pangolins (*Manis pentadactyla*) and Malayan pangolins (*Manis javanica*) and application on judicial expertise', *Zoological Research*, 33, 271–275, 2012; Challender, D.W.S. et al., 'Understanding markets to conserve trade-threatened species in CITES', *Biological Conservation*, 187, 249–259, 2015.
- 24 UNODC, *World Wildlife Crime Report*, 2016.
- 25 UNODC, *World Wildlife Crime Report*, 2016.
- 26 UNODC, *West and Central Africa Transnational Organized Crime Threat Assessment*, 2018.
- 27 UNODC fieldwork.
- 28 Despite heavy community involvement in the pangolin trade, there are certain communities, like the Lugave Clan in Uganda's Mukono District, that protect pangolin populations (in this case because the species is their totem animal).
- 29 Hunters operating near national parks reported the highest per day catches.
- 30 UNODC fieldwork.
- 31 UNODC fieldwork.
- 32 Note that prices for 1 kg of pangolin scales are on the low side in Uganda with hunters in Cameroon reporting being paid anywhere from US\$6 to 23 per kilo (with the highest prices near major cities).
- 33 Osborne, S., 'Record haul of pangolin scales seized along with hundreds of ivory tusks in Hong Kong', *The Independent*, 2 February 2019.
- 34 Delegation of the European Union to the African Union, '3.2 tons of ivory and 423 Kg of pangolin scales seized thanks to support of EU Wildlife Conservation programme', 2 April 2019.
- 35 Doom, J., '7.5 tons of ivory, pangolin scales seized in Viet Nam', *ABC News*, 14 June 2019.
- 36 CITES, *Wildlife crime enforcement support in West and Central Africa*, CoP18, Doc34 (available at: <https://cites.org/sites/default/files/eng/cop/18/doc/E-CoP18-034.pdf>).
- 37 TRAFFIC, 'Ivory processing workshop found in Angola following airport rhino horn seizure', 28 August 2018.
- 38 UNODC fieldwork; Osborne, S. 2019, op.cit.
- 39 UNODC fieldwork.
- 40 Also confirmed by research from the first UNODC *World Wildlife Crime Report* (2016).
- 41 China Daily, *Smuggled pangolin scales seized in joint operation*, 12 December 2019 (available at: http://www.china.org.cn/china/2019-12/12/content_75505980.htm).
- 42 UNODC fieldwork in 2018.
- 43 Cheng, W., Xing, S. and Bonebrake, T. C., 'Recent pangolin seizures in China reveal priority areas for intervention', *Conservation Letters*, 10(6), 757–764, 2017.
- 44 Zhang, L. and Yin, F., 'Wildlife consumption and conservation awareness in China: a long way to go', *Biodiversity and Conservation*, 23, 2371–2381, 2014.
- 45 De Guzman, E., 'Research study on consumer demand for elephant, pangolin, rhino and tiger parts and products in China', *USAID Wildlife Asia*, 2018.
- 46 Primarily males in their 30s and early 40s with high levels of income and education, and frequent travel outside the country.
- 47 Bale, R., 'Pangolin scale medicines no longer covered by Chinese insurance', *National Geographic: Wildlife Watch*, 29 August 2019.
- 48 USAID Viet Nam, 'Research Study on Consumer Demand for Elephant, Rhino and Pangolin Parts and Products in Viet Nam', research study submitted by GlobeScan, 2018.
- 49 Supporting documents provided with requests for CITES listing upgrades for multiple pangolin species suggest that demand remains strong and is driving these species to extinction as demand outpaces the number of individuals available for consumption (CITES CoP17 Prop. 9).

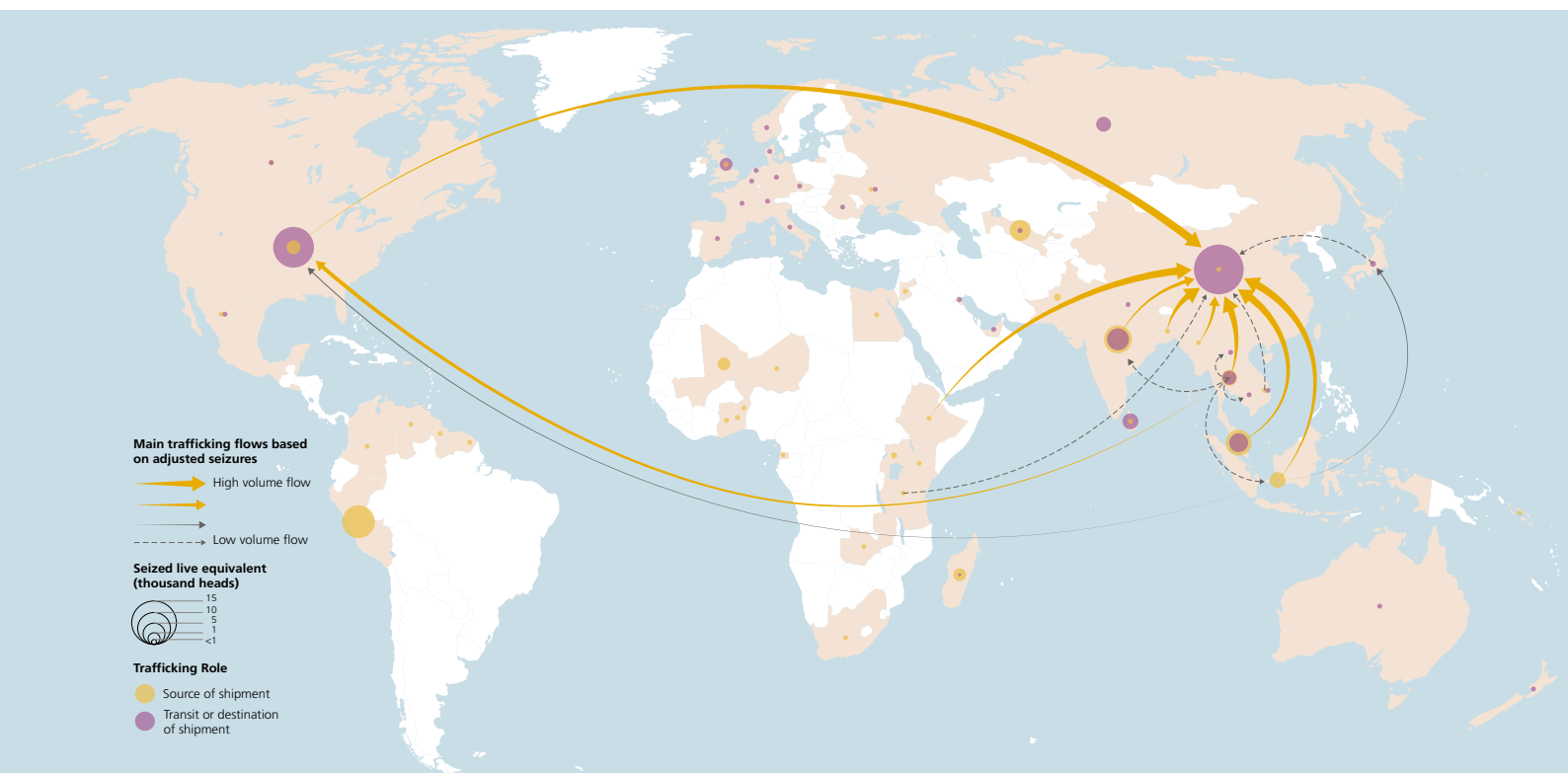


LIVE REPTILES

5

Map 1

Trafficking flow map - Reptilia (2007-2018)*



Source: UNODC World WISE Database *The year 2018 is based on partial data.

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

In the last *World Wildlife Crime Report*, several species of reptiles appeared among the most trafficked species in the world, including crocodilians, lizards, snakes, tortoises and freshwater turtles.¹ The same species remain prominent in the analysis conducted for this report. The three largest markets for illegally traded reptiles that appear in the seizure records are:

- Reptile skin or shells used in the décor or fashion industries;
- Reptile meat organs, or venom consumed as a food, tonic or medicine;
- Live reptiles used as pets, for zoos, or breeding.

The last *World Wildlife Crime Report* focused on the illegal skin trade, highlighting the ways that unregulated collection of wild pythons and boas can introduce illegally caught skins into the legal fashion industry. Since 2016, however, according to the CITES Secretariat, fashion brands, designers and department stores have expanded their support to reptile conservation programmes around the world. While small leather items (such as handbags, wallets, belts, and shoes) continue to be the single largest category of reptile products seized, the number of live reptiles seized is comparable to the number of reptile skins from crocodilians, snakes, and lizards seized, and live reptile seized.²

Because the smuggling of live reptiles often results in high mortality rates, seizures involving live reptiles or whole reptile bodies³ are included in the analysis below as “live reptile equivalents.” In addition, species known to be widely used for their meat or skin or widely farmed were excluded,⁴ so the analysis below focuses on wild-sourced species that are likely to be traded as pets or among reptile collectors and breeders. According to World WISE, nine out of the top ten CITES-listed wild-sourced live reptile species seized in recent years, based on a head count, were tortoises and freshwater turtles (Figure 1).⁵ Consequently, this chapter pays particular attention to the illegal trade in live turtles and tortoises.⁶



The majority of the live reptiles seized (70 per cent) were listed on Appendix II of CITES, with 18 per cent on Appendix I and 4 per cent on Appendix III. The remaining live reptiles seized for CITES violations were not identified down to a taxonomic level that allowed for an exact appendix listing classification.⁷ The top 10 CITES-listed live reptile species seized,

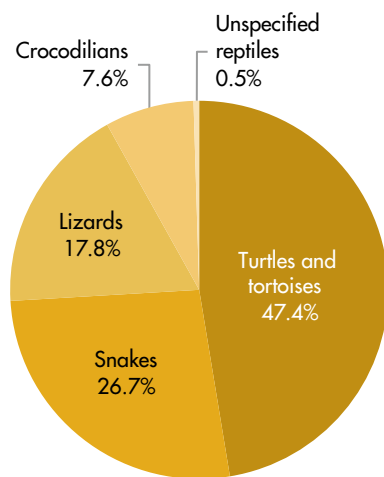
excluding food species, are indicated in the table 1 below, along with their Appendix listing and IUCN status.

In addition to World WISE data, the chapter uses qualitative data based on a series of 30 interviews with reptile experts and people involved in the live reptile trade during 2019.¹⁴

Sourcing

Live reptiles detected in illegal international trade come from several different parts of the world, including South Asia, Central Asia, South-East Asia, East Africa and West Africa. Based on World WISE seizure data, India is the leading national source of seizures and is the source of a variety

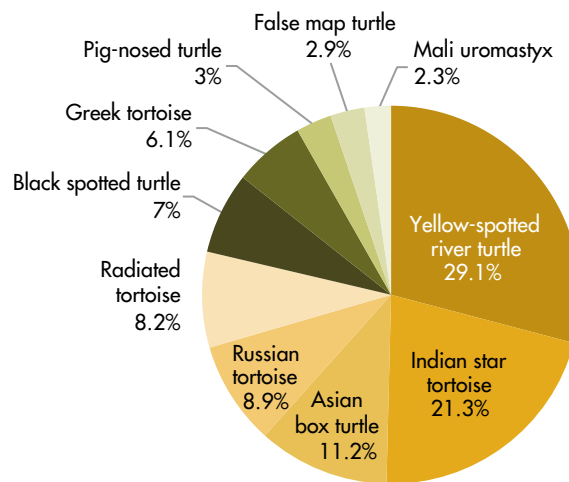
Fig. 1 Share of broad reptile groups in total number of live reptile equivalents seized, 2007-2017*



Source: UNODC World WISE Database

* Includes live specimens and bodies. Based on 6,015 seizure events.

Fig. 2 Share of top ten CITES-listed live reptiles seized, 2007-2017

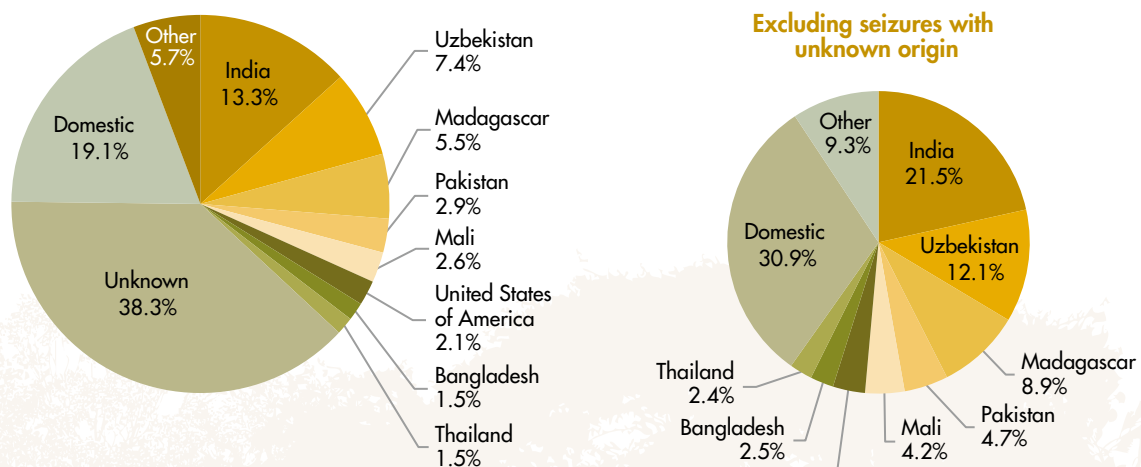


Source: UNODC World WISE Database

* Includes bodies.

** The top ten live reptile species seized represent 33% of all reptiles seized when looking only at bodies and live specimens.

Fig. 3 Share of source countries for the top ten live reptile species seized,* 2007-2017



Source: UNODC World WISE Database

* Excluding food species. Includes bodies.

Table 1 Top ten seized reptile species for the live trade, 2007-2017

TOP 10 CITES-LISTED SPECIES SEIZED	COMMON NAMES OF SPECIES	IUCN RED LIST STATUS ⁸	POPULATION TREND ⁹
<i>Podocnemis unifilis</i> (Appendix II)	Yellow-spotted river turtle ¹⁰	Vulnerable	Unknown
<i>Geochelone elegans</i> (II)	Indian star tortoise	Vulnerable	Decreasing
<i>Cuora spp.</i> (II) ¹¹	Asian box turtle	Endangered or critically endangered ¹²	Decreasing for three species and unknown for all others ¹³
<i>Testudo horsfieldii</i> (II)	Russian tortoise	Vulnerable	Unknown
<i>Astrochelys radiata</i> (I)	Radiated tortoise	Critically endangered	Decreasing
<i>Geoclemys hamiltonii</i> (I)	Black pond turtle/ Indian spotted pond turtle	Endangered	Decreasing
<i>Testudo graeca</i> (II)	Greek tortoise	Vulnerable	Unknown
<i>Carettochelys insculpta</i> (II)	Pig-nosed turtle	Endangered	Decreasing
<i>Graptemys pseudo-geographica</i> (III)	False map turtle	Least concern	Unknown
<i>Uromastix dispar</i> (II)	Mali uromastyx	—	—

* Excluding food species, including bodies.

of species, most notably the Indian star tortoise (*Geochelone elegans*). Uzbekistan appears prominently due to the indigenous Russian tortoise (*Testudo horsfieldii*). Madagascar is seen as the source of seizures of at least 30 species of reptiles, but most prominently the radiated tortoise (*Astrochelys radiata*). The black pond turtle (*Geoclemys hamiltonii*) is seized from a wide range of source countries, including India, Indonesia, Malaysia, Pakistan and Thailand.

The wide range of seizure source locations makes it difficult to generalize about the means of collection. Based on interviews with international reptile traders,¹⁵ poachers collect animals by hand or with snares, pitfall traps, fishing line or funnel traps, and sometimes specialized hunting dogs. The advent of YouTube and other video sharing sites has resulted in an abundance of “how to” videos promoting the best ways to catch certain species, especially in South-East Asia. Most poachers living in the range area collect reptiles opportunistically for secondary income and keep them at

their homes until middlemen come to collect them. They may also breed and grow-out reptiles.

At this early point in the trafficking chain, prices paid are often very low. For example, illegal market prices for turtles in the Philippines range from US\$1-15 per turtle at the source. These are sold for 10 to 100 times that at the retail level. Radiated tortoises (*Astrochelys radiata*) from Madagascar are sold for US\$2-10 at source, while they are sold to the end consumer for US\$1,000-2,000 (for a one- to three-year-old animal, depending on the colour).¹⁶

Interviews with reptile traders around the world suggested that contraband reptiles may be laundered through captive breeding operations. International traders say that some suppliers will illegally source gravid females from the wild, so that they lay their eggs at their farm, and they then declare the offspring to be captive-bred. “Niche” species, with very specific or lesser-known ecologies, diets and behaviours that make them

difficult or costly to breed in captivity, are typical targets for this sort of laundering.¹⁷

Trafficking

The intention of this kind of wildlife trafficking is to get the animals to arrive alive at their final destination. To reduce mortality rates due to suffocation, dehydration, starvation or otherwise, most international trafficking of live reptiles occurs by air: 56 per cent of the live reptile seizure incidents in World WISE that included transport information involved air transport.

According to interviews with reptile dealers around the world, turtles and tortoises are a good product to sell because they tend to sell for higher prices than other reptiles and survive transportation well, providing higher profit margins. Some turtle and tortoise species are valuable enough to air courier, making use of carry-on or checked luggage. Some experts interviewed reported cases involving



airport personnel facilitating the trafficking of ploughshare tortoises (*Astrochelys yniphora*), for example.¹⁸ Use of air freight also appears to be on the rise as well as the use of express mail using devised packaging and techniques that allow live reptiles to be posted to buyers. Mail and air courier seizures have increased more than any other means of trafficking documented in World WISE in recent years, each more than doubling from 2016 to 2017.

Small-scale seizures of less than 15 reptiles per shipment accounted for 80 per cent of seizures in World WISE. For these small-scale seizures, the 15 most valuable species seized represented only 9 per cent of shipments; the large majority of shipments were of less valuable species. Many seizures of tortoises and freshwater turtles seem to involve small numbers of animals carried or kept as personal pets or souvenirs. Trends in the illegal trade in tortoises and freshwater turtles, though, do differ geographically, with a relatively large number of seizures in Europe and North America involving smaller quantities of specimens per event, whilst a smaller number of seizures in Asia resulted in

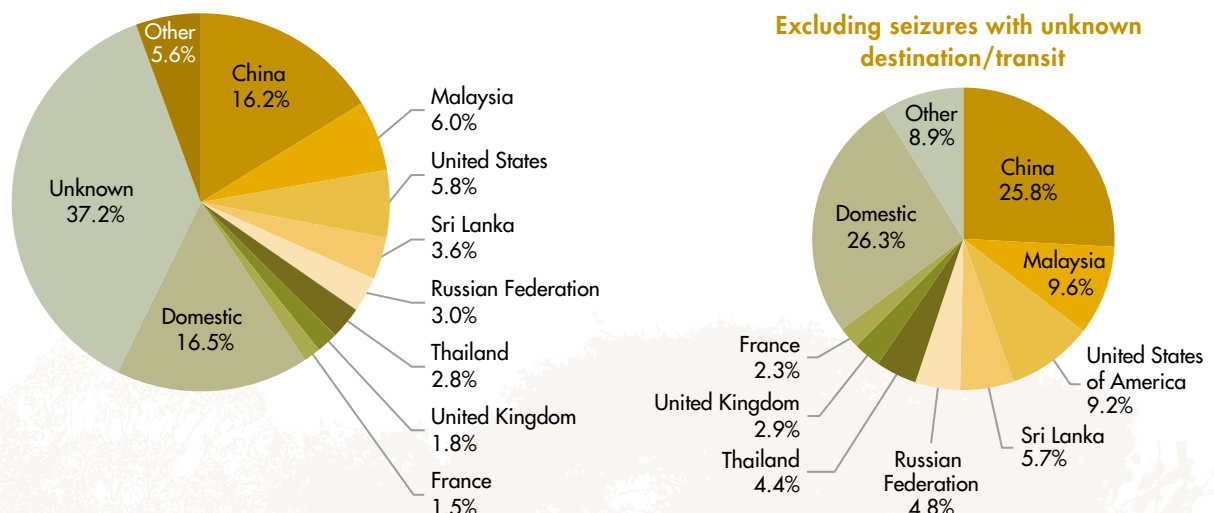
much greater quantities of specimens seized.¹⁹ A smaller number of seizures of large to very large shipments (that is several hundred or thousands of live specimens) have also been documented, suggesting the involvement of well-organized criminal networks, consisting of collectors, local traders, wholesalers, exporters and importers.²⁰

Based on seizures, Asia is the main destination (or possible transit destination) for the illegal live reptile trade. East and South-East Asia, followed by the United States of America and Europe, are the main destinations for tortoise and freshwater turtle species.²¹ Trafficking routes are in constant flux with traffickers seeking out emerging transit opportunities and concentrating their activities in major air transit hubs.²² These hubs provide more direct flight options that reduce the transit time necessary to get trafficked live reptiles to their destination, limiting deaths in transit. The trafficking flow map at the beginning of the chapter provides an overview of some of the current trafficking routes.

Private Facebook groups and other social media platforms are in some cases the dominant sales points. For example, in Indonesia, according to

interviews with experts in the trade, many physical markets have closed in favour of online sales, as these reduce overhead costs and often receive less official scrutiny. When online sales points are detected by law enforcement, traffickers simply switch platforms. Facebook, in May 2019, added a functionality to its site enabling the public to report illegal wildlife trade, and subsequently shut down various Indonesian Facebook groups. In response, traffickers moved to other platforms, such as vk.com or mewe.com, even keeping the same group names they had on Facebook. WhatsApp groups have also been used to traffic reptiles since the Facebook crackdown. These groups are smaller than those from Facebook because WhatsApp limits the number of people that can join groups. Perhaps partly as a result, these splintered groups have become more specialized, with some focusing on specific species. Some groups also moved to Telegram, which has no group member limit. In some cases, these moves have made illegal activity more difficult to detect because they make use of encoded private messaging applications.

Fig. 4 : Share of the most reported final destination or transit countries for the top ten live reptile species seized, * 2007-2017



Source: UNODC World WISE Database
* Excluding food species. Includes bodies.

This rise in online markets allows hobbyists, and not only traders, to import and breed on a small scale and sell directly to other hobbyists, both to supplement their income and fund their hobby. In doing so they cut out the middleman and the overhead costs involved in brick and mortar operations. Private sellers are less exposed to law enforcement and specialized shipping services make it easy to ship from home.

In addition to these virtual meeting places, large reptile shows often act as rallying points for collectors and dealers to build relationships and trade merchandise. Sales of illegally imported reptiles at such shows are generally pre-arranged via social media and private messaging so the dealer can meet buyers outside the show to avoid law enforcement scrutiny as well as avoid the risk of returning with unsold trafficked animals.²³

In September 2019, Austrian customs at Vienna International Airport intercepted an Austrian national living in the Philippines with a suitcase filled with 43 venomous snakes and 45 other reptiles.²⁴ His plan was to cross

the open border between Austria and Germany and sell the animals at Terraristika Hamm, a quarterly trade fair that claims to be the largest of its sort in the world.²⁵

Dealers at shows find different ways of circumventing legislation and bans on selling protected species. These include laundering the animals as captive bred, marking animals that are illegal to trade as “display only” in order to ensure dealers are officially acting within the law. Dealers can also label animals as being sold for “scientific or educational purposes only” in order, for example, to bypass legislation preventing commercial trade in turtle specimens smaller than 4 inches (10.2 cm).²⁶ After some scandals, most of the larger reptile shows in recent times have stricter controls to prevent these kinds of operations. A greater focus on traceability and proof of valid captive breeding claims would also help prevent these abuses.

Street markets, both permanent and temporary, are also a common place to obtain illegal reptiles based on seasonal availability. At the Mercado Sonora in Mexico,²⁷ reptile dealers sometimes keep native animals that

are illegal to trade in the back of their stalls or have local suppliers nearby who can deliver rapidly if interested international collectors visit.²⁸ To evade law enforcement, some dealers at the Mercado de Peces, also in Mexico, suggested collectors come back on the weekend for sales of illegal wildlife because less law enforcement agents are on duty then.²⁹



Endnotes

- 1 See figure 3 on the share of type of wildlife among total seizures (aggregated on the basis of standard value) 2005-2016 on page 16 of the first World Wildlife Crime Report published by UNODC in 2016. Included in these most trafficked species are various species of python, boa, monitor, alligator, crocodile, and caiman, as well as turtles and tortoises.
- 2 Small leather products made of reptile skin are very common (more than 13,000 seizures) but two-thirds of these were of one or two items (such as two shoes). These seizures may be related to tourists or others who inadvertently travel internationally with products made of protected reptile skins, rather than the actions of traffickers. Reptile skin seizures are sometimes reported by weight or another unit (as are live reptiles less commonly), but based on those seizures in which a count is given, there were 386,156 reptile skins seized in World WISE, compared to 316,393 live reptiles. World WISE contains 5,699 seizures of live reptiles (99.2% in which a count is given), compared to 1,644 seizures of reptile skins (98% in which a count is given).
- 3 Note that the World WISE database separates taxidermy specimens from dead bodies so the whole reptile bodies mentioned here are not meant for the taxidermy market.
- 4 Looking at the volume of all reptile species seized, the top species illegally traded include a number that are primarily consumed for meat or the skin trade and/or are heavily farmed with little need for wild-sourcing or conservation protection. They include, for example, the green iguana (*Iguana iguana*) and the ball python (*Python regius*), both of which are heavily farmed and in the top ten species for the legal reptile commercial trade based on number of live specimens, according to the CITES Trade Database. Also excluded are *Varanus nebulosus* (clouded monitor), *Varanus bengalensis* (bengal monitor), and *Ptyas mucosus* (oriental rat snake), excluded because they are primarily traded for the skin trade. *Amyda cartilaginea* (Asiatic softshell turtle), *Mauremys reevesi* (Chinese pond turtle), *Testudo hermanni* (Hermann's tortoise), and *Naja atra* (Chinese cobra) are primarily consumed for their meat (as well as for traditional Chinese medicine for Chinese cobra), so were also removed. These species are not, first and foremost, traded for the live pet trade and have therefore been removed from the analysis.
- 5 The exception being the Mali uromastix lizard (*Uromastix dispar*).
- 6 All analyses nevertheless include all reptile types.
- 7 30% of reptiles seized had no CITES listing information and were excluded from this analysis.
- 8 The Red List of the International Union for the Conservation of Nature (IUCN) is a compilation of research about plant and animal species put together on a voluntary basis by interested scientists. This compilation involves the assignment of a threat status, from "least threatened" and "critically endangered" which is updated periodically, as well as an assessment of the population trend.
- 9 International Union for the Conservation of Nature (IUCN), *The IUCN Red List of Threatened Species*, Version 2019-3 (available at: <http://www.iucnredlist.org>).
- 10 The yellow-spotted river turtle suffers from overfishing (partly as fisheries bycatch) and habitat loss in addition to harvesting for the pet trade. Its conservation status is unclear. Poaching in the wild for the pet trade is a major contributor to the decline in population numbers, so it was included in this list.
- 11 *Cuora spp.* is left at the genus level in this table because most seizures did not identify the specimen seized down to the species level. *Cuora amboinensis*, though, is number 14 in the top 15 seized reptile species for the live trade by count. The other reptiles in this top 15 seized were all identified down to the species level.
- 12 Except for the Southeast Asian box turtle (*Cuora amboinensis*) which is listed as vulnerable.
- 13 Decreasing for *Cuora picturata* (Southern Viet Nam box turtle), *Cuora galbinifrons* (Indochinese box turtle), *Cuora yunnanensis* (Yunnan box turtle) and *Cuora bourreti* (Bourret's box turtle). Unspecified for *Cuora trifasciata* (golden coin turtle), *Cuora mouhotii* (keeled box turtle), *Cuora flavomarginata* (yellow-margined box turtle), *Cuora zhoui* (Zhou's box turtle), *Cuora mccordi* (McCord's box turtle), *Cuora amboinensis* (Southeast Asian box turtle), *Cuora aurocapitata* (Yellow-headed box turtle) and *Cuora pani* (Pan's box turtle).
- 14 See the Methodological Annex for details.
- 15 UNODC fieldwork, see Methodological Annex.
- 16 UNODC fieldwork.
- 17 Ibid.
- 18 UNODC fieldwork.
- 19 See CITES CoP 17, Doc. 73, Annex 2 (2016), *Species specific matters: Tortoises and freshwater turtles (testudines spp.)*.
- 20 See CITES CoP 17, Doc. 73, Annex 2 (2016), *Species specific matters: Tortoises and freshwater turtles (testudines spp.)*.
- 21 66% of the seizure incidents in World-WISE reported origin while 74% included destination.
- 22 UNODC fieldwork.
- 23 UNODC fieldwork.
- 24 Federal Ministry of Finance of the Republic of Austria. (September 16, 2019). 43 poison snakes and another 45 reptiles seized by Austrian customs. Vienna, Austria: Federal Ministry of Finance of the Republic of Austria. See, for example, '43 Giftschlangen und 45 weitere Reptilien auf Flughafen Wien sichergestellt', *Der Standard*, 12 September 2019.
- 25 For more information about the trade fair, see: <http://www.terrarakahamm.de/content/index.php>.
- 26 UNODC fieldwork.
- 27 Sellers also sell reptiles along the highways in Mexico, especially those with high national tourist traffic.
- 28 UNODC fieldwork.
- 29 Ibid.