



**UNODC**

United Nations Office on Drugs and Crime

# Wildlife Crime

Pangolin scales







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Pangolin scales

2020



UNITED NATIONS  
New York, 2020

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Suggested citation: UNODC, *Wildlife Crime: Pangolin scales*, 2020.  
United Nations Office on Drugs and Crime.

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## Acknowledgements

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The support provided by the UNODC Global Programme for Combating Wildlife and Forest Crime is gratefully acknowledged: Jorge Eduardo Rios, Giovanni Broussard and Jenna Dawson-Faber.

The preparation of this report benefitted from the financial contributions of the Bureau of International Narcotics and Law Enforcement Affairs, US Department of State.

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# Preface

As I write this I, like many millions of people around the world, am working from home, self-isolating to help stop the spread of the global COVID-19 pandemic. The number of COVID-19 cases worldwide has now exceeded two million, and more than 145,000 people have already lost their lives to the virus.

We are far from knowing the full impact of this unprecedented threat. Standing in solidarity, we must do everything we can to address the immense and immediate suffering caused by COVID-19. In overcoming this crisis, we must ensure that hardships are not compounded by its aftermath, especially for the most vulnerable among us. As we recover, we can take its lessons to heart and do all we can to prevent the next global pandemic.

The outbreak of COVID-19 has been linked to a coronavirus originating in wild bats that jumped to humans via an intermediary, with pangolins - scaly anteaters living in Asia and Africa - among the likely suspects. The continuing debate in the scientific community suggests that wet markets trading in wild meat served as a possible ground zero for the virus.

According to the United Nations Environment Programme, 70 percent of all emerging infectious diseases are zoonotic, originating from the transfer from animals to humans. The World Health Organization, in response to COVID-19, has highlighted the importance of enforcing bans on the sale of wildlife for food, as well as food safety and hygiene regulations.

However, governments face serious challenges in enforcing such controls as organized criminal groups trafficking wildlife products have infiltrated legitimate markets in East Asia, Southeast Asia and other parts of the world. To stop the transmission of zoonotic diseases in future, the international community needs to stop the illegal wildlife trade.

Trafficked wild species - pangolins, birds, turtles, tigers, bears and many more – and the resulting products offered for human consumption, by definition, escape any hygiene or sanitary control. Animals from around the world are crammed into cages in

wet markets, pet markets and other facilities, in close proximity with one another and with humans, exponentially increasing the risk of transmission of viruses and other pathogens.

It has become all too clear that wildlife crime is a threat not only to the environment and biodiversity, but to human health, economic development and security. The United Nations Office on Drugs and Crime (UNODC) will publish the second edition of the World Wildlife Crime Report in June. We are releasing the chapter on pangolins ahead of the full report to draw attention to these risks.

Pangolins harbour a wide variety of coronaviruses, some of which share genetic similarities to the virus that caused COVID-19. These shy mammals do not pose any immediate threat to human health if left in their ecosystem. But when pangolins are poached from their natural habitat, butchered and sold illegally, a potential health hazard is brought close to home.

Pangolins remain the most trafficked mammal in the world despite the international ban on the trade of all pangolin species since January 2017. One operation last April seized 25 tonnes of African pangolin scales - representing an estimated 50,000 dead pangolins - with a market value of some seven million dollars. Between 2014 and 2018, the equivalent of 370,000 pangolins were seized globally. We do not know how many African pangolins are left in the wild.

Conservation of an endangered animal potentially tied to the spread of COVID-19 is not an obvious priority when the international community is rightfully focused on overcoming the many grave and urgent problems posed by the pandemic. Nevertheless, stopping the illegal trade in pangolins and other wildlife species is a critical step not just to protect biodiversity and the rule of law in line with the Sustainable Development Goals, but to help prevent future public health emergencies.

In recent years, we have made a great deal of progress in advancing awareness of wildlife trafficking as a serious transnational organized crime. UNODC published the first-ever World Wildlife

Crime Report in 2016, providing a much-needed global overview and analysis of the geographic scope and nature of the problem.

This research has been further complemented by work done through our Global Programme for Combating Wildlife and Forest Crime. Drawing on UNODC's role as guardian to the United Nations Convention against Transnational Organized Crime and the United Nations Convention against Corruption, the Global Programme provides both policy guidance and technical assistance to requesting countries, working with the wildlife law enforcement community and the criminal justice system to prevent and stop wildlife crime, illegal logging and related crimes.

In response to the COVID-19 outbreak, some countries have already taken additional welcome steps to address the trafficking of wildlife. It is crucial that these measures are sustained and effectively enforced. The second edition of the UNODC World Wildlife Crime Report and the UNODC Global Programme can support further action.

Life on our planet is interconnected. Human society has continuously encroached upon the natural world, upsetting a fragile balance. We must act to prevent and combat the reckless, illegal exploitation of natural resources to stop such crimes from further endangering ecosystems, livelihoods and the health of billions of people, by strengthening international cooperation, information sharing and threat assessment; improving legislation; enhancing enforcement and investigation techniques; building borders and customs capacities; promoting alternative livelihoods; and increasing community and public awareness.



Ghada Waly  
Director-General/Executive Director

United Nations  
Office on Drugs and Crime

April 2020

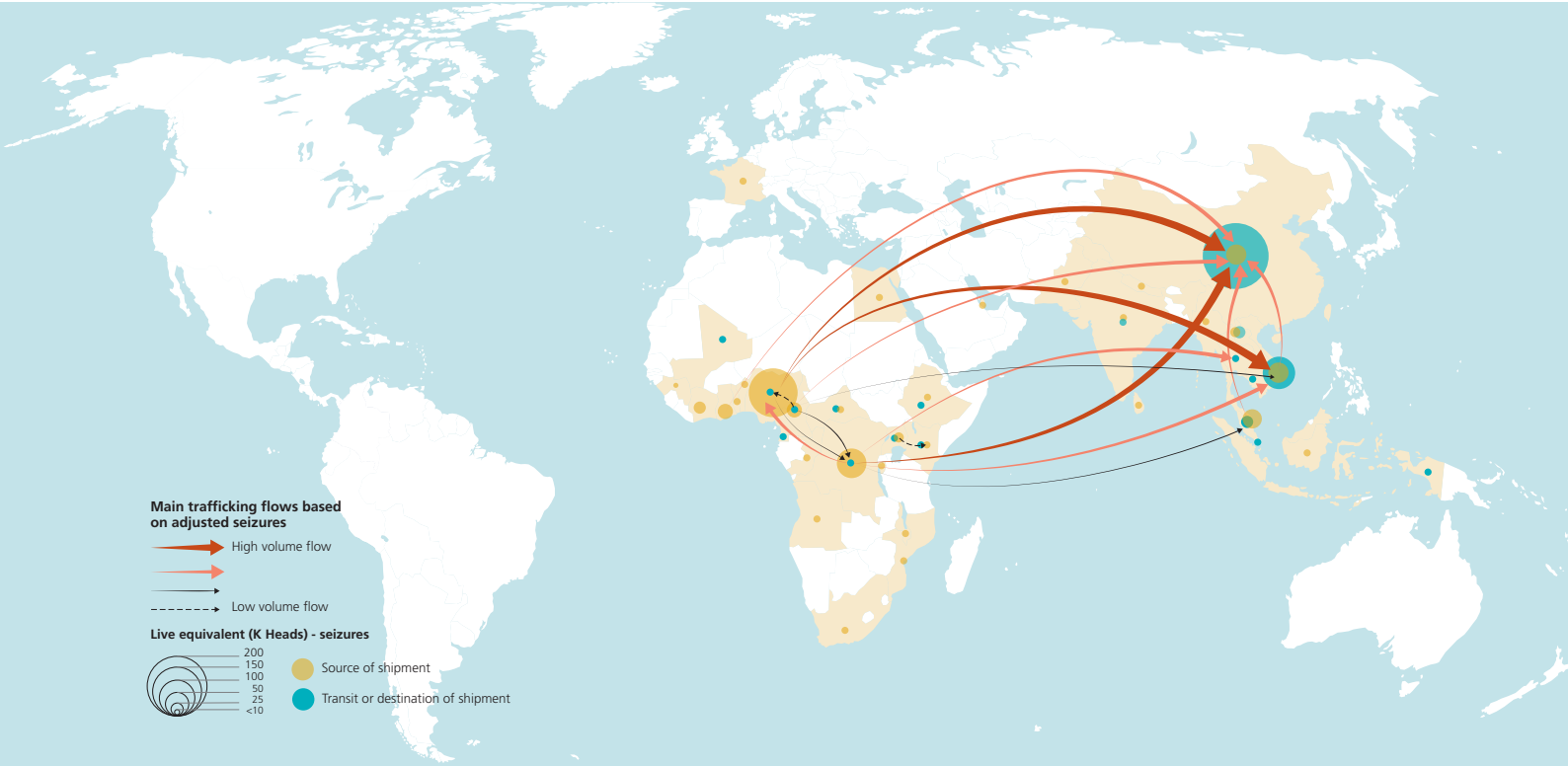




# WILDLIFE CRIME: PANGOLIN SCALES<sup>1</sup>

Map 1

Main trafficking flows and reported origins/destinations of seized pangolin scales (2007-2018)



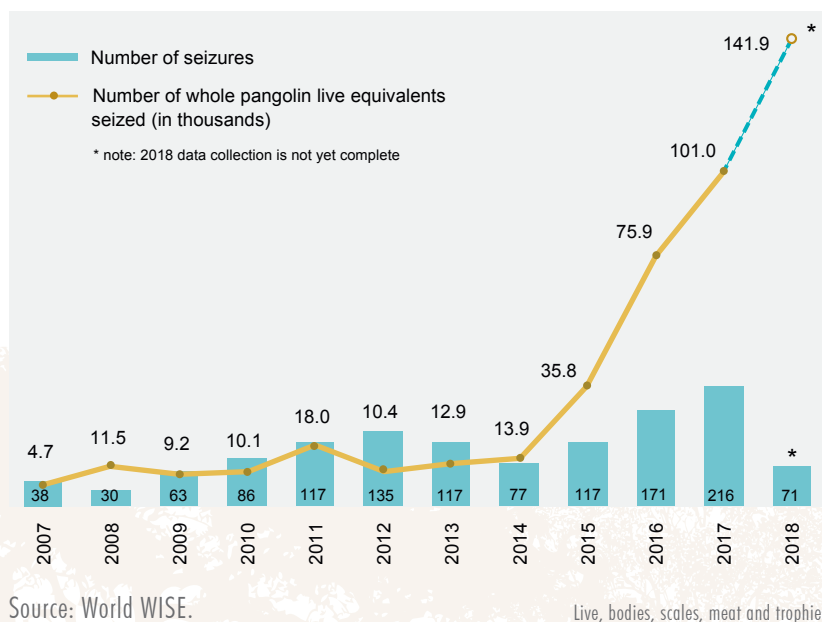
Sources: World WISE Database.

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

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.<sup>2</sup> 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.<sup>3</sup>

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 equivalents<sup>4</sup> seized and number of seizures annually, 2007-2018



Today, demand for pangolins in Asia is being supplied by pangolins from Africa. In both regions, pangolins are killed for their meat<sup>5</sup> and their scales, which have been used medicinally.<sup>6</sup> 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.<sup>7</sup> 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.<sup>8</sup>

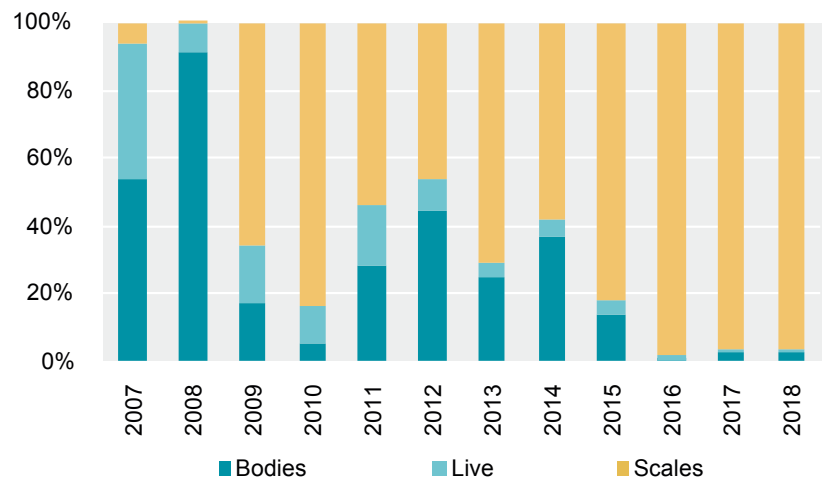
All eight species of pangolins are believed to be in decline,<sup>9</sup> but since exact population counts are unavailable, it is difficult to determine the conservation impact of the illegal trade.<sup>10</sup> The sheer volume of seizures, though, suggests unsustainable harvesting, a hypothesis corroborated by hunters interviewed by UNODC in Uganda and Cameroon in 2018, who reported that pangolins are becoming harder to find.<sup>11</sup>

Since 2014, there has been a 10-fold increase in the number of whole pangolin equivalents seized globally. The inclusion of all pangolin species in 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.

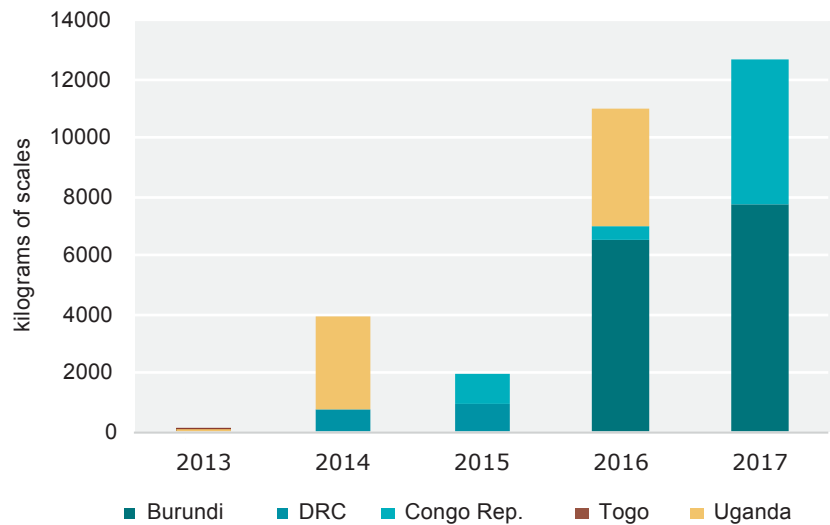
Sizable shipments of whole (often live) pangolins have been seized in Asia, but most of the largest recent

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



Source: World WISE.

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



Source: CITES Trade Database.

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).<sup>12</sup> 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,<sup>13</sup> where three out of the four African pangolin species are found.<sup>14</sup> Four pangolin species are also found in Southeast, South and East Asia. Most of the trade for all species is destined for East and Southeast Asian countries.<sup>15</sup> Before 2016, the largest seizures intercepted amounted to less than 10,000 live pangolin equivalents. In 2019, all 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.<sup>16</sup> Between 2013 to 2017 (when all pangolin species were up-listed to Appendix I), 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 (DRC), 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 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.<sup>17</sup> Intercontinental meat seizures, though, remain rare, and the short range 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.<sup>18</sup>

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.<sup>19</sup> China reports regularly releasing these stockpiled scales for domestic use by designated hospitals and manufacturers of patented Chinese medicines.<sup>20</sup> 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 time<sup>21</sup> with gestation periods that range from about 65 to 370 days.<sup>22</sup> Only a few births have been reported in captivity, with high infant mortality rates.<sup>23</sup> 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 poachers.

Given that the scales from one pangolin weigh anywhere between 0.36 to 3.60 kg,<sup>24</sup> 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

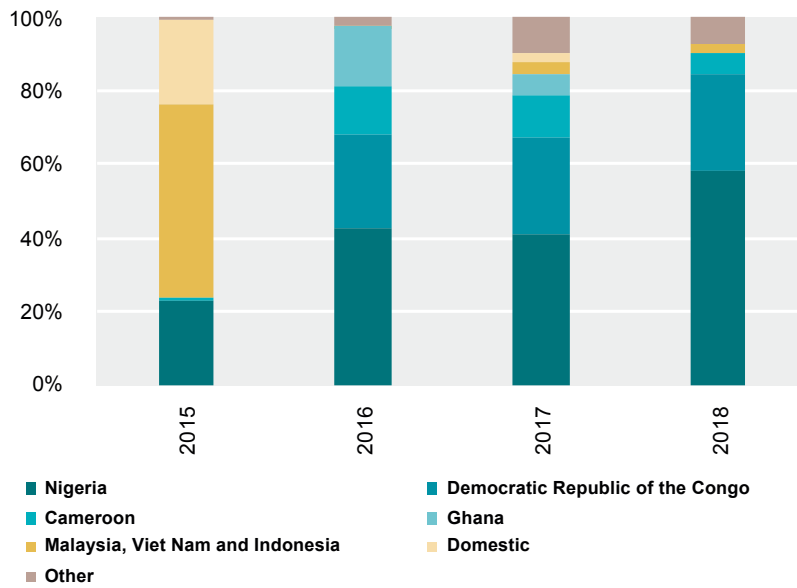
In 2000, zero export quotas were established for Asian pangolin species whose populations were seriously depleted from the skin and meat trade.<sup>25</sup> These zero quotas may have contributed to the decline in the skin trade,<sup>26</sup> but despite population depletion, sourcing from Southeast Asia (primarily from Indonesia, Malaysia and Thailand) continued in large quantities until 2013, at which point it dropped off significantly.

Based on 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) to 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.<sup>27</sup>

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)

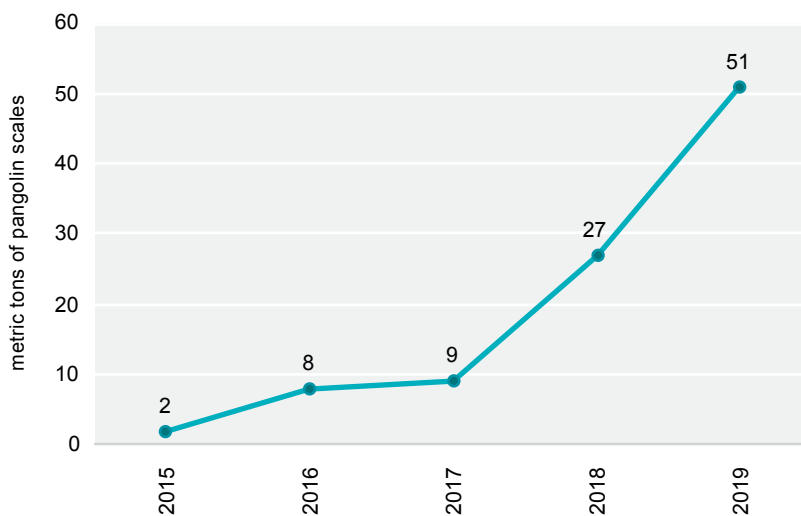
Based on UNODC fieldwork in Cameroon and Uganda in 2018, it appears that the initial hunting of pangolins for the trade is done by local community members. Wealthier local traders and intermediaries then consolidate their catch into bulk batches and transport them to urban centres where they are trafficked onward by Asian expatriates.<sup>28</sup> 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.<sup>29</sup> As a result,

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



Source: World WISE.

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



Source: World WISE and CITES.

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.<sup>30</sup>

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.<sup>31</sup> In the urban areas, the goods are sold to international traffickers, primarily Chinese, but also some Nigerians and Vietnamese.<sup>32</sup>

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 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 kilogram than that paid to the hunters.

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

	HUNTER	→	TRADER	→	INTERMEDIARY	→	TRAFFICKER
<b>Income</b>	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
<b>Costs</b>	<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

Traders order pangolin scales by the kilo, 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.<sup>33</sup>

## 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,<sup>34</sup> hidden in logs using candle wax<sup>35</sup> and stuffed inside steel barrels of other goods.<sup>36</sup> 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.<sup>37</sup> Some are even smuggled in luggage<sup>38</sup> 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.<sup>39</sup> 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.<sup>40</sup> 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.<sup>41</sup> 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.<sup>42</sup>

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 poachers 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 have been going up since 2017.<sup>43</sup> 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, poachers 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

**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.

number of kilos 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 Southeast 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.

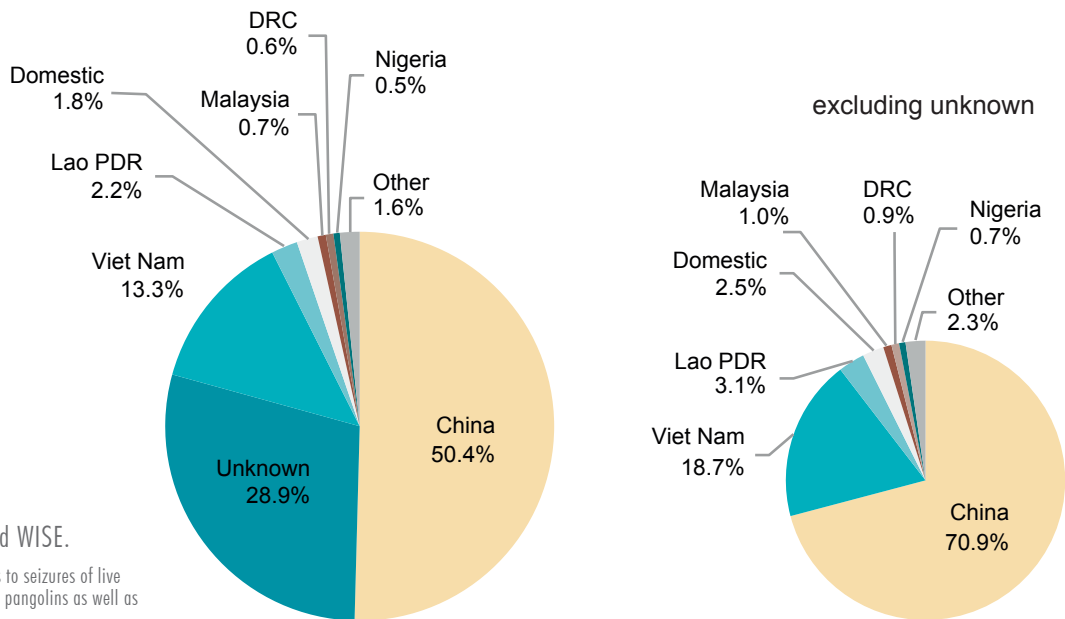
In China, the cities of Fangchengang, Guangzhou and Kunming are key nodes for pangolin trafficking according to a 2016 study of 206 Chinese seizures.<sup>44</sup> In a survey of five major Chinese cities in 2012, Guangzhou residents reported the highest rates

of wildlife consumption for food and as ingredients for traditional medicine.<sup>45</sup> 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.<sup>46</sup> 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 buyers<sup>47</sup> 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.<sup>48</sup>

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.<sup>49</sup> 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.<sup>50</sup> 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** Destination of seizures in whole pangolin equivalents\*, 2007-2018



Source: World WISE.

\*The figure refers to seizures of live pangolins, dead pangolins as well as pangolin scales.

## Endnotes

- This article is part of the forthcoming UNODC *World Wildlife Crime Report 2020* to be published in June 2020.
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- 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.
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- Challender, Waterman and Baillie 2014, op. cit.
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- 29 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).
- 30 Hunters operating near national parks reported the highest per day catches.
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- 32 UNODC fieldwork.
- 33 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).
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