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United Nations Office on Drugs and Crime



RESEARCH BRIEF

Wildlife Crime Status Update 2017



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Overview

The international illegal trade in wildlife is currently experiencing the impact of a number of policy innovations. While it is probably still too early to say, tightening national and international controls appear to be showing positive results with regard to some of the best known illegal wildlife markets:

- Elephant poaching levels remain unacceptably high, but appear to be significantly lower than their peak in 2011, and there are indications that reforms in the largest ivory markets may be having positive impact.
- A decline in the annual number of rhinos poached in South Africa for the second consecutive year, and indications of declines in the price of horn in Viet Nam, may also bode well for the species.
- The reported international trade West African rosewood, the legality of which has been disputed, appears to have dipped sharply after the listing of the relevant species, but questions have been raised about a recent increase in permitted trade.
- Unfortunately, both the number and the volume of recent African pangolin scales seizures suggest that the removal of legal commercial international trade in the species has not had any immediate impact on demand, and that this trade continues to be driven by illegal activities.

Policy implications

- The restriction of legal domestic ivory markets contributing to poaching or illegal trade, as called for in CITES Resolution Conf. 10.10 (Rev. CoP17) on *Trade in elephant specimens*, appears to be having a positive effect, but systematic monitoring of this major policy innovation is needed, including evaluating its impact on poaching and ivory prices.
- The recent developments on domestic trade in rhinoceros horn in South Africa should similarly be closely monitored for their impact on poaching and horn prices.
- Given the vulnerability of the source region, the implementation of CITES controls on rosewood exports from West Africa should be carefully monitored.
- For those countries where consumption of pangolin products is legal and widespread, careful monitoring is required to ensure stocks are consistent with legal sourcing.

I. Introduction

In May 2016, UNODC published its first *World Wildlife Crime Report*. This report was based on a global wildlife seizure database called “World WISE”, which included some 164,000 seizures from 120 countries. The Report looked in detail at eight highly significant illicit wildlife markets:

- Rosewood logs used in furnishing
- African elephant ivory used in art, décor, and jewellery
- Reptile skins used in fashion items
- Agar wood used in perfumery and incense
- Pangolin and rhino horn used in medicine and tonics
- Parrots used in the pet trade
- Sturgeon caviar used as seafood

Since this time, there have been some developments in illicit wildlife markets highlighted in the report. These developments include both changes in international and national policy, and trends within the markets themselves. In terms of international policy, a number of key decisions were agreed at CITES CoP17 (Johannesburg, 2016).¹ While it was not possible to update the World WISE database in time for the publication of this Research Brief, open source data reflect many of the market changes. This Research Brief provides an overview of these trends in four case study markets: African elephant ivory, African rhino horn, rosewood, and pangolins.

II. Ivory

International and national policy and law

CITES CoP17 saw a marked change in international policy toward legal domestic ivory markets. A recommendation was made to close legal domestic markets that might contribute to poaching or illegal trade.² This decision was, however, a universalisation of a movement already underway in some of the most important destination states.

In December of 2015, the two countries generally deemed to host some of the largest markets for ivory globally – the United States and China – publically committed to effectively closing their legal domestic markets in the future.³ Since the publication of the World Wildlife Crime Report, this promise has been enacted in law in both countries. On 6 June 2016, the relevant rules under the United

¹https://www.cites.org/eng/news/pr/Largest_ever_World_Wildlife_Conference_CoP17_hailed_as_a_game_changer_04_102016

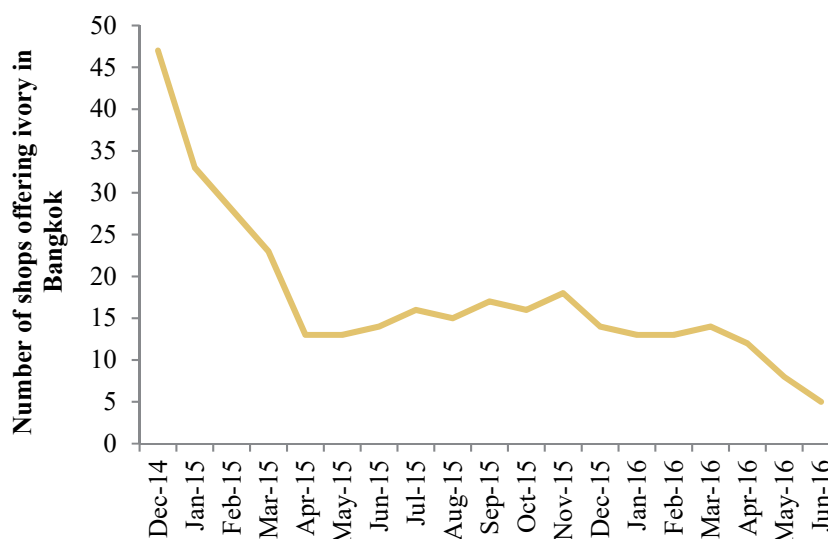
² At COP 17, the decision was taken to amend Conference Resolution 10.10 on *Trade in elephant specimens* by including the following as action paragraph 3: “Recommends that all Parties and non-Parties in whose jurisdiction there is a legal domestic market for ivory that is contributing to poaching or illegal trade, take all necessary legislative, regulatory and enforcement measures to close their domestic markets for commercial trade in raw and worked ivory as a matter of urgency.”

³ <https://obamawhitehouse.archives.gov/the-press-office/2015/09/25/fact-sheet-president-xi-jinpings-state-visit-united-states>
http://www.gov.cn/zhengce/content/2016-12/30/content_5155017.htm

States Endangered Species Act were revised, prohibiting import, export, and interstate trade of African elephant ivory with very limited exceptions.⁴ On 30 December 2016, the Chinese government announced its decision to orderly stop the commercial processing and sale of ivory and its products by the end of 2017.⁵

In addition, Thailand has taken stringent measures to prevent trade of African elephant ivory. Thailand initiated a series of reforms at the beginning of 2015, including the listing of African elephants on the national protected species list and mandatory countrywide registration of privately owned ivory objects. In response, some 40,000 people registered over 200 metric tons of ivory with the national authorities, underscoring the importance of this market. While not a ban on domestic sales, these measures appear to have dramatically reduced retailing of ivory in Thailand (Krishnasamy, Milliken and Savini, 2016).

Figure 1: Number of shops selling ivory in Bangkok, December 2014-June 2016



Source: Data from Krishnasamy, Milliken and Savini, 2016

While these measures make it considerably more difficult to legally purchase ivory in large consumer states, their impact on elephant poaching will depend on several factors:

- Not all elephant poaching in Africa is motivated by the desire to acquire ivory for these markets. As forthcoming papers illustrate, elephant poachers have many motivations, including high local demand for elephant as a meat, and traditions of elephant hunting that pre-date present ivory demand (Leggett and Salgueiro, forthcoming).
- Laundering of illegal acquired ivory through licit markets has been documented, but the size of the legal markets appears to be small relative to estimated illegal ivory production, which is

⁴ 50 CFR Part 17, “Endangered and Threatened Wildlife and Plants; Revision of the Section 4(d) Rule for the African Elephant (*Loxodonta africana*); Final Rule”. *Federal Register*, Vol. 81, No. 108, Monday, June 6, 2016.

⁵ State Council of China, “Notice of the General Office of the State Council on the Orderly Stopping of Commercial Processing and Sales of Ivory and Products”, Notice 103 of 2016, 30 December 2016. http://www.gov.cn/zhengce/content/2016-12/30/content_5155017.htm?from=timeline&isappinstalled=0

likely in the hundreds of tons. It appears that most illegally imported ivory is also retailed in illegal markets.

- If the speculative value of illicit ivory is dependent on the existence of a legal retail market, then the closure of this market could cause prices to crash.

Illegal trade

It is still rather early to determine whether the recent shift in international policy will result in less poaching. Based on the available indicators, it appears that the current wave of poaching of African elephants for ivory, which began around 2007 and saw its peak in 2011, has declined since then, though remaining above sustainable levels.⁶

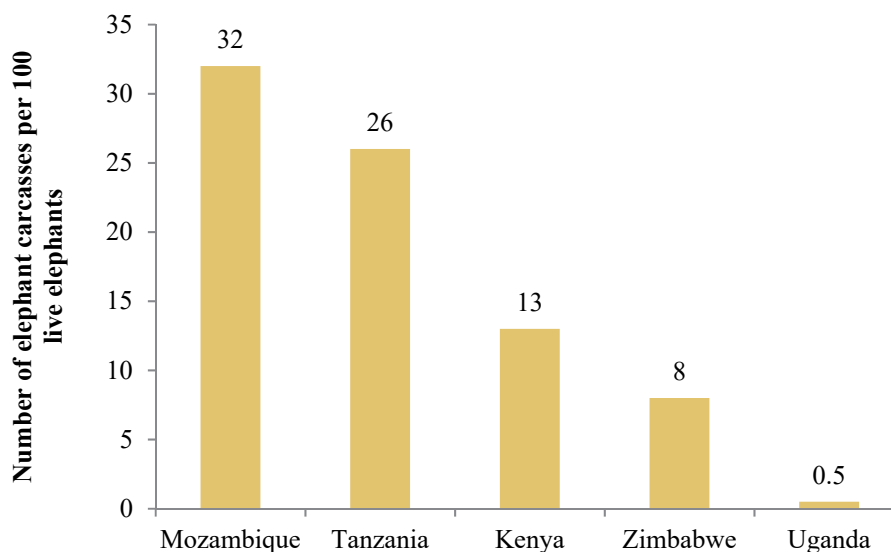
The size and distribution of the African elephant population was reappraised by the International Union for the Conservation of Nature (IUCN) in the *African Elephant Status Report 2016*. This assessment benefitted from a recent continent-wide aerial survey of savanna elephant populations.⁷ Comparing these and other surveys to data from 2007, the IUCN concluded that the elephant population in the areas surveyed was 118,000 less than it had been a decade previously. The difference, the IUCN concludes, is largely due to poaching (IUCN, 2016).

In addition to live elephants, The Great Elephant Census also counted carcasses visible from the air. Under savannah conditions, most elephants decompose relatively quickly, and the ratio between the number of live and dead elephants counted is an indicator of recent poaching intensity. In Mozambique, for example, 32 dead elephants were counted for every 100 live elephants viewed, while in Uganda, only one carcass was seen for every 200 elephants counted.

⁶https://www.cites.org/eng/news/pr/African_elephant_poaching_down_ivory_seizures_up_and_hit_record_high_24102017

⁷ This survey, dubbed “The Great Elephant Census”, was conducted by the Paul G. Allen Foundation. The Census counted 352,271 savanna elephants in the 18 countries surveyed, which is estimated to be the vast majority of the savanna elephants in these countries. This is estimated to be 30 percent less than comparable figures from 2007, resulting in a net decline of 30 percent, or 144,000 elephants, over eight years. The Census estimates current losses running at about 8% per year, mostly due to poaching.

Figure 2: Number of savanna elephant carcasses observed per 100 live savanna elephants observed in 2014 flyovers by country



Source: Great Elephant Census/Paul G Allen Foundation

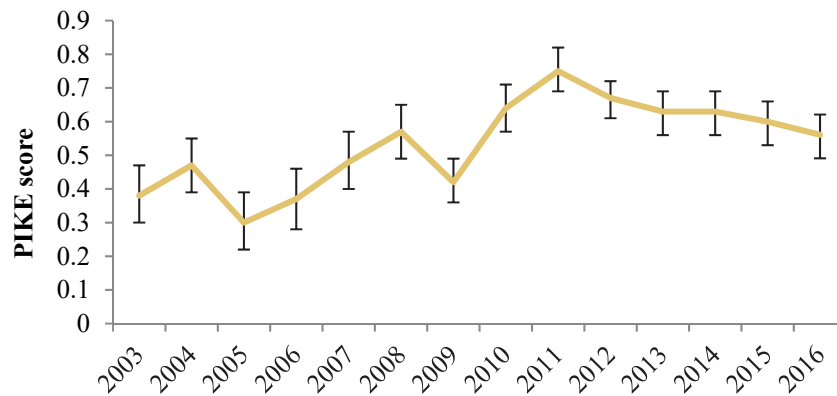
The devastating loss of elephants in Eastern Africa, particularly in Tanzania but also in Mozambique, was already evident at the time of the 2016 Report, but has been confirmed by the Census and subsequent surveys. In Tanzania, the Selous and Ruaha reserves were particularly hard hit. According to the IUCN, Tanzania has lost over 60% of its elephants in the last decade, and the estimates from surveyed areas in Mozambique show a loss of about half of the comparable current population estimate, with losses particularly intense in the north (Thouless et al, 2016). The importance of southern Tanzania/northern Mozambique to the illegal ivory market has been repeatedly demonstrated in DNA analysis of seized tusks (Wasser et al, 2015).

It has been estimated that between 2010 and 2012, an average of about 33,630 African elephants were poached each year (Wittemyer et al, 2014). Long term poaching trends are analysed by the CITES Monitoring the Illegal Killing of Elephants (MIKE) programme, which recently found “a steady increase in levels of illegal killing of elephants starting in 2006, peaking in 2011, and levelling off and slightly declining thereafter” (CITES, 2017).⁸ The share of detected dead elephants that had been poached declined in 2016 to its lowest level since 2009. More than half the elephant carcasses detected in sentinel monitoring sites were illegally killed, however, and experts believe this signifies offtake in excess of sustainable levels.⁹

⁸ <https://cites.org/sites/default/files/eng/com/sc/69/E-SC69-51-01-A.pdf>

⁹ See CoP17 Doc.57.5.

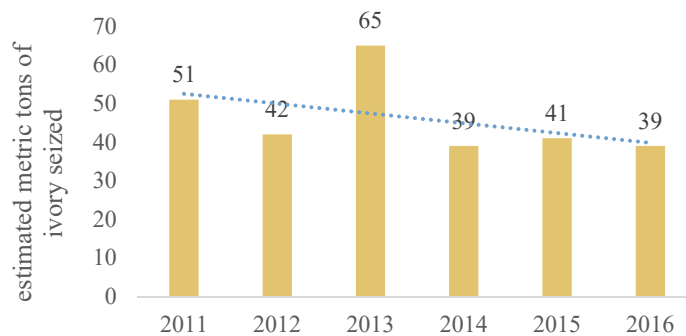
Figure 3: Share of detected African elephant carcasses that were illegally killed (PIKE score¹⁰), 2003-2015



Source: CITES MIKE¹¹

Both the estimated weight and number of ivory trafficking seizures are highly volatile. Based on CITES ETIS data, the year on year variation in estimated global ivory seizure volumes was 100% or more in 1997, 2002, 2003, 2007, 2009, and 2011. Paralleling the poaching data, however, the number of seizure incidents peaked in 2011. The estimated weight peaked in 2013, but looking at the volumes of seizures since 2011, the trend is also downward (Figure). Given the volatility, these numbers alone do not mean much, but combined with other data, they could be indicative of a stabilization or decline in ivory trafficking.

Figure 4: Figure: Estimated weight of ivory in raw ivory equivalent terms represented by unadjusted ETIS seizure data, 2011-2016 (metric tons)



Source: CITES ETIS¹²

Based on World WISE data, officially provided by all Member States, China was the largest national destination of detected illegal ivory shipments between 2006 and 2015.¹³ The weight of smuggled

¹⁰ “PIKE” stands for “Percentage of Illegally Killed Elephants”, or the share of all elephant carcasses detected that were apparently victims of poaching. For example, in 2015, out of every 10 elephant carcasses detected in sentinel areas across Africa, six were illegally killed, resulting in a PIKE score of 0.6. For most areas, estimates of population and natural elephant mortality rates exist, so the PIKE score gives a sense of how many undetected poaching incidents occur.

¹¹ https://cites.org/sites/default/files/eng/prog/MIKE/MIKE_report_released_WWD_3Mar2017.pdf

¹² <https://cites.org/sites/default/files/eng/cop/16/doc/E-CoP16-53-02-02.pdf>;
<https://cites.org/sites/default/files/eng/cop/17/WorkingDocs/E-CoP17-57-06-R1.pdf>;
<https://cites.org/sites/default/files/eng/com/sc/69/E-SC69-51-01-A.pdf>

¹³ UNODC, *World Wildlife Crime Report*, Vienna: UNODC, 2016, p. 45.

ivory seized by Chinese customs has declined annually since 2012, down by 82% from 2012 to 2015. The number of cases involved is declining “in step.”¹⁴

Taken together, the decline in PIKE scores and the decline in ivory seizure incidents suggest good news for the African elephant. It is possible this is due to the greater restrictions in the main destination markets. As discussed above, it may be that the loss of legitimate retail markets has deeply undermined the speculative value of ivory as a value store. Continued monitoring of both source and destination indicators will be important in evaluating the impact of this major policy change.

III. Rhino horn

International and national policy and law

CITES CoP17 was held in South Africa, home to some 79% of the world’s remaining rhinos, at least one quarter of which are privately owned (Emslie et al, 2016). The rhino horn trade was prominent on the agenda. A late proposal by the government of Swaziland to permit the sale of a limited amount of rhino horn was soundly defeated.¹⁵ In April 2017, the South African Constitutional Court denied leave to appeal to the Minister of Environmental Affairs concerning the national moratorium on rhino horn trade.¹⁶ This, in effect, opened the door to domestic trade in horn, despite the fact that the primary markets for this product are overseas.

The rhino trafficking situation in two countries – Viet Nam and Mozambique – has long been under special scrutiny, and at CoP17, the CITES Secretariat was directed to conduct missions to Viet Nam and Mozambique to evaluate law enforcement in both countries.¹⁷ The progress of Vietnam and Mozambique in addressing the illegal trade will be evaluated at the 69th meeting of the CITES Standing Committee (SC69, Geneva, November 2017).

Illegal trade

Rhino populations have snapped back remarkably in the past 25 years, and they continue to grow in most countries, but their numbers remain critically low, with less than 30,000 rhinos of any species left in the world.¹⁸ Given that at least 6,000 have been poached in the past ten years, the illegal trade poses a very real threat to the survival of this species (Emslie et al, 2016).

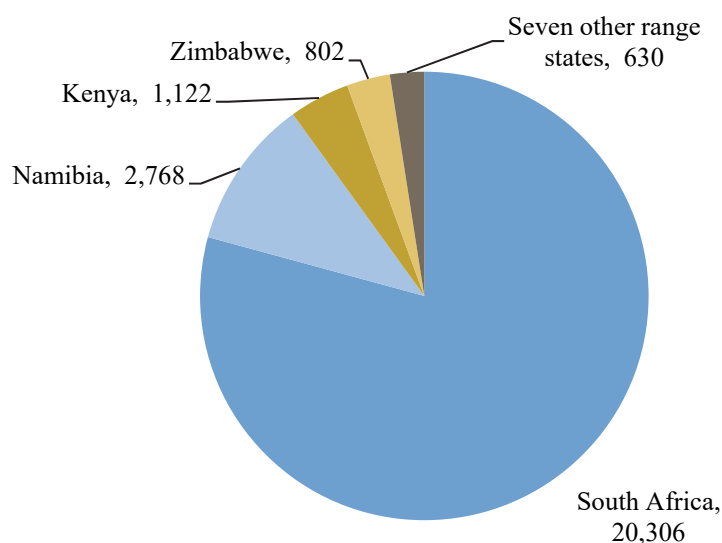
¹⁴ Permanent Mission of China to the United Nations in Vienna

¹⁵ CITES CoP17 Prop. 7

¹⁶ South African Constitutional Court, “In the matter between The Minister of Environmental Affairs and Johan Kruger, John Hume, Wildlife Ranching South Africa, and The Private Rhino Owners Association”. CCT Case 121/16, 30 March 2017.

¹⁷ CITES CoP17Com.II.14

¹⁸ <https://cites.org/sites/default/files/eng/cop/17/WorkingDocs/E-CoP17-68-A5.pdf>

Figure 5: National distribution of African rhino populations in 2015

Source: Data from IUCN African Rhino Specialist Group¹⁹

The most recent boom in African rhino poaching began around 2008, just shortly after the latest wave of elephant poaching. Most of the illegal rhino horn entering the market comes from South Africa, and most of South Africa's illegal rhino horn has come from Kruger National Park.²⁰ Up to date information on rhino poaching in all the African range states is not currently available,²¹ but South Africa has seen a reduction in the number of detected killings over the last two years. While this is undeniably good news, the location of these killings has shifted in ways that give rise to concerns. In 2016, poaching declined by almost 20% in Kruger National Park,²² but increased by 38% at various reserves in Kwa-Zulu Natal.²³ This sudden shift suggests a tactical move on the part of rhino traffickers in response to enforcement efforts.

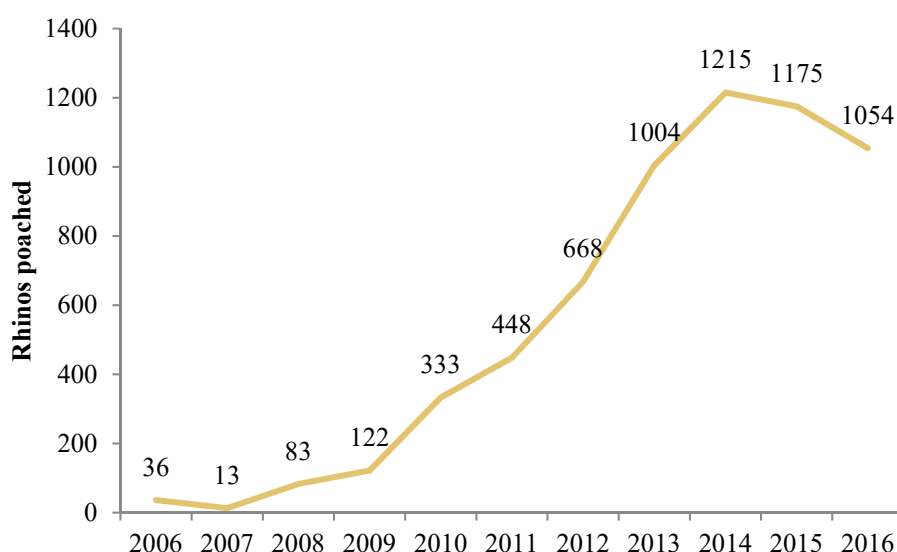
¹⁹ CITES CoP17 Doc 68 Annex 5

²⁰ South Africa Department of Environmental Affairs, "Minister Molewa highlights progress on Integrated Strategic Management of Rhinoceros." Press release issued 27 February 2017

²¹ According to the IUCN Red List, African rhino are found in Angola, Botswana, Kenya, Malawi, Mozambique, Namibia, South Africa, Swaziland, Uganda, United Republic of Tanzania, Zimbabwe, and Zambia, and possibly the DRC, Ethiopia, Sudan, and South Sudan. Data for a number of these states up to 2015 can be found at: <https://cites.org/sites/default/files/eng/cop/17/WorkingDocs/E-CoP17-68-A5.pdf>

²² South Africa Department of Environmental Affairs op cit.. <https://www.businesslive.co.za/bd/national/science-and-environment/2017-02-28-rhino-poachers-look-to-kwazulu-natal-as-kruger-net-tightens/>

²³ CITES CoP17 Doc 68 Annex 5:

Figure 6: Number of rhinos poached in South Africa, 2006-2016

Source: Dr Richard Emslie and South African Department of Environmental Affairs

In the past, much of the poaching was carried out by Mozambican nationals crossing into Kruger from the Limpopo National Park in Mozambique. According to the Mozambican government, several arrests of Vietnamese and Mozambican nationals were made in connection with rhino horn smuggling, including two seizures (March and May 2016) in which a total 34 rhino horns were seized.²⁴ Since there are few if any remaining rhinos in Mozambique, it is likely that all of the horns came from neighbouring countries.

The shift away from Kruger supports the view that the horn market is being directed by transnational organized crime groups. Further evidence is found in the relative prominence of mixed species loads when rhino horn is detected.²⁵ And while the decline in poaching in South Africa is encouraging, levels remain much higher than they have been in the recent past.

Based on World WISE data from 2006 to 2015, over 70% of rhino horns seized were destined for Viet Nam or China.²⁶ Fieldwork in 2015 at a Vietnamese market town catering to Chinese clientele found an average price per kilogram of some US\$26,000. This figure is much lower than that cited in many previous reports, but it remains unclear if this is due to the lack of systematic sampling in the past, the particularities of the market sampled, or a genuine downward trend in price. Subsequent monitoring found a further decline, to about US\$18,000 in 2017 (Stoner, Verheij, and Wu, forthcoming).

If prices have indeed decreased, this fact, combined with an observed decline in poaching in South Africa over the last two years, could be indicative of a decline in the illicit rhino horn market.

²⁴ SC67 Doc 21.1, Annex 1, pp 34-35.

²⁵ Based on seizure incidents recorded in World WISE.

²⁶ UNODC, *World Wildlife Crime Report*, Vienna: UNODC, 2016, p. 71.

IV. Rosewood

International and national policy and law

The World Wildlife Crime report found that, based on the volume and value of seizures, the various tree species harvested for “rosewood” appeared to be the single largest wildlife crime market in the world. The wood has been harvested in great quantities from the wild forests of Southeast Asia, West Africa, East Africa, and Latin America. At the time of the 2016 World Wildlife Crime Report, a limited number of rosewood species were CITES listed, and the Report illustrated how rosewood dealers were logging alternate species to avoid the CITES constraints. In particular, it pointed out the enormous growth in illegal harvesting of the main West African rosewood, kosso (*Pterocarpus erinaceus*), since 2010 (UNODC, 2016).

The Report argued that although it was clear that the wood was illegal in origin, importing countries lacked legislation allowing them to refuse the wood just because it was harvested or exported contrary to the regulations and laws of the sourced country. In other words, it was clear that kosso was being taken contrary to the forestry laws of the source countries, but some destination countries had no legal basis for acknowledging these foreign rules. Indeed, the purpose of the CITES system is precisely to allow all Parties to protect each other’s species, so the obvious solution was CITES listing.

In 2016, the Government of Senegal requested that kosso be included in Appendix III,²⁷ requesting that all imports of rosewood be accompanied by either a Senegalese export certificate or a certificate of origin specifying that the source was not Senegalese. Later that year, the CITES CoP included kosso in Appendix II,²⁸ without annotation, requiring export certification from all Parties. While it is still too soon to measure the impact this may have had on the illegal harvesting and export of kosso, it is hoped that this regulation of the legal market will help protect the species.

CITES CoP17 also took measures to address the issue of “species hopping” by rosewood dealers. The entire genus of *Dalbergia*, which contains the largest number of rosewood species, was listed in Appendix II (except for the species listed in Appendix I).²⁹ This should greatly simplify controls, as previously distinguishing species and origin was required. This does leave other species of *Pterocarpus* vulnerable to legal exploitation, and the species of most concern is probably Burmese padauk (*Pterocarpus macarocarpus*), a popular mid-range rosewood. There may also be greater draw on species of the other rosewood genera, including *Diospyros*, *Millettia*, and *Cassia*.

Fieldwork conducted by UNODC in five West African countries in 2014 and 2015 highlighted the difficulties of regulating trade in this region. Officials interviewed shared conflicting views on national policy, and complained about the limited capacity to monitor extraction. Timber traders suggested that regulations could be overcome through corruption. In the context of a great deal of cross-border trade, the national origin of timber can be extremely difficult to determine. As one of

²⁷ Notification to the Parties 2016/008 on Amendment to Appendix III. See <https://cites.org/sites/default/files/notif/E-Notif-2016-008.pdf>

²⁸ CITE CoP17 Prop. 57

²⁹ Annex of Notification to the Parties No. 2016/068

the poorest areas of the world, it is clear that West Africa will need international assistance in protecting its endangered resources (Leggett, forthcoming).

Based on official data from destination markets in the Asian region, it appears that the value of legal rosewood imports began to rise sharply after 2009, peaking in 2014 at some US\$2.25 billion. This included some US\$500 million of imports from West Africa, the vast majority of which were likely *Pterocarpus erinaceus*, which was not protected at the time. These imports dropped precipitously in 2015, to less than US\$1 billion, and further in 2016, to just over US\$800 million.³⁰ Exports from some West African countries appear to have increased in 2016 and early 2017, however. As an Appendix II species, kosso can be legally traded with export certification of sustainability. For example, in May 2017, Ghana lifted its rosewood trade ban and began exporting felled stocks.³¹ Given the challenges of regulating timber exports in this region, monitoring of this market is vital to prevent further illegal supply.

V. Pangolins

International and national policy and law

Like rosewood, pangolins gained a major boost in protection at CITES CoP17, as all species were moved to Appendix I, banning international commercial trade.³² As shown in the 2016 World Wildlife Crime Report, legal trade in pangolins has virtually disappeared, while illegal trade has boomed. To give this listing its full effect, a stocktaking is required. Since domestic pangolins are dwindling in the big consumer nations, the continued availability of pangolin products should be subjected to scrutiny. Greater forensic monitoring of pangolins in end use markets could also help prevent the smuggling of African pangolins.

Illegal trade

Very little is known about the size of remaining pangolin populations. As nocturnal and solitary animals, spread out over a wide geographic area in developing countries, population surveys are difficult. They give birth to a single young after an extended gestation, so there is good reason to be concerned about the sustainability of high offtake.

Whatever their true numbers, seizure data show alarming levels of pangolin in illegal trade. Multi ton seizures of African pangolin scales are now common. Updated World WISE data show the equivalent of 190,000 live pangolins were seized in illegal trade between 1999 and 2016, with 2017 on pace to represent a new high. These totals are mostly comprised of a limited number of very large seizures, indicating a highly organized market, and one that may be greatly underestimated. In addition, it appears to be more common for pangolin scales to be detected in mixed loads, alongside part of other species, such as ivory or rhino horn. This suggests the trade is run by specialised wildlife traffickers.

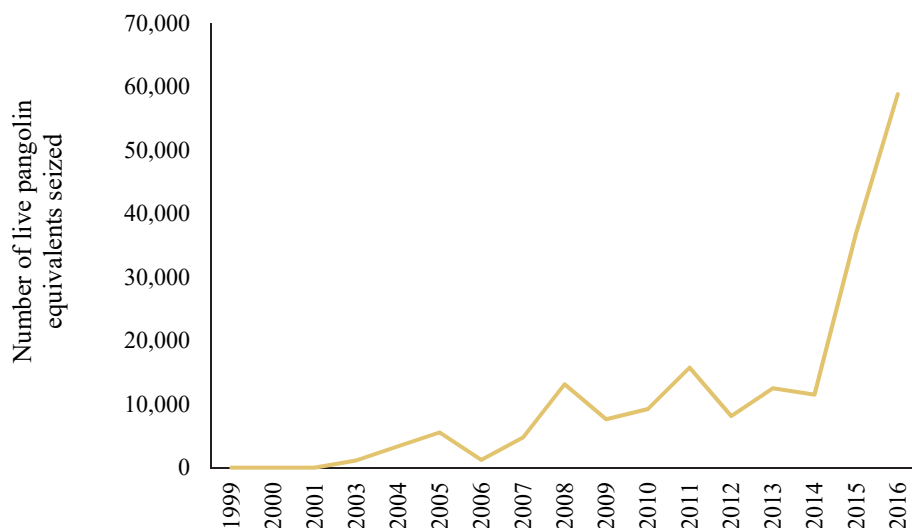
³⁰ Based on official data reported to World Trade Atlas.

³¹ Forestry Commission of Ghana, Rosewood Harvesting in Ghana and Way Forward, 4 May 2017.

³² CITES CoP17 Props 8-12; CITES No. 2016/063

Many had predicted that illicit demand for pangolins would soon exhaust the Asian supply, and that African pangolins would soon be targeted by poachers.³³ Sadly, it appears that this threat has been realised. Pangolin scales have traditional use in Africa, and some of the exports may involve buyers purchasing existing stocks. Since little is known about the scale of these stocks,³⁴ it is difficult to say for sure how much of the recent seizures involve poaching.

Figure 7: Live pangolin equivalents seized globally, 1999 to 2016



Source: World WISE, EIA, and CITES³⁵

VI. Policy implications

The bold moves made by the international community to address the illegal wildlife trade appear to be having a positive effect. In the case of ivory, the restriction of legal domestic markets appears to be resonating down the supply chain. It is less clear why rhino markets appear to be undergoing a similar decline, and the recent legalisation of domestic trade in the source country of South Africa should be closely monitored for its effects on the market. Since most illegal rosewood is ultimately sold in legal markets, the impact of CITES controls on the primary African species affected appear to be exactly what would be expected: a dampening of the market. This African species was itself a substitute for traditional Asian species, so international vigilance is needed to monitor the extraction of the next substitute species.

Because most of the pangolin market was already illegal, the Appendix I listing, although merited, does not have much effect on the illegal trade. It may assist authorities to detect illegal trade in future and enable stronger enforcement action. The use of African pangolin scales in place of the traditional Asian ones is now an established fact, and more needs to be done to understand the scale and impact

³³ Dan Challender and L. Hywood, 'African pangolins under increased pressure from poaching and intercontinental trade'. *TRAFFIC Bulletin*, Vol 24, No 2, 2012, pp 53-55.

³⁴ The data that have been reported are included in Table 13 of Annex 2 to document SC69 Doc. 57. See: <https://cites.org/sites/default/files/eng/com/sc/69/E-SC69-57-A.pdf>

Only five countries report large holdings: Cameroon, China, Kenya, Thailand, and Uganda.

³⁵ Thanks to the Environmental Investigation Agency, the IUCN species programme (Dan Challender), and CITES for their help in updating World WISE pangolin data.

of this extraction. For those countries where consumption of pangolin products is legal and widespread, careful monitoring is required to ensure stocks are consistent with legal sourcing.

Recent research by UNODC on the non-pecuniary motivations of poachers has highlighted the importance of focusing not only at the supply side, but also on the front end of the trafficking chain. Wildlife trafficking is different from the trafficking of other forms of contraband. In most criminal markets, the damage only accrues when the contraband reaches its final consumer. In contrast, the main harm caused by wildlife trafficking occurs when the contraband is sourced. Once wildlife has been illegally sourced, the damage has been done, regardless of what happens later in the market. Strategies aimed at reducing wildlife crime should take this element into account.

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