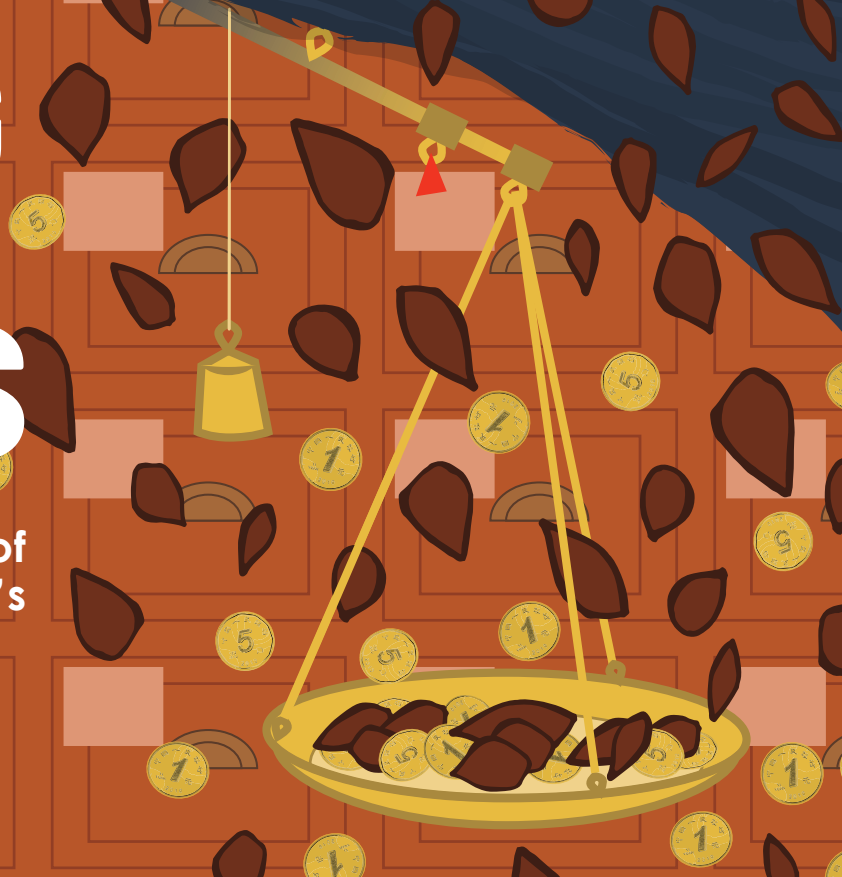




TIPPING the SCALES

Exposing the Growing Trade of
African Pangolins into China's
Traditional Medicine Industry



ABOUT C4ADS

C4ADS (www.c4ads.org) is a 501(c)(3) nonprofit organization dedicated to data-driven analysis and evidence-based reporting of conflict and security issues worldwide. We seek to alleviate the analytical burden carried by public sector institutions by applying manpower, depth, and rigor to questions of conflict and security. Our approach leverages nontraditional investigative techniques and emerging analytical technologies. We recognize the value of working on the ground in the field, capturing local knowledge, and collecting original data to inform our analysis. At the same time, we employ cutting edge technology to manage and analyze that data. The result is an innovative analytical approach to conflict prevention and mitigation.

LEGAL DISCLAIMER

The mention of any individual, company, organization, or other entity in this report does not imply the violation of any law or international agreement, and should not be construed as such.

COVER IMAGE

Front cover art by Becky Delaware.

ABOUT THE AUTHORS

Faith Hornor is the Program Director of C4ADS' Environmental Crimes Fusion Cell. She received her undergraduate degree in International Relations from American University. She speaks Swahili and French and has previously lived and studied in Tanzania and Kenya.

Devin Thorne is a Senior Analyst at C4ADS. Devin received his undergraduate degree from the University of Alabama at Birmingham. He studied and worked in China for three years, where he earned an MA in International Relations from The Johns Hopkins University – Nanjing University Center for Chinese and American Studies. He speaks Mandarin.

Amanda Shaver is an Analyst at C4ADS. She received her BA in International Affairs and Economics and her MA in International Affairs, with concentrations in Security Studies and International Development Policy, from the George Washington University. Her previous experience includes the Stimson Center, the Obama White House, the State Department, and Capitol Hill. She speaks Italian and previously lived in Italy and Indonesia.

ACKNOWLEDGEMENTS

C4ADS would like to thank all those who provided advice and guidance during this project. The authors extend special gratitude to the peer reviewers of this report for their insightful feedback, including Chris Hamley, Senior Campaigner at the Environmental Investigation Agency (UK); Ellen Connelly, Trustee and Director of Conservation at the Tikki Hywood Foundation; Lisa Hywood, CEO and Founder of the Tikki Hywood Foundation; Dr. Meredith Gore, Associate Professor at the University of Maryland; and others who asked to remain anonymous. Further, C4ADS is grateful to the World Customs Organization and the U.S. Fish and Wildlife Service (U.S. FWS) – Zoological Society of London (ZSL) MENTOR-POP (Progress on Pangolins) program, whose data supplemented C4ADS' Wildlife Seizure Database. Finally, the authors are grateful to numerous others on the C4ADS team, specifically Data Scientist Max Kearns, whose support was invaluable throughout this research.

OUR TECH PARTNERS

C4ADS is grateful to our technology partners whose software and systems are integral to the integrity and quality of our research and analysis.

ANALYSIS POWERED BY



WINDWARD

EXECUTIVE SUMMARY

The trafficking of pangolins and their scales drives corruption, undermines the rule of law, creates public health risks, and even threatens local and regional security. Additionally, the illicit pangolin trade may have even played a role in onset of the COVID-19 pandemic.¹ Critically, the trade—and all of its related challenges—appears to be growing: between 2015 and 2019, 253 tonnes² of pangolin scales were confiscated, and the annual quantity of pangolin scales seized increased by nearly 400%. To expose the logistics of how these scales are trafficked internationally, *Tipping the Scales* uses publicly available seizure data and investigative case studies.

The global plight of pangolins is increasingly well-known, but less understood are the opaque supply chains that enable pangolin trafficking. To trace this illicit system from consolidation hubs in West and Central Africa to China's consumer markets, *Tipping the Scales* analyses 899 pangolin seizures. Drawing on C4ADS' Wildlife Seizure Database, law enforcement partner seizure data, official government documents, corporate data, and expert interviews, the report details how traffickers nest their activities within licit systems of trade and commerce. To disrupt this trade, C4ADS identifies opportunities for intervention and capacity building.

In Section I, the report finds that pangolin scale traffickers have co-opted bushmeat supply chains and legal breeding programs for their illicit activities. Bushmeat-scale trafficking supply chains are particularly prominent in Central and West Africa; 72% of African scale seizures over the last five years have come from those regions. Growing demand for pangolin meat and scales has made pangolins a dual-transaction good³ that relies on transport networks between rural areas and urban and coastal distribution hubs. Further, the report finds that pangolin breeding programs in sub-Saharan Africa obscure the lines between poaching, conservation, and science.

In Section II, the report finds that bulk pangolin scale shipments often exit the continent through coastal countries in Central and West Africa. While 70% of intercontinental trafficking instances tied to Africa rely on the air transport sector, 81% of the total weight of pangolin scales are trafficked intercontinentally via the maritime transport sector. China and Hong Kong are the trade's most prominent destinations. Since 2015, 42% of the 195 tonnes of pangolin scales seized throughout Asia originated in Africa and were seized in or bound for China or Hong Kong.

In Section III, the report finds that there are more than 1,000 companies, hospitals, and other entities participating in China's legal market for medicinal pangolin products. In this market, which allows companies to privately stockpile pangolin scales, traffickers exploit lax regulations to sell scales from Africa and Asia. Government-reported pangolin scale consumption quotas, geo-tagged company data, and seizures suggest that Guangdong and Hunan provinces have relatively high levels of exposure to both the legal pangolin market and pangolin trafficking.

Based on these findings, *Tipping the Scales* makes 10 recommendations to increase detection of and improve enforcement against transnational criminal networks operating in Africa and Asia (see page 58).

TABLE OF CONTENTS

Executive Summary	03
Introduction	05
Glossary	06
Methodology	07
Defining the Core Pangolin Trafficking Supply Chain	

Section I: Systems Of Sourcing Pangolins From Africa **11**

Central and West Africa: The Critical Regions	12
Overlapping Bushmeat and Scale Supply Chains	13
Case Study: Local and International Pangolin Supply Chains in Cameroon	
Pangolin Breeding Programs	16
Case Study: Breeding Programs' Ties to Pharmaceutical Companies	

Section II: The Intercontinental Transport Of Scales **24**

Intra-African Shipment Consolidation	25
Maritime Trafficking Trends	26
Case Study: Nigeria's Enforcement Gap	
Air Trafficking Trends	29
Distribution into China	31

Section III: China's Legal Pangolin Scale Market **36**

A Vulnerable Market Structure	37
Stockpile and Quota System	
Exploitation of the Legal Market	45
Case Study: Shanghai Market	
Improving, but Incomplete, Legal Protections	48

Conclusion	57
Recommendations	

INTRODUCTION

Transnational criminal syndicates are turning a profit by exploiting pangolins. Recognized as “the world’s most trafficked mammal” since at least 2014,⁴ the animal’s only protection is keratin scales that cover its body—the exact thing that paying consumers in China, Vietnam, and elsewhere believe holds medicinal properties.⁵ Throughout sub-Saharan Africa and Asia, poachers hunt all eight species of pangolin to fill the demand for scales and meat.⁶ Seizures of known pangolin shipments increased over the last five years.⁷ By 2019, global pangolin seizures reached an all-time high: authorities seized more than 116 tonnes of pangolin scales and meat with a more than 70% increase in the number of global seizures seen just five years earlier.⁸ In their pursuit to fulfill consumer demand for pangolins, traffickers exploit communities and legal supply chains. Together, such activities threaten economic growth, erode progress toward good governance, and degrade environmental stewardship.

Although there is no scientific proof that pangolin meat and scales have medicinal properties,^{9 10 11} reliance on the species for food and medicine remains strong in many consumer markets. Subsistence poaching of pangolins has given way to viewing the animal as a luxury food item in Africa and Asia and contributed to scale-sourcing supply chains.^{12 13} Wildlife traffickers operating in Central and West Africa have emerged to fill the demand created by Traditional Chinese Medicine (TCM) markets in China and elsewhere. While Eastern and Southern Africa have traditionally been hubs for international ivory trafficking,¹⁴ 7% of seized African pangolin scales originated in or transited through those regions over the last five years.¹⁵ In contrast, about 90% (184 tonnes) of seized pangolin scales transited through Central and West Africa since 2015.¹⁶ What was once largely a regional, intra-Asian trade relying on the four Asian species of pangolin, has increasingly become an international trade¹⁷ that heavily relies on transcontinental transportation services.¹⁸ Today, Central and West Africa appear to be as critical to the sourcing side of the illicit pangolin supply chain as China is to the demand side.

In 2016, the Convention on International Trade in Endangered Species (CITES)—a treaty that governs the international trade of wild animals and plants—applied its highest level of protection to all eight pangolin species.¹⁹

²⁰ Classified as Appendix I, CITES banned the interstate commercial trade of pangolins.²¹ However, CITES has no independent enforcement authority over activities within the sovereign territory of its parties.²² Therefore, countries like China can be a party to CITES, while also operating domestic consumer markets for pangolin-based products. In China, longstanding cultural practices have industrialized; pharmaceutical companies and TCM practitioners legally produce, prescribe, and apply pangolin-based medicines on a massive scale.²³ ²⁴ Although recent regulatory changes introduced by the Chinese government in June 2020 may begin to restrict the size of this market,^{25 26 27} for decades, the country’s TCM market has generated a demand for scales up to an estimated 150,000 pangolins annually.²⁸ China’s legal pangolin market and decentralized stockpile system, which leaves pangolin scales in the hands of for-profit companies,²⁹ creates opportunities for criminal syndicates to profit while blurring the line between licit and illicit systems.

Unchecked international pangolin trafficking is not only an existential threat to the species, it is also a security concern. The trade enriches criminal actors that create public health risks, fuel corruption, and undermine the rule of law.^{30 31 32 33} Wildlife traffickers routinely take advantage of legal loopholes and bribe key government and industry stakeholders. They drive the creation of permissive environments that are simultaneously exploited by other illicit networks that also rely on money laundering, extortion, and licit systems of trade and commerce. Without a data-driven understanding of the trade, traffickers will increasingly pose local and regional security risks across Africa and Asia. *Tipping the Scales* uses data on 899 pangolin seizures from C4ADS’ Wildlife Seizure Database and global law enforcement partners, as well as publicly available investigative data, to uncover the pangolin trafficking supply chains and propose concrete measures for combatting wildlife crime.

GLOSSARY



CITES

Convention on the International Trade in Endangered Species of Wild Fauna and Flora



CWT

Counter-Wildlife Trafficking



IWT

Illicit Wildlife Trafficking



NFGA

National Forestry and Grasslands Administration of the People's Republic of China. The NFGA is the national-level authority, and each province has a provincial-level authority.



TCM

Traditional Chinese Medicine



Air Seizure

An air seizure is made at airports or affiliated cargo warehouses before or after an illicit wildlife product has been transported via plane from one location to another. Air seizures include both passenger-carried wildlife and products shipped via air freight services. Air seizures are also referred to as "seizures in the air transport sector."



Destination Location

The location to which a shipment of product is headed. As shipments are merged and divided, creating new shipments, destination locations can change. Thus, they are not necessarily reflective of the ultimate consumption location for a product.



Interdiction Rate

The number of shipments of illicit product that are seized (i.e. interdicted) compared to the total number of known shipments that transit a given location.



Land Seizure

A land seizure is made at inland locations, outside of logistics hubs like airports, ports, and mail processing facilities. Examples of where land seizures might be made include in homes, in company warehouses, on roads, or at land border crossings.



Mail Seizure

A mail seizure is made at post and parcel processing facilities or customs inspection points. Mail seizures can be of small and large personal shipments as well as commercial shipments via package delivery services (i.e., courier services).



Origin Location

The starting point of a shipment of product. As shipments are merged and divided, thus creating new shipments, origin locations may be re-set to reflect that part of the transport route. Therefore, origin locations are not necessarily reflective of the initial source location of a product.



Pangolin Product

A pangolin product can include any component of the animal, such as meat, skin, claws, limbs, and scales.



Sea Seizure

A sea seizure is made at maritime ports, affiliated cargo warehouses and customs inspection points, or from boats along various bodies of water (e.g., rivers, gulfs, seas, etc.) Sea seizures include both passenger and crew-carried wildlife products on vessels like speedboats as well as containerized shipments on cargo ships. Sea seizures are also referred to as "seizures in the maritime transport sector."



Seizure

A seizure is one interception of an illicit product by enforcement authorities.



Shipment

A shipment is a batch of product, regardless of size, that is trafficked as a single unit.



Transit Location

A transit location is the location through which a shipment passes. A shipment can have multiple transit locations.



Whole Pangolin

A whole pangolin refers to the live or dead body of the animal.

METHODOLOGY

Tipping the Scales analyzes pangolin trafficking from Central and West Africa to China between January 1, 2015 and December 31, 2019, to provide insight on the status of the illicit trade and emerging trends. The report draws on four primary types of information:

- 741 whole pangolin or pangolin scale seizures curated from publicly available sources such as news reports and customs press releases;
- 158 additional pangolin seizures provided to C4ADS by law enforcement authorities, including the World Customs Organization and U.S. Fish and Wildlife Service (U.S. FWS) – Zoological Society of London (ZSL) MENTOR-POP (Progress on Pangolins) program;
- 10 interviews with counter-wildlife trafficking experts; and
- Investigative data drawn from publicly available information such as Chinese corporate registries, trade data, and the CITES Trade Database.

C4ADS' Wildlife Seizure Database forms the foundation of the trends analysis in this report. The Database maintains records of ivory, rhino horn, and pangolin seizures tracing back to 2009. It is populated by careful curation and systematic integration of publicly available reporting on wildlife seizures in more than 10 languages on a daily basis by a team of six analysts.¹ This report focuses on the trends derived from the Database's 899 pangolin seizures over the last five years (2015-2019).

More than 90 fields of information can be recorded for each seizure in C4ADS' Wildlife Seizure Database. Select fields include: seized products and quantities; date of seizure; origin, transit, and destination locations; obfuscation methods; individual(s) arrested during the seizure; airports and seaports used to move the seized products; and sources of information. The robustness of seizure data, and thus the Database, relies on the quality of publicly available reporting. Therefore, a few caveats must be considered:

1. Details on seizures can be reported inaccurately and change over time.
2. An increase or decrease in the reporting of seizures is not necessarily reflective of an increase or decrease in trafficking, but could indicate either an increase in proactive reporting by news agencies sometimes due to increased public interest, or an increase in enforcement

capabilities leading to higher interdiction rates.

3. Seizures only reflect failed trafficking attempts. Thus, there may be successful trafficking tactics and routes that are unknown.

For more information on the complexities of analyzing seizure data, please refer to C4ADS' *Flying Under the Radar*.³⁴

To minimize the potential bias and factual inaccuracies that may result from news reporting, C4ADS records information from multiple sources whenever possible. Furthermore, since aggregate trends are more affected by public reporting shortfalls, multiyear and relative trend analysis is prioritized throughout the report. The data is interpreted in the context of C4ADS' experience working on counter-wildlife trafficking (CWT) issues and interaction with on-the-ground organizations to ensure that the trends are reflective of what the greater CWT community is seeing. To support a broad view of the impact of the trade on pangolins and the nuances of China's legal pangolin scale stockpile, C4ADS worked with and interviewed academic researchers, wildlife criminologists, pangolin biology experts, and experts at CWT non-governmental organizations (NGOs).

The pangolin seizure data in C4ADS' Wildlife Seizure Database is enriched with non-public pangolin seizure reporting (2015-2019) from the World Customs Organization's Customs Enforcement Network (WCO's CEN) and the U.S. Fish and Wildlife Service (US FWS) - Zoological Society of London (ZSL) MENTOR-POP (Progress on Pangolins) Program.^{35,36} WCO's CEN data was collected by its international network of members and liaison offices that interact with global customs and associated law enforcement agencies. This data and U.S. FWS-ZSL MENTOR-POP program's Cameroon data provide improved insight into countries critical to the trade, but where local media reporting of the issue may be scarce.³⁷

Within the conservation community, there is concern that public reports that expose trafficking hotspots, animal habitats, and the value chain of illegal activity can be exploited by current and potential trafficking syndicates to evade detection. C4ADS considered this when outlining what information to include in this report and to prevent any ongoing CWT operations from being compromised. These self-limitations had no effect on the analysis of pangolin trafficking trends in the report.

¹ To receive further information or request statistics derived from C4ADS' Wildlife Seizure Database, please email info@c4ads.org.

Defining the Core Pangolin Trafficking Supply Chain

GLOBAL PANGOLIN TRADE



Analyzing the trade of pangolins and pangolin products from Africa to Asia requires an understanding of the structure of illegal wildlife trafficking syndicates. A model wildlife trafficking syndicate consists of peripheral actors (poachers and consumers) and core actors (intermediaries, consolidators, transporters, and distributors). The peripheral actors are the most numerous and replaceable. Therefore, actions taken against peripheral actors have less of an impact on dismantling trafficking syndicates. In contrast, the core actors have unique skillsets and are therefore less replaceable. They rely on established relationships with corrupt officials, insider knowledge on logistics supply chains, and personal networks of suppliers and distributors. Targeting the core actors is critical to creating systemic change.

C4ADS' analysis and recommendations operate under the assumption that individuals involved in wildlife trafficking syndicates are rational actors driven by financial gain and the desire to mitigate personal risk. C4ADS expects these actors to engage in illegal wildlife trafficking activity based on a cost-benefit calculation. As a result, C4ADS believes that larger shipments are

indicative of coordinated and complex syndicates that not only have the capabilities to manage and transport large amounts of product, but also view the risk of seizure as low.

Therefore, to substantially alter the illicit wildlife trade, authorities should work toward creating a less permissive environment for wildlife crime. Doing so means increasing the risk of detection, seizure, arrest, and prosecution. Such enforcement actions—particularly the confiscation of illicit wildlife product and the certainty of incarceration—increase the costs of engaging in wildlife crime. Over time, traffickers will move away from their illicit endeavors if they are viewed as too risky, increasingly costly, and ultimately less profitable. This cost-benefit framework and understanding of the wildlife trafficking network guide C4ADS' analysis of the illegal trade of pangolins. The Global Pangolin Trade graphic provides a brief overview of the network that facilitates the illegal trade of African pangolins to Asia, which will be discussed in further detail throughout the paper.

Endnotes

- 1 Gorman, James. "Pangolins Are Suspected as a Potential Coronavirus Host." *The New York Times*, 10 Feb. 2020, www.nytimes.com/2020/02/10/science/pangolin-coronavirus.html.
- 2 Throughout the report, "tonnes" refers to metric tons and is equivalent to 1,000 kilograms and 2,205 lbs.
- 3 A dual-transaction good is a single item that can be split and sold as two products. In this case, a pangolin can be sold for its meat as well as its scales into separate consumer markets.
- 4 Sutter, John. "The pangolin trade must stop now." *CNN*, 31 July 2014, <http://www.cnn.com/2014/07/31/opinion/sutter-pangolin-iucn-update/index.html>.
- 5 Denyer, Simon. "China's push to export traditional medicine may doom the magical pangolin." *The Washington Post*, 20 July 2017, https://www.washingtonpost.com/world/asia_pacific/chinas-push-to-export-traditional-medicine-may-doom-the-magical-pangolin/2018/07/20/8d8c52d4-7ef1-11e8-a63f-7b5d2aba7ac5_story.html.
- 6 In addition to demand from Asia for pangolin-derived medicinal remedies, traditional healers in Africa also use pangolin scales. Sources: Nuwer, Rachel. "Illegal trade in pangolins keeps growing as criminal networks expand," *Animals*, *National Geographic*, 11 February 2020, <https://www.nationalgeographic.com/animals/2020/02/pangolin-scale-trade-shipments-growing/>; Krishnasamy, Kanitha and Monica Zavaagli. "Southeast Asia: At the Heart of Wildlife Trade." *TRAFFIC*, February 2020 <https://www.traffic.org/site/assets/files/12648/sea-traps-february-2020.pdf>. Boakye, Maxwell Kwame, et al. "Knowledge and Uses of African Pangolins as a Source of Traditional Medicine in Ghana." *Plos One*, 20 January 2015, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4300090/>.
- 7 C4ADS' Wildlife Seizure Database.
- 8 C4ADS' Wildlife Seizure Database.
- 9 "Eating pangolin meat is actually not 'big tonic.'" *People's Network*, 22 February 2017, <http://health.people.com.cn/n1/2017/0222/c404177-29099432.html>.
- 10 Cheng, Weijia. "穿山甲!怎么有可能是它?其实,你都不知道它经历了什么" ["Pangolins! How Could It Be Them? Actually, You Do Not Know What They Have Been Through"]. *Science Net*, *China Science News Agency*, 7 February 2020, <http://news.sciencenet.cn/htmlnews/2020/2/435474.shtm>.
- 11 Jacobs, Rachel L., et al. "Myth debunked: Keratinous pangolin scales do not contain the analgesic tramadol." *Conservation Science and Practice*, 20 March 2019, <https://conbio.onlinelibrary.wiley.com/doi/pdf/10.1111/csp2.82>.
- 12 Coad, Lauren, et al. "Towards a Sustainable, Participatory and Inclusive Wild Meat Sector," *Center for International Forestry Research*, 2019, https://www.cifor.org/publications/pdf_files/Books/BCoad1901.pdf.
- 13 "Threats," *IUCN SSC Pangolin Specialist Group*, <https://www.pangolinsg.org/pangolins/threats/>.
- 14 C4ADS' Wildlife Seizure Database.
- 15 C4ADS' Wildlife Seizure Database.
- 16 C4ADS' Wildlife Seizure Database.
- 17 Heinrich, Sarah, et al. "Where did all the pangolins go? International CITES trade in pangolin species." *Science Direct*, October 2016, <https://www.sciencedirect.com/science/article/pii/S2351989416300798>.
- 18 C4ADS' Wildlife Seizure Database.
- 19 "Consideration of Proposals for Amendments to Appendices I and II." *Seventeenth Meeting of the Conference of the Parties (CoP17), Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)*, https://cites.org/sites/default/files/eng/cop/17/prop/CAR_etc_pangolins_E.pdf.
- 20 "Appendices I, II, and III." *Documents, Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)*, <https://cites.org/eng/app/appendices.php>.
- 21 "The CITES Appendices." *Official Documents, Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)*, <https://cites.org/eng/app/index.php>.
- 22 "What is CITES?" *Discover CITES, Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)*, <https://cites.org/eng/disc/what.php>.
- 23 Jiaming, Xu, et al. "Trafficked to Extinction." *The Pangolin Reports*, *Global Environmental Reporting Collective*, 25 September 2019, pangolinreports.com/#lede.
- 24 穿山甲大数据纵览:疯狂的利用何时休? ["Pangolin Big Data Survey: When Will Crazy Exploitation End?"]. *China Biodiversity Conservation and Green Development Fund*, July 2016, http://file.cbcdgdf.org/T18/O125/file/20180925/20180925133325_3022.pdf.
- 25 国家重点保护野生动物名录 ["National Key Protected Wild Animals Directory"]. *Directory, National Forestry and Grasslands Administration of the People's Republic of China*, 4 January 2018, <http://www.forestry.gov.cn/main/3954/content-1063883.html>.

- 26 Wang, Yueming. "不再入药!穿山甲从药典“除名” ["Never Again to be Used in Medicine! Pangolins are Removed from the Pharmacopoeia"]. Health Times, People's Daily, 9 June 2020, <http://www.jksb.com.cn/html/xinwen/2020/0609/163148.html>.
- 27 Alberts, Elizabeth Claire. "Did China really ban the pangolin trade? Not quite, investigators say." Mongabay, 24 June 2020, <https://news.mongabay.com/2020/06/did-china-really-ban-the-pangolin-trade-not-quite-investigators-say/>.
- 28 Demand for pangolin meat in China allegedly accounts for up to an additional 150,000 pangolins each year. Sources: Wang, Yifu. "Saving Pangolins from the Traditional Chinese Medicine Markets in China." Zoological Society of London, April 2018, <https://www.zsl.org/sites/default/files/media/2018-04/Yifu%20Wang%20talk%20slides.pdf>.
"Extinction Around the World, A National Grade II Protected Animal." Written News, China Wild Animal Protection Committee, 4 January 2017, <http://www.forestry.gov.cn/bhxx/651/content-935727.htm>.
Wu, Shibao, et al. "中国穿山甲资源现状及保护对策" ["China's Pangolin Resources Situation and Protection Policy"]. Journal of Natural Resources, vol. 17, 2, 2002, http://www.pangolinsg.org/wp-content/uploads/sites/4/2016/06/Wu-et-al-2002-The-status-and-conservation-strategy-of-pangolin-resource-in-China_J-of-Nat-Resources.pdf.
- 29 This feature of China's pangolin stockpile is discussed in-depth in Section III of this report.
- 30 "2019 END Wildlife Trafficking Strategic Review." U.S. Department of State, 7 November 2019, <https://www.state.gov/2019-end-wildlife-trafficking-strategic-review/>.
- 31 "Wildlife Trafficking." The U.S. Department of Justice, 15 April 2020, <https://www.justice.gov/enrd/wildlife-trafficking>.
- 32 Ahmed, Mariam. "Wildlife Crime and the Rule of Law." Multilateral, The University of Texas at Austin, 22 October 2014, <https://sites.utexas.edu/wildlife/2014/10/22/wildlife-crime-and-the-rule-of-law/>.
- 33 Wyatt, Tanya and Anh Ngoc Cao. "Corruption and wildlife trafficking." Volume 11, Anti-Corruption Resource Center, 15 May 2015, <https://www.cmi.no/publications/file/5570-corruption-and-wildlife-trafficking.pdf>.
- 34 Utermohlen, Mary and Patrick Baine. "Flying Under the Radar: Wildlife Trafficking in the Air Transport Sector." Appendix I–Seizure Data Biases and Vulnerabilities. C4ADS, June 2017, <https://static1.squarespace.com/static/566ef8b4d8af107232d5358a/t/59225c49db29d65872a1a67b/1495424094784/Flying+Under+the+Radar.pdf>.
- 35 Kirensky, Jerry Mbi, Euphemia Ewah Fosab, and Nebaneh Samuel Neba, coordinated by Francis Nchembi Tarla. "Seizures, Arrests, and Prosecution of Pangolin Traffickers in Cameroon." Legal Systems Action Group, USFWS-ZSL MENTOR (Mentoring for Environmental Training in Outreach and Resource conservation) POP (Progress on Pangolins), June 2017.
- 36 Throughout the report, all citations to C4ADS' Wildlife Seizure Database include data provided by WCO's CEN and FWS' MENTOR (Mentoring for Environmental Training in Outreach and Resource conservation) POP (Progress on Pangolins), unless otherwise indicated.
- 37 "Illicit Trade Report, 2018." World Customs Organization, 2018, http://www.wcoomd.org/-/media/wco/public/global/pdf/topics/enforcement-and-compliance/activities-and-programmes/illicit-trade-report/itr_2018_en.pdf?db=web.

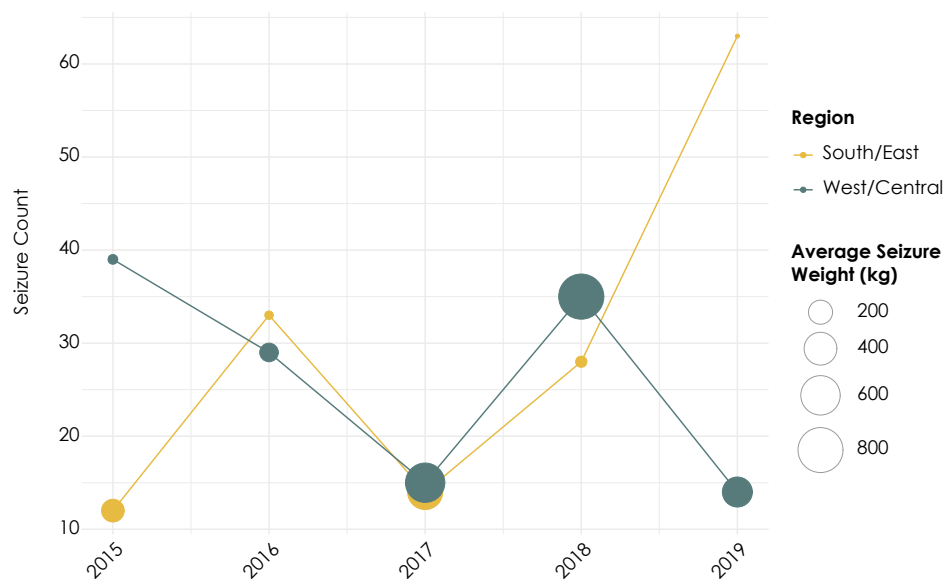
SECTION I: SYSTEMS OF SOURCING PANGOLINS FROM AFRICA

Traffickers target all four species of African pangolins,¹ with the most urgent trafficking crisis occurring in Central and West Africa. Since 2015, 72% of all known pangolin scale seizures linked to Africa transited through or originated in these two regions.² Within Central and West Africa, traffickers leverage two distinct supply chains for delivering pangolin scales to consumers: a supply chain that co-opts the bushmeat trade to collect scales in bulk and a supply chain that relies on pangolin breeding programs, which create opportunities to obfuscate trafficking activity as an ostensibly legal trade. Of these two supply chains, the exploitation of the existing bushmeat trade is the dominant model. Understanding the prevalence and methods of these supply chains is critical to improving enforcement outcomes on illicit pangolin sourcing.

Central and West Africa: The Critical Regions

Figure 1: Regional Comparison of Number of Seizures and Average Weight Seized Over Time, 2015-2019.

Source: C4ADS' Wildlife Seizure Database.



Home to four species of pangolin, Central and West Africa have become vital source regions for the global pangolin trade.³ The Democratic Republic of the Congo (DRC), Cameroon, and Nigeria have emerged as the most critical jurisdictions exposed to the trade in these regions. Since 2015, pangolin seizures with known origins and links to Africa most commonly originate from the Central and West African countries of Nigeria (26%), Cameroon (19%), and the DRC (14%).⁴⁻⁵ During the same period, pangolin scale seizures associated with these two regions grew in size, with the average weight of a pangolin scale seizure increasing by 995% to 3,059 kilograms per seizure.⁶ While East⁷ and Southern⁸ Africa are not exempt from the illicit trade—they appear to have higher detection, interdiction, and reporting rates for pangolin seizures—the size of pangolin seizures in that part of the continent are typically much smaller or consist more often of live pangolins than those in Central⁹ and West Africa.¹⁰⁻¹¹ In the last five years, South Africa, Zimbabwe, and Uganda achieved more pangolin seizures than any Central or West African country, except Cameroon. At the same time, the average size of pangolin scale seizures in East or Southern Africa decreased 81%, making them only about 3.2% the average size of seizures associated with Central and West Africa in 2019 (See Figure 1).¹² Therefore, while East and Southern Africa experience high frequency low-volume shipments of scales, West and Central Africa experience relatively low frequency, but high-volume shipments.

The tremendous growth in the size of pangolin seizures linked to Central and West Africa suggests well-financed trafficking syndicates are increasingly operating out of these regions. The larger the seizure, the more complex the syndicate behind an illicit pangolin shipment.¹³⁻¹⁴⁻¹⁵⁻¹⁶ Paying for, collecting, and transporting large quantities of pangolin products entails great upfront investment and coordination. It also indicates a calculation by traffickers that engaging in the enterprise is low risk. Losing one large shipment in a seizure may mean a significant reduction in profits, yet syndicates continue to traffic in large quantities. The traffickers appear confident that shipments will not be detected by law enforcement and that their channels of import and export are secure, possibly through corrupt means. Thus, Central and West Africa have become critical regions for combatting the illicit trade in pangolins.

Overlapping Bushmeat and Scale Supply Chains

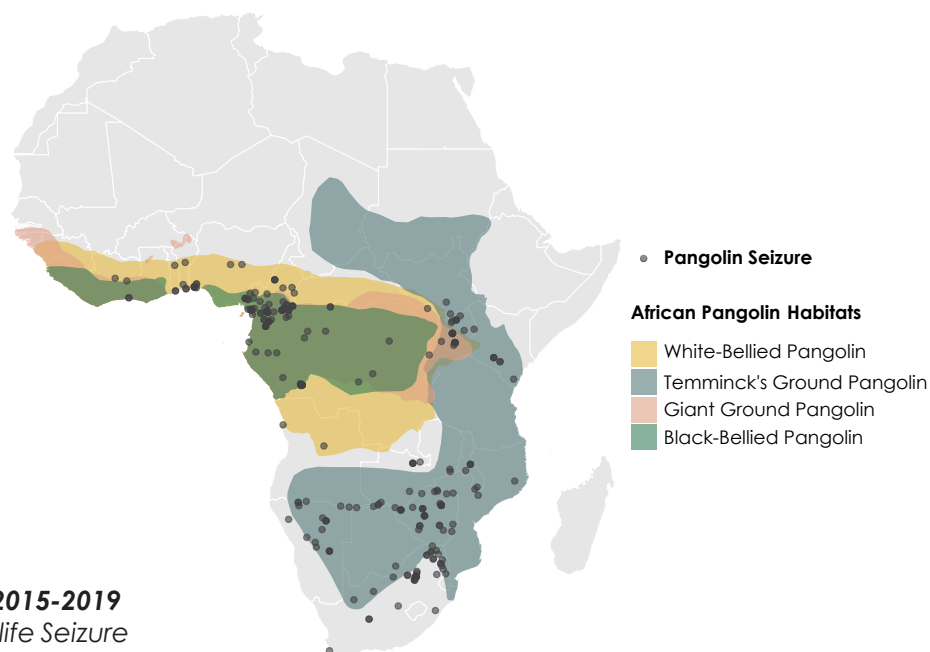


Figure 2: African Pangolin Ranges and 2015-2019 Seizure Locations. Source: C4ADS' Wildlife Seizure Database.

Pangolin hunting in Africa has a long history, but Asian demand has transformed a subsistence activity into an internationalized illicit trade reliant on Central and West Africa. Home to all four African species of pangolin and spanning Central and West African countries, the Congo Basin Forest is a key region for pangolin poaching.^{17 18} In particular, 61%¹⁹ of this forest exists within the borders of the DRC, which experiences significant pangolin poaching in its northern, southern, and southwestern provinces.^{20 21} CWT professionals in the DRC emphasize the country's critical position in the pangolin trafficking supply chain as a major source, transit, and exit point to the global market.²² Investigating supply chains in this area reveal that supply networks developed from decades of African pangolin poaching for subsistence and traditional African medicine²³ have been co-opted by trafficking syndicates. Local traffickers bring descaled pangolin meat to rural and urban markets for consumption, while pangolin scales are consolidated for export by intercontinental syndicates.

At the early stages of the pangolin scale supply chain, poachers work within their community to capture pangolins for the bushmeat trade.²⁴ Hunting for pangolins is not resource-intensive. Some hunters are known to use snares or dogs to help locate the animals, but the capture itself does not require the outfitting of weapons.²⁵ ^{26 27} Pangolins removed from their natural environment typically struggle to survive in captivity,²⁸ but the animal can be sold live, dead, or descaled and preserved (e.g., smoked or refrigerated).^{29 30 31 32} While bushmeat

is consumed as a subsistence protein in Africa, it is also desired as a luxury food item in urban centers.³³ Thus, after being sold to rural bushmeat markets or to urban transporters, pangolin meat is often taken to cities via road or by boat on the Congo River.³⁴ Upon arrival in Kinshasa (DRC) or Brazzaville (Republic of the Congo), meat is often consolidated pending sale at downtown markets and restaurants.^{35 36}

In the DRC and the Republic of the Congo, poachers sell descaled pangolin meat to bushmeat markets and stockpile pangolin scales at home.³⁷ Poachers know they can receive additional income by selling the scales separately and waiting for intermediaries to collect the scales directly.³⁸ Seizure data suggests this is a prevalent method throughout Africa because whole pangolins are not typically seized in large quantities or together with scales. Nearly half (45%) of all pangolin seizures on the continent include whole, often live, pangolins, indicative of recent poaching activity.³⁹ It is also very rare that pangolin scales are seized alongside whole pangolins. Seizures of whole pangolins in Africa average just 2.5 pangolins per seizure,^{40 41} while pangolin scale seizures originating from Africa average 1,144 kilograms⁴² from roughly 317 to 3,800 pangolins.⁴³ The lack of seizures containing both meat and scales, and the notable discrepancy between the number of whole pangolins seized and the number of pangolins needed to fulfill a shipment of scales, suggests that pangolin scales appear to be separated from the meat early in the supply chain.

Urban Bushmeat Markets: An Additional Supply of Scales?

Limited evidence suggests that traffickers also collect discarded scales from bushmeat markets for export.¹ When cooking the meat, bushmeat vendors reportedly discard pangolin scales as a byproduct.^{2,3} While bushmeat markets could therefore be natural consolidation points, there have been few reported cases of this happening. For example, in August 2019, Chinese courts convicted one trafficker for smuggling 26 kilograms of pangolin scales that the suspect claimed to have collected from bushmeat markets in Africa.⁴

1 Confidential Interviews, April 2020.

2 Kriel, Alexis. "Africa's pangolins caught in 'the perfect storm'." *Oxpeckers*, May 2019, <https://oxpeckers.org/2019/05/africas-pangolins/>.

3 "Species threats," Conserve, African Pangolin Working Group, <https://africanpangolin.org/conservation/species-threats/>.

4 "Doctor smuggled 26 kg pangolin scales sentenced," 19 December 2019, <http://bjgy.chinacourt.gov.cn/article/detail/2019/12/id/4741744.shtml>; English translation: http://webcache.googleusercontent.com/search?q=cache:4Mfg8nKl_l8J:epaper.ynef.com/images/2019-12/19/A07/bjbqb20191219A07.pdf+&cd=3&hl=en&ct=clnk&gl=us.

DRC-based investigators indicate that some of the intermediaries who buy scales from poachers are employed by foreign timber and mining businesses.⁴⁴ These go-betweens allegedly collect scales as they travel rural DRC for legitimate business activities.⁴⁵ A 2020 survey indicated that "non-locals" buy pangolin products in Masegheseghe, a village just outside Tayna Nature Reserve in Eastern DRC, but not in villages within the reserve.⁴⁶ The area east of Tayna Nature Reserve has multiple mining research permits held by foreign companies,⁴⁷ and is near the Ugandan border—a known route for trafficking consolidated pangolin scales out of the DRC.⁴⁸

Once scales are collected from disparate locations around the DRC, they are consolidated for intercontinental export. Export happens through major maritime and air transit hubs either in the country where the pangolins were poached or after being smuggled via land routes to neighboring countries (*Reference Section II: The Intercontinental Transport of Scales*). Two major models of consolidation and export include:

- **Model 1:** Intermediaries collect pangolin scales periodically as they travel through rural areas and consolidate them in major cities like Kinshasa and Brazzaville. In these cities, the scales are handed off to facilitators with connections at transportation hubs, such as airports and seaports, for export.⁴⁹ C4ADS' Wildlife Seizure Database shows trafficking activity through N'Djili International Airport in the DRC.
- **Model 2:** Intermediaries collect pangolin scales in bulk from rural areas and traffic them through neighboring countries before being exported off the continent. Traffickers first move the pangolin scales across land borders, often by motorbike, car, or container truck.⁵⁰ ⁵¹ The scales are then reconsolidated in major cities for intercontinental export through airports or seaports.⁵² C4ADS' Wildlife Seizure Database shows routes out of the DRC to the Republic of Congo and Central African Republic.⁵³

Local and International Pangolin Supply Chains in Cameroon

Cameroon has emerged as a hotspot for pangolin meat and scale trafficking. Between 2015 and 2019, Cameroonian authorities made 84 pangolin seizures, which included the confiscation of nearly 9,280 kilograms of scales.⁵⁴ Cameroon is both a major source and transit country; 21% of all pangolin seizures in Africa are linked to Cameroon.⁵⁵

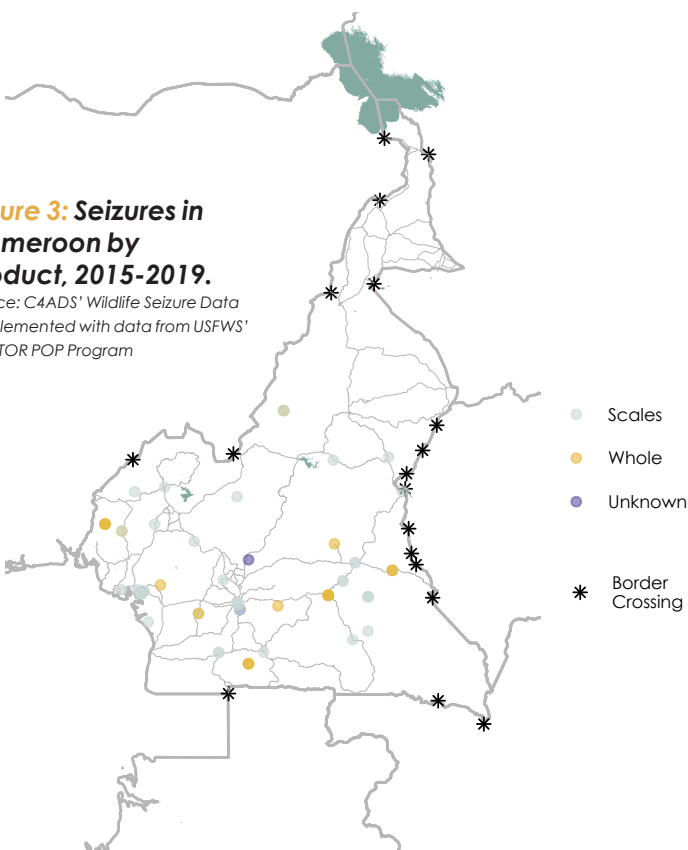
It is very rare that seizures contain both pangolin meat and scales, which reflect the divergent bushmeat and scale supply chains. Whole pangolin seizures are clustered near Abong Mbang, Korup National Park, or bushmeat markets such as the Kye-Ossi market on the border of Cameroon, Equatorial Guinea, and Gabon.⁵⁶ Over 75% of whole pangolin seizures in Cameroon involve less than 10 whole pangolins, and 46% of the time, whole pangolins are seized with other bushmeat.⁵⁷ Pangolin scale shipments linked to Cameroon are most often seized at air and seaports in Douala, Yaoundé, and Bonaberi, or at land border crossings into neighboring countries.

C4ADS' Wildlife Seizure Database and in-country investigations suggest that Cameroon is an important origin, transit, and exit jurisdiction for pangolin scales leaving the African continent.^{58 59}

- CAR-, Gabon-, and DRC-to-Cameroon trafficking routes all appear in C4ADS' Wildlife Seizure Database.⁶⁰
- The Cameroon-to-Nigeria trafficking route is known by local investigators as crucial to supplying Nigeria with scales for the intercontinental trade.⁶¹ Seizure data suggests the prominence of pangolin seizures in areas near Cameroon's northwest border with Nigeria.⁶²
- The Cameroon-to-Asia route is seen in 21 trafficking instances.⁶³ The majority (81%) of those shipments leave Africa by air, most often from Douala International Airport and Yaoundé Nsimalen International Airport.⁶⁴ The remaining 19% of pangolin scale shipments exported from Cameroon to Asia come from seaports.⁶⁵ Eighty-six percent of all trafficking instances linked to Cameroon and destined for Asia involved pangolin products bound for China or Hong Kong.⁶⁶

Figure 3: Seizures in Cameroon by Product, 2015-2019.

Source: C4ADS' Wildlife Seizure Data supplemented with data from USFWS' MENTOR POP Program



As the international scale trade has grown, traffickers have integrated themselves into the rural and urban bushmeat economies. Poachers have the opportunity to profit twice from each pangolin captured: once in the bushmeat trade and again in the international scale trade. The consolidation of scales from hunted pangolins likely accounts for the majority of scales trafficked from Africa.

Pangolin Breeding Programs

A less prevalent, but equally exploitative source of scales, is the quasi-licit business venture of breeding programs.

Pangolin breeding is seen by some consumers as a solution to the twin demands of species conservation and consumer appetites for medicinal products.^{67 68} As a result, breeding programs have sprung up throughout Africa.⁶⁹ Often relying on wild-caught pangolins to create their initial stock,⁷⁰ many programs are oriented toward discovering ways to commercially farm pangolins for their scales.⁷¹ Thus, pangolin breeding programs muddy the distinction between trafficking and research, providing syndicates a veneer of legitimacy.

Breeding programs have long aroused suspicion due to their commercial orientation and the well-documented challenges of raising pangolins in captivity.^{72 73} Pangolins struggle to adapt to artificial diets and require supervised care,⁷⁴ both of which are capital- and land-intensive. Even under the best conditions, long-term survival of a single animal is rare, making breeding programs infeasible on a commercial scale.^{75 76} Furthermore, captive pangolin births are typically not successful. When successful, many do not live beyond one year and are believed to be the result of wild conception.^{77 78} Only a small number of programs, such as one at the Taipei Zoo, have had success with third-generational captive breeding.⁷⁹

CITES Regulations of Captive Breeding

CITES governs the international trade of endangered fauna and flora. As an Appendix I species, international commercial trade of pangolins is prohibited.¹ However, there are two conditions under which CITES allows captive-bred pangolins or their products to be internationally exported.²

- 1. If the specimens can be certified as multi-generational offspring from captive stock and are being sold for non-commercial purposes, then captive-bred specimens are treated as Appendix II, which allows for CITES-approved exports.^{3 4}**
- 2. If the breeding facility is registered with the CITES Secretariat, then captive-bred Appendix I animals may be traded for commercial purposes.^{5 6} As of publication, the CITES Secretariat did not register any pangolin breeding facilities.⁷**

According to the CITES Trade Database, since the up-listing of pangolins to Appendix I in 2016, there have been five instances of pangolins or pangolin products exported under approved CITES permits that were classified as “animals bred in captivity” or “animals born in captivity.”^{8 9} While all five instances were classified as “specimens,” each was given a measurement unit of “g” or “ml.”¹⁰ Therefore, it is possible these were not whole pangolins and were instead exports of pangolin products. Four of these five instances were exports from South Africa to Malaysia in 2018 and had no reported purpose. The fifth was an export from Singapore to Great Britain that was categorized as “for scientific purposes.”¹¹

1 "Resolution Conf. 12.10 (Rev. CoP15): Registration of operations that breed Appendix-I animal species in captivity for commercial purposes." Convention on International Trade in Endangered Species, <https://www.cites.org/eng/res/12/12-10R15.php>.

2 "Resolution Conf. 12.10 (Rev. CoP15): Registration of operations that breed Appendix-I animal species in captivity for commercial purposes." Convention on International Trade in Endangered Species, <https://www.cites.org/eng/res/12/12-10R15.php>.

3 "Resolution Conf. 12.10 (Rev. CoP15): Registration of operations that breed Appendix-I animal species in captivity for commercial purposes." Convention on International Trade in Endangered Species, <https://www.cites.org/eng/res/12/12-10R15.php>.

4 "Exporting CITES Bred-in-captivity Wildlife." U.S. Fish and Wildlife Service, September 2012, <https://www.fws.gov/international/pdf/factsheet-export-cites-bred-in-captivity-wildlife-2013.pdf>.

5 "Resolution Conf. 12.10 (Rev. CoP15): Registration of operations that breed Appendix-I animal species in captivity for commercial purposes." Convention on International Trade in Endangered Species, <https://www.cites.org/eng/res/12/12-10R15.php>.

6 "Exporting CITES Bred-in-captivity Wildlife." U.S. Fish and Wildlife Service, September 2012, <https://www.fws.gov/international/pdf/factsheet-export-cites-bred-in-captivity-wildlife-2013.pdf>.

7 "List of Species." Convention on International Trade in Endangered Species, <https://www.cites.org/common/reg/cb/species.html>.

8 These correspond to code C and F in the CITES Trade Database. Source: "A guide to using the CITES Trade Database," United Nations Environment Programme and World Conservation Monitoring Centre, October 2013, https://trade.cites.org/cites_trade_guidelines/en-CITES_Trade_Database_Guide.pdf.

9 Note the CITES Trade Database is created from annual reports from CITES Management Authorities, which can include copies of documents. There are instances of CITES documents containing incorrect information. In particular, the source of the species listed as "animals bred in captivity," despite the animals being sourced from the wild, is reportedly a common abuse. C4ADS was unable to independently verify the information from the CITES Trade Database in relation to the five exports described in this section. Source: "A guide to using the CITES Trade Database," United Nations Environment Programme and World Conservation Monitoring Centre, October 2013, https://trade.cites.org/cites_trade_guidelines/en-CITES_Trade_Database_Guide.pdf.

10 "A guide to using the CITES Trade Database," United Nations Environment Programme and World Conservation Monitoring Centre, October 2013, https://trade.cites.org/cites_trade_guidelines/en-CITES_Trade_Database_Guide.pdf.

11 "CITES Trade Database." United Nations Environment Programme and World Conservation Monitoring Centre, <https://trade.cites.org/>.

Breeding Programs' Ties to Pharmaceutical Companies

In spite of well-known challenges, multiple pangolin breeding programs were established in Africa between 2013 and 2016.^{80 81 82 83} Several of these raised suspicion among the conservation community and even law enforcement for potential involvement in illicit activities.⁸⁴^{85 86} CWT authorities suspected one such breeding program, Olsen East Africa International Investment Co. Ltd. (奥森东非国际投资公司), of involvement in illicit wildlife activities.⁸⁷ Olsen East Africa International Investment's background and operations demonstrate how government-approved pangolin breeding programs could potentially cloak international pangolin scale trafficking.

Olsen East Africa International Investment Co. Ltd. was established in Uganda in 2013.⁸⁸ A Chinese national, Ma Jinru (马津汝), is reportedly the director of the company.⁸⁹ In April 2014, the company had a permit to trade pangolin scales and products within the country and was granted a permit to breed pangolins.⁹⁰ Media reports about the

company's breeding activities allege that "1/3 of [Olsen East Africa's] artificially-bred pangolins were returned to the wild, 1/3 were exported for use as seedlings [of other breeding programs], and 1/3 were used to continue breeding."⁹¹ However, the activities of the parent company and director suggest the company may have been selling pangolin scales to China's pharmaceutical industry.

Across the Indian Ocean, Olsen East Africa International Investment's parent company is a Chinese graphics and animation firm named Hangzhou Aosen Technology Co. Ltd (杭州奥森科技有限公司),⁹² which expanded into pharmaceuticals sometime in or before 2013.⁹³ Hangzhou Aosen's website states that "Olsen East Africa International Investment Co. Ltd. is primarily involved in breeding and the research and development of Chinese medicine. Because domestic [within China] pangolin resources are very scarce, [the company] transferred to Uganda in 2013 to breed pangolins."⁹⁴

您现在的位置：杭州奥森科技有限公司 > 产品展示 > 穿山甲鳞片

穿山甲鳞片

穿山甲鳞片属于中药材，又名甲片、川甲、川甲片、鳞甲片。穿山甲是国家一级保护动物，穿山甲鳞片是穿山甲身上的类似于鱼鳞的保护甲壳，市场价值很高。

Pangolin scales are Chinese medicine ingredients.... Pangolins are a Grade-I nationally protected species....; the market price [of pangolin scales] is very high.

性味，味咸，性微寒
 《别录》：微寒
 《药性论》：有大毒
 《滇南本草》：性寒凉，味咸
 归经：入肝、胃经
 《纲目》：入厥阴、阳明经
 《本草汇言》：入足太阴，厥阴经
 入药部分：穿山甲的鳞甲

EFFECTS AND USES: Promoting blood circulation and dispersing knots; promoting lactation; eliminating carbuncles and ulcers.... It is used for amenorrhea, dysphagia, carbuncle, swollen sores, arthralgia, and numbness.

功效与作用：活血散结，通经下乳，消痈溃坚。主血瘀经闭，症瘕，风湿痹痛，乳汁不下，痈肿，瘰疬。用于经闭癥瘕，乳汁不通，痈肿疮毒，关节痹痛，麻木拘挛。
 《别录》：主五邪惊啼悲伤，烧之作灰，以酒或水和方寸匕，疗蚊瘰。
 陶弘景：疗疮癩。
 《药性论》：治山瘕疰。恶疮，烧敷之。
 《日华子本草》：治小儿惊邪，痔漏，恶疮，疥癣。
 《滇南本草》：治疥癩痛毒，破气行血，胸膈膨胀逆气，治膀胱血气疼痛。
 《纲目》：除痰疟寒热，风痹强直疼痛，通经脉，下乳汁，消痈肿，排脓血，通窍杀虫。
 《本草再新》：搜风去湿，解热败毒。

Figure 4: Annotated Page from Hangzhou Aosen Technology Co. Ltd.'s Website. Source: “穿山甲鳞片” [“Pangolin Scales”]. Products, Hangzhou Aosen Technology Co. Ltd., May 2019, Accessed via the Wayback Machine, <https://web.archive.org/web/20190517105947/http://www.aosentech.com/product/html/?90.html>.

Olsen East Africa International Investment's director, Ma Jinru⁹⁵—who also owns 46% of Hangzhou Aosen Technology⁹⁶—raised the issue of using African pangolins (rather than Chinese pangolins) in Chinese medicine products at the 2014 Seminar on the Development and Prospects of Artificial Pangolin Breeding.⁹⁷ The seminar was attended by Chinese government representatives, TCM-focused NGOs, pharmaceutical companies, researchers, and pangolin breeders.⁹⁸ The Chairman of the Chinese Traditional Medicine Association's TCM Ingredients Cultivation Committee noted that previous attempts at commercial breeding had failed. He argued that the biggest impediment to commercial pangolin breeding is the lack of "seedlings" (pangolins used to begin the breeding cycle), because only previously domesticated pangolins could enter the international trade.⁹⁹ At the same conference, Ma Jinru reportedly claimed: "In the future, I can supply you all with pangolin

seedlings, but the four species of [African] pangolins are not included in China's pharmacopeia."^{100 101} She added that African pangolins need to be researched to receive approval.¹⁰²

Despite Ma Jinru's acknowledgement that African pangolins are not approved for use in Chinese medicine, Hangzhou Aosen Technology's website hosts images of pangolin scales and indicates the company's intent to sell them under the banner "Olsen International."¹⁰³ The website describes pangolin scales as "Chinese medicine ingredients" with a "very high market price" and lists their TCM characteristics and medicinal effects.¹⁰⁴ However, there is no public record of Olsen East Africa International Investment's breeding program having ever been registered with CITES, which would be required for the legal sale of scales from Africa to Asia for commercial purposes post up-listing in 2016.¹⁰⁵

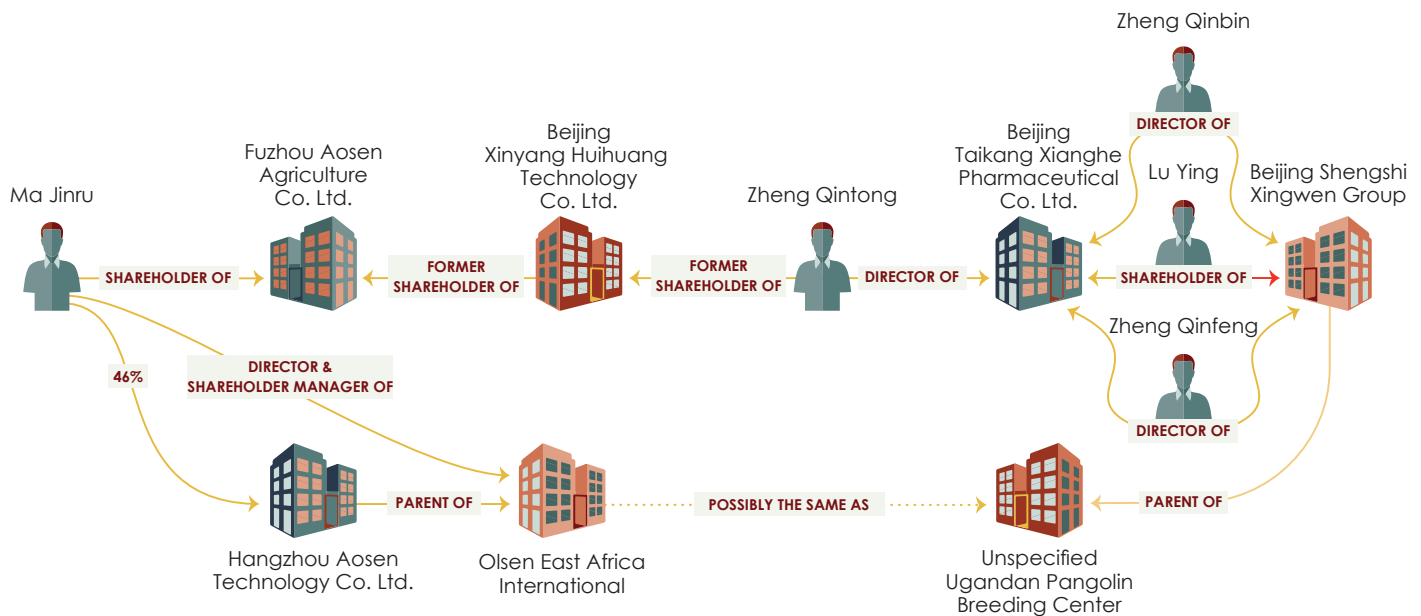


Figure 5: The Link between Olsen East Africa International Investment Co. Ltd. and Beijing Shengshi Xingwen Group

Sources: "这些福建商人，仍在从非洲进口野生动物" ["These Fujian merchants are still importing wildlife from Africa"]. *Guardian of the Colored Earth*, Weibo, 4 March 2020, <https://www.weibo.com/ttarticle/p/show?id=2309404478754125644144>.

"福州奥森农业有限公司" ["Fuzhou Olsen Agriculture Co., Ltd."]. *Chinese Business Registry*.

"北京盛世兴文国际贸易有限公司" ["Beijing Shengshi Xingwen International Trade Co. Ltd."]. *51Job*, <https://jobs.51job.com/yx/co4871289.html>.

"北京鑫阳辉煌科技有限公司" ["Beijing Xinyang Huihuang Technology Co. Ltd."]. *Chinese Business Registry*.

"北京泰康祥和药业有限责任公司" ["Beijing Taikang Xianghe Pharmaceutical Co. Ltd."]. *Chinese Business Registry*.

"北京盛世兴文国际贸易有限公司" ["Beijing Shengshi Xingwen International Trade Co., Ltd."]. *Chinese Business Registry*.

"Is UWA Aiding Illegal Pangolin Trade?" *New Vision*, 11 June 2017.

A Chinese conservation NGO has further alleged the identity of one of Ma Jinru's customers: Beijing Shengshi Xingwen Group (北京盛世兴文集团).¹⁰⁶ Until 2018, Ma Jinru was reportedly a shareholder in a company named Fuzhou Olsen Agriculture Co. Ltd. (福州奥森农业有限公司) along with Beijing Xinyang Huihuang Technology Co. Ltd. (北京鑫阳辉煌科技有限公司).^{107 108 109} Until June 2014, Beijing Xinyang's sole investor was reportedly Zheng Qintong (郑沁彤).¹¹⁰ Zheng Qintong is also reported to be the director of Beijing Taikong Xianghe Pharmaceutical Co. (北京泰康祥和药业有限责任公司), which shares two directors and one shareholder with Beijing Shengshi Xingwen.¹¹¹ ¹¹² Beijing Shengshi Xingwen claims to have a pangolin breeding center in Uganda for the purpose of supplying ingredients for its TCM products, although it does not specify Olsen East Africa International Investment.¹¹³ In 2019, Beijing Shengshi Xingwen was permitted to sell 900 kilograms of African pangolin scales to two companies in Hebei.^{114 115}

In 2016, two years after Olsen East Africa International Investment was granted a breeding license, illicit wildlife products were allegedly discovered at Ma Jinru's home.¹¹⁶ Ugandan authorities ultimately revoked Olsen East Africa International Investment's breeding license.¹¹⁷ The company's apparent connections to pharmaceutical

manufacturers and allegations of misconduct represent a pattern among breeding programs operating in Africa. Although public sources do not document many concrete instances of illegal behavior, these programs appear to blur the line between licit and illicit activity.

Identifying the source of trafficked pangolin scales is particularly challenging due to the complexity and variability of trafficking activity. However, understanding the previously described sourcing methods provides opportunities for prioritizing action. First, as the pangolin bushmeat and scale trades often converge at the sourcing-end of the supply chain, law enforcement can target both illicit activities simultaneously. Second, breeding programs are often highly visible legal entities that should be subjected to strict monitoring or shut down entirely. In the trafficking stage of the supply chain, the overlap between illicit and licit becomes even more pronounced as traffickers rely on legal systems of trade and transport to move pangolin scales from Africa to Asia.

Endnotes

- 1 "Pangolins," Animals, National Geographic, <https://www.nationalgeographic.com/animals/mammals/group/pangolins/>.
- 2 C4ADS' Wildlife Seizure Database.
- 3 "Protecting Pangolins in Central Africa," Africa, Zoological Society of London MENTOR (Mentoring for Environmental Training in Outreach and Resource conservation) POP (Progress on Pangolins), <https://www.zsl.org/conservation/regions/africa/protecting-pangolins-in-central-africa>.
- 4 About 50% of seizures that can be tied to Africa do not have a known country of origin recorded in C4ADS' Wildlife Seizure Database.
- 5 C4ADS' Wildlife Seizure Database, excluding FWS MENTOR POP Data.
- 6 C4ADS' Wildlife Seizure Database.
- 7 East Africa refers to the following countries: Burundi, Comoros, Djibouti, Eritrea, Ethiopia, Kenya, Madagascar, Malawi, Mauritius, Réunion, Rwanda, Seychelles, Somalia, Somaliland, South Sudan, Tanzania, and Uganda.
- 8 Southern Africa refers to the following countries: Angola, Botswana, Eswatini, Lesotho, Mozambique, Namibia, South Africa, Swaziland, Zambia, and Zimbabwe.
- 9 Central Africa refers to the following countries: Cameroon, Central African Republic, Chad, Republic of the Congo, Democratic Republic of Congo, Equatorial Guinea, Gabon, and Sao Tome and Principe.
- 10 C4ADS' Wildlife Seizure Database.
- 11 West Africa refers to the following countries: Benin, Burkina Faso, Cape Verde, Ivory Coast, The Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Saint Helena, Senegal, Sierra Leone, and Togo.
- 12 C4ADS' Wildlife Seizure Database.
- 13 Vira, Varun and Thomas Ewing. "Out of Africa: Mapping the Global Trade in Illicit Elephant Ivory." Reports, C4ADS, August 2014, <https://static1.squarespace.com/static/566ef8b4d8af107232d5358a/t/56af83ee1f40390e88337743/1454343151910/Out+of+Africa.pdf>.
- 14 Milliken, Tom. "Illegal Trade in Ivory and Rhino Horn: An Assessment to Improve Law Enforcement Under the Wildlife TRAPS Project," TRAFFIC, 2014, <https://www.usaid.gov/sites/default/files/documents/1865/W-TRAPS-Elephant-Rhino-report.pdf>.
- 15 Milliken, Tom, et al. "The Elephant Trade Information System (ETIS) and the Illicit Trade in Ivory: A report to the 17th meeting of the Conference of the Parties to CITES." Convention on International Trade in Endangered Species of Wild Fauna and Flora, 2013, <https://cites.org/sites/default/files/eng/cop/16/doc/E-CoP16-53-02-02.pdf>.
- 16 Prinsloo, Hendelene. "Scaling Up: The Rapid Growth in the Industrial Scale Trafficking of Pangolin Scales." Wildlife Justice Foundation, February 2020, https://wildlifejustice.org/wp-content/uploads/2020/02/The_Rapid_Growth_in_the_Trafficking_of_Pangolin_Scales_2015-2019-Update1.pdf.
- 17 "Protecting Pangolins in Central Africa," Africa, Zoological Society of London MENTOR (Mentoring for Environmental Training in Outreach and Resource conservation) POP (Progress on Pangolins), <https://www.zsl.org/conservation/regions/africa/protecting-pangolins-in-central-africa>.
- 18 Challender, Dan and Carly Waterman. "Global Pangolin Conservation Status." International Union For Conservation Of Nature, <https://www.fws.gov/international/pdf/pangolin-conservation-status-challender.pdf>.
- 19 "The Congo Basin Forest," Global Forest Atlas, Yale School of the Environment, <https://globalforestatlas.yale.edu/region/congo>.
- 20 Confidential Interview, April 2020.
- 21 Confidential Interview, April 2020.
- 22 Confidential Interview, November 2019.
- 23 Soewu, Durojaye, et al. "Bushmeat and beyond: Historic and Contemporary Use in Africa." Pangolins: Science, Society and Conservation, edited by Challender, Daniel W.S, Helen Nash, and Carly Waterman, Elsevier, 2020, pp. 241–258, doi:10.1016/b978-0-12-815507-3.00015-0.
- 24 Confidential Interview, April 2020.
- 25 Carrington, Damian. "Scale of pangolin slaughter revealed – millions hunted in central Africa alone." The Guardian, 20 July 2017, <https://www.theguardian.com/environment/2017/jul/20/scale-of-pangolin-slaughter-revealed-millions-hunted-in-central-africa-alone>.
- 26 "D.R. Congo's Giant Pangolins: Two Tons of Scales Seized, Field notes from Dr. Terese Hart." Searching for Bonobo in Congo, <https://www.bonoboincongo.com/2017/12/09/d-r-congos-giant-pangolins-two-tons-of-scales-seized/>.
- 27 Xing, Fangyu. "Meet pangolin – one of the world's most hunted animals," China Global Television Network (CGTN), 11 February 2020, <https://news.cgtn.com/news/2020-02-11/What-do-you-know-about-pangolins--NYLyKfQobS/index.html>.
- 28 Actman, Jani. "Plan to Save World's Most Trafficked Mammal Ignites Debate." National Geographic, 14 June 2017, <https://www.nationalgeographic.com/news/2017/06/wildlife-watch-pangolins-zoos-breeding-scales/>.
- 29 Soewu, Durojaye, et al. "Bushmeat and beyond: Historic and Contemporary Use in Africa." Pangolins: Science, Society and Conservation, edited by Challender, et al., Elsevier, 2020, pp. 241–258, doi:10.1016/b978-0-12-815507-3.00015-0.
- 30 Lordfred, Atembeh. "Despite conservation efforts, Pangolins still booming Bush Meat markets." The Green Vision, 30 June 2020, <https://www.>

greenvision.news/despite-conservation-efforts-pangolins-still-booming-bush-meat-markets/.

31 "D.R. Congo's Giant Pangolins: Two Tons of Scales Seized, Field notes from Dr. Terese Hart." Searching for Bonobo in Congo, <https://www.bonoboincongo.com/2017/12/09/d-r-congos-giant-pangolins-two-tons-of-scales-seized/>.

32 Gore, Meredith. "A Conservation Criminology Analysis of Illegal Urban Bushmeat Trafficking in Kinshasa, Democratic Republic of Congo." Wildlife Conservation Society, April 2019.

33 Coad, Lauren, et al. "Towards a Sustainable, Participatory and Inclusive Wild Meat Sector." Center for International Forestry Research, 2019, https://www.cifor.org/publications/pdf_files/Books/BCoad1901.pdf.

34 Gore, Meredith. "A Conservation Criminology Analysis of Illegal Urban Bushmeat Trafficking in Kinshasa, Democratic Republic of Congo." Wildlife Conservation Society, April 2019.

35 Gore, Meredith. "A Conservation Criminology Analysis of Illegal Urban Bushmeat Trafficking in Kinshasa, Democratic Republic of Congo." Wildlife Conservation Society, April 2019.

36 Gore, Meredith. "A Conservation Criminology Analysis of Illegal Urban Bushmeat Trafficking in Brazzaville, Republic of Congo." Wildlife Conservation Society, April 2019.

37 Confidential Interview, November 2019.

38 Confidential Interview, April 2020.

39 C4ADS' Wildlife Seizure Database.

40 C4ADS' Wildlife Seizure Database.

41 Ninety-four percent of whole pangolin seizures have recorded quantities.

42 C4ADS' Wildlife Seizure Database.

43 It is estimated that adult African pangolins can range from having approximately 0.301 kilograms to 3.6 kilograms of scales per animal depending on the species. Source: Challender, Daniel W.S., et al. "International Trade and Trafficking in Pangolins, 1900–2019." *Pangolins: Science, Society and Conservation*, edited by Challender, et al., Elsevier, 2020, pp. 259–276, doi:10.1016/b978-0-12-815507-3.00016-2.

44 Confidential Interview, April 2020.

45 Confidential Interview, April 2020.

46 Malimbo, David, et al. "Exploitation of Pangolins (Pholidota, Mammalia) by Communities Living in and around the Tayna Nature Reserve (RNT) North Kivu, Democratic Republic of Congo (DRC)." *Journal of Geoscience and Environment Protection*, 2020, https://www.researchgate.net/publication/340552817_Exploitation_of_Pangolins_Pholidota_Mammalia_by_Communities_Living_in_and_around_the_Tayna_Nature_Reserve_RNT_North_Kivu_Democratic_Republic_of_Congo_DRC.

47 "Forest Atlas of DRC." *Forest Atlas*, Ministry of the Environment and Sustainable Development, Ministry of Mines, Congolese Institute for the Conservation of Nature, National REDD Coordination, cod.forest-atlas.org/map?l=en.

48 Confidential Interview, April 2020.

49 Confidential Interview, November 2019.

50 Confidential Interview, November 2019.

51 Confidential Interview, November 2019.

52 Confidential Interview, April 2020.

53 C4ADS' Wildlife Seizure Database.

54 C4ADS' Wildlife Seizure Database, excluding FWS MENTOR POP data.

55 C4ADS' Wildlife Seizure Database.

56 C4ADS' Wildlife Seizure Database.

57 C4ADS' Wildlife Seizure Database.

58 Confidential Interview, November 2019.

59 C4ADS' Wildlife Seizure Database.

60 C4ADS' Wildlife Seizure Database.

61 Confidential Interview, November 2019.

62 C4ADS' Wildlife Seizures Database.

63 C4ADS' Wildlife Seizures Database.

64 C4ADS' Wildlife Seizures Database.

65 C4ADS' Wildlife Seizures Database.

66 C4ADS' Wildlife Seizures Database.

- 67 Pang, Xiaoqiong. "关注穿山甲保护与利用报道之二:穿山甲人工养殖瓶颈待破" ["Concern about the protection and utilization of pangolins Part 2: The bottleneck of pangolin artificial breeding is to be broken"]. Industry Portal, Chinese Herbal Medicines Network World, 8 June 2014, <https://www.zyctd.com/zixun/204/11829.html>.
- 68 "Notice on strengthening the protection of saiga, pangolin and rare snake resources and regulating the management of their products." Important Documents, State Forest and Grasslands Bureau of the People's Republic of China, 12 November 2007, <http://www.forestry.gov.cn/main/4818/content-796751.html>.
- 69 Challender, Dan, and Carly Waterman. "Implementation of CITES Decisions 17.239 b) and 17.240 on Pangolins (*Manis* spp.)." International Union for Conservation of Nature, September 2017, <https://www.cites.org/sites/default/files/eng/com/sc/69/E-SC69-57-A.pdf>.
- 70 Challender, Dan, and Carly Waterman. "Implementation of CITES Decisions 17.239 b) and 17.240 on Pangolins (*Manis* spp.)." International Union for Conservation of Nature, September 2017, <https://www.cites.org/sites/default/files/eng/com/sc/69/E-SC69-57-A.pdf>.
- 71 Challender, Dan, et al. "Evaluating the feasibility of pangolin farming and its potential conservation impact." *Global Ecology and Conservation*, 2019, pp. 20. doi: <https://doi.org/10.1016/j.gecco.2019.e00714>.
- 72 Sas-Rolfes, Michael 't, and Daniel W.S. Challender. "Evaluating the Impact of Pangolin Farming on Conservation." *Pangolins: Science, Society and Conservation*, edited by Challender, Daniel W.S, et al., Elsevier, 2020, pp. 517–527, doi:10.1016/b978-0-12-815507-3.00032-0.
- 73 Wicker, Leanne Vivian, et al. "Captive Husbandry of Pangolins: Lessons and Challenges." *Pangolins: Science, Society and Conservation*, edited by Challender, Daniel W.S, et al., Elsevier, 2020, pp. 443–459, doi:10.1016/b978-0-12-815507-3.00028-9.
- 74 Wicker, Leanne Vivian, et al. "Captive Husbandry of Pangolins: Lessons and Challenges." *Pangolins: Science, Society and Conservation*, edited by Challender, Daniel W.S, et al., Elsevier, 2020, pp. 443–459, doi:10.1016/b978-0-12-815507-3.00028-9.
- 75 Wicker, Leanne Vivian, et al. "Captive Husbandry of Pangolins: Lessons and Challenges." *Pangolins: Science, Society and Conservation*, edited by Challender, Daniel W.S, et al., Elsevier, 2020, pp. 443–459, doi:10.1016/b978-0-12-815507-3.00028-9.
- 76 Sas-Rolfes, Michael 't, and Daniel W.S. Challender. "Evaluating the Impact of Pangolin Farming on Conservation." *Pangolins: Science, Society and Conservation*, edited by Challender, Daniel W.S, et al., Elsevier, 2020, pp. 517–527, doi:10.1016/b978-0-12-815507-3.00032-0.
- 77 Durojaye, A Soewu, and A. Sodeinde Olufemi. "Utilization of Pangolins in Africa: Fueling Factors, Diversity of Uses and Sustainability." *International Journal of Biodiversity and Conservation*, vol. 7, no. 1, 2015, pp. 1–10, doi:10.5897/ijbc2014.0760.
- 78 Wicker, Leanne Vivian, et al. "Captive Husbandry of Pangolins: Lessons and Challenges." *Pangolins: Science, Society and Conservation*, edited by Challender, Daniel W.S, et al., Elsevier, 2020, pp. 443–459, doi:10.1016/b978-0-12-815507-3.00028-9.
- 79 Wicker, Leanne Vivian, et al. "Captive Husbandry of Pangolins: Lessons and Challenges." *Pangolins: Science, Society and Conservation*, edited by Challender, Daniel W.S, et al., Elsevier, 2020, pp. 443–459, doi:10.1016/b978-0-12-815507-3.00028-9.
- 80 "Asia-Africa Pangolin Breeding Research Centre Mozambique – Sociedade Unipessoal, Limitada." Official Bulletin of the Republic of Mozambique, series III, no. 76, 27 June 2016.
- 81 "Asia-Africa Pangolin Breeding Research Center (U) Limited." Business Registration System, Uganda Registration Services Bureau.
- 82 "Olsen East Africa International Investment Co. Limited." Business Registration System, Uganda Registration Services Bureau.
- 83 Bale, Rachael. "Poaching is sending the shy, elusive pangolin to its doom." *National Geographic*, June 2019, <https://www.nationalgeographic.com/magazine/2019/06/pangolins-poached-for-scales-used-in-chinese-medicine/>.
- 84 "Is UWA Aiding Illegal Pangolin Trade?" *New Vision*, 11 June 2017.
- 85 "Strengthening Governance and Reducing Corruption Risks to Tackle Illegal Wildlife Trade Lessons from East and Southern Africa," OECD Publishing, 2018, https://www.oecd-ilibrary.org/trade/strengthening-governance-and-reducing-corruption-risks-to-tackle-illegal-wildlife-trade_9789264306509-en.
- 86 Bale, Rachael. "Poaching Is Sending the Shy, Elusive Pangolin to Its Doom." *National Geographic*, June 2019, www.nationalgeographic.com/magazine/2019/06/pangolins-poached-for-scales-used-in-chinese-medicine/.
- 87 "Is UWA Aiding Illegal Pangolin Trade?" *New Vision*, 11 June 2017.
- 88 "Olsen East Africa International Investment Co Limited." Business Registration System, Uganda Registration Services Bureau.
- 89 "Is UWA Aiding Illegal Pangolin Trade?" *New Vision*, 11 June 2017.
- 90 Challender, Dan, and Carly Waterman. "Implementation of CITES Decisions 17.239 b) and 17.240 on Pangolins (*Manis* spp.)." International Union for Conservation of Nature, September 2017, <https://www.cites.org/sites/default/files/eng/com/sc/69/E-SC69-57-A.pdf>.
- 91 Pang, Xiaoqiong. "关注穿山甲保护与利用报道之二:穿山甲人工养殖瓶颈待破" ["Concern about the protection and utilization of pangolins Part 2: The bottleneck of pangolin artificial breeding is to be broken"]. Industry Portal, Chinese Herbal Medicines Network World, 8 June 2014, <https://www.zyctd.com/zixun/204/11829.html>.
- 92 "杭州奥森科技有限公司" ["Hangzhou Aosen Technology Co. Ltd."]. Chinese Business Registry.

- 93 “杭州奥森科技有限公司于” [“Hangzhou Aosen Technology Co., Ltd.”]. August 2018, Accessed via Wayback Machine, <https://web.archive.org/web/20190624213242/http://aosentech.com/>.
- 94 “杭州奥森科技有限公司于” [“Hangzhou Aosen Technology Co., Ltd.”]. August 2018, Accessed via Wayback Machine, <https://web.archive.org/web/20190624213242/http://aosentech.com/>.
- 95 “Is UWA Aiding Illegal Pangolin Trade?” New Vision, 11 June 2017.
- 96 “杭州奥森科技有限公司” [“Hangzhou Aosen Technology Co. Ltd.”]. Chinese Business Registry.
- 97 Pang, Xiaoqiong. “关注穿山甲保护与利用报道之二：穿山甲人工养殖瓶颈待破” [“Concern about the protection and utilization of pangolins Part 2: The bottleneck of pangolin artificial breeding is to be broken”]. Industry Portal, Chinese Herbal Medicines Network World, 8 June 2014, <https://www.zyctd.com/zixun/204/11829.html>.
- 98 Pang, Xiaoqiong. “关注穿山甲保护与利用报道之二：穿山甲人工养殖瓶颈待破” [“Concern about the protection and utilization of pangolins Part 2: The bottleneck of pangolin artificial breeding is to be broken”]. Industry Portal, Chinese Herbal Medicines Network World, 8 June 2014, <https://www.zyctd.com/zixun/204/11829.html>.
- 99 Pang, Xiaoqiong. “关注穿山甲保护与利用报道之二：穿山甲人工养殖瓶颈待破” [“Concern about the protection and utilization of pangolins Part 2: The bottleneck of pangolin artificial breeding is to be broken”]. Industry Portal, Chinese Herbal Medicines Network World, 8 June 2014, <https://www.zyctd.com/zixun/204/11829.html>.
- 100 Pang, Xiaoqiong. “关注穿山甲保护与利用报道之二：穿山甲人工养殖瓶颈待破” [“Concern about the protection and utilization of pangolins Part 2: The bottleneck of pangolin artificial breeding is to be broken”]. Industry Portal, Chinese Herbal Medicines Network World, 8 June 2014, <https://www.zyctd.com/zixun/204/11829.html>.
- 101 Several efforts to pursue breeding programs in China or by Chinese-affiliated companies were abandoned as a result of limited breeding success. Source: Liang, Xiao, and Xun Li. “探访穿山甲养殖‘名企’：运作几近停滞，国外引种计划搁浅” [“Visiting ‘Famous Companies’ in Pangolin Breeding: Operations Are Almost Stagnant, and Plans to Introduce Foreign Species Are Stranded”]. The Paper, Shanghai Oriental Press Co., Ltd., 22 March 2017, www.thepaper.cn/newsDetail_forward_1644616.
- 102 Pang, Xiaoqiong. “关注穿山甲保护与利用报道之二：穿山甲人工养殖瓶颈待破” [“Concern about the protection and utilization of pangolins Part 2: The bottleneck of pangolin artificial breeding is to be broken”]. Industry Portal, Chinese Herbal Medicines Network World, 8 June 2014, <https://www.zyctd.com/zixun/204/11829.html>.
- 103 “杭州奥森科技有限公司于” [“Hangzhou Aosen Technology Co., Ltd.”]. August 2018, Accessed via Wayback Machine, <https://web.archive.org/web/20190624213242/http://aosentech.com/>.
- 104 “穿山甲鳞片” [“Pangolin Scales”]. Products, Hangzhou Aosen Technology Co. Ltd., May 2019, Accessed via the Wayback Machine <https://web.archive.org/web/20190517105947/http://www.aosentech.com/product/html/?90.html>.
- 105 “Resolution Conf. 12.10 (Rev. CoP15): Registration of operations that breed Appendix-I animal species in captivity for commercial purposes.” Convention on International Trade in Endangered Species, <https://www.cites.org/eng/res/12/12-10R15.php>.
- 106 “这些福建商人，仍旧在从非洲进口野生动物” [“These Fujian merchants are still importing wildlife from Africa”]. Guardian of the Colored Earth, Weibo, 4 March 2020, <https://www.weibo.com/ttarticle/p/show?id=2309404478754125644144>.
- 107 This company used to be called Beijing Xiekai Zhenghe International Trade Co. Ltd, according to Chinese business registration records. Source: “北京鑫阳辉煌科技有限公司” [“Beijing Xinyang Huihuang Technology Co. Ltd.”]. Chinese Business Registry.
- 108 “北京鑫阳辉煌科技有限公司” [“Beijing Xinyang Huihuang Technology Co. Ltd.”]. Chinese Business Registry.
- 109 “福州奥森农业有限公司” [“Fuzhou Olsen Agriculture Co., Ltd.”]. Chinese Business Registry.
- 110 “北京鑫阳辉煌科技有限公司” [“Beijing Xinyang Huihuang Technology Co. Ltd.”]. Chinese Business Registry.
- 111 “北京泰康祥和药业有限责任公司” [“Beijing Taikong Xianghe Pharmaceutical Co.”]. Chinese Business Registry.
- 112 “北京盛世兴文国际贸易有限公司” [“Beijing Shengshi Xingwen International Trade Co., Ltd.”]. Chinese Business Registry.
- 113 “北京盛世兴文国际贸易有限公司” [“Beijing Shengshi Xingwen International Trade Co., Ltd.”]. 51 Job, <https://jobs.51job.com/yx/co4871289.html>.
- 114 “这些福建商人，仍旧在从非洲进口野生动物” [“These Fujian merchants are still importing wildlife from Africa”]. Guardian of the Colored Earth, Weibo, 4 March 2020, <https://www.weibo.com/ttarticle/p/show?id=2309404478754125644144>.
- 115 Sophia. “北京某文化公司出售非洲穿山甲鳞片，有关部门审批后流入市场成假药？” [“A Certain Cultural Company in Beijing Sells African Pangolin Scales. After Approval by the Relevant Authorities, They Will Flow into the Market and Become Fake Drugs?”]. Edited by Angel and Oak, China Biodiversity Conservation and Green Development Foundation, 26 November 2019, www.cbcdgf.org/NewsShow/4854/10556.html.
- 116 “Is UWA Aiding Illegal Pangolin Trade?” New Vision, 11 June 2017.
- 117 “Former pangolin breeder Olsen East Africa expands mining business,” Exploration & Production, Africa Intelligence, 3 March 2020, https://www.africaintelligence.com/mining-sector_exploration-production/2020/04/30/former-pangolin-breeder-olsen-east-africa-expands-mining-business,108403444-ar1.

SECTION II: THE INTERCONTINENTAL TRANSPORT OF SCALES

In 2019, intercontinental pangolin scale seizures originating in Africa and destined for Asia averaged nearly 10 times the size of seizures in 2015, rising from an already significant average of 332 kilograms of scales per seizure to more than 3,200 kilograms of scales per seizure.¹ Trafficking syndicates routinely exploit a few key transport logistics hubs in the air and maritime sectors. Identifying these at-risk locations and tracking illicit pangolin scales from Africa to their consumer markets in Asia can inform where enforcement capacity needs to increase to more efficiently disrupt intercontinental trafficking.

Intra-African Shipment Consolidation

Prior to intercontinental shipment, pangolin scales are typically trafficked over land through one or more neighboring countries. In 2019, for example, Ugandan authorities seized “thousands of pangolin scales” from container trucks transiting from South Sudan to Uganda.² More broadly, the average weight of pangolin scale land seizures in Africa is 792 kilograms.³ Countries along the western coast of Africa have the largest average land seizure weights and are consolidation points before pangolin scales are shipped off the continent.⁴

After consolidation is complete, traffickers have two major options for shipping products to Asia: by air or by sea. Between 2015 and 2019, the maritime transport sector’s relevance to pangolin trafficking increased, accounting for 76% of all seized pangolin scales by weight in 2019.⁵ Yet, over the last five years, 69% of all pangolin seizures originating in Africa with known destinations in Asia were made in the air transport sector.⁶ The variation in weight of pangolin scales seized in the air and maritime sectors is stark: In 2019, under 500 kilograms of pangolin scales trafficked from Africa to Asia were seized in the air transport sector, while over one hundred times more (nearly 55,000 kilograms) were seized in the maritime sector.⁷ Thus, maritime routes account for the majority of pangolin scales trafficked out of Africa and appear to be increasingly critical to the operations of criminal syndicates.⁸

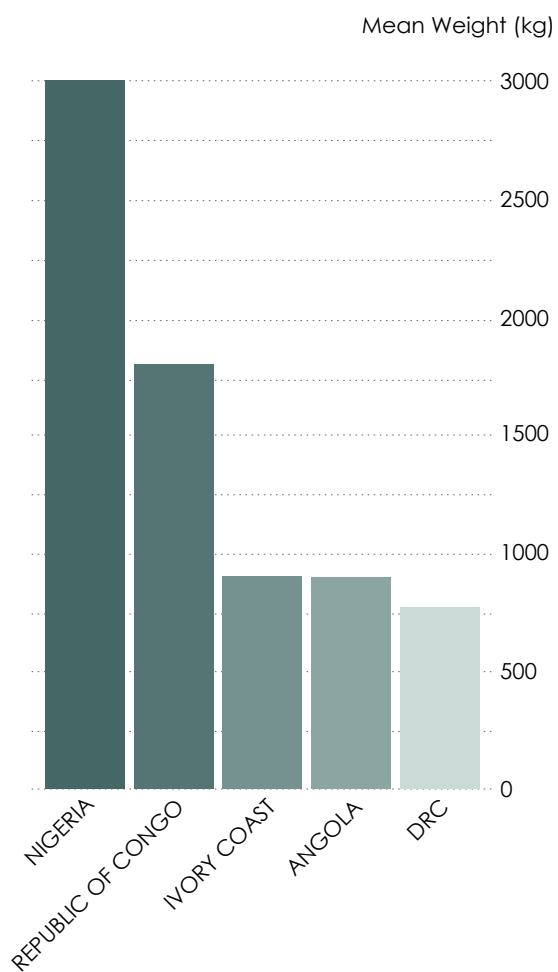


Figure 6: Top Five African Countries according to the Average Weight of Land Seizures, 2015-2019.

Source: C4ADS’ Wildlife Seizure Database.

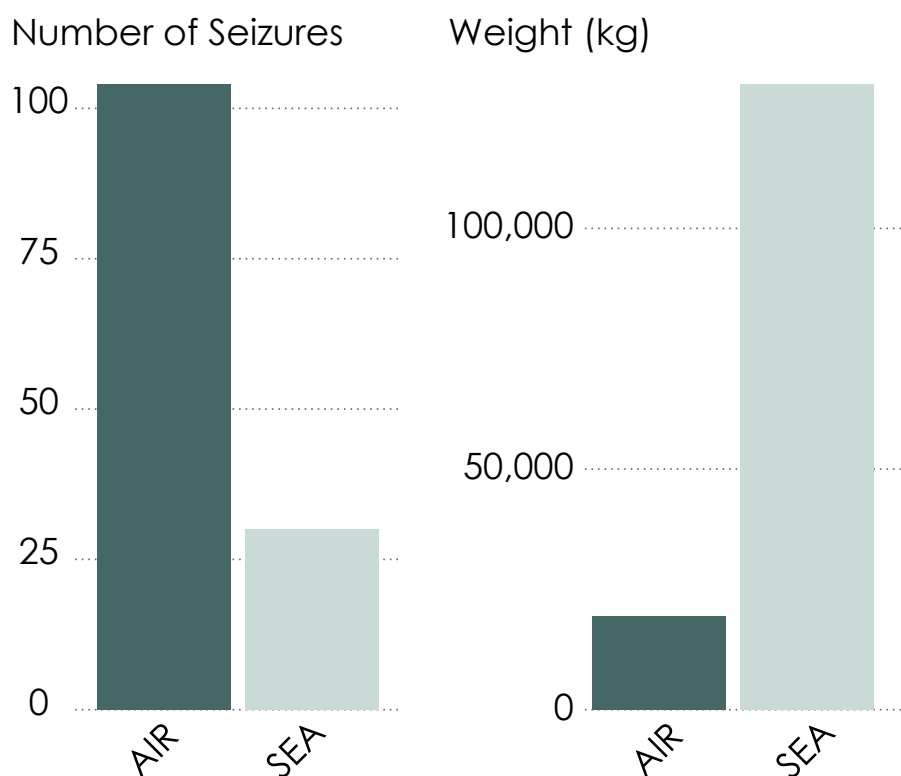


Figure 7: Number of Seizures and Total Weight Seized by Sector Originating From or Transiting Through Africa, 2015-2019.

Source: C4ADS’ Wildlife Seizure Database.

Maritime Trafficking Trends

Maritime trafficking is the modality of choice for the largest intercontinental shipments of pangolin products from Africa.⁹ Between 2015 and 2019, over 127 tonnes of pangolin products were confiscated from just 26 maritime shipments exported from Africa to Asia.¹⁰ The primary destinations of known pangolin seizures are Vietnam, Hong Kong, and China.¹¹ En route to these and other markets, pangolin products often transship through countries like Singapore and Malaysia, each of which is a potential point of interdiction.¹² Notably, the point of arrival for pangolin scales in Asia does not always align with the final consumer country. For example, a portion of scales that arrive in Vietnam are trafficked into China.^{13 14 15}

African authorities face many challenges when intercepting maritime shipments leaving the continent. Of the 30 maritime pangolin seizures linked to Africa between 2015 and 2019, only four of them—accounting for just 2% of all pangolin scales (by weight)—were seized in Africa.¹⁶ Cameroon and the DRC each made two seizures and are also two of the most common export countries for maritime pangolin shipments out of Central and West Africa, only preceded by Nigeria.¹⁷ Traffickers exported more than 87 tonnes of pangolin scales through Nigeria's maritime sector over the last five years.¹⁸ Despite this, between 2015 and 2019, authorities at Nigerian ports made no known seizures; all maritime seizures occurred after transit through the country. Nigeria's Apapa Port, in particular, appears to be commonly used by traffickers.¹⁹

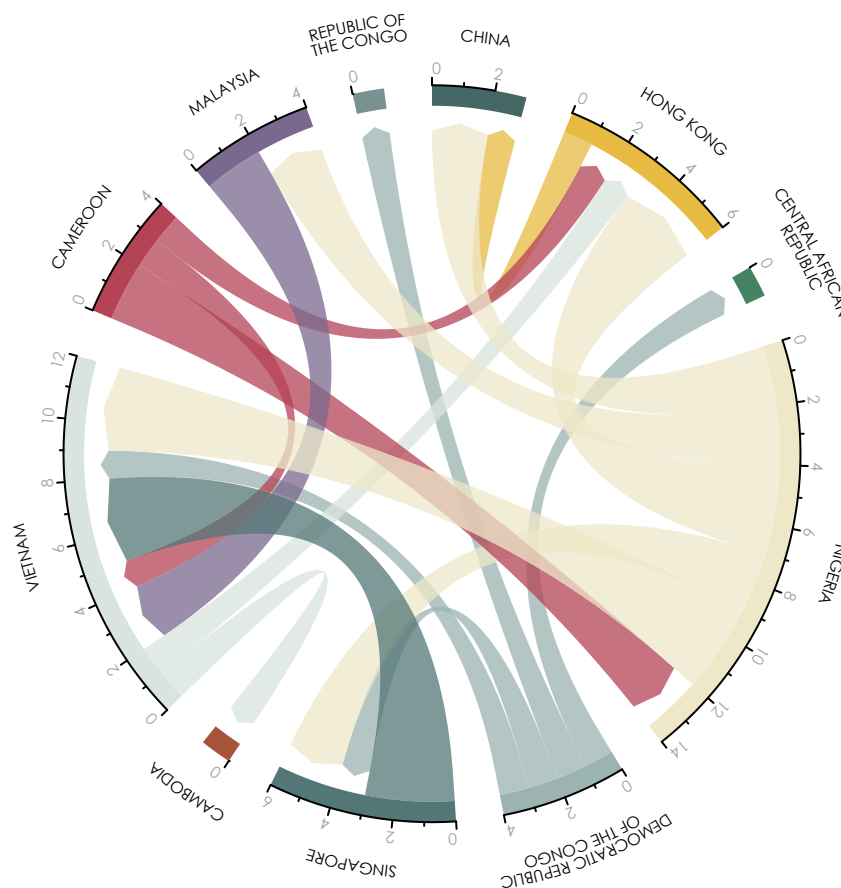


Figure 8: Pangolin Maritime Shipment Routes Linked to Africa, 2015-2019.
Source: C4ADS' Wildlife Seizures Database.

Nigeria's Enforcement Gap

Between 2015 and 2019, 55 known shipments of pangolins or pangolin products transited Nigeria and only 11 of them (20%) were intercepted within Nigeria.²⁰ Shipments were most commonly seized in Hong Kong, Vietnam, and China (Figure 9) after departing Nigeria's airports or seaports.²¹

In 2019 alone, 10 pangolin scale shipments originated or transited through Nigeria, amounting to more than 54.5 tonnes of scales.²² Despite this, Nigeria only experienced two successful pangolin seizures, both of which were land-based.²³ These two seizures confiscated just 2% of

the total weight of pangolin scales linked to Nigeria in 2019.²⁴ Since 64% of the weight of seized pangolin scales linked to Africa originated, transited, or were destined for Nigeria in the last five years,²⁵ the country is a critical location for intervention.

Unfortunately, Nigeria successfully interdicted just 10% of the quantity of scales that transited its borders in the last five years,²⁶ highlighting a significant gap in counter-wildlife trafficking capability within the country.

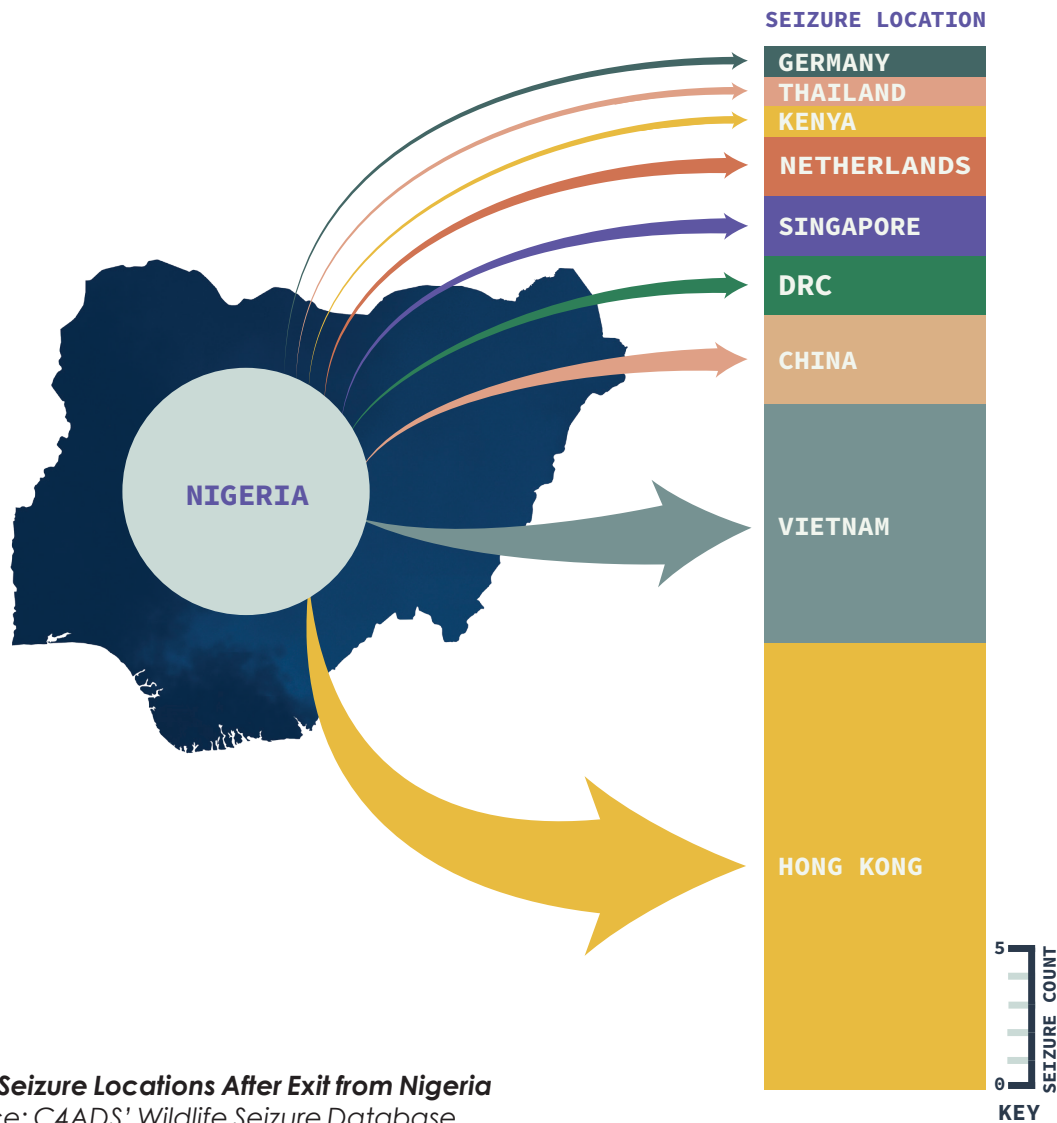


Figure 9: Top Seizure Locations After Exit from Nigeria
 Source: Source: C4ADS' Wildlife Seizure Database

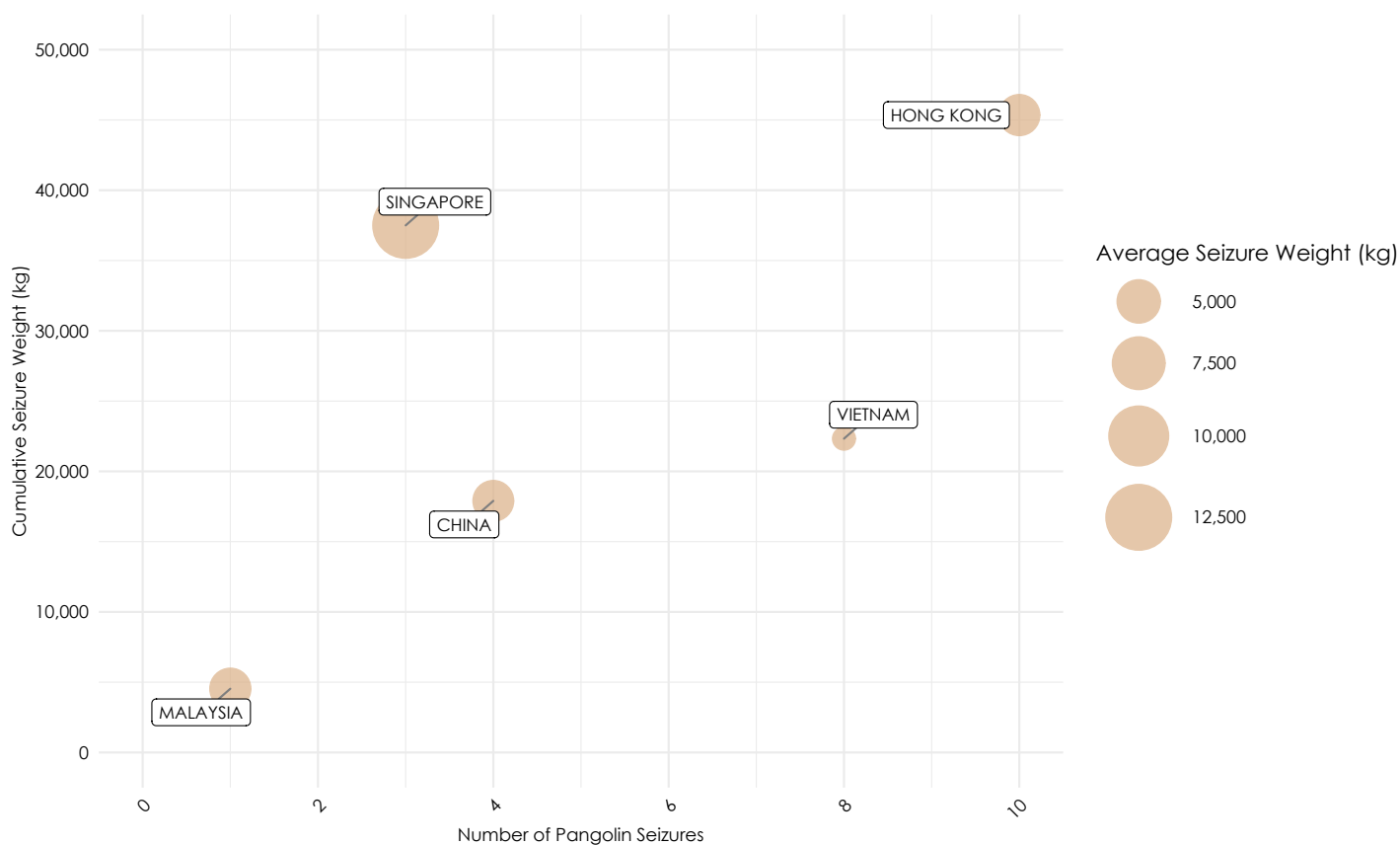


Figure 10: Top Countries for Africa-Linked Pangolin Maritime Seizures in Asia by Number of Seizures and Total Weight, 2015-2019.

Source: C4ADS' Wildlife Seizures Database.

In Asia, key interdiction points include Hong Kong, Vietnam, China, Malaysia, and Singapore.²⁷ Second only to Hong Kong, Vietnam makes more maritime seizures coming from Africa than other jurisdictions.²⁸ Common seizure locations in Vietnam include the Ports of Saigon, Hai Phong, Da Nang, and Cat Lai.²⁹ However, the Vietnamese seizures are typically smaller than those interdicted elsewhere. For example, Singapore's seizures average 4.5 times larger.³⁰

Traffickers rely on low cost and commonly traded materials to obfuscate pangolin scales and disguise shipments as legal transactions. Common obfuscation methods in maritime shipments coming out of Africa include plastic, timber, nuts, and seeds.³¹ Over the last five years, Hong Kong intercepted five shipments declared as or obfuscated in plastic.³² These shipments came from Nigeria, Cameroon, and Ghana.³³ Vietnam's Hai Phong and Cat Lai ports are more likely to receive shipments concealed in timber.³⁴ Timber is an increasingly significant import from Africa to Vietnam.^{35 36 37}

Air Trafficking Trends

The most frequent form of intercontinental pangolin trafficking from Africa to Asia relies on the air transport sector, including passenger-carried products and air freight. Between 2015 and 2019, nearly 13 tonnes of pangolin products were confiscated in 88 seizures from the air transit sector travelling between Africa and Asia.³⁸ The final destination of pangolin products trafficked via commercial airlines is most frequently mainland China, followed by Hong Kong.³⁹ Vietnam, Laos, and Malaysia each tie for third most common final destination.⁴⁰ En route to these and other markets, pangolin products often transit countries such as Ethiopia, Turkey, and the United Arab Emirates.⁴¹

African enforcement authorities struggle to effectively monitor and detect pangolin trafficking in the air transport sector. Over the last five years, air shipments of pangolin products that originated in Africa transited through

airports in at least 120 instances.⁴² These shipments passed through 22 African countries.⁴³ Yet, less than a third of them were intercepted on the continent.⁴⁴ Only one country—Cameroon—achieved an interdiction rate greater than 50%.⁴⁵ Nigeria, in particular, only seized 13% of its known illicit air shipments.⁴⁶

The most common African jurisdictions through which illicit shipments of pangolin products transited in the last five years include:⁴⁷

- **Nigeria** (Murtala Muhammed International Airport and Nnamdi Azikiwe International Airport)
- **Cameroon** (Douala International Airport and Yaoundé International Airport)
- **Ethiopia** (Bole International Airport)

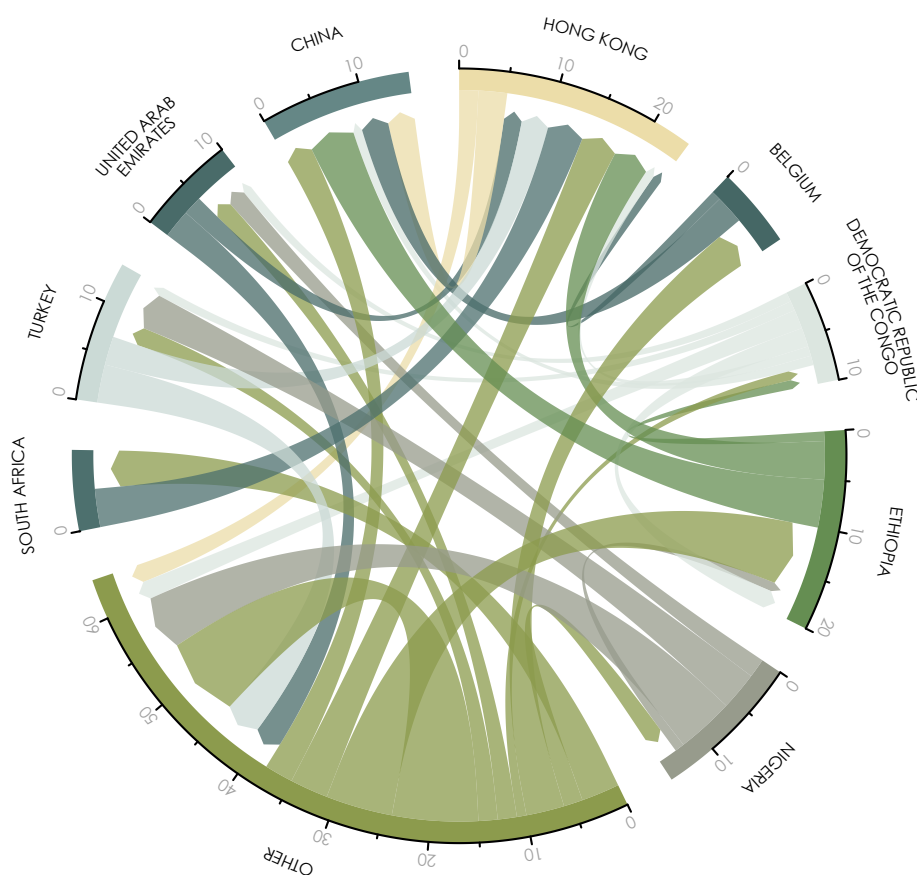


Figure 11: Pangolin Air Shipment Routes Linked to Africa, 2015-2019.
Source: C4ADS' Wildlife Seizure Database

Note: "Other" countries are all countries with air trafficking instances, but that did not appear in the top nine of countries with the most instances. They include: Cameroon, Equatorial Guinea, France, Germany, Ghana, Guinea, Kenya, Laos, Liberia, Macau, Malaysia, Morocco, Mozambique, Netherlands, Qatar, Republic of the Congo, Sierra Leone, Singapore, South Sudan, Sudan, Thailand, Togo, and Vietnam.

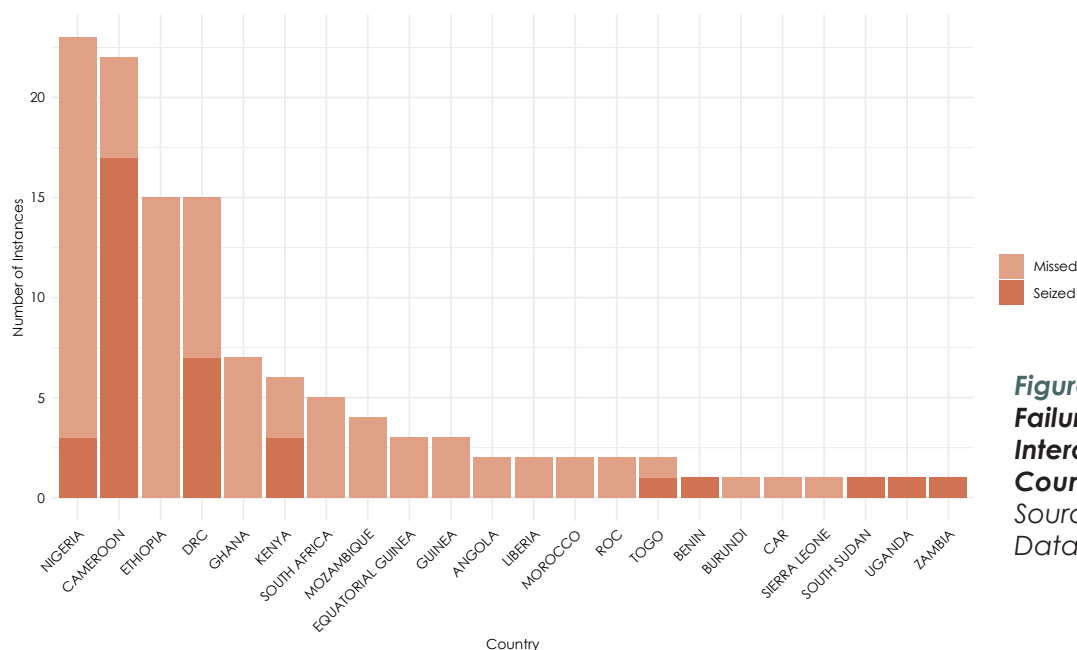


Figure 12: Successes and Failures in Air Transit Sector Interdictions by African Country, 2015-2019

Source: C4ADS' Wildlife Seizure Database.

Note: A "missed" seizure instance is when a location fails to intercept a shipment of illicit product. This is identified when an illicit shipment is reported to have originated or transited through one location but is seized in a second location; thus, the first location failed to seize the illicit shipment (i.e. "missed" the seizure).instances.

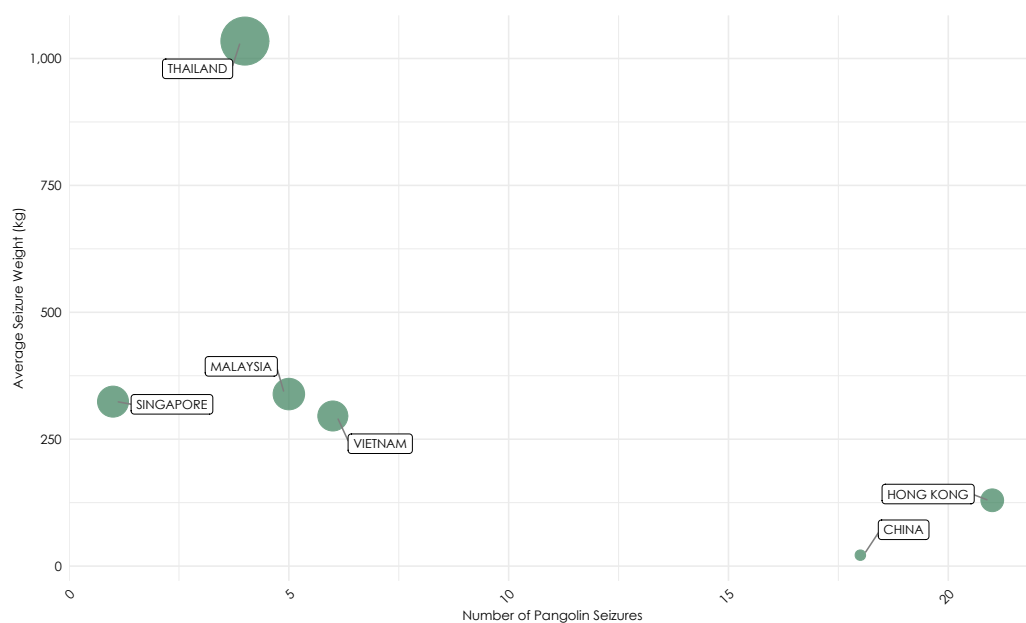


Figure 13: Top Countries for Africa-Linked Air Seizures in Asia by Number of Seizures and Total Weight, 2015-2019

Mean is only calculated from seizures with known seizure weights.

As a result of limited frontline enforcement, 64% of pangolin air shipments from Africa to Asia are seized in Asia.⁴⁸ The most common air seizure locations are Hong Kong and China, specifically Chengdu Shuangliu and Guangzhou Baiyun Airports.⁴⁹ These locations are followed by Vietnam, Malaysia, and Thailand.⁵⁰ Despite making significantly fewer seizures, average seizure weights in Malaysia, Vietnam, and Thailand are much higher than in China and Hong Kong.⁵¹ Limited data suggests this may be due to the volume of passengers carrying personal-use quantities of scales from Africa to China and the prominence of Southeast Asian countries in intercontinental air freight routes. For example, out of four seizures in Thailand, three contained more than 500 kilograms of pangolin scales.⁵² All three shipments were bound for Laos and were mainly air freight shipments (as opposed to passenger-carried shipments).⁵³

Distribution into China

Whether arriving directly from the African continent or by way of a neighboring Asian country, China is the primary destination for illicitly-sourced pangolin scales. Authorities in Asia have seized over 195 tonnes of pangolin scales since 2015; 53% of which were seized in or destined for mainland China or Hong Kong.⁵⁴ More than 40% of the 176 global pangolin scale seizures in or bound for China or Hong Kong are known to have originated in Africa—accounting for upwards of 84 tonnes since 2015.⁵⁵

Trafficking by air and land are the most common methods by which pangolin scales enter China.⁵⁶ These transport modes account for more than 70% of global scale seizures in or bound for China or Hong Kong.⁵⁷ Air seizures in China and Hong Kong, on average, weigh 55 kilograms.⁵⁸ Seizures on land in China and Hong Kong, on average, weigh 316 kilograms.⁵⁹ However, the weight of pangolin scales seized from containers in China or Hong Kong is nearly four times greater than the amount confiscated from all other modes of transportation, combined. Maritime seizures of pangolin scales in China and Hong Kong—over half of which originate from Nigeria—totaled more than 72 tonnes.⁶⁰

Pangolin scales also arrive in China legally. Between 2015 and 2019, the CITES Trade Database indicates that over 13 tonnes of pangolin scales and skins were shipped to China from Africa, 92% of which were shipped after pangolins were up-listed to Appendix I in 2016.¹

¹ "CITES Trade Database." United Nations Environment Programme and World Conservation Monitoring Centre, <https://trade.cites.org/>.

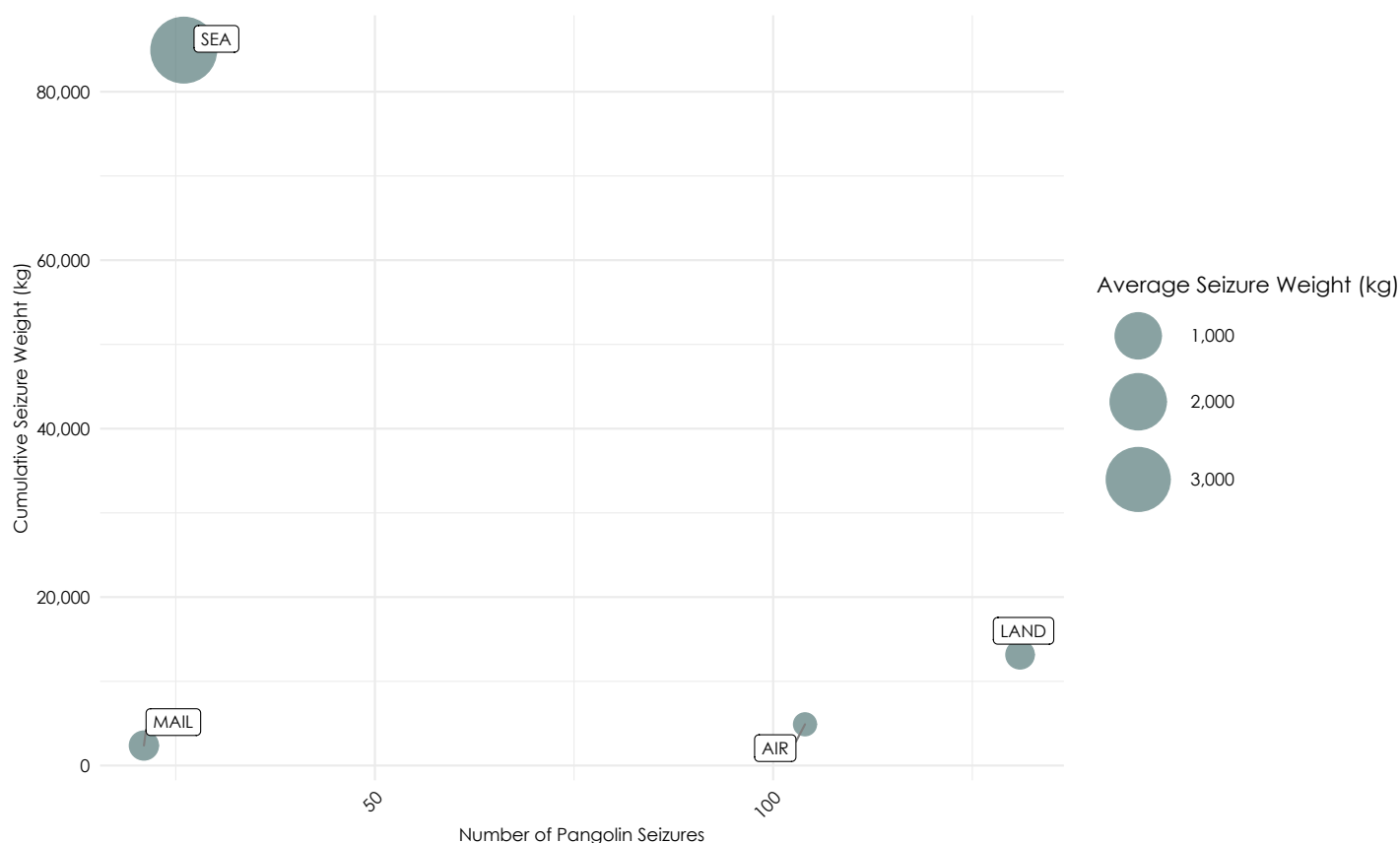


Figure 14: Number of Pangolin Seizures in or Bound for China or Hong Kong and Cumulative Weight Seized by Transport Method, 2015-2019.

Source: C4ADS' Wildlife Seizure Database.

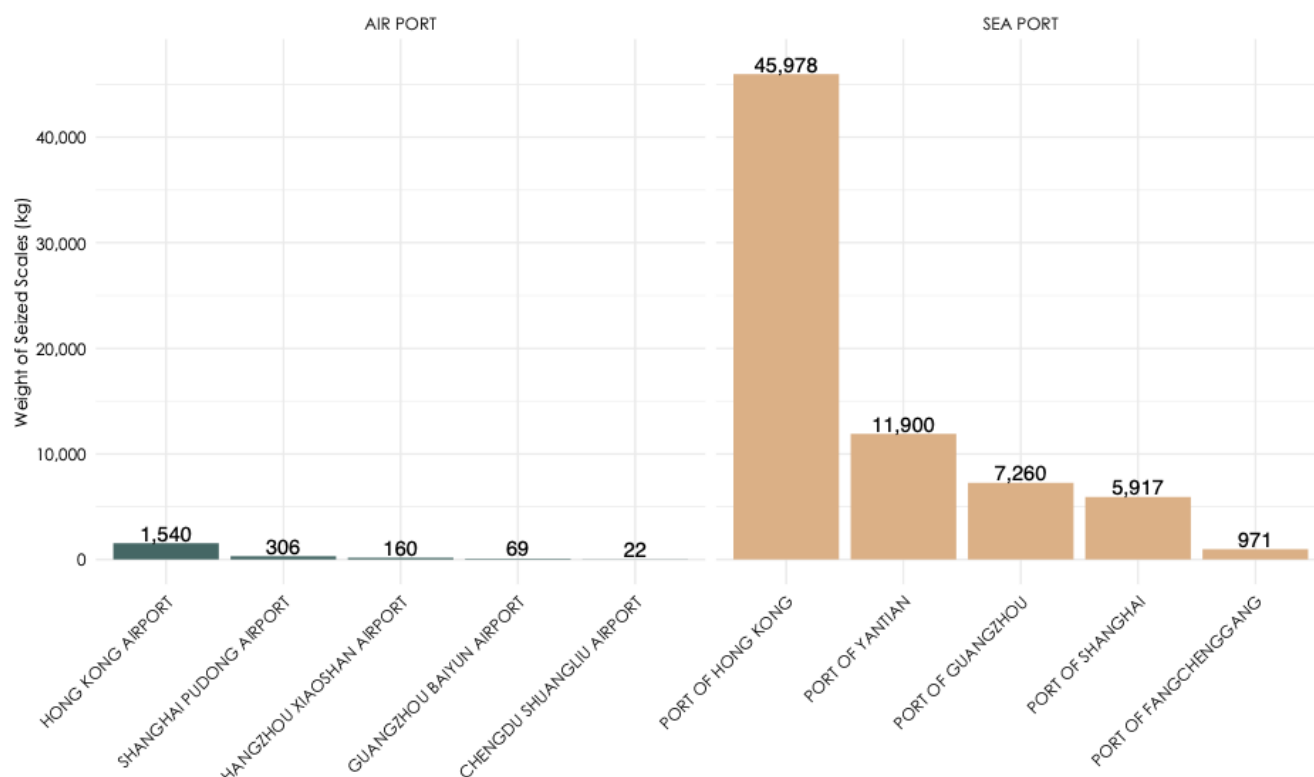


Figure 15: Top Five Airports and Port Cities in China and Hong Kong for Pangolin Scale Seizures by Weight, 2015-2019.

Source: C4ADS' Wildlife Seizure Database.

The Port of Yantian is located in Shenzhen, China.

The air and seaports with the greatest cumulative weights of seized pangolin scales are primarily located in southern China and Hong Kong. Just five cities in China (including Hong Kong) account for over 99.5% of all pangolin scales trafficked into the country by air and sea.⁶¹ For pangolin scales arriving in China and Hong Kong directly from West Africa by air, Hong Kong International is the principal point of entry.⁶² Additionally, Fangchenggang's proximity to Vietnam makes it a significant point of entry for pangolin scales coming to China from Southeast Asia.^{63 64}

Mapping land seizures of pangolin scales and whole pangolins in China further reveals common points of entry from South and Southeast Asia, as well as distribution points for illicit pangolin products throughout the country. In Figure 16, seizures on the Myanmar-China border and around the Vietnam-China border highlight three prominent smuggling routes into China from Southeast Asia: through the Muse and Mongla border crossings in Myanmar, and through the Mong Cai border crossing in Vietnam.⁶⁵ Numerous seizures at Hong Kong border

crossings and in Shenzhen highlight another overland route for pangolin scales, often arriving from West Africa.⁶⁶

Regardless of transport method, pangolin products are seized throughout China. Between 2015 and 2019, C4ADS' Wildlife Seizure Database shows that authorities in more than 60 cities have seized whole pangolins or their scales.⁶⁷ Most of these cities have seen at least one land seizure.⁶⁸ However, a major enforcement action by Chinese authorities reveals the complicated nature of pangolin distribution supply chains:

In 2019, authorities dismantled a pangolin trafficking syndicate that sourced scales from Nigeria. The scales were shipped to Busan in South Korea, then forwarded to Shanghai. From Shanghai, the traffickers smuggled their scales to Wenzhou and then distributed them to various parts of the country, including the Guangxi autonomous region.¹

¹ Zhenhuan, Ma. "Smuggled Pangolin Scales Seized in Joint Operation." Chinadaily.com.cn, 12 December 2019, www.chinadaily.com.cn/a/201912/12/WS5df17ba2a310cf3e3557d8f2.html.

The pangolin trafficking supply chain's reliance on systems of licit trade and commerce provides law enforcement vital opportunities to intercept shipments before they are broken down and distributed to consumers. It is at key logistics hubs—border crossings, airports, and seaports—that trafficking syndicates are most vulnerable, both to detection and to profit loss. Upon reaching China, illicit pangolin scales meld into the country's legal market for buying and producing pangolin-based medicine.



Figure 16: Land, Air, and Sea Seizures of Whole Pangolins or Pangolin Scales in China and Hong Kong, 2015-2019.
Source: C4ADS' Wildlife Seizure Database.

Endnotes

- 1 C4ADS' Wildlife Seizure Database.
- 2 "Uganda Seizes 750 Pieces of Ivory Being Smuggled from South Sudan." Al Jazeera, 31 January 2019, www.aljazeera.com/news/africa/2019/01/uganda-seizes-750-pieces-ivory-smuggled-sudan-190131195921122.html#:~:text=Ugandan authorities have seized 750, in the East African country.&text=Two Vietnamese men, suspected of smuggling, were detained.
- 3 C4ADS' Wildlife Seizure Database.
- 4 C4ADS' Wildlife Seizure Database.
- 5 C4ADS' Wildlife Seizure Database.
- 6 C4ADS' Wildlife Seizure Database.
- 7 C4ADS' Wildlife Seizure Database.
- 8 C4ADS' Wildlife Seizure Database.
- 9 C4ADS' Wildlife Seizure Database.
- 10 C4ADS' Wildlife Seizure Database.
- 11 C4ADS' Wildlife Seizure Database.
- 12 C4ADS' Wildlife Seizure Database.
- 13 C4ADS' Wildlife Seizure Database.
- 14 Jiaming, Xu, et al. "Trafficked to Extinction." The Pangolin Reports, Global Environmental Reporting Collective, 25 September 2019, globalstory.pangolinreports.com/#lede.
- 15 Prinsloo, Hendelene. "Scaling Up: The Rapid Growth in the Trafficking of Pangolin Scales 2015-2019." Wildlife Justice Commission, February 2020.
- 16 C4ADS' Wildlife Seizures Database.
- 17 C4ADS' Wildlife Seizures Database.
- 18 C4ADS' Wildlife Seizures Database.
- 19 C4ADS' Wildlife Seizures Database.
- 20 C4ADS' Wildlife Seizures Database.
- 21 C4ADS' Wildlife Seizures Database.
- 22 C4ADS' Wildlife Seizures Database.
- 23 C4ADS' Wildlife Seizures Database.
- 24 C4ADS' Wildlife Seizures Database.
- 25 C4ADS' Wildlife Seizures Database.
- 26 C4ADS' Wildlife Seizures Database.
- 27 C4ADS' Wildlife Seizures Database.
- 28 C4ADS' Wildlife Seizures Database.
- 29 C4ADS' Wildlife Seizures Database.
- 30 C4ADS' Wildlife Seizures Database.
- 31 C4ADS' Wildlife Seizures Database.
- 32 C4ADS' Wildlife Seizures Database.
- 33 C4ADS' Wildlife Seizures Database.
- 34 C4ADS' Wildlife Seizures Database.
- 35 Blackman, Jo. "Clamping Down on Vietnam's Illegal Timber Trade: EU Trade Agreements Should Signal a New Era." Global Witness, 8 November 2018, www.globalwitness.org/en/blog/clamping-down-vietnams-illegal-timber-trade-eu-trade-agreements-should-signal-new-era/.
- 36 "Vietnam." Panjiva Supply Chain Intelligence, S&P Global Intelligence, <https://panjiva.com/>.
- 37 In 2019, African exports classified under HS code 44 (wood) were the second highest (by cost) import to Vietnam from Africa. Source: "Vietnam." Panjiva Supply Chain Intelligence, S&P Global Intelligence, <https://panjiva.com/>.
- 38 C4ADS' Wildlife Seizure Database.
- 39 C4ADS' Wildlife Seizure Database.
- 40 C4ADS' Wildlife Seizure Database.
- 41 C4ADS' Wildlife Seizure Database.
- 42 C4ADS' Wildlife Seizure Database.
- 43 C4ADS' Wildlife Seizure Database.

- 44 C4ADS' Wildlife Seizure Database.
- 45 Cameroon's interdiction rate between 2015 and 2019 was 70%. Source: C4ADS' Wildlife Seizure Database.
- 46 C4ADS' Wildlife Seizure Database.
- 47 C4ADS' Wildlife Seizure Database.
- 48 The remaining shipments are intercepted in Europe and the Americas (11%, and 1%, respectively). Source: C4ADS' Wildlife Seizure Database.
- 49 C4ADS' Wildlife Seizure Database.
- 50 C4ADS' Wildlife Seizure Database.
- 51 C4ADS' Wildlife Seizure Database.
- 52 C4ADS' Wildlife Seizure Database.
- 53 C4ADS' Wildlife Seizure Database.
- 54 C4ADS' Wildlife Seizure Database.
- 55 C4ADS' Wildlife Seizure Database.
- 56 Because it is difficult to differentiate between African and Asian pangolin scales without genetic testing, most seizure reports outside of transport hubs (e.g., airports) do not indicate the ultimate origin of seized scales. Thus, this discussion is not specific to African scales except where explicitly stated. Overall seizure trends, regardless of scale origin, are a proxy for understanding the supply chains that African scales likely follow in Asia.
- 57 C4ADS' Wildlife Seizure Database.
- 58 C4ADS' Wildlife Seizure Database.
- 59 C4ADS' Wildlife Seizure Database.
- 60 C4ADS' Wildlife Seizure Database.
- 61 C4ADS' Wildlife Seizure Database.
- 62 C4ADS' Wildlife Seizure Database.
- 63 Cheng, Wenda, et al. "Recent Pangolin Seizures in China Reveal Priority Areas for Intervention." *Conservation Letters*, vol. 10, no. 6, 2017, pp. 757–764. Wiley Online Library, doi:10.1111/conl.12339.
- 64 Zhou, Mian. "湖南破获特大非法贩卖穿山甲案" ["Large Case of illegal Trafficking in Pangolin Uncovered in Hunan"]. Xinhua Net, Xinhua News Agency, 6 November 2018, www.xinhuanet.com/legal/2018-11/06/c_1123673800.htm.
- 65 C4ADS' Wildlife Seizure Database.
- 66 C4ADS' Wildlife Seizure Database.
- 67 C4ADS' Wildlife Seizure Database.
- 68 C4ADS' Wildlife Seizure Database.

SECTION III: CHINA'S LEGAL PANGOLIN SCALE MARKET

Pangolin scales seized in or destined for China or Hong Kong increased by 171% between 2015 and 2019.¹ During this period, at least 227 whole pangolins were seized each year.² Traffickers are actively seeking to profit from demand for pangolin meat and pangolin-based traditional medicines³ in China; this demand is estimated to require 100,000 to 300,000 pangolins annually.⁴ Operating under conditions of lax enforcement, traffickers have long exploited the country's self-regulating TCM market that allows companies to privately own government-registered scales. Regulatory changes to China's TCM standards introduced by the government in June 2020 may begin to restrict the legal market's operations,⁵ but it is too soon to determine the full effect.

Thus, understanding how traffickers and others circumvent the legal pangolin market is critical to preventing continued criminal activity, improving law enforcement, and effectively implementing new regulations. Even if new or future regulatory changes completely dismantle the legal market that currently provides cover to traffickers, a black market could persist through existing connections between traffickers and licit TCM actors.

This section maps China's legal pangolin scale market as it has functioned since 2007, offering lessons on how criminals exploit licit systems and highlighting the risk legal markets pose for endangered wildlife in China and elsewhere.

A Vulnerable Market Structure

China's legal pangolin scale market relies on thousands of companies and other actors to self-regulate their behavior.⁶ Companies, hospitals, apothecaries, and other entities using, buying, and selling pangolin scales are bound by domestic Chinese law and regulations issued by the National Forestry and Grasslands Administration (NFGA), which also houses China's CITES management authority.⁷ While CITES protects pangolins internationally, the treaty lacks enforcement authority over domestic activities involving endangered species.⁸ China has exercised this leeway by allowing market actors to commercialize government-registered—but not always government-owned—"stockpile" scales since 2007.⁹ Despite restricting the trade to stockpiled scales, pangolin scales trafficked to China from Africa and other parts of Asia still find their way into the legal TCM market.^{10 11 12 13}

Purposes of Demand



Medicine

Traditional medicine is the principal purpose for pangolin scales in China. Some TCM practitioners allege that scales can promote lactation, reduce swelling, and treat rheumatism, among serving other purposes.¹ Pangolin scales are used to produce patented medications and to make prescribed TCM decoctions. Pangolin scales are used to produce patented medications² and to make prescribed TCM decoctions.³

1 Yan, HuiFang, et al. "吃穿山甲肉其实不'大补'" ["Eating Pangolins is Actually Not a 'Big Supplement'"]. People's Net, 22 February 2017, health.people.com.cn/n1/2017/0222/c404177-29099432.html.

2 Search Results for "穿山甲" ["Pangolin"]. Chinese Medicine Prescription Database, Chongqing Kangzhou Big Data Co. Ltd. (Medicine Knowledge Net), db.yaozh.com/chufang?Comprehensivesearchcontent=%E7%A9%BF%E5%B1%B1%E7%94%B2&

3 Vallianos, Christina. Pangolins—On the Brink. WildAid, September 2017, wildaid.org/wp-content/uploads/2017/09/WildAid-Pangolins-on-the-Brink.pdf.

Food

Pangolin is often eaten as a delicacy,¹ with some people believing that the same health benefits of pangolin scales can also be obtained by eating the meat and other parts.² Pangolin bones and scales are used in certain recipes.³

1 "Indonesian Pangolin, a Prized Delicacy in China, Faces Extinction Due to Trafficking." Agence France-Presse/South China Morning Post, South China Morning Post Publishers Ltd., 21 December 2017, www.scmp.com/news/asia/southeast-asia/article/2125247/indonesian-pangolin-prized-delicacy-china-faces-extinction.

2 Huang Jun Feng and Ma, Yi. "这种'四毒'俱全的动物快被吃灭绝了" ["All kinds of this 'Four Poisons' Animal is about to be Eaten to Extinction"]. Modern Publishing House, The Paper, www.thepaper.cn/newsDetail_forward_5835016.

3 Prinsloo, Hendelene. "Scaling Up: The Rapid Growth in the Industrial Scale Trafficking of Pangolin Scales 2016-2019." Wildlife Justice Commission, February 2020, wildlifejustice.org/wp-content/uploads/2020/02/The_Rapid_Growth_in_the_Trafficking_of_Pangolin_Scales_2015-2019-Update1.pdf.

Art

Luxury and cultural products are another use for pangolin parts, including scales and skin. Larger pangolin scales can be carved into pendants¹ and objects like picks for stringed instruments.² Pangolin claws can also be used as good luck charms.³

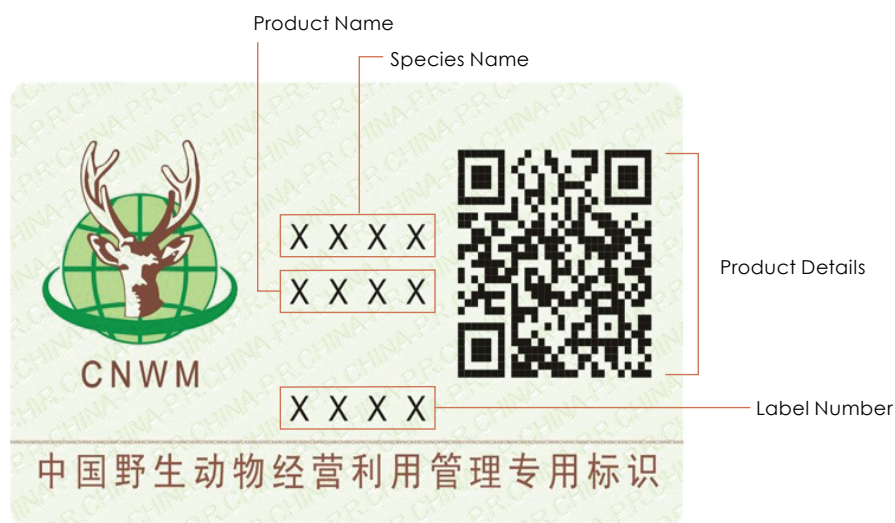
1 "穿山甲雕刻图片 (第1页)" ["Pangolin Carving Pictures (Page 1)"]. QQ Net, jbh.17qq.com/article/cdpcpdov.html.

2 Mr. Gu Who Loves to Eat Fish. "那些年我们用过的古筝指甲 (三): 穿山甲" ["Those Years When We Used Fingernails for the Zither (3): Pangolin"]. Cai Fu Traditional Chinese Culture Community, 14 January 2016, m.91ddcc.com/1/95804.

3 Observer Net, "盗墓影视剧盛行 穿山甲又多了个灭绝的方式" ["Tomb Robbing Movies Are in Vogue, Pangolins Again Face Another Manner Extinction"]. Sohu, 26 February 2019, www.sohu.com/a/297791145_115479.

Figure 17: Official 2015 Template of the Special Label for Products Containing Wildlife

Source: “国家林业局公告 [2015年第8号]” [“State Forestry Administration Announcement (2015 No. 8)”. Information Publication, State Forestry and Grasslands Administration of the People’s Republic of China, 8 May 2015, www.forestry.gov.cn/sites/main/main/gov/content.jsp?TID=2157].



China’s legal pangolin market operates within boundaries established by a 2007 NFGA announcement, “Notice on Strengthening Protections for Saiga, Pangolins, and Rare Reptiles, as well as the Regulation of their Products in Medicine.”¹⁴ The notice states that “the use of pangolin ingredients is strictly limited to clinical application in designated hospitals and the production of traditional Chinese medicine, and their public sale outside of designated hospitals is not allowed.”¹⁵ The notice also created China’s pangolin scale stockpile through a government registration program.¹⁶ TCM ingredient wholesalers and other owners of raw pangolin scales, such as pharmaceutical companies, may sell raw, government-registered scales from the stockpile to designated hospitals and pharmaceutical companies for processing with government approval.^{17 18} The post-processing sale of pangolin scales, such as scale powder and patented medicines, requires a special label to indicate the product used legally-sourced pangolin scales.^{19 20 21}

Thus, the principal actors in the legal market are the owners of pangolin scales (typically TCM ingredient wholesalers or pharmaceutical companies); pharmaceutical companies that manufacture patented medicines with pangolin scales; and government-designated hospitals that prescribe and apply pangolin-based remedies in a clinical setting. Other actors, such as attempted breeding programs, operate on the periphery of this system.

In the source, production, and distribution stages of the legal supply chain, C4ADS identified, by name, 1,036 companies, hospitals, zoos, associations, and breeding programs participating in China’s legal pangolin market.²² Together, these actors comprise a sample of the pangolin industry in China.

- In 2008, China released a list of 711 hospitals²³ authorized to buy and use raw, unprocessed pangolin scales.²⁴ Two additional hospitals were permitted to use pangolin products in 2015,²⁵ bringing the total number of known designated hospitals to 713.
- Authorities never released a list of companies that registered scales with the NFGA’s provincial forestry bureaus or a list of the pharmaceutical companies manufacturing patented medicines with pangolin scales. One estimate puts the number of such pharmaceutical companies at 209,²⁶ all of which C4ADS identified.
- C4ADS found an additional 114 companies, hospitals, zoos, and associations that either filed patents for products containing pangolin parts; were granted official permits to use, buy, sell, or otherwise transfer (e.g., gift) pangolin scales; or have allegedly engaged in pangolin breeding activities.²⁷

This is likely an underestimate of the true number of entities legally participating in the pangolin market given the opaque nature of the system. Nevertheless, the list provides a window through which to assess the geographic distribution of the market. *The Exploitation of the Legal Market* section later in this report discusses how this distribution of companies relates to illegal activity involving pangolin scales.

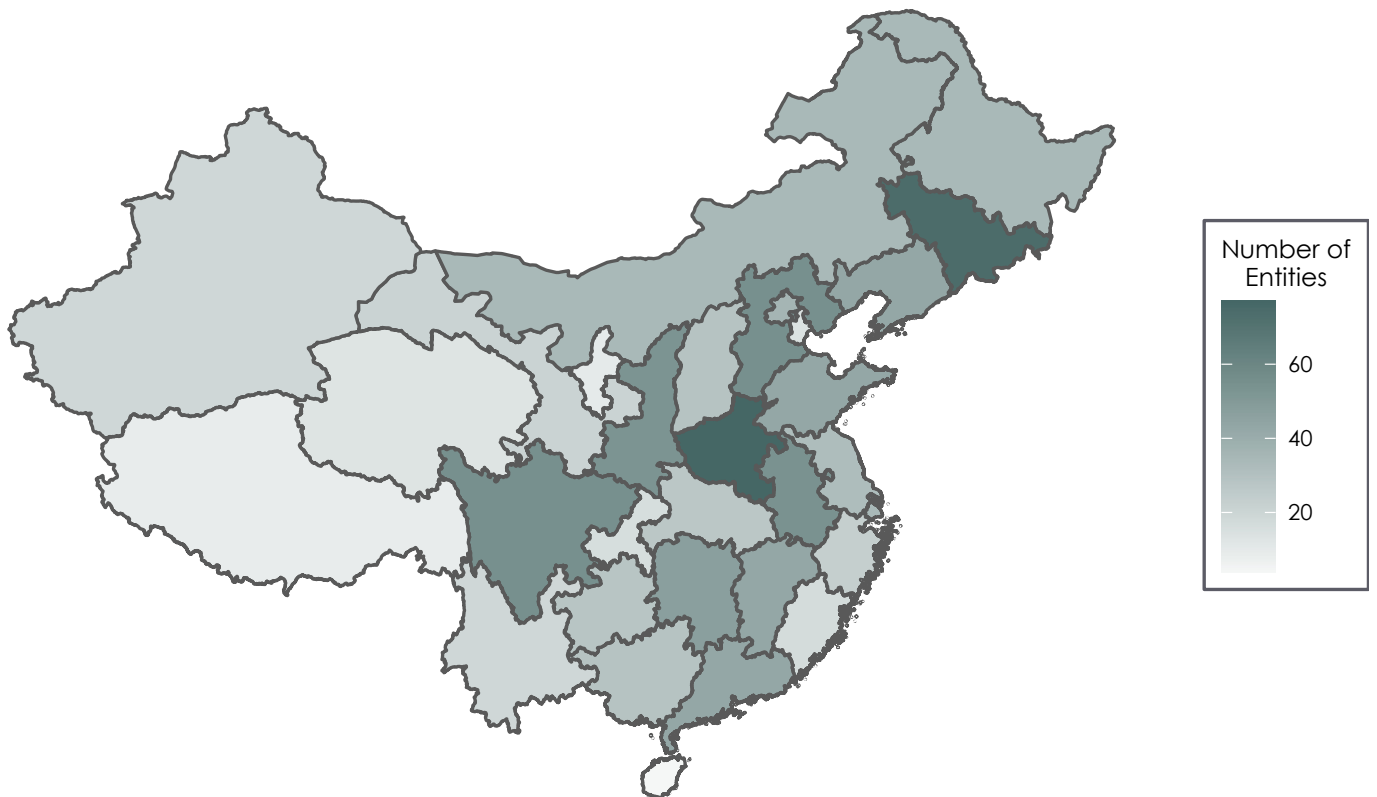
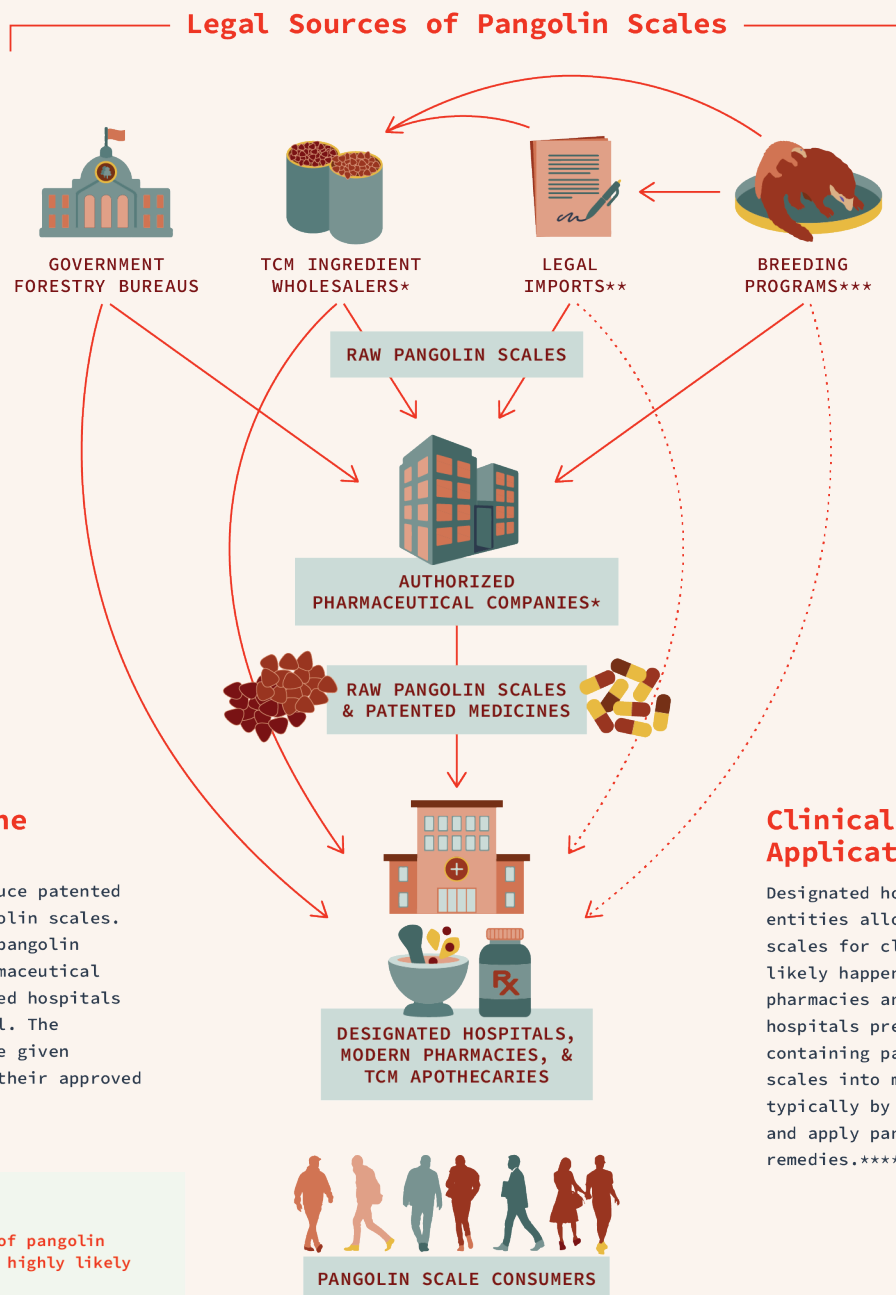


Figure 18: Heat Map of Known Companies, Hospitals, and Other Organizations Participating in China's Legal Pangolin Market by Province

China's Legal Pangolin Scale Market



Patented Medicine Production

Authorized companies produce patented medications from raw pangolin scales. These companies can sell pangolin scales to both other pharmaceutical companies and to designated hospitals with government approval. The medicines they produce are given special labels to verify their approved use of

Clinical Application

Designated hospitals are the only entities allowed to use pangolin scales for clinical purposes, which likely happens through their internal pharmacies and TCM apothecaries. These hospitals prescribe patented medicines containing pangolin scales; process raw scales into medicinal remedies, typically by grinding them into powder; and apply pangolin-based TCM remedies.****

—————>
 Direct legal transfer of pangolin scales is confirmed or highly likely

.....>
 Direct legal transfer of pangolin scales is unconfirmed

* "TCM Ingredient Wholesalers" are the most likely commercial entities to own pangolin scales that have been registered with the Chinese government's Forestry Bureaus. These entities are often authorized pharmaceutical companies themselves. As a result, many of the permits for buying or selling pangolin scales reviewed by C4ADS concern commercial agreements between one or more pharmaceutical companies.

** "Legal Imports" refers to pangolin scales bought by Chinese firms internationally with approval from the Chinese government's Forestry Bureaus. Legal imports would also likely require a CITES permit in most cases. Since pangolins were up-listed to Appendix I in 2016, imports as a legal source for scales should become increasingly rare. However, CITES' data indicates 14,000 kilograms of pangolin scales and skins were shipped to China from Africa between 2015 and 2019, 86% of which were shipped after 2016.

*** Chinese law does not appear to explicitly allow for pangolin scales sourced from breeding programs. China's 2017 National Wildlife Law states that artificial breeding of protected species like pangolin is only permitted for purposes of protecting the species. However, prior to this, breeding was promoted as a method for replenishing scarce TCM resources, and scales sourced from artificial breeding programs are not counted toward China's consumption quota. There are notable examples of pangolin breeding programs established by Chinese pharmaceutical companies and comments by representatives of those companies suggest scales from breeding programs are used for TCM products. If a company can apply for and receive permits to both breed and sell pangolin scales, it would be legal. In the international market, CITES regulations would likely govern whether Chinese companies can receive approval to import scales from breeding programs.

**** It is unclear whether Modern Pharmacies outside of designated hospitals are allowed to carry legally-manufactured and appropriately labelled patented medications that contain pangolin as an ingredient.

Stockpile and Quota System

The use, purchase, and sale of scales between actors in China's legal pangolin market is regulated by a stockpile and quota system. Only pangolin scales from the government-registered stockpile can be used for the legal practice of TCM and to produce pangolin-based patented medicines.²⁸ However, the system allows companies to retain private ownership of pangolin scale stocks, thus creating opportunities for illegal activity.

The stockpile and quota system was established by the NFGA's 2007 "Notice on Strengthening Protections for Saiga, Pangolins, and Rare Reptiles, as well as the Regulation of their Products in Medicine."²⁹ This system has four key features:

- An annual census of pangolin scales in all provinces, autonomous regions, and municipalities;^{30 31}
- An annual consumption quota to define the maximum amount of pangolin scales that can be used within each province, autonomous region, and municipality;^{32 33}
- A permit system by which the government approves and monitors the use, purchase, and sale of all pangolin scales;³⁴ and
- A decentralized system of non-government ownership and control over pangolin scales in China.³⁵

China's stockpile fundamentally relies on the TCM market to self-regulate because the pangolin scales in China's stockpile are typically not in the government's possession. The 2007 notice instructed government departments across China to "verify the [pangolin] stocks of relevant work units³⁶ in each region."³⁷ In 2008, an industry periodical relayed the government's request for all "enterprises" (i.e., companies) to report their pangolin

申请单位	上海市药材有限公司	APPLYING UNIT	Shanghai Traditional Chinese Medicine Co. Ltd.
办理状态	已办结	STATUS	Already Handled
联系地址	上海市黄浦区太仓路200号名义楼层19层02室、20层、21层 (实际楼层16层02室、17层、18层)	CONTACT ADDRESS	Nominally Rm 2, Fl 19, Fl 20, Fl 21, No 200 Taicang Rd, Huangpu District, Shanghai (Actually Rm 2, Fl 16, Fl 17, Fl 18)
申请事项所在地名称及地址	上海市药材有限公司申请出售穿山甲片3000公斤给重庆上药惠远药业有限公司 (太仓200号)	LOCATION NAME & ADDRESS OF APPLICATION ITEM	Shanghai Traditional Chinese Medicine Co. Ltd. applies to sell 3000 kg of pangolin scales to Chongqing Shangyao Huiyuan Pharmaceutical Co. Ltd. (200 Taicang)
联系人	席爱华	CONTACT PERSON	Xi Aihua
受理编号	[2019]70-0021	RECEIPT NUMBER	[2019] 70-0021
受理时间	2019/11/25	TIME OF RECEIPT	25 November 2019
受理人	顾纪雯	RECEIVING PERSON	Gu Xiwen
许可文号	沪林许[2019]217号	PERMIT CODE	Shanghai Forestry Bureau [2019] No. 217
批复内容	上海市林业局关于同意上海市药材有限公司出售穿山甲片的行政许可决定	OFFICIAL REPLY	On the approving decision of Shanghai Forestry Bureau for a permit allowing Shanghai Traditional Chinese Medicine Co. Ltd. to sell pangolin scales
决定书	查看	DECISION DOCUMENT	View
批复日期	2019/12/11	OFFICIAL REPLY DATE	11 December 2019
许可事项	对出售、购买、利用国家重点保护陆生野生动物及其制品的审批 (国务院有关经营利用无特别规定的野生动物及其制品)	PERMIT ITEM	Approval to sell, buy, and use national key protected wild animals and other products (Animals and other products without relevant special regulations from the State Council)
公布时间	2019/11/25	PUBLICATION DATE	25 November 2019

Figure 19: A 2019 Permit Approving the Sale of 3,000 Kilograms of Pangolin Scales by Shanghai Traditional Chinese Medicine Co. to Chongqing Shangyao Huiyuan Pharmaceutical Co.

Source: "办事结果查询" ["Work Result Inquiry"]. Dual Publication, Shanghai Landscaping & City Appearance Bureau, lhrs.sh.gov.cn/sgs/.

stocks to central authorities.³⁸ The 2007 notice does not indicate that the government planned to take physical possession of reported pangolin scales, only that the stocks would be recorded and monitored.³⁹ Accordingly, permits issued by the provincial forestry bureaus of the NFGA for the purchase and sale of pangolin scales often specify the transfer of scales from one corporate entity to another rather than from the government to a company. Behind these permits are contracts in which companies negotiate their own prices for scales.^{40 41}

Therefore, China's "stockpiled" pangolin scales are largely not consolidated in one location by the government but are held by individual companies who apply for permission from the government before using the scales or transferring ownership of them. The exact size of this decentralized stockpile is not publicly known. Despite allegedly conducting an annual census of pangolin stocks, the Chinese government has never publicly disclosed the total number of pangolin scales held nationally or in each province.⁴² Nor has the NFGA published information on the number of scales used by companies and hospitals in any one year.⁴³ While some areas such as Hebei⁴⁴ and Shanghai⁴⁵ publish their pangolin permits in a searchable online format, most do not.

The annual maximum consumption quota for each province, autonomous region, and municipality may provide an imperfect gauge of the volume of scales available in each location. The NFGA regularly published these figures from 2008 to 2015. During this period, the cumulative average of China's consumption quota across all administrative regions exceeded 26 tonnes annually.^{46 47 48 49 50 51} That said, yearly consumption quota announcements are not a reliable proxy for judging the actual amount of scales used in a given year. Quota announcements from the 2012-2013 and 2013-2014 periods specify that when demand exceeds the quota, "enterprises may choose to purchase [pangolin scales] obtained through artificial breeding and provided by legal breeding enterprises."^{52 53} It does not specify if this policy includes foreign breeding programs, or whether it is limited to Chinese breeding programs. Regardless, scales from breeding programs do not appear to count toward the quota maximum (*Reference Breeding Programs' Ties to Pharmaceutical Companies*).

Periodic increases in the yearly consumption quota for some provinces suggest that the stockpile might have been replenished during the 2008 to 2015 period. Anecdotal evidence implies this could be because before pangolins were up-listed to CITES Appendix I in 2016, seized scales may have been routinely added to the stockpile.⁵⁴ Since January 2017, when a revised version of China's National Wildlife Protection Law entered into force, seized scales are reportedly turned over to officials of the NFGA and do not enter China's legal market.^{55 56}

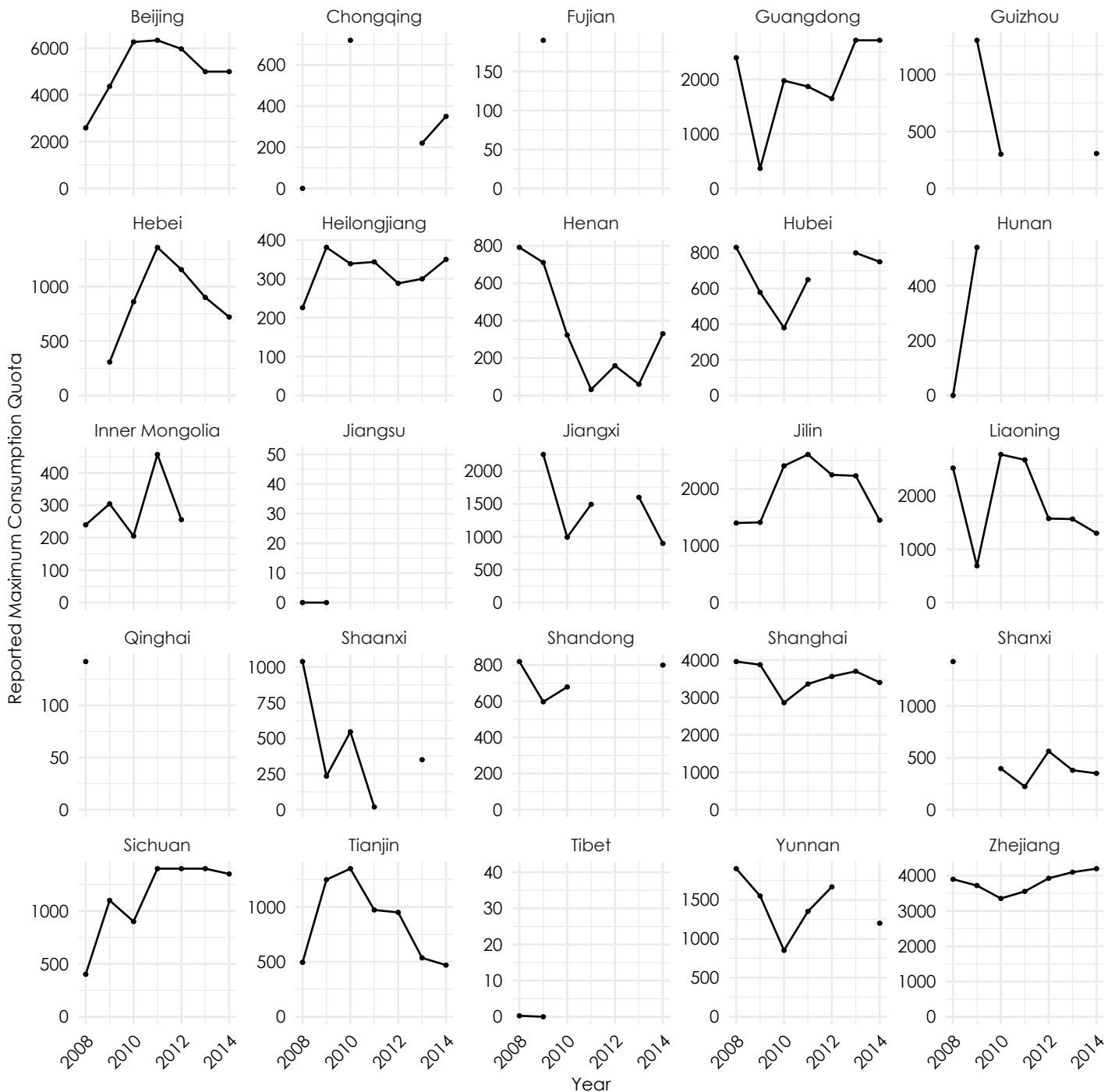


Figure 20: The Pangolin Scale Consumption Quota (kilograms) per Province per Year, 2008-2015.

Sources: "国家林业局关于下达2008-2009年穿山甲片和稀有蛇类库存原材料年度消耗控制量的通知" ["State Forestry Administration Notice on the Issuance of the 2008-2009 Annual Consumption Quota for Pangolin and Rare Snake Stockpile Materials"]. Information Publication, State Forestry and Grasslands Administration of the People's Republic of China, 27 November 2008, www.forestry.gov.cn/sites/main/main/gov/content.jsp?TID=1434.

"关于下达库存原材料年度消耗控制量的通知" ["Notice on the Issuance of the Annual Consumption Quota for Stockpile Materials"]. Information Publication, State Forestry and Grasslands Administration of the People's Republic of China, 21 September 2009, www.forestry.gov.cn/sites/main/main/gov/content.jsp?TID=1434.

"国家林业局关于下达2011-2012年度库存穿山甲片原材料年度消耗控制量的通知" ["State Forestry Administration Notice on the Issuance of the 2011-2012 Annual Consumption Quota for Pangolin Stockpile Materials"]. Information Publication, State Forestry and Grasslands Administration of the People's Republic of China, 27 November 2008, www.forestry.gov.cn/sites/main/main/gov/content.jsp?TID=1849.

"国家林业局关于下达2012-2013年度库存穿山甲片原材料年度消耗控制量的通知" ["State Forestry Administration Notice on the Issuance of the 2012-2013 Annual Consumption Quota for Pangolin Stockpile Materials"]. Information Publication, State Forestry and Grasslands Administration of the People's Republic of China, 10 October 2012, www.gov.cn/gzdt/2012-10/10/content_2240622.htm.

"国家林业局关于下达2013-2014年度库存穿山甲片原材料年度消耗控制量的通知" ["State Forestry Administration Notice on the Issuance of the 2013-2014 Annual Consumption Quota for Pangolin Stockpile Materials"]. Information Publication, State Forestry and Grasslands Administration of the People's Republic of China, 6 July 2016, www.forestry.gov.cn/zrbh/4833/88621/1.html.

"穿山甲大数据纵览：疯狂的利用何时休?" ["Pangolin Big Data Survey: When will Crazy Exploitation End?"]. China Biodiversity Conservation and Green Development Fund, July 2016, file. cbcgdf.org/T18/O125/file/20180925/20180925133325_3022.pdf.

Shanghai Market

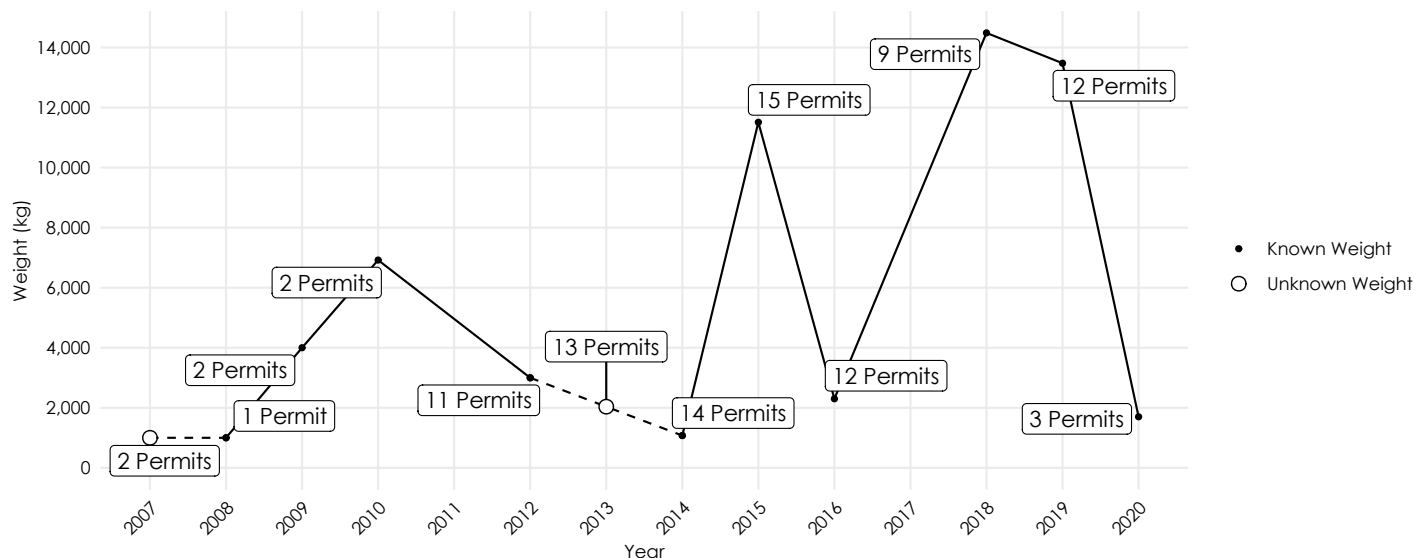


Figure 21: Number of Shanghai-Issued Permits for the Transfer, Purchase, Sale, and Use of Pangolin Scales and Cumulative Permitted Weight (kilograms) by Year, 2007-2020

Source: “办事结果查询” [“Work Result Inquiry”]. Dual Publication, Shanghai Landscaping & City Appearance Bureau, lhr.sh.gov.cn/sgs/.

Between 2015 and 2019, authorities in Shanghai⁵⁷ seized more than 6 tonnes of pangolin scales.⁵⁸ Shanghai is one of the most transparent administrative regions for information on the pangolin stockpile, having reported its consumption quota every year from 2008 to 2015. The city's permits regulating the transfer, purchase, sale, and use of pangolin scales remain publicly accessible as of this report's publication.

By searching the Shanghai Forestry Bureau's public information portal for permits that include the word “pangolin” (“穿山甲”) in the title, C4ADS found 96 permits issued between 2007 and 2020.⁵⁹ While the city's available permits show only 18 individual applicants, C4ADS identified a list of 30 hospitals and other businesses operating in Shanghai's legal pangolin market.

According to available government permits, from 2007 to 2020, more than 59 tonnes of pangolin scales were legally imported to, shipped out of, sold or bought in, or used in Shanghai. Not all of the permits include weight information, nor do they account for untouched stockpile scales, so this is likely an underestimation of the amount of scales in Shanghai's market. As a result, this number is not directly comparable to Shanghai's average annual consumption quota, which was 3,531 kilograms between 2008 and 2015.^{60 61 62 63 64 65} However, Shanghai's quota

was consistently among the largest in China, confirming the large size of the city's stockpile.

Being self-regulated, the legal pangolin market is vulnerable to exploitation. Market surveys, interviews, court records, and investigative reporting consistently show that pangolin trafficking syndicates feed illicitly-obtained scales into this legal system.^{1 2 3 4 5 6 7 8} Indeed, the legal market is circumvented at nearly every point in its supply chain, creating a black market that is nested within the legal system.

1 “穿山甲大数据纵览：疯狂的利用何时休？” [“Pangolin Big Data Survey: When will Crazy Exploitation End?”]. China Biodiversity Conservation and Green Development Fund, July 2016, file.cbcdgdf.org/T18/O125/file/20180925/20180925133325_3022.pdf

2 Oak. “绿会向央视3.15举报：现中药市场的穿山甲多为伪药” [“CBCGDF's March 15 Complaint to CCTV: Many Modern Pangolin Chinese Traditional Medicines are Fake”]. Edited by Sophia and Angel, China Biodiversity Conservation and Green Development Fund, 4 December 2018, www.cbcdgdf.org/NewsShow/4854/6929.html.

3 Zhang, Li, et al. “穿山甲种群概况及保护” [“Pangolin Population Situation and Protection”]. *Bulletin of Biology*, vol. 45, 9, 2010, pp. 1-4.

4 Yin, Feng, et al. “穿山甲的贸易与保护” [“Pangolin Trade and Protection”]. *Chinese Journal of Wildlife*, vol. 37, 2, 2016, pp. 157-161, DOI: 10.19711/j.cnki.issn2310-1490.2016.02.016.

5 “江西樟树国康中药饮片有限公司、陈某兵等非法收购、运输、出售珍贵、濒危野生动物、珍贵、濒危野生动物制品一审刑事判决书” [“Jiangxi Zhongshu Guokang Chinese Medicine Decoction Pieces Co. Ltd., Chen Moubing, and Others Illegally Purchased, Transported, and Sold Precious and Endangered Animals and Precious and Endangered Animal Products Criminal Judgement in the First Instance”]. Zhangshu Municipal People's Court, accessed via China Court Judgements Related to Pangolins, Global Environmental Reporting Collective, drive.google.com/drive/folders/1ewrpDoDv9JZo6aBj85L_D965HY12fRz.

6 “江西古方原中药饮片有限公司、李某锋非法收购、运输、出售珍贵、濒危野生动物、珍贵、濒危野生动物制品一审刑事判决书” [“Jiangxi Gufangyuan Chinese Medicine Decoction Pieces Co. Ltd. and Li Mofeng Illegally Purchased, Transported, and Sold Precious and Endangered Animals and Precious and Endangered Animal Products Criminal Judgement in the First Instance”]. Zhangshu Municipal People's Court, accessed via China Court Judgements Related to Pangolins, Global Environmental Reporting Collective, drive.google.com/drive/folders/1ewrpDoDv9JZo6aBj85L_D965HY12fRz.

7 Wang, Yifu. “Saving Pangolins from the Traditional Chinese Medicine Markets in China.” *Zoological Society of London*, April 2018, www.zsl.org/sites/default/files/media/2018-04/Yifu%20Wang%20talk%20slides.pdf.

8 Ling, Xu, et al. “An Overview of Pangolin Trade in China.” *TRAFFIC*, September 2016, www.traffic.org/site/assets/files/10569/pangolin-trade-in-china.pdf.

Exploitation of the Legal Market

The trust placed in China's pharmaceutical companies, hospitals, and other actors of the legal pangolin market, coupled with lax enforcement, has created a permissive environment for illicit activity. The market is circumvented at nearly every level, including by trafficking syndicates that sell African pangolin scales into the otherwise legal supply chain. Illicitly-sourced scales from Africa and other parts of Asia not only contravene China's regulatory protections for pangolins and CITES' Appendix I listing of the species, but their use likely also violates China's official pharmacopeia, which long specified only Chinese pangolin as suitable for use in medicinal products.⁶⁶ Nevertheless, the use of illicitly obtained pangolin scales is a longstanding issue.^{67 68 69 70}

Improper Sourcing at Pharmaceutical Companies

In the legal market, only pangolin scales that are registered may be used to produce pangolin-based patented medicines or clinically applied in designated hospitals. Although some pharmaceutical companies are allegedly willing to pay higher prices for legal pangolin scales,⁷¹ investigations have found that smuggled scales are passed through dealers and TCM apothecaries, "who then sell them on to pharmaceutical companies."⁷² Chinese court records also show a small number of instances in which pharmaceutical companies have bought and sold scales without proper government approval.^{73 74}

Lax Regulation of Hospitals

Roughly 18%⁷⁵ of all TCM hospitals in China are legally designated by the NFGA to buy, sell, and use pangolin scales. However, non-designated hospitals also illegally acquire, use, and sell the scales.⁷⁶ A preliminary survey in Henan province revealed that out of 15 hospitals selling pangolin scales, 40% were not authorized to do so.⁷⁷ This situation reveals that both hospital administrators and their suppliers violate the legal market's regulatory framework.

Illicit Sales by TCM Apothecaries and Wholesalers

According to the NFGA's 2007 regulation, pangolin scales are only to be used in the production of patented medicine and for clinical application at designated hospitals.⁷⁸ TCM ingredient wholesalers are also allowed to sell registered scales to designated hospitals and pharmaceutical companies with government approval. However, interviews with TCM wholesalers and apothecary representatives suggest that their scales are smuggled from Southeast Asia, Pakistan, and Africa.⁷⁹ One pharmacist indicated "that hospitals purchase pangolin scales from authorized [TCM ingredient] wholesalers, but due to lack of regulation, wholesalers often mix illegally sourced pangolin parts with legal ones."⁸⁰ Market surveys have also shown that apothecaries source raw scales from TCM ingredient wholesalers and pharmaceutical companies directly.⁸¹ TCM apothecaries have also been found selling raw scales without government-mandated markings,^{82 83 84} underscoring their illegality.⁸⁵

Outside of the System

In violation of Chinese regulations and wholly outside the legal market, pangolin scales are also sold online directly to consumers.⁸⁶ Internet sales are found on both general e-commerce platforms and on specialized TCM ingredient websites.⁸⁷

Exploratory analysis of pangolin seizure data and data on China's legal pangolin market highlights potential high-risk locations where legal pangolin activities and trafficking converge. C4ADS used each of its available datasets to rank the level of exposure to China's provinces⁸⁸ in the illegal and legal pangolin trade based on five indicators:

- **Number of legal actors in the pangolin industry (e.g., hospitals, companies, etc.)** Percent of total legal actors accounted for by a province
- **Pangolin scale consumption quota, 2008-2015** Average of the percent of the yearly quota accounted for by a province⁸⁹
- **Whole pangolins seized, 2015-2019** Percent of live or dead pangolins seized in China accounted for by a province
- **Weight of scales seized, 2015-2019** Percent of pangolin scales seized in China accounted for by a province
- **Number of seizures, 2015-2019** Percent of pangolin seizures in China accounted for by a province

C4ADS calculated a cumulative average across these five indicators for each province to develop a final ranking. Based on the results, C4ADS was able to identify the top 10 provinces (based on available data) with involvement in both the legal and illegal pangolin trade: Guangdong, Zhejiang, Guangxi, Shanghai, Beijing, Yunnan, Hunan, Sichuan, Jilin, and Liaoning (in descending rank).⁹⁰ Figures 22 and 23 show the breakdown for these provinces across the indicators described previously:



Figure 22: Provinces with the Highest Level of Pangolin Market Exposure by Key Indicator, Geographic View

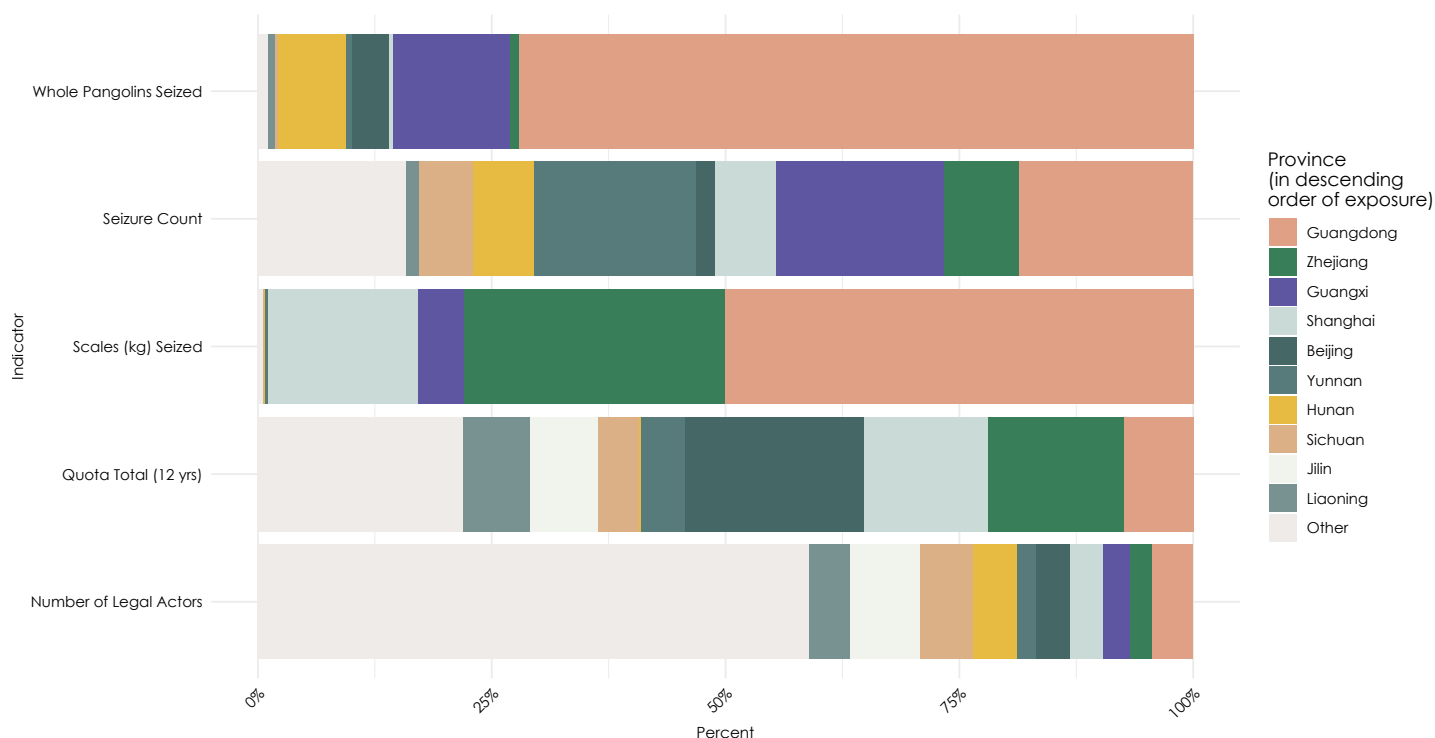


Figure 23: Provinces with the Highest Level of Pangolin Market Exposure by Key Indicator, Percentage View

These 10 provinces, on average, account for 60% of the legal market and are exposed to 93% of the illegal market. Further, the top five provinces—Guangdong, Zhejiang, Guangxi, Shanghai, and Beijing—are home to major cross-border and intercontinental transport corridors and infrastructure. As a result, the legal actors in these areas may be particularly exposed to pangolin trafficking activity.

Additionally, Guangdong and Hunan provinces have both relatively high numbers of legal pangolin scale market actors and seizure metrics compared to the rest of China. Guangdong is prominent in each of the five categories above. Hunan ranked among the top 10 for all the categories except for the consumption quota between 2008 and 2015. During this period, Hunan's authorities only set a consumption quota twice; zero kilograms in the 2008-2009 period and 540 kilograms in the 2009-2010 period.^{91 92 93 94 95 96} Several other provinces, including Sichuan and Shandong, also appear in at least three of the lists above, although Shandong is not a top 10 province after accounting for all of the indicators.

Analysis of legal and illegal market exposure by law enforcement agencies with access to customs, arrest, and NFGA data can facilitate a granular understanding of high-risk provinces. On the basis of that understanding, law enforcement could direct its inspections of particular actors. Future analyses should strive to compare the output and volume of pangolin scales used by hospitals and pharmaceutical companies with law enforcement metrics to identify which companies may be most exposed to pangolin trafficking.

Tracking illicit shipments of pangolins, their scales, and other products through complex trafficking supply chains and into China's opaque legal TCM market is difficult at scale. However, understanding how the TCM market has operated since 2007, the scope and scale of actors participating in it, and how traffickers exploit this market is critical to enforcing and improving protections for pangolins—something the Chinese government has taken steps toward over the last several years.

Guangdong: A Closer Look

Emphasizing Guangdong's potential exposure to the legal and illegal market, the province is or was home to at least five alleged breeding programs. One of those breeding programs is the Dongguan Qingfeng Garden Medicinal Animal Research Institute (东莞市庆丰园药用动物研究所), which allegedly has or had an affiliated breeding program in Nigeria.¹ A former associate of the company spoke to Chinese media in 2017. The associate claimed that the company's method of acquiring seedlings (first generation pangolins used to start breeding) amounted to "smuggling," particularly the company's reliance on live pangolins previously rescued from traffickers.²



Branded Image of the Dongguan Qingfeng Garden Medicinal Animal Research Institute's Affiliated Breeding Program in Nigeria.

Source: Li, Xun. "探访穿山甲养殖'名企': 运作几近停滞, 国外引种计划搁浅" ["Visiting 'Famous Enterprises' for Pangolin Breeding: Operations Close to Stagnating, Plans to Import Seedlings from Outside China have Ground to a Halt"]. Green Government Office, *The Paper*, 22 March 2017, www.thepaper.cn/newsDetail_forward_1644616.

1 Li, Xun. "探访穿山甲养殖'名企': 运作几近停滞, 国外引种计划搁浅" ["Visiting 'Famous Enterprises' for Pangolin Breeding: Operations Close to Stagnating, Plans to Import Seedlings from Outside China have Ground to a Halt"]. Green Government Office, *The Paper*, 22 March 2017, www.thepaper.cn/newsDetail_forward_1644616.

2 Li, Xun. "探访穿山甲养殖'名企': 运作几近停滞, 国外引种计划搁浅" ["Visiting 'Famous Enterprises' for Pangolin Breeding: Operations Close to Stagnating, Plans to Import Seedlings from Outside China have Ground to a Halt"]. Green Government Office, *The Paper*, 22 March 2017, www.thepaper.cn/newsDetail_forward_1644616.

Improving, But Incomplete Legal Protections

Two regulatory changes introduced in June 2020 may begin to reduce the application of pangolin-based medicinal remedies in certain settings. These changes build on smaller steps to restrict the market for pangolin-based remedies in TCM since 2019. For example, in mid-2019, China's 2020 TCM clinical examination outline removed content related to the use of pangolins for treatment.⁹⁷ Beginning in January 2020, China's government-sponsored traditional medicine insurance no longer covers pangolin-based remedies.⁹⁸⁻⁹⁹ The government is also taking steps to strengthen regulatory enforcement of attempted pangolin breeding within China.¹⁰⁰ However, historically lax enforcement of similar protections for other endangered species¹⁰¹ and potential gaps in regulation may allow traffickers to continue profiting from the legal market that has existed since 2007.

In the first regulatory change introduced in June 2020, the NFGA upgraded the level of protections afforded to all species of pangolins from National Grade-II to National Grade-I,¹⁰² placing pangolins on par with tigers and giant pandas.¹⁰³ Functionally, this means harsher penalties for traffickers,¹⁰⁴⁻¹⁰⁵⁻¹⁰⁶ but does not necessarily put an end to the legal trade in pangolin scales. China's National Wildlife Protection Law allows the hunting of, consumption of, and commercial activities involving Grade-I (and Grade-II) protected species under "special circumstances" and for "heritage protection."¹⁰⁷ Provincial forestry bureaus under the NFGA approve these exceptions, and since 2007 "special circumstances" have seemingly been the justification for the use of pangolin scales in TCM.¹⁰⁸

In the second regulatory change introduced in June 2020, China's official 2020 pharmacopoeia reportedly removed pangolins from its section on TCM ingredients.¹⁰⁹ Whether this will lead to a significant reduction in the use of pangolin-based TCM remedies is uncertain. Article 44 of China's Pharmaceutical Administration Law states that TCM decoction pieces must be in accordance with the country's national drug standards.¹¹⁰ However, when the national standards lack specific regulations, what is and is not

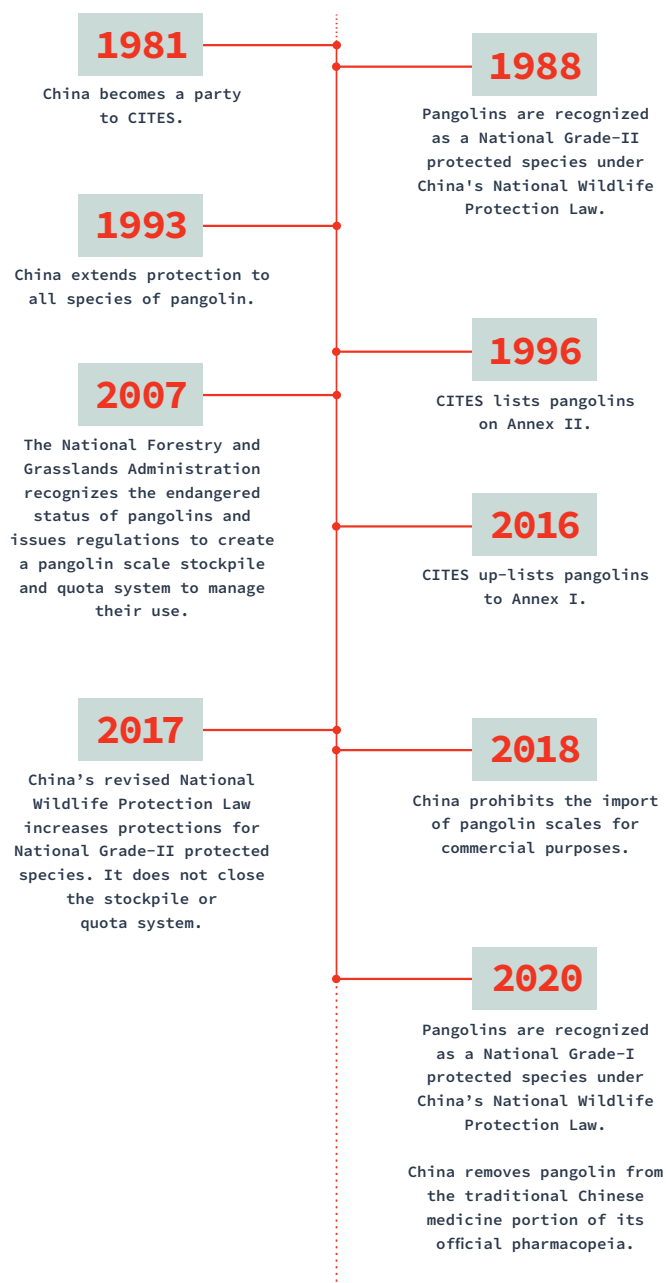


Figure 23: Milestones in China's Legal Protection for Pangolin

Source: Li, Peng. "穿山甲因盗猎遭灭顶之灾 中国已经所剩无几" ["Pangolins are being wiped out due to poaching, China already has few left"]. *Cultural News, China News*, 27 August 2009, <http://www.chinanews.com/cul/news/2009/08-27/1837347.shtml>.

"穿山甲被提升为国家一级保护野生动物" ["Pangolins Have Been Upgraded to a National Grade I Protected Wild Animal"]. *Policy Explanations, National Forestry and Grasslands Administration of the People's Republic of China*, 8 June 2020, <https://www.forestry.gov.cn/main/3957/20200611/092647330379052.html>.

allowed is determined by provincial authorities.¹¹¹ Thus, while TCM ingredient standards at the national level now exclude pangolin (at least partially), some provincial-level standards may continue to allow the use of pangolin products for TCM.¹¹² Moreover, the changes to China's 2020 pharmacopeia do not restrict pangolin scales from being used to produce patented medicines.¹¹³ Indeed, the pharmacopoeia still lists pangolin scales as an ingredient in at least eight patented medicines.¹¹⁴

Even if the June 2020 and future regulatory changes close China's legal pangolin market completely, the connections forged between legitimate businesses—hospitals, pharmaceutical companies, and TCM ingredient wholesalers—and trafficking syndicates over the past 13 years will likely persist. The key to effectively preventing the emergence of a wholly black market is mapping these relationships and how they function. Increasing transparency around the current legal market is the first step. This would include publishing the provincial consumption quotas since 2015, current stockpile quantities, permits for the use and sale of pangolin scales, and comprehensive lists of companies producing or selling pangolin-based products. These measures, coupled with data-driven investigative methods, will expose how illicit systems nest within legal markets and thus improve enforcement against pangolin traffickers.

Endnotes

- 1 C4ADS' Wildlife Seizure Database.
- 2 C4ADS' Wildlife Seizure Database.
- 3 There is no scientific proof that pangolin meat and scales have medicinal properties. Sources: Yan, Huifang, et al. "吃穿山甲肉其实不‘大补’" ["Eating Pangolins is Actually Not a 'Big Supplement'"]. People's Net, 22 February 2017, health.people.com.cn/n1/2017/0222/c404177-29099432.html.
- Cheng, Weijia. "穿山甲!怎么有可能是它?其实,你都不知道它经历了什么" ["Pangolins! How could it be them? Actually, you do not know what they have been through"]. Science Net, China Science News Agency, 7 February 2020, news.sciencenet.cn/htmlnews/2020/2/435474.shtml.
- Jacobs, Rachel L., et al. "Myth debunked: Keratinous pangolin scales do not contain the analgesic tramadol." *Conservation Science and Practice*, vol. 1, e82, 2019, conbio.onlinelibrary.wiley.com/doi/pdf/10.1111/csp2.82.
- 4 Consumption of pangolin meat and medicine each account for half of the pangolins required to meet China's total demand. Sources: Xu, Jiaming. "The Pangolin Trade Explained: Situation in China." *The Pangolin Reports*, Global Environmental Reporting Collective, 2 May 2019, www.pangolinreports.com/china/.
- Wang, Yifu. "Saving Pangolins from the Traditional Chinese Medicine Markets in China." *Zoological Society of London*, April 2018, www.zsl.org/sites/default/files/media/2018-04/Yifu%20Wang%20talk%20slides.pdf.
- "穿山甲正在全球范围内濒临灭绝为国家二级保护动物" ["Pangolins are Currently Near Extinction Around the World, A National Grade II Protected Animal"]. *Written News*, China Wild Animal Protection Committee, 4 January 2017, www.forestry.gov.cn/bhxx/651/content-935727.html.
- Wu, Shibao, et al. "中国穿山甲资源现状及保护对策" ["China's Pangolin Resources Situation and Protection Policy"]. *Journal of Natural Resources*, vol. 17, 2, 2002, www.pangolinsg.org/wp-content/uploads/sites/4/2016/06/Wu-et-al-2002-The-status-and-conservation-strategy-of-pangolin-resource-in-China_J-of-Nat-Resources.pdf.
- 5 Wang, Yueming. "不再入药!穿山甲从药典“除名”" ["Never Again to be Used in Medicine! Pangolins are Removed from the Pharmacopoeia"]. *Health Times*, *People's Daily*, 9 June 2020, www.jksb.com.cn/html/xinwen/2020/0609/163148.html.
- 6 "关于加强赛加羚羊、穿山甲、稀有蛇类资源保护和规范其产品入药管理的通知" ["Notice on Strengthening Protections for Saiga, Pangolins, and Rare Reptiles, as well as the Regulation of their Products in Medicine"]. *Administration Published Documents*, National Forestry and Grasslands Administration of the People's Republic of China, 12 November 2007, www.forestry.gov.cn/main/4818/content-796751.html.
- 7 "China." *Convention on International Trade in Endangered Fauna and Flora*, cites.org/eng/cms/index.php/component/cp/country/CN.
- 8 "List of Parties to the Convention." *Convention on International Trade in Endangered Fauna and Flora*, www.cites.org/eng/disc/parties/index.php.
- 9 "关于加强赛加羚羊、穿山甲、稀有蛇类资源保护和规范其产品入药管理的通知" ("Notice on Strengthening Protections for Saiga, Pangolins, and Rare Reptiles, as well as the Regulation of their Products in Medicine"). *Administration Published Documents*, National Forestry and Grasslands Administration of the People's Republic of China, 12 November 2007, www.forestry.gov.cn/main/4818/content-796751.html.
- 10 "穿山甲大数据纵览:疯狂的利用何时休?" ["Pangolin Big Data Survey: When will Crazy Exploitation End?"]. *China Biodiversity Conservation and Green Development Fund*, July 2016, file.cbcdgf.org/T18/O125/file/20180925/20180925133325_3022.pdf.
- 11 Oak. "两会向央视3.15举报:现中药市场的穿山甲多为伪药" ["CBCGDF's March 15 Complaint to CCTV: Many Modern Pangolin Chinese Traditional Medicines are Fake"]. Edited by Sophia and Angel, *China Biodiversity Conservation and Green Development Fund*, 4 December 2018, www.cbcdgf.org/NewsShow/4854/6929.html.
- 12 Zhang, Li, et al. "穿山甲种群概况及保护" ["Pangolin Population Situation and Protection"]. *Bulletin of Biology*, vol. 45, 9, 2010, pp. 1-4.
- 13 Yin, Feng, et al. "穿山甲的贸易与保护" ["Pangolin Trade and Protection"]. *Chinese Journal of Wildlife*, vol. 37, 2, 2016, pp. 157-161, DOI: 10.19711/j.cnki.issn2310-1490.2016.02.016.
- 14 "关于加强赛加羚羊、穿山甲、稀有蛇类资源保护和规范其产品入药管理的通知" ["Notice on Strengthening Protections for Saiga, Pangolins, and Rare Reptiles, as well as the Regulation of their Products in Medicine"]. *Administration Published Documents*, National Forestry and Grasslands Administration of the People's Republic of China, 12 November 2007, www.forestry.gov.cn/main/4818/content-796751.html.
- 15 "关于加强赛加羚羊、穿山甲、稀有蛇类资源保护和规范其产品入药管理的通知" ["Notice on Strengthening Protections for Saiga, Pangolins, and Rare Reptiles, as well as the Regulation of their Products in Medicine"]. *Administration Published Documents*, National Forestry and Grasslands Administration of the People's Republic of China, 12 November 2007, www.forestry.gov.cn/main/4818/content-796751.html.
- 16 "关于加强赛加羚羊、穿山甲、稀有蛇类资源保护和规范其产品入药管理的通知" ["Notice on Strengthening Protections for Saiga, Pangolins, and Rare Reptiles, as well as the Regulation of their Products in Medicine"]. *Administration Published Documents*, National Forestry and Grasslands Administration of the People's Republic of China, 12 November 2007, www.forestry.gov.cn/main/4818/content-796751.html.
- 17 Ling, Xu, et al. "An Overview of Pangolin Trade in China." *TRAFFIC*, September 2016, www.traffic.org/site/assets/files/10569/pangolin-trade-

in-china.pdf.

18 “关于加强赛加羚羊、穿山甲、稀有蛇类资源保护和规范其产品入药管理的通知” [“Notice on Strengthening Protections for Saiga, Pangolins, and Rare Reptiles, as well as the Regulation of their Products in Medicine”]. Administration Published Documents, National Forestry and Grasslands Administration of the People's Republic of China, 12 November 2007, www.forestry.gov.cn/main/4818/content-796751.html.

19 “关于加强赛加羚羊、穿山甲、稀有蛇类资源保护和规范其产品入药管理的通知” [“Notice on Strengthening Protections for Saiga, Pangolins, and Rare Reptiles, as well as the Regulation of their Products in Medicine”]. Administration Published Documents, National Forestry and Grasslands Administration of the People's Republic of China, 12 November 2007, www.forestry.gov.cn/main/4818/content-796751.html.

20 “国家林业局公告 (2015年第8号)” [“National Forestry Administration Announcement (2015 No. 8)”]. Information Publication, National Forestry and Grasslands Administration of the People's Republic of China, 8 May 2015, www.forestry.gov.cn/sites/main/main/gov/content.jsp?TID=2157.

21 Fu, Shan. “中药公司被曝采购3000斤穿山甲片 安徽林业厅批准遭质疑” [“Chinese Medicine Company Exposed Buying 3000 grams of Pangolin Scales, Approval by Anhui Forestry Administration Met with Suspicion”]. Xinhua Net, Xinhua News Agency, 18 February 2017, www.xinhuanet.com/2017-02/18/c_1120487558.htm.

22 C4ADS was unable to verify whether all of the companies identified are still in operation.

23 Although the designated hospitals include a small number of hybrid traditional Chinese-Western medicine facilities and hospitals of unspecified type, the vast majority of these are traditional Chinese medicine hospitals.

24 “国家林业局公告 (2008年第15号)” [“National Forestry Administration Announcement (2008 No. 15)”]. Information Publication, National Forestry and Grasslands Administration of the People's Republic of China, 12 November 2008, www.forestry.gov.cn/sites/main/main/gov/content.jsp?TID=678.

25 “国家林业局公告 (2015年第8号)” [“National Forestry Administration Announcement (2015 No. 8)”]. Information Publication, National Forestry and Grasslands Administration of the People's Republic of China, 8 May 2015, www.forestry.gov.cn/sites/main/main/gov/content.jsp?TID=2157.

26 “穿山甲大数据纵览：疯狂的利用何时休？” [“Pangolin Big Data Survey: When will Crazy Exploitation End?”]. China Biodiversity Conservation and Green Development Fund, July 2016, file.cbcdgdf.org/T18/O125/file/20180925/20180925133325_3022.pdf.

27 The 117 entities referenced here were drawn from publicly available Google patent data and official permits from the NFGA websites of Shanghai, Hebei, and other provinces; Chinese news media; and research by Chinese NGOs.

28 “关于加强赛加羚羊、穿山甲、稀有蛇类资源保护和规范其产品入药管理的通知” [“Notice on Strengthening Protections for Saiga, Pangolins, and Rare Reptiles, as well as the Regulation of their Products in Medicine”]. Administration Published Documents, National Forestry and Grasslands Administration of the People's Republic of China, 12 November 2007, www.forestry.gov.cn/main/4818/content-796751.html.

29 “关于加强赛加羚羊、穿山甲、稀有蛇类资源保护和规范其产品入药管理的通知” [“Notice on Strengthening Protections for Saiga, Pangolins, and Rare Reptiles, as well as the Regulation of their Products in Medicine”]. Administration Published Documents, National Forestry and Grasslands Administration of the People's Republic of China, 12 November 2007, www.forestry.gov.cn/main/4818/content-796751.html.

30 Specifically, every province, autonomous region, and municipalities. Sources: “关于加强赛加羚羊、穿山甲、稀有蛇类资源保护和规范其产品入药管理的通知” [“Notice on Strengthening Protections for Saiga, Pangolins, and Rare Reptiles, as well as the Regulation of their Products in Medicine”]. Administration Published Documents, National Forestry and Grasslands Administration of the People's Republic of China, 12 November 2007, www.forestry.gov.cn/main/4818/content-96751.html.

“国家林业局关于下达2008-2009年穿山甲片和稀有蛇类库存原材料年度消耗控制量的通知” [“National Forestry Administration Notice on the Issuance of the 2008-2009 Annual Consumption Quota for Pangolin and Rare Snake Stockpile Materials”]. Information Publication, National Forestry and Grasslands Administration of the People's Republic of China, 27 November 2008, www.forestry.gov.cn/sites/main/main/gov/content.jsp?TID=1434.

31 Within China's civil governance structure, municipalities are provincial-level administrative units. China's municipalities are Beijing, Shanghai, Chongqing, and Tianjin.

32 “关于加强赛加羚羊、穿山甲、稀有蛇类资源保护和规范其产品入药管理的通知” [“Notice on Strengthening Protections for Saiga, Pangolins, and Rare Reptiles, as well as the Regulation of their Products in Medicine”]. Administration Published Documents, National Forestry and Grasslands Administration of the People's Republic of China, 12 November 2007, www.forestry.gov.cn/main/4818/content-796751.html.

33 “国家林业局关于下达2008-2009年穿山甲片和稀有蛇类库存原材料年度消耗控制量的通知” [“National Forestry Administration Notice on the Issuance of the 2008-2009 Annual Consumption Quota for Pangolin and Rare Snake Stockpile Materials”]. Information Publication, National Forestry and Grasslands Administration of the People's Republic of China, 27 November 2008, www.forestry.gov.cn/sites/main/main/gov/content.jsp?TID=1434.

34 “关于加强赛加羚羊、穿山甲、稀有蛇类资源保护和规范其产品入药管理的通知” [“Notice on Strengthening Protections for Saiga, Pangolins, and Rare Reptiles, as well as the Regulation of their Products in Medicine”]. Administration Published Documents, National Forestry and Grasslands Administration of the People's Republic of China, 12 November 2007, www.forestry.gov.cn/main/4818/content-796751.html.

35 Confidential Interview, May 2020.

- 36 The term used in Chinese is danwei, which can indicate organizations, companies, universities, government departments, and other “work units.”
- 37 “关于加强赛加羚羊、穿山甲、稀有蛇类资源保护和规范其产品入药管理的通知” [“Notice on Strengthening Protections for Saiga, Pangolins, and Rare Reptiles, as well as the Regulation of their Products in Medicine”]. Administration Published Documents, National Forestry and Grasslands Administration of the People's Republic of China, 12 November 2007, www.forestry.gov.cn/main/4818/content-796751.html.
- 38 “国家对羚羊角穿山甲蛇类药材实施严格管理” [“The State is Implementing Strict Management Over Saiga Horn, Pangolin, and Snake Medicinal Ingredients”]. *Modern Chinese Medicine*, vol. 10, 4, 2008, p. 54.
- 39 “关于加强赛加羚羊、穿山甲、稀有蛇类资源保护和规范其产品入药管理的通知” [“Notice on Strengthening Protections for Saiga, Pangolins, and Rare Reptiles, as well as the Regulation of their Products in Medicine”]. Administration Published Documents, National Forestry and Grasslands Administration of the People's Republic of China, 12 November 2007, www.forestry.gov.cn/main/4818/content-796751.html.
- 40 Confidential Interview, April 2020.
- 41 Fu, Shan. “中药公司被曝采购3000斤穿山甲片 安徽林业厅批准遭质疑” [“Chinese Medicine Company Exposed Buying 3000 grams of Pangolin Scales, Approval by Anhui Forestry Administration Met with Suspicion”]. Xinhua Net, Xinhua News Agency, 18 February 2017, www.xinhuanet.com/2017-02/18/c_1120487558.htm.
- 42 “穿山甲大数据纵览：疯狂的利用何时休？” [“Pangolin Big Data Survey: When will Crazy Exploitation End?”]. China Biodiversity Conservation and Green Development Fund, July 2016, file.cbcgdf.org/T18/O125/file/20180925/20180925133325_3022.pdf.
- 43 “穿山甲大数据纵览：疯狂的利用何时休？” [“Pangolin Big Data Survey: When will Crazy Exploitation End?”]. China Biodiversity Conservation and Green Development Fund, July 2016, file.cbcgdf.org/T18/O125/file/20180925/20180925133325_3022.pdf.
- 44 “行政许可” [“Administrative Permits”]. Resource Management Administrative Permits, Hebei Forestry and Grasslands Bureau, lycy.hebei.gov.cn/list.php?sortid=24.
- 45 “办事结果查询” [“Work Result Inquiry”]. Dual Publication, Shanghai Landscaping & City Appearance Bureau, lhrs.sh.gov.cn/sgs/.
- 46 “国家林业局关于下达2008-2009年穿山甲片和稀有蛇类库存原材料年度消耗控制量的通知” [“National Forestry Administration Notice on the Issuance of the 2008-2009 Annual Consumption Quota for Pangolin and Rare Snake Stockpile Materials”]. Information Publication, National Forestry and Grasslands Administration of the People's Republic of China, 27 November 2008, www.forestry.gov.cn/sites/main/main/gov/content.jsp?TID=1434.
- 47 “关于下达库存原材料年度消耗控制量的通知” [“Notice on the Issuance of the Annual Consumption Quota for Stockpile Materials”]. Information Publication, National Forestry and Grasslands Administration of the People's Republic of China, 21 September 2009, www.forestry.gov.cn/sites/main/main/gov/content.jsp?TID=215.
- 48 “国家林业局关于下达2011-2012年库存穿山甲片原材料年度消耗控制量的通知” [“National Forestry Administration Notice on the Issuance of the 2011-2012 Annual Consumption Quota for Pangolin Stockpile Materials”]. Information Publication, National Forestry and Grasslands Administration of the People's Republic of China, 27 November 2008, www.forestry.gov.cn/sites/main/main/gov/content.jsp?TID=1849.
- 49 “国家林业局关于下达2012-2013年度库存穿山甲片原材料年度消耗控制量的通知” [“National Forestry Administration Notice on the Issuance of the 2012-2013 Annual Consumption Quota for Pangolin Stockpile Materials”]. Information Publication, National Forestry and Grasslands Administration of the People's Republic of China, 10 October 2012, www.gov.cn/gzdt/2012-10/10/content_2240622.htm.
- 50 “穿山甲大数据纵览：疯狂的利用何时休？” [“Pangolin Big Data Survey: When will Crazy Exploitation End?”]. China Biodiversity Conservation and Green Development Fund, July 2016, file.cbcgdf.org/T18/O125/file/20180925/20180925133325_3022.pdf.
- 51 “国家林业局关于下达2013-2014年度库存穿山甲片原料年度消耗控制量的通知” [“National Forestry Administration Notice on the Issuance of the 2013-2014 Annual Consumption Quota for Pangolin Stockpile Materials”]. Information Publication, National Forestry and Grasslands Administration of the People's Republic of China, 6 July 2016, www.forestry.gov.cn/zrbh/4833/88621/1.html.
- 52 “国家林业局关于下达2012-2013年度库存穿山甲片原材料年度消耗控制量的通知” [“National Forestry Administration Notice on the Issuance of the 2012-2013 Annual Consumption Quota for Pangolin Stockpile Materials”]. Information Publication, National Forestry and Grasslands Administration of the People's Republic of China, 10 October 2012, www.gov.cn/gzdt/2012-10/10/content_2240622.htm.
- 53 “国家林业局关于下达2013-2014年度库存穿山甲片原料年度消耗控制量的通知” [“National Forestry Administration Notice on the Issuance of the 2013-2014 Annual Consumption Quota for Pangolin Stockpile Materials”]. Information Publication, National Forestry and Grasslands Administration of the People's Republic of China, 6 July 2016, www.forestry.gov.cn/zrbh/4833/88621/1.html.
- 54 Confidential Interview, April 2020.
- 55 Confidential Interview, April 2020.
- 56 Confidential Interview, April 2020.
- 57 Here, the text refers to the provincial-level administrative unit of Shanghai.
- 58 C4ADS' Wildlife Seizure Database.
- 59 “办事结果查询” [“Work Result Inquiry”]. Dual Publication, Shanghai Landscaping & City Appearance Bureau, lhrs.sh.gov.cn/sgs/.

- 60 “国家林业局关于下达2008-2009年穿山甲片和稀有蛇类库存原材料年度消耗控制量的通知” [“National Forestry Administration Notice on the Issuance of the 2008-2009 Annual Consumption Quota for Pangolin and Rare Snake Stockpile Materials”]. Information Publication, National Forestry and Grasslands Administration of the People's Republic of China, 27 November 2008, www.forestry.gov.cn/sites/main/main/gov/content.jsp?TID=1434.
- 61 “关于下达库存原材料年度消耗控制量的通知” [“Notice on the Issuance of the Annual Consumption Quota for Stockpile Materials”]. Information Publication, National Forestry and Grasslands Administration of the People's Republic of China, 21 September 2009, www.forestry.gov.cn/sites/main/main/gov/content.jsp?TID=215.
- 62 “国家林业局关于下达2011-2012年库存穿山甲片原材料年度消耗控制量的通知” [“National Forestry Administration Notice on the Issuance of the 2011-2012 Annual Consumption Quota for Pangolin Stockpile Materials”]. Information Publication, National Forestry and Grasslands Administration of the People's Republic of China, 27 November 2008, www.forestry.gov.cn/sites/main/main/gov/content.jsp?TID=1849.
- 63 “国家林业局关于下达2012-2013年度库存穿山甲片原材料年度消耗控制量的通知” [“National Forestry Administration Notice on the Issuance of the 2012-2013 Annual Consumption Quota for Pangolin Stockpile Materials”]. Information Publication, National Forestry and Grasslands Administration of the People's Republic of China, 10 October 2012, www.gov.cn/gzdt/2012-10/10/content_2240622.htm.
- 64 “国家林业局关于下达2013-2014年度库存穿山甲片原料年度消耗控制量的通知” [“National Forestry Administration Notice on the Issuance of the 2013-2014 Annual Consumption Quota for Pangolin Stockpile Materials”]. Information Publication, National Forestry and Grasslands Administration of the People's Republic of China, 6 July 2016, www.forestry.gov.cn/zrbh/4833/88621/1.html.
- 65 “穿山甲大数据纵览：疯狂的利用何时休？” [“Pangolin Big Data Survey: When will Crazy Exploitation End?”]. China Biodiversity Conservation and Green Development Fund, July 2016, file.cbcgdf.org/T18/O125/file/20180925/20180925133325_3022.pdf.
- 66 Sophia. “用非洲穿山甲鳞片生产中药，会否涉嫌假药生产？绿会向吉林省药监部门申请行政审批信息公开” [“Using African Pangolin Scales to Produce Traditional Chinese Medicine, Will it Be Suspected of Producing Fake Medicine? China Biodiversity Conservation and Green Development Fund Applies for Information from the Jilin Province Medical Products Administration”]. Edited by Oak and Angel, China Biodiversity Conservation and Green Development Fund, 28 November 2019, www.cbcgdf.org/NewsShow/4854/10574.html.
- 67 “穿山甲大数据纵览：疯狂的利用何时休？” [“Pangolin Big Data Survey: When will Crazy Exploitation End?”]. China Biodiversity Conservation and Green Development Fund, July 2016, file.cbcgdf.org/T18/O125/file/20180925/20180925133325_3022.pdf.
- 68 Oak. “绿会向央视3.15举报：现中药市场的穿山甲多为伪药” [“CBCGDF's March 15 Complaint to CCTV: Many Modern Pangolin Chinese Traditional Medicines are Fake”]. Edited by Sophia and Angel, China Biodiversity Conservation and Green Development Fund, 4 December 2018, www.cbcgdf.org/NewsShow/4854/6929.html.
- 69 Zhang, Li, et al. “穿山甲种群概况及保护” [“Pangolin Population Situation and Protection”]. *Bulletin of Biology*, vol. 45, 9, 2010, pp. 1-4.
- 70 Yin, Feng, et al. “穿山甲的贸易与保护” [“Pangolin Trade and Protection”]. *Chinese Journal of Wildlife*, vol. 37, 2, 2016, pp. 157-161, DOI: 10.19711/j.cnki.issn2310-1490.2016.02.016.
- 71 Xu, Jiaming, et al. “China: Tons of Demand for ‘Commercially Extinct’ Species.” *The Pangolin Reports*, Global Environmental Reporting Collective, 2 May 2019, globalstory.pangolinreports.com/#china.
- 72 The Shuidong Connection: Exposing the Global Hub of the Illegal Ivory Trade. Environmental Investigation Agency, July 2017, eia-international.org/wp-content/uploads/EIA-The-Shuidong-Connection-FINAL-1.pdf.
- 73 “江西樟树国康中药饮片有限公司、陈某兵等非法收购、运输、出售珍贵、濒危野生动物、珍贵、濒危野生动物制品一审刑事判决书” [“Jiangxi Zhangshu Guokang Chinese Medicine Decoction Pieces Co. Ltd., Chen Moubing, and Others Illegally Purchased, Transported, and Sold Precious and Endangered Animals and Precious and Endangered Animal Products Criminal Judgement in the First Instance”]. Zhangshu Municipal People's Court, accessed via China Court Judgements Related to Pangolins, Global Environmental Reporting Collective, drive.google.com/drive/folders/1ewrpDoDv9JZo6aBj85L_D965HY12lfrz.
- 74 “江西古方原中药饮片有限公司、李某锋非法收购、运输、出售珍贵、濒危野生动物、珍贵、濒危野生动物制品一审刑事判决书” [“Jiangxi Gufangyuan Chinese Medicine Decoction Pieces Co. Ltd. and Li Mufeng Illegally Purchased, Transported, and Sold Precious and Endangered Animals and Precious and Endangered Animal Products Criminal Judgement in the First Instance”]. Zhangshu Municipal People's Court, accessed via China Court Judgements Related to Pangolins, Global Environmental Reporting Collective, drive.google.com/drive/folders/1ewrpDoDv9JZo6aBj85L_D965HY12lfrz.
- 75 The 713 designated hospitals authorized to use pangolin scales in medicine include traditional Chinese medicine hospitals, hybrid TCM-Western facilities, and other types of hospitals. Given that the vast majority of the 713 designated hospitals are TCM hospitals, C4ADS calculated this proportion based off the total number of TCM hospitals in China in 2018. In 2018, there were 3,977 TCM hospitals in China. Source: “2018年全国中医类医院机构、床位数” [“2018 National Chinese Medicine Hospital Organizations, Bed Counts”]. 2018 National Chinese Medicine Statistics Extract, Health and Sanitation Industry, National Administration of Traditional Chinese Medicine, 2018, www.satcm.gov.cn/2018tjzb/atog/2018/A26.htm.
- 76 Wang, Yifu. “Saving Pangolins from the Traditional Chinese Medicine Markets in China.” *Zoological Society of London*, April 2018, www.zsl.

org/sites/default/files/media/2018-04/Yifu%20Wang%20talk%20slides.pdf.

77 Wang, Yifu. "Saving Pangolins from the Traditional Chinese Medicine Markets in China." Zoological Society of London, April 2018, www.zsl.org/sites/default/files/media/2018-04/Yifu%20Wang%20talk%20slides.pdf.

78 "关于加强赛加羚羊、穿山甲、稀有蛇类资源保护和规范其产品入药管理的通知" ["Notice on Strengthening Protections for Saiga, Pangolins, and Rare Reptiles, as well as the Regulation of their Products in Medicine"]. Administration Published Documents, National Forestry and Grasslands Administration of the People's Republic of China, 12 November 2007, www.forestry.gov.cn/main/4818/content-796751.html.

79 Ling, Xu, et al. "An Overview of Pangolin Trade in China." TRAFFIC, September 2016, www.traffic.org/site/assets/files/10569/pangolin-trade-in-china.pdf.

80 Wang, Yan. "The plight of the pangolin in China." Nature, China Dialogue, 5 June 2019, chinadialogue.net/en/nature/11275-the-plight-of-the-pangolin-in-china/.

81 Ling, Xu, et al. "An Overview of Pangolin Trade in China." TRAFFIC, September 2016, www.traffic.org/site/assets/files/10569/pangolin-trade-in-china.pdf.

82 "关于加强赛加羚羊、穿山甲、稀有蛇类资源保护和规范其产品入药管理的通知" ["Notice on Strengthening Protections for Saiga, Pangolins, and Rare Reptiles, as well as the Regulation of their Products in Medicine"]. Administration Published Documents, National Forestry and Grasslands Administration of the People's Republic of China, 12 November 2007, www.forestry.gov.cn/main/4818/content-796751.html.

83 "国家林业局公告 (2015年第8号)" ["National Forestry Administration Announcement (2015 No. 8)"]. Information Publication, National Forestry and Grasslands Administration of the People's Republic of China, 8 May 2015, www.forestry.gov.cn/sites/main/main/gov/content.jsp?TID=2157.

84 Fu, Shan. "中药公司被曝采购3000斤穿山甲片 安徽林业厅批准遭质疑" ["Chinese Medicine Company Exposed Buying 3000 grams of Pangolin Scales, Approval by Anhui Forestry Administration Met with Suspicion"]. Xinhua Net, Xinhua News Agency, 18 February 2017, www.xinhuanet.com/2017-02/18/c_1120487558.htm.

85 Wang, Yan. "The plight of the pangolin in China." Nature, China Dialogue, 5 June 2019, chinadialogue.net/en/nature/11275-the-plight-of-the-pangolin-in-china/.

86 Wang, Yan. "The plight of the pangolin in China." Nature, China Dialogue, 5 June 2019, chinadialogue.net/en/nature/11275-the-plight-of-the-pangolin-in-china/.

87 Ling, Xu, et al. "An Overview of Pangolin Trade in China." TRAFFIC, September 2016, www.traffic.org/site/assets/files/10569/pangolin-trade-in-china.pdf.

88 The provinces, autonomous regions, and municipalities for which there was data in at least one of C4ADS' datasets include: Anhui, Beijing, Chongqing, Fujian, Guangdong, Guangxi, Guizhou, Hebei, Heilongjiang, Henan, Hunan, Inner Mongolia, Jiangsu, Jiangxi, Jilin, Liaoning, Shaanxi, Shandong, Shanghai, Shanxi, Sichuan, Tianjin, Tibet, Yunnan, Zhejiang, and Qinghai.

89 In years where there was no reporting, that year was removed from that provinces' average, while years where reporting was a quota of zero were included. The total quota amount for China was based on publicly reported quotas and is possibly much lower than what was actually designated.

90 Within China's civil governance structure, Beijing and Shanghai are provincial-level administrative units called municipalities.

91 "国家林业局关于下达2008-2009年穿山甲片和稀有蛇类库存原材料年度消耗控制量的通知" ["National Forestry Administration Notice on the Issuance of the 2008-2009 Annual Consumption Quota for Pangolin and Rare Snake Stockpile Materials"]. Information Publication, National Forestry and Grasslands Administration of the People's Republic of China, 27 November 2008, www.forestry.gov.cn/sites/main/main/gov/content.jsp?TID=1434.

92 "关于下达库存原材料年度消耗控制量的通知" ["Notice on the Issuance of the Annual Consumption Quota for Stockpile Materials"]. Information Publication, National Forestry and Grasslands Administration of the People's Republic of China, 21 September 2009, www.forestry.gov.cn/sites/main/main/gov/content.jsp?TID=215.

93 "国家林业局关于下达2011-2012年库存穿山甲片原材料年度消耗控制量的通知" ["National Forestry Administration Notice on the Issuance of the 2011-2012 Annual Consumption Quota for Pangolin Stockpile Materials"]. Information Publication, National Forestry and Grasslands Administration of the People's Republic of China, 27 November 2008, www.forestry.gov.cn/sites/main/main/gov/content.jsp?TID=1849.

94 "国家林业局关于下达2012-2013年度库存穿山甲片原材料年度消耗控制量的通知" ["National Forestry Administration Notice on the Issuance of the 2012-2013 Annual Consumption Quota for Pangolin Stockpile Materials"]. Information Publication, National Forestry and Grasslands Administration of the People's Republic of China, 10 October 2012, www.gov.cn/gzdt/2012-10/10/content_2240622.htm.

95 "国家林业局关于下达2013-2014年度库存穿山甲片原料年度消耗控制量的通知" ["National Forestry Administration Notice on the Issuance of the 2013-2014 Annual Consumption Quota for Pangolin Stockpile Materials"]. Information Publication, National Forestry and Grasslands Administration of the People's Republic of China, 6 July 2016, www.forestry.gov.cn/zrbh/4833/88621/1.html.

96 "穿山甲大数据纵览:疯狂的利用何时休?" ["Pangolin Big Data Survey: When will Crazy Exploitation End?"]. China Biodiversity Conservation

and Green Development Fund, July 2016, file.cbcgdf.org/T18/O125/file/20180925/20180925133325_3022.pdf.

97 Zine. "Significant progress in the withdrawal of pangolins from traditional Chinese medicine: praise the outline of the comprehensive entrance examination of Chinese medicine." Edited by Sophia and Angel, China Biodiversity Conservation and Green Development Fund, 10 July 2019, www.cbcgdf.org/NewsShow/4854/9199.html.

98 "Pangolins Get Another Boost From China." WildAid, 30 August 2019, wildaid.org/pangolins-get-another-boost-from-china/.

99 "国家医保局人力资源社会保障部关于印发《国家基本医疗保险、工伤保险和生育保险药品目录》的通知" ["Notice by the Human Resources and Social Security Department of the National Healthcare Security Administration on the Issuance of the 'Medicine Catalogue for National Basic Medical Insurance, Work Injury Insurance, and Maternity Insurance'"]. Policy and Regulation, National Healthcare Security Administration, 20 August 2019, www.nhsa.gov.cn/art/2019/8/20/art_37_1666.html.

100 "国家林业和草原局关于进一步加强穿山甲保护管理工作的通知" ["National Forestry and Grasslands Administration Notice on Further Strengthening Pangolin Protection and Management Work"]. Full Text, Forestry Focus Net, 1 July 2020, www.isenlin.cn/sf_1862B881B4864586B6DCCE94EE767225_209_F2AE1C4285.html.

101 "China's Widely Publicised New Pangolin Protections Might Not Mean a Total Ban on Use of the Species." Environmental Investigation Agency, 10 June 2020, eia-international.org/news/chinas-widely-publicised-new-pangolin-protections-might-not-mean-a-total-ban-on-use-of-the-species/.

102 "穿山甲被提升为国家一级保护野生动物" ["Pangolins Have Been Upgraded to a National Grade I Protected Wild Animal"]. Policy Explanations, National Forestry and Grasslands Administration of the People's Republic of China, 8 June 2020, www.forestry.gov.cn/main/3957/20200611/092647330379052.html.

103 "国家重点保护野生动物名录" ["National Key Protected Wild Animals Directory"]. Directory, National Forestry and Grasslands Administration, 4 January 2018, www.forestry.gov.cn/main/3954/content-1063883.html.

104 "最高人民法院最高人民检察院关于办理走私刑事案件适用法律若干问题的解释" ["Supreme People's Court and the Supreme People's Procuratorate Explanation of Several Issues Concerning the Application of Law in Handling Criminal Smuggling Cases"]. Criminal Trials, Supreme People's Court of the People's Republic of China, 17 December 2014, www.court.gov.cn/shenpan-xiangqing-7081.html.

105 "中华人民共和国刑法" ["Criminal Law of the People's Republic of China"]. Full Text, Just Law Net, 5 November 2017, www.dffyw.com/faguixiazai/xingfa/200311/20031110213247_8.htm.

106 "中华人民共和国刑法" ["Criminal Law of the People's Republic of China"]. Full Text, Just Law Net, 5 November 2017, www.dffyw.com/faguixiazai/xingfa/200311/20031110213247_11.htm.

107 "中华人民共和国野生动物保护法" ["Wildlife Protection Law of the People's Republic of China"]. Authoritative Announcements, National People's Congress of the People's Republic of China, 5 November 2018, www.npc.gov.cn/zgrdw/npc/xinwen/2018-11/05/content_2065670.htm.

108 Ling, Xu, et al. "An Overview of Pangolin Trade in China." TRAFFIC, September 2016, www.traffic.org/site/assets/files/10569/pangolin-trade-in-china.pdf.

109 Wang, Yueming. "不再入药!穿山甲从药典'除名'" ["Never Again to be Used in Medicine! Pangolins are Removed from the Pharmacopoeia"]. Health Times, People's Daily, 9 June 2020, www.jksb.com.cn/html/xinwen/2020/0609/163148.html.

110 Although not the only document that forms China's national drug standards, the pharmacopoeia is one of the principal defining documents. Source:

"(受权发布) 中华人民共和国药品管理法" ["(Distributed with Authority) Pharmaceutical Administration Law of the People's Republic of China"]. Full Text, Xinhua News Agency, 26 August 2019, http://www.xinhuanet.com/politics/2019-08/26/c_1124924302.htm.

111 "(受权发布) 中华人民共和国药品管理法" ["(Distributed with Authority) Pharmaceutical Administration Law of the People's Republic of China"]. Full Text, Xinhua News Agency, 26 August 2019, http://www.xinhuanet.com/politics/2019-08/26/c_1124924302.htm.

112 For examples of provincial-level regulations allowing pangolin usage, see "上海市药品监督管理局关于发布实施《上海市中药饮片炮制规范》2018年版的公告" ["Announcement of the Shanghai Municipal Drug Administration on Issuing and Implementing the 2018 Edition of the 'Shanghai Standards for the Processing of Traditional Chinese Medicines'"], Recently Published Information, Shanghai People's Government, 9 July 2019, http://www.shanghai.gov.cn/nw2/nw2314/nw2319/nw12344/u26aw59505.html.

"《贵州省中药饮片炮制规范》543个品种目录公示" ["'Guizhou Province Traditional Chinese Medicine Processing Regulations' 543 varieties catalog public announcement"], Business Club, Sina Finance, 10 August 2020, https://finance.sina.com.cn/money/future/agri/2020-08-10/doc-iihvuipn7853783.shtml.

113 At publication, it was still uncertain whether China would make additional revisions to the sections of the pharmacopoeia that deal with patented medicines. Source: "China's Widely Publicised New Pangolin Protections Might Not Mean a Total Ban on Use of the Species." Environmental Investigation Agency, 10 June 2020, eia-international.org/news/chinas-widely-publicised-new-pangolin-protections-might-not-

mean-a-total-ban-on-use-of-the-species/.

114 Alberts, Elizabeth Claire. "Did China Really Ban the Pangolin Trade? Not Quite, Investigators Say." Mongabay, Conservation News, 24 June 2020, news.mongabay.com/2020/06/did-china-really-ban-the-pangolin-trade-not-quite-investigators-say/.

CONCLUSION

Wildlife traffickers, driven by lucrative profits derived from the TCM market in Asia, hunt pangolins, threatening the species' survival. The annual quantity of pangolin scales seized globally increased by nearly 400% between 2015 and 2019, and authorities seized over 323 tonnes of pangolin meat and scales during those five years.¹ Illegal wildlife traffickers undermine efforts toward the rule of law and good governance, and ultimately, degrade local environments, and may even contribute to public health concerns.

With data-backed analysis, law enforcement and policymakers can be better equipped to disrupt and dismantle the syndicates that facilitate these operations.

The core findings of *Tipping the Scales* are as follows:

- Central and West Africa have become hubs for trafficking activity. Seventy-two percent of African pangolin scale shipments over the last five years transited these regions, averaging 1,300 kilograms per seizure.
 - Traffickers rely on and co-opt established subsistence bushmeat trades. This opportunity to profit twice from one animal incentivizes hunters to further engage in the activity.
 - Breeding facilities in Africa and Asia can act as a front for illegal pangolin scale trafficking.
 - Nigeria and Cameroon are critical exit points from the African continent. Nearly 50% of known seizures originating in Africa and destined for Asia are associated with one or both of these countries.
 - Syndicates rely on maritime and air transport for intercontinental trafficking. While 70% of intercontinental trafficking instances tied to Africa rely on the air transport sector, 81% of the total weight of pangolin scales are trafficked via maritime shipping.
 - China and Hong Kong are the top destinations or seizure locations for illegal pangolin shipments. These jurisdictions are tied to 65% of all known Asia-bound pangolin scale shipments that originated in Africa since 2015.
- Lax oversight of the Chinese pangolin scale stockpile allows traffickers to mix illicit scales from Africa and Asia into the existing licit system. While the Chinese central government recently announced that pangolin scales were removed from part of the official TCM pharmacopeia,^{2 3 4} it remains to be seen whether implementation will be effective.
 - Guangdong province has the highest levels of exposure to both the legal and illegal pangolin markets.

Recommendations

C4ADS offers 10 recommendations categorized into three broad opportunities for intervention: law enforcement and training, legal and regulatory environment, and data sharing and transparency. The following recommendations focus on ways that governments and NGOs can create an environment that is less profitable and higher-risk for traffickers.

Law Enforcement and Training

Increase training programs on CWT for law enforcement and customs officials

Law enforcement and customs officials should be trained to effectively identify the indicators and trends for wildlife trafficking activity, including common obfuscation methods and routes. Training programs should emphasize the importance of chain of custody standards and reporting requirements. This would not only support prosecutions but would create a data repository to help investigators identify emerging trends and wildlife trafficking networks. In jurisdictions where funding is scarce, CWT-specific content should be added to existing customs and law enforcement training programs, which would decrease costs and elevate the importance of the issue to the same level as other crimes.

Strengthen detection systems at key transport hubs

Law enforcement officers and investigators need the proper tools to improve monitoring and detection efforts at key transport hubs in the illicit wildlife trafficking (IWT) supply chain. Using advanced scanning technology and sniffer dogs at air and seaports can increase the likelihood of identifying illicit products, even during random checks. Increased risk of detection at specific ports and airports will temporarily lead to more seizures, and over the long-term, force traffickers to disengage in the trade as it becomes more expensive and riskier. Key transport hubs should improve law enforcement capacity: these include airports in Cameroon, seaports in Nigeria, land border crossings in Myanmar and Vietnam, and air and seaports in China and Hong Kong.

Broaden law-enforcement capacity by promoting cross-sector engagement

Law enforcement authorities can increase their capacity by working directly with CWT-focused NGOs, foundations, and scientific researchers. By engaging private companies and air and maritime transport authorities, law enforcement can further support transparent logistics processes and secure supply chains. Through these public-private partnerships, action agencies can improve data sharing and CWT training to better identify illicit shipments.

Legal and Regulatory Environment

Make illegal wildlife trafficking a predicate offense to other crimes

Wildlife traffickers rely on a permissive environment to facilitate their operations, and consistent convictions can be a major deterrent for criminals. Legislative and governmental bodies need to create a legal environment that deters traffickers from engaging in IWT. Source and demand countries should update existing laws, regulations, or rules to clearly define wildlife trafficking as a predicate offense to other crimes such as money laundering and fraud. Not only would this allow investigators and prosecutors greater ability to target and take down entire networks, but it would also increase prosecution of key high-level trafficking coordinators who are less often caught in possession of illegal wildlife.

Remove pangolin from China's pharmacopeia completely

While China announced the removal of pangolins from the TCM ingredients section of the national pharmacopeia in June 2020, the animal's products are still listed ingredients of patented medicines.⁵ Pangolin scales may also continue to be legally used as raw TCM ingredients under provincial standards. The existence of this legal market for pangolin scales creates opportunities for illicit actors to evade

detection. Removing the remaining legal grounds, both at the national and provincial levels, for commercial production and sale of pangolin-based medicinal products will make it easier to detect and prosecute illicit activity. Additionally, steps should be taken to ensure legal actors abide by the revised regulations and prosecute those who do not.

Revise self-regulatory practices of the pangolin scale stockpile in China

The Chinese pangolin scale stockpile is managed by provincial authorities, but physical possession of the scales remains in the hands of for-profit companies. This fractured oversight fosters uncertainty and confusion that is further amplified by poor disclosure of the key actors and stockpile quantities. As such, the central government should directly manage and take possession of the stockpile.

Increase prosecution and conviction of entities that illegally use and sell pangolin scales in China

The availability of pangolins and pangolin scales in markets and apothecaries in China outside of the permitted structure is well known. Law enforcement in China should increase investigations and prosecutions against these actors to deter their engagement in the trade. As successful arrests and convictions occur, they should be widely publicized to make clear the costs of participating in the trade.

Update existing legal mechanisms to cultivate cross-mandate communication and collaboration

Law enforcement and prosecutors should communicate across jurisdictions, sharing information and data where necessary to support ongoing investigations. Mutual legal assistance treaties (MLAT) provide a clear framework for jurisdictions to communicate and share information. Wildlife trafficking often transits several jurisdictions, complicating law enforcement's ability to successfully prosecute criminals involved in transnational operations. In addition to formal communications via MLATs, IWT-focused law enforcement should establish regular lines of communication with officials in key jurisdictions to support transnational investigations.

Invest in data-sharing technology platforms to cultivate cross-mandate communication and collaboration

On a regional and global level, law enforcement authorities should adopt secure data-sharing platforms. Further, law enforcement should invest in efforts to standardize data collection and reporting to allow for interoperability of analysis. Formal communications among officials operating in jurisdictions along a network's supply chain are crucial to executing targeted enforcement operations that dismantle the illegal system of actors.

Data Sharing and Transparency

Improve seizure press releases and reporting

Seizure data is critical to understanding the typologies and trends of IWT, without which, analysis of the global pangolin trade would be incomplete. Detailed reporting is critical to establish commonly used routes and methods to educate key stakeholders on emerging trends and tactics. In 2019, C4ADS, as part of the ROUTES partnership, published *Wildlife Seizure Press Releases: A Best Practice Guide*.⁶ The guide highlights ways in which improved reporting can support transparency and foster an understanding of IWT.

Endnotes

- 1 C4ADS' Wildlife Seizure Database.
- 2 Alberts, Elizabeth Claire. "Did China really ban the pangolin trade? Not quite, investigators say." Mongabay, June 24, 2020, <https://news.mongabay.com/2020/06/did-china-really-ban-the-pangolin-trade-not-quite-investigators-say/>.
- 3 "国家重点保护野生动物名录" ["National Key Protected Wild Animals Directory"]. Directory, National Forestry and Grasslands Administration of the People's Republic of China, 4 January 2018, <http://www.forestry.gov.cn/main/3954/content-1063883.html>.
- 4 Wang, Yueming. "不再入药!穿山甲从药典"除名" ["Never Again to be Used in Medicine! Pangolins are Removed from the Pharmacopoeia"]. Health Times, People's Daily, 9 June 2020, <http://www.jksb.com.cn/html/xinwen/2020/0609/163148.html>.
- 5 "Despite the Headlines, China's Government Still Promotes Pangolin Scales in Traditional Medicines." Environmental Investigation Agency, 23 June 2020, eia-international.org/news/despite-the-headlines-chinas-government-still-promotes-pangolin-scales-in-traditional-medicines/.
- 6 "Wildlife Seizure Press Releases: A Best Practice Guide." ROUTES Partnership, 2019, https://routespartnership.org/industry-resources/guidance-documents/guidance-documents-1/routes_praidememoire.pdf/view.