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the wildlife trade monitoring network

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SKIN AND BONES UNRESOLVED

AN ANALYSIS OF TIGER SEIZURES FROM
2000–2018

*Ramacandra Wong
Kanitha Krishnasamy*

TRAFFIC REPORT

SKIN AND BONES UNRESOLVED TIGER SEIZURES FROM 2000–2018

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Indochinese Tiger *Panthera tigris tigris*
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ACRONYMS

ENV	Education for Nature – Vietnam
EIA	Environmental Investigation Agency
FFI	Fauna & Flora International
MyCat	Malaysian Conservation Alliance for Tigers
WCS	Wildlife Conservation Society
WWF	World Wildlife Fund for Nature



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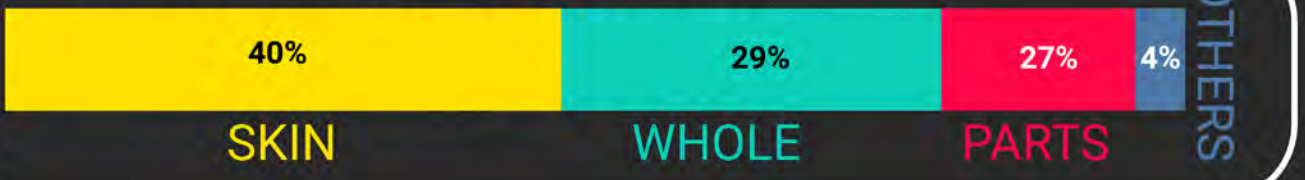
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SKIN AND BONES

AN ANALYSIS OF TIGER SEIZURES



COMMODITIES



UNRESOLVED

FROM 2000 - 2018



DESIGN BY FARIL IZZADI



3890 WORLD WILD
TIGER POPULATION



124 TIGERS
LOST / YEAR



2359 TIGERS
SEIZED WORLDWIDE

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EXECUTIVE SUMMARY

The present report is the fourth iteration of TRAFFIC's analysis on the illegal trade in Tigers *Panthera tigris* looking at an overall 19-year trend from 2000 to 2018. Previous analyses reviewed seizures from the 2000–2010, 2000–2012 and 2000–2015 periods. This analysis involved largely Tiger Range Countries (TRCs), while information opportunistically gathered from outside TRCs has also been included to provide a more comprehensive picture of the illegal trade in Tigers. Beyond highlighting the statistics, this report provides insights into trends and the most current and urgent threats facing Tigers. Nineteen years is a considerable timeframe for data aggregation, and admittedly numerous changes have occurred in the wildlife protection and management regimes, including of Tiger habitats in a number of TRCs. With the large dataset spanning almost two decades, various considerations emerge involving TRCs and issues concerning the protection of wild Tigers, as well as those arising from captive facilities implicated with illegal Tiger trade.

Overall, a conservative estimate of **2,359 Tigers were seized from 2000 to 2018** across 32 countries and territories globally. These occurred from a total of **1,142 seizure incidents**, with 95.1% (or 1,086 incidents) occurring in the 13 Asian TRCs¹, accounting for a minimum of 2,241 Tigers seized. On average, 60 seizures were recorded annually, accounting for almost 124 Tigers seized each year. The top three countries with the highest number of **seizure incidents** were India (463 or 40.5% of total seizures) and China (126 or 11.0%) closely followed by Indonesia (119 or 10.5%).

India—home to more than 56% of the global wild Tiger population—remains the country with the highest overall number of seizures and number of Tigers seized, consistent with findings from previous years. Along with Thailand and Indonesia, the three countries recorded the highest **number of Tigers seized** for the 19-year period: 626 (or 26.5%) Tigers seized in India, 369 (or 15.6%) Tigers seized in Thailand and 266 (or 11.3%) Tigers seized in Indonesia. The highest number of Tigers seized in a single year took place in 2016 with 288 Tigers seized from 70 seizure incidents, though the high number of Tigers was contributed largely by a single seizure at Thailand's Wat Pha Luang Ta Bua Tiger Temple involving 187 Tigers (representing 65% of the Tigers seized that year).

This analysis also found that the reported number of Tigers seized by TRCs from 2016–2018 equates to a conservative estimate of 5.5% of the declared wild Tiger population in 2016². This is equivalent to a minimum estimated 216 Tigers seized within the TRCs. This is based upon 152 seizure records during this period—largely from India and Indonesia—a count that excludes incidences that were known or suspected to be from captive facilities. Indonesia recorded the highest loss of 11.9% due to known illegal trade, based on its 2016 estimates of the wild Tiger population. Given that seizure data represent only a fraction of illegal trade, the loss and potential decline in wild Tiger populations is suspected to be much greater than reported here.

¹ Here and throughout the report the term "Outside TRCs" is used to refer to countries / territories outside the Tiger's range.
² <http://tigers.panda.org/wp-content/uploads/Background-Document-Wild-Tiger-Status-2016.pdf>



Outside TRCs recorded a total of 56 seizures, out of which Taiwan Province of China and Mexico reported the largest number of Tigers seized throughout the 19-year period: 39 and 13 Tigers from 7 and 13 seizure incidents respectively. Although India has been consistently the most active country in terms of number of seizure incidents—executing almost half of the global seizures in 2009 alone—in more recent years Indonesia has seen the most significant increase. Indonesia accounted for just 4.0% of all seizures in 2012 but that proportion grew almost sevenfold in 2016, reaching an all-time high of 27.0%.

The vast majority (66.2%) of seized **commodity types** involved Tiger parts, with skins alone accounting for 40.0% (or 1,099 equivalent whole skins) of the overall Tiger parts seized from 2000 to 2018. This highlights that on average every year, almost 58 Tigers are estimated to have been poached for their skins. The seizure of whole animals—both live (382) and dead (416)—has seen an upwards trend since 2016. While a total of 798 whole animals (29.0% of the total) were seized over this 19-year period, the proportion seized from just 2016-2018 alone ranged from 44.0% to 73.0% annually. These largely came from captive sources. Tigers were reported to be from **captive sources** in at least 55 seizures, accounting for a total of 366 Tigers seized, largely in Thailand and Viet Nam. This includes at least 40 Tigers were seized in 25 incidents outside TRCs.

When looking at the reported **trafficking routes**, where this information was available from just 231 incidents, almost 90% of Viet Nam's reported Tiger trafficking route implicated a supply of Tigers from Lao PDR. Given that Lao PDR has no viable Tiger population at about two individuals, the most plausible source of these Tigers was from captive populations. Lao PDR also featured with an estimated 59 Tigers inbound, entirely originating from Thailand. These seizures are concerning given the considerable number of Tigers implicated in the illegal trade and reinforces the need to put in place strong measures for the regulation, management and inspection of captive Tiger stocks. They also emphasize two points: i) the recurrent threat of leakage of captive Tigers into



the illegal market despite years of caution to control them, and ii) there is no evidence such facilities are relieving pressure off wild Tigers given the continuous and higher proportion of seizures taking place in Tiger range strongholds that are directly impacting wild populations.

Tigers are also often seized along with **other wildlife parts and products** targeted for illegal trade. Where this information was available, bears and elephants emerged to be the most frequently traded species alongside Tigers, respectively occurring in 35.6% and 32.5% of documented seizure records that featured multiple species. This was most apparent in Viet Nam, Thailand and China, with some interesting distinctions. Bears are most frequently associated with Tigers in Viet Nam (40%), and as much as half (50%) of the documented incidents featuring multiple species included elephant parts (i.e. ivory) in Thailand, 47% in Malaysia and 43% in China. Rhino horn appears frequently associated with Tigers in Viet Nam (26%) and even more in China (38%).

In 65.5% of seizure records, **outcomes (comprising arrests through to conviction)** from seizure incidents were reported. Conviction information was not comprehensive, and available for only 15% of these cases, or just under 10% of all seizures over the 19-year period. While incomplete information prevents TRAFFIC from presenting a thorough picture of the law enforcement effectiveness or the judicial process in-country, this analysis provides some insights into the penalties imposed for Tiger crimes. At least 1,167 people were **arrested** in relation to 591 cases. The largest share, over 38% of people arrested took place in India, commensurate to the high number of cases recorded there. This was followed by Indonesia and China. At least 259 people were reported to be **prosecuted** again largely in China, Indonesia and India. For 17.4% of the people arrested, analysis highlighted a cumulative imprisonment of 934 years from the reported data.

Of the 199 cases that resulted in successful **conviction** involving imprisonment and for which jail time was reported, the average jail term served was only four years. China, as the top country by number of convictions (54), also imposed the longest **imprisonment** terms reaching 8.9 years of length on average for each wildlife criminal. On the contrary, despite being among the top three countries by number of convictions, India and Indonesia imposed relatively short sentences: with India ranking fourth with 3.4 years and Indonesia ranking seventh with 1.7 years of jail term imposed on average. In terms of **finest**, at least 65 cases resulted in cumulative/total fines exceeding USD765,300 imposed on 137 people. China reported the highest overall total fines (USD282,557), while Russia reported the highest average fine per person (USD155,000—although this was limited to only one case. This was followed by China (USD9,709) and Malaysia (USD9,634) as per average fines imposed per person for a Tiger-related crime. These same countries had the same ranking in terms of average fine per case, with China reporting USD25,600 and Malaysia less than half this figure (USD12,000).



Because the poaching and illegal trade in Tigers has been an unresolved problem for decades, with wild Tiger strongholds experiencing increased pressure, this report underscores an urgency to galvanise action—by range, transit and consumer countries and territories—including strengthening legislation, improving law enforcement effectiveness, regulating and monitoring of captive facilities, as well as reducing the demand and consumption of Tiger parts and derivatives. TRAFFIC reiterates these recommendations, in line with earlier expressed prioritisation required by Parties under the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and specifically, calling on full and effective **implementation of Resolution Conf. 12.5 (Rev. CoP17)³ on Asian big cats (ABCs) and associated CoP Decisions⁴.**

The need for continued **intelligence-led law enforcement**, leading to strong and deterrent **convictions** remains critical in the fight against poaching and illegal Tiger trade. **Information sharing** between countries, particularly in cross-border incidents, is absolutely pivotal in any effort to crack down on international smuggling operations. The analysis showed changes in the types of commodities seized over the years, with, for example, the proportion of whole live or dead specimens being seized more frequent compared to previous years. Sharing information across borders would allow for such trends to be noted in real time allowing for adaptive management of enforcement approaches.

As Tiger skins alone constituted the highest proportion of Tiger commodities seized in 2017 and 2018 (35–39%)—the sharing of images of skins by the seizing country can help determine the provenance of the Tiger from the stripe pattern, which would greatly bolster knowledge, understanding and patterns of criminal networks that trade in Tiger commodities. This recommendation needs to be supported by countries through establishing a standardised and systematic database containing forensic markers and photographic information, at minimum, involving both wild and captive Tigers. While this is being established, bilateral sharing of photographic and genetic data from countries of seizure to countries holding national databases would strengthen law enforcement efforts and cross-border co-operation.

Legislation and regulations—and their active and consistent enforcement—must be implemented as a matter of urgency, especially where **loopholes** facilitate illegal trade or where **penalties** are too low to represent an effective deterrent. While this report does not directly analyse legislation, effective legislation and regulations are key to enforcement and deterring criminals from engaging in Tiger crimes. Other reports⁵ demonstrate that in many countries, including TRCs, there is a lack of sufficient legislation to protect Tigers from trade: for example, not addressing non-native species, products labelled as or claiming to contain specimens of Asian big cats (ABCs) and interpretation of the term “readily recognisable part or derivative”. The trade in non-native Tigers is particularly relevant for countries and territories implicated in captive Tigers.

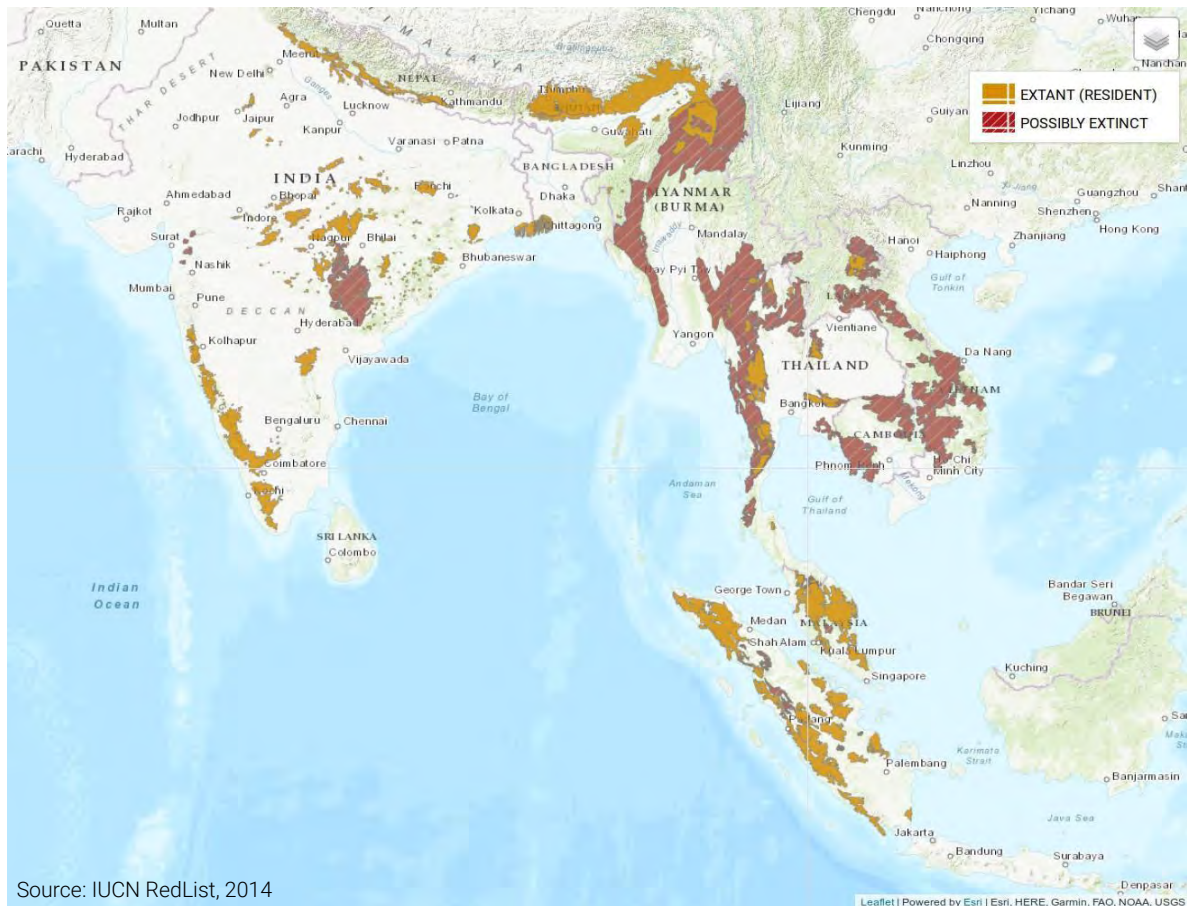
Strength of prosecution and the outcomes have much room for improvement. As the analysis in this report demonstrates—even though information was available in only a small number of cases—**finest** in many places continue to be too low to represent an effective deterrent. **Sensitisation of the judiciary** could contribute towards better outcomes for Tiger-related crimes. In the case of Thailand, for example, analysis from this dataset showed that the average fine per person barely amounted to three months of the average annual income for the year individual fines were given, a percentage which increases to 56% of the annual average wage for Viet Nam, 78% for Indonesia and 83% for India. In all these countries, the opportunity to profit from trafficking in Tigers far outweighs the potential loss of profit. This is even more evident when considering that USD500 was not reached in half of the fines levied in Viet Nam, and one third of those imposed in Indonesia and India for such crimes.

³ <https://www.cites.org/sites/default/files/document/E-Res-12-05-R17.pdf>

⁴ <https://www.cites.org/eng/dec/valid17/81877>

⁵ <https://www.cites.org/sites/default/files/eng/cop/18/doc/E-CoP18-071-01.pdf>

Map 1: Tiger range – South and South-East Asia.



Note: Amur tiger range not included.

Following the commitments from the 2nd Stocktaking Conference of The Global Tiger Recovery Program (GTRP) held in Dhaka in September 2014, several range countries executed systematic national surveys of their national wild Tiger population (WWF, 2016). Based on this, the minimum estimated number of wild Tigers as at 2019 is 3,900 (Figure 1). Over half of the world’s wild Tiger population is hosted by India (56.4%), followed by Russia (11.0%) and Indonesia (9.4%).

Figure 1: Tiger population estimates for the 13 range countries.

Country	Count	Share
Bangladesh	106	2.7%
Bhutan	103	2.6%
Cambodia	0	0.0%
China	9	0.2%
India	2,226	56.3%
Indonesia	371	9.4%
Lao People’s Democratic Republic	2	0.1%
Malaysia	250	6.3%
Myanmar	22	0.6%
Nepal	235	5.9%
Russian Federation	433	11.0%
Thailand	189	4.8%
Viet Nam	5	0.1%
TOTAL	3,951	100.0%

Source: WWF, 2016 for all; except China⁶ (Dou et al., 2016), (Myanmar (WWF, 2019) and Nepal (WWF, 2018)

⁶ TRAFFIC was made aware that studies are underway and updated figures may be released in the near future.

Provisions to **register, manage, monitor, audit and control captive facilities**, particularly those with a sizeable stock of captive Tigers in any location or facility (including those considered to be farms that also hold non-native species) is paramount. Transparency in this process is fundamental to **prevent laundering or leakage of stocks**, especially when considering that a large number of captive-held Tigers continue to be seized due to illegal operations. Where infractions are consistently recorded and within the same countries, these farms should be phased out. As farms are cannot be economically viable without involvement in some trade activity and their continued existence will likely mean ongoing (illegal) trade, those found to be breeding for trade should be closed. Closure of farms is also in line with CITES Decision 14.69⁷ prohibiting Tiger breeding for the purpose of trade. A **CITES mission** to facilities of concern is urgently needed to understand fully the role they play in illegal trade.

DNA profiles and other markings (such as photographic evidence) of captive-held Tigers must be taken and maintained in a centralised registry and reported to the CITES Secretariat to prevent any illegal laundering activity. This will also be inherently important during investigations into cases implicating captive Tigers. Without these measures, it is impossible to ascertain if seized Tigers from such captive sources are part of previously held stocks or were newly acquired ones including those potentially from the wild. This has been a long-identified problem, and one that will continue to undermine the effective implementation of CITES unless it is promptly addressed.



Tigers *Panthera tigris* currently inhabit less than 6% of their historic range (Sanderson *et al.*, 2006, Walston *et al.*, 2010) with the known Tiger range having declined sharply by over 43% during the ten years spanning 2006 to 2015 (Goodrich *et al.*, 2015). Multiple factors contributed to this decline including habitat loss, although illegal hunting for trade is a primary threat to the survival of Tigers (Chapron *et al.*, 2008). While 13 Tiger Range Countries (TRCs) exist today (Figure 1) (WWF, 2016), active breeding populations of Tigers occur in only eight range states: Bangladesh, Bhutan, India, Indonesia, Malaysia, Nepal, Russia, and Thailand. There was evidence of breeding in China (WWF, 2015) and Myanmar between 2009 and 2015 although these populations are likely dependent on immigration from neighboring countries (Goodrich *et al.*, 2015). Cambodia, Lao PDR and Viet Nam do not currently support known breeding populations, despite having large landscapes with suitable habitat (Goodrich *et al.*, 2015)

7 <https://www.cites.org/eng/dec/valid17/81842>

All Tiger subspecies have been listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) since 1975 (except for *P. t. altaica*, which was added to Appendix I in 1987). This effectively means that all commercial international trade in Tigers, their parts, products and derivatives, has long been prohibited.

Since 2010, analyses of Tiger seizures across range states have been conducted by TRAFFIC, highlighting that illegal trade in Tigers persists (Verheij *et al.*, 2010; Stoner and Pervushina, 2013; Stoner and Krishnasamy, 2016). Following this, and to service the 65th meeting of the CITES Standing Committee in 2014, IUCN and TRAFFIC with the support of the CITES Secretariat and WWF, published an analysis that also reviewed the trade in Tigers and other Asian big cats—Review of implementation of Resolution Conf. 12.5 (Rev. CoP16) on Conservation and trade in Tigers and other Appendix-I Asian big cat species (Nowell and Pervushina, 2014). Each of these analyses featured a common occurrence: a year-on-year increase in the number of Tigers detected in illegal trade. Building upon these reports, TRAFFIC undertook this study to analyse seizure data from 2000–2018. It synthesizes 19 years of seizure data to provide insights into patterns and potential trends, particularly in the most recent period, while highlighting key features at priority country levels.



Sources and acquisition

The dataset underlying this analysis spans 1st January 2000 to 31st December 2018, and focuses on the current 13 Tiger Range Countries (TRCs). Information was sourced largely (40%) from open sources such as news media outlets. Government partners provided over 35% of the data, and another 22% was supplied by partner NGOs. Ahead of the 2010, 2013, 2016 analyses, TRAFFIC formally requested seizure data from all TRCs in order to complement our dataset. The governments of Bangladesh, Bhutan, India, Lao PDR, Malaysia, Myanmar and Thailand had previously supplied data to TRAFFIC for prior Tiger trade analyses (Verheij *et al.*, 2010; Stoner and Pervushina, 2013; Stoner and Krishnasamy, 2016), with additional information gathered for the 2016–2018 period. Details from each seizure was assessed to determine key information such as locations involved, sources (wild, known or suspected to be captive), outcomes from seizures, etc. Information contributed by the media and multiple government agencies however conformed to different reporting standards with often largely differing level of details. For example, detailed information on outcomes of prosecution was also incomplete, leading to substantial limitations in the analysis of such outcomes.

This analysis also features data about Tiger-related law enforcement operations that occurred outside of the TRCs as collected by TRAFFIC. Acquisition of such data was opportunistic and by no means exhaustive, but is included in this analysis as it offers a more wide-ranging overview of the international scale of the trade in Tigers and of the role played by countries and territories outside of its range. In this analysis, Hong Kong Special Administrative Region (SAR), Macau SAR and Taiwan Province of China are considered in the non-range group given that Tigers are known not to occur there.

Pre-Processing

All incident records were subject to a verification process to ensure the maximum accuracy of the dataset, and as much as possible, they were verified with government sources. Particular attention was devoted to indicators of time, location, number and type of commodity, and type and length of penalty to enable a more comprehensive analysis.

Locations

Geographical data points have been averaged to the first decimal unit for both latitude and longitude in order to mitigate the variance of GPS locations reported for very close physical places in the dataset (e.g. districts of a city). Displayed data points may therefore be at up to 16 km radius distance from the original location of the incident. For locations where only the provincial level of detail was available, the data point is displayed at the geographical centre point of the province. Due diligence has been conducted to minimise the number of such approximations as much as possible.

Tiger Counts

In order to calculate the minimum number of Tigers seized, and to make seizure data comparable, records of seized items were tallied using a standardised calculation methodology which exercises care to avoid over inflation of the data (Table 1).

Figure 1: Methodology count for estimating Tiger individuals

Calculation*	Commodity Type	Confidence
$n = x$	Live, Dead (carcass), Skin, Head, Skeleton, Skull, Tail, Genitalia, Gallbladder	High
$n = x/18$	Claw	High
$n = x$	"Tiger spirit" (when animal is juvenile)	High (whole cubs)
$n = x/10$	Bone (weight – Kg)	High
$n = x/4$	Paw	High
$n = x/4$	Teeth	Low (when traded alone, they are most likely canine teeth)
$n = x/432$	Bone (when no weight indication)	Low
$m = x/200$ (m.) $m = x/117.5$ (f.) $m = x/159$ (u.) $n = m$ (adult) $n = m/2$ (juvenile)	Meat (weight – Kg)	Low (based on 45% meat yield on average body weight Male 200 kg, Female 117.5 kg, Unknown 159 kg, juveniles are estimated half weight)
$n = x/8$	"Tiger spirit" (when animal is not juvenile)	Low (bigger leg bones are used for spirits)
$n = x/6$ (adult) $n = x/3$ (juvenile)	Skin pieces	Low (6 is an arbitrary value allowing enough surface to result in a product e.g. bag)
$n = 1$	Whisker and other derivatives and body parts	Low
$n = 1$	When unspecified	Low

* figures refer to the actual or estimated number of items per Tiger

Commodity Type Confidence Level

In order to minimise assumption-induced overestimation errors, the authors have identified two groups of commodities yielding either High or Low Confidence estimates as specified in Table 1.

Whenever one single seizure incident involves both commodities with different confidence levels, only High Confidence estimates are used—High Confidence is attributed when the number of Tigers involved is certain or fairly accurate (e.g. 1 skull = 1 Tiger).

If Low Confidence items were computed against the average, the resulting estimate will lose accuracy and potentially result in either over or under-estimates. For example, a seizure of 5 skulls and 10 bones would result in an estimate of 2.5 Tigers [$n=(5+0.023)/2$] using a computed average between High Confidence (skull) and Low Confidence (bones) values. This would be a severe underestimate and outright wrong (no Tiger has multiple skulls). For the purpose of this analysis, a seizure of 5 skulls and 10 bones will result in an estimate of 5 Tigers, as the Low Confidence value (bones) is discarded from the calculation.

Discarding Low Confidence data when higher confidence data are available has considerably reduced the error margin, since the vast majority of seizure incidents involved at least one High Confidence commodity. The 10 bones of the example above represent an estimated 2.3% of one Tiger, and while they do not add any significant detail (likely belonging to the same Tigers as the skulls), they would add significant error to an average estimate, if they had been considered.

Low Confidence Commodities

Teeth: Each Tiger has 30 teeth, however canines ($n=4$) are typically the most sought after commodity due to their use as pendants. For the purpose of this analysis we consider that when traded alone, teeth are canines. Because this is considered to be a Low Confidence commodity, in the case of one complete body-set the misleading teeth-dependent estimate ($30/4=7.5$ tigers) is discarded in favour of concurrent High Confidence commodity types (e.g. skull), therefore not introducing errors in the estimate of 1 Tiger for one complete body-set.

Meat: The total weight of an adult Tiger spans 90–310 kg (males), 65–170 kg (females). We assume a 45% edible meat yield from Tigers [min (avg. female) 35 kg – max (avg. male) 71 kg], a bit higher than cows (ca. 40%) due to the relatively higher ratio of muscular tissue in wild Tigers. Such a range coupled with the absence in most cases of cues on the sex and size of the animal determines such a commodity type to be of Low Confidence and be computed as an average of the minimum and maximum estimates.

Single-Case Maximum Estimate

When multiple types of High Confidence commodities were collected at the same time, only the commodity yielding the largest number of Tigers possibly involved is considered. Such a single case maximum estimate approach is effective in avoiding underestimates when a fraction of several parts of potentially multiple Tiger individuals are captured in a single seizure incident (see examples in Table 2).

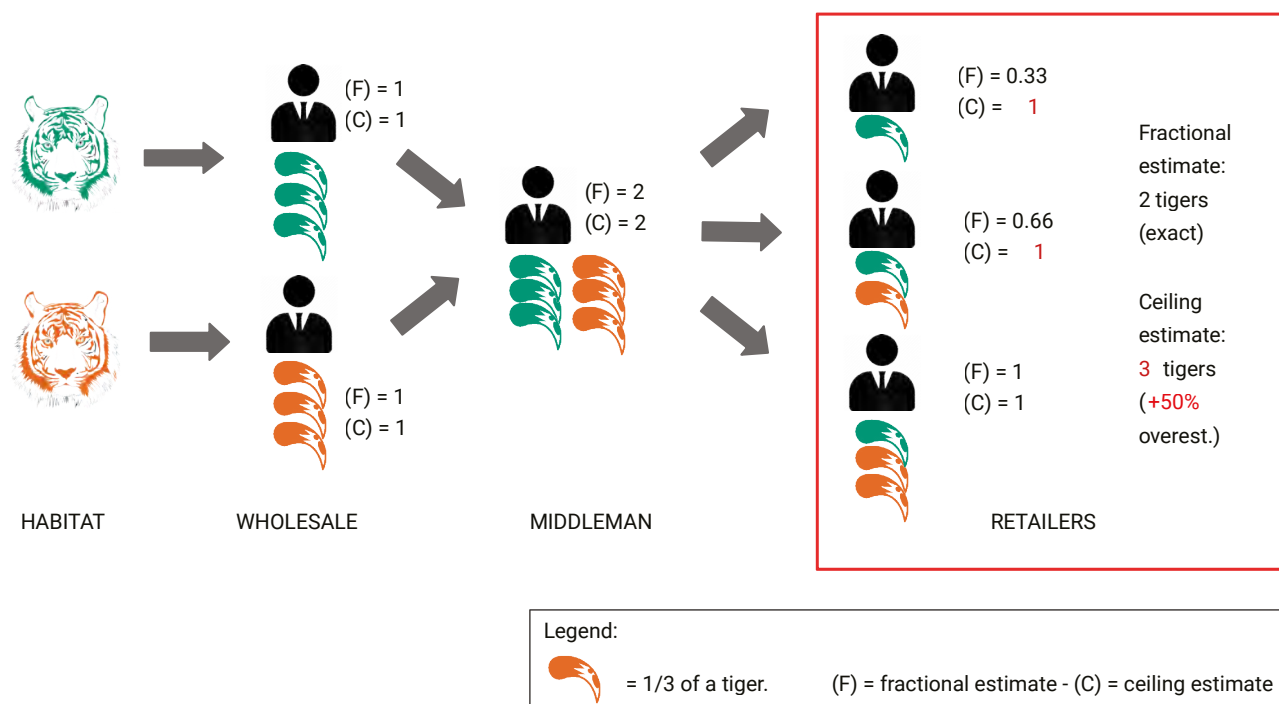
Table 2: Explanatory examples for the Single-Case Maximum Estimate approach

Example	Items seized	Fractional estimate of number of Tigers	Single Case Max Estimate	Rationale
Seizure 1	Skulls = 3 Claws = 74	from Skulls = 3 from Claws = 4.1	4.1 (5 tigers)	One Tiger has only 1 Skull and 18 Claws, therefore 74 Claws must belong to five Tigers ($74/18=4.1$), not three.
Seizure 2	Skulls = 2 Teeth = 13	from Skulls = 2 from Teeth = 3.2	3.2 (4 tigers)	One Tiger has only 1 Skull and 4 canine Teeth (valued for trade), therefore 13 canine Teeth must come from four Tigers ($13/4=3.2$), not two.
Seizure 3	Genitalia = 3 Bones = 35 Kg	from Genitalia = 3 from Bones = 3.5	3.5 (4 tigers)	One (adult) Tiger has 1 Genitalia and an average of 10 kg of Bones, therefore the minimum number of Tigers involved is likely to be from four Tigers ($35/10=3.5$), not three.

Trade Chain Distribution

Confidence in the number of Tigers poached decreases proportionally as the trade chain moves from the poaching site downstream to the end consumer. Seized Tiger commodities in proximity to a poaching site are likely to feature full sets (whole body, teeth, claws, etc.), which offer more reliable information on the number of Tigers involved. However, after the commodities are mixed and distributed in fractions across middlemen and retailers, achieving a reliable estimate requires additional caution. The current analysis adopts a fractional estimate approach, which takes into consideration fractions of one Tiger in the computation and ensures aggregate measures are truly conservative estimates. In past reports⁸, a ceiling estimate approach was used, which considered whole numbers rounded up to the higher unit (ceiling).

Figure 2: The current fractional estimate analysis takes into account trade chain distribution patterns in aggregated calculations, avoiding overestimates of as much as 50% above the real values in this example.



Data Deficient Cases

In 0.7% of the seizures recorded, no indication of the quantity of the commodity was provided. In such cases, an estimated one Tiger was assumed. With a sparse distribution over time and across the geography of such incidents, the circumstance of counting the same individual multiple times across multiple incidents is expected to be unlikely and have negligible impact on the overall reliability of this analysis.

Data Quality and Limitations

For the purposes of this analysis, the reported seizure data were assumed to be correct, and assumed to be genuine Tiger parts. Given the inconsistent manner in which seizures, enforcement action and effort are reported and recorded by various countries and agencies, this dataset may not be representative of the complete number of seizures. Importantly, due to the inherently covert nature of the illegal trade in Tigers, its true extent is unlikely to be reflected by the reported seizure data alone. Seizure records are an indirect measure of trafficking levels, but the data are inherently influenced by a number of biases, including varying levels of law enforcement and its effectiveness in each country, rate of wildlife crime per country, different reporting and recording practices of both law enforcement and media, varying levels of corruption, etc. Therefore, a higher number of seizures in one country may not necessarily imply higher wildlife trafficking levels in comparison to other countries, though it is indicative of the scale of the trafficking taking place within the country.

⁸ *Reduced to Skin and Bones*, TRAFFIC (2015), p.21.



Seizure Incidents

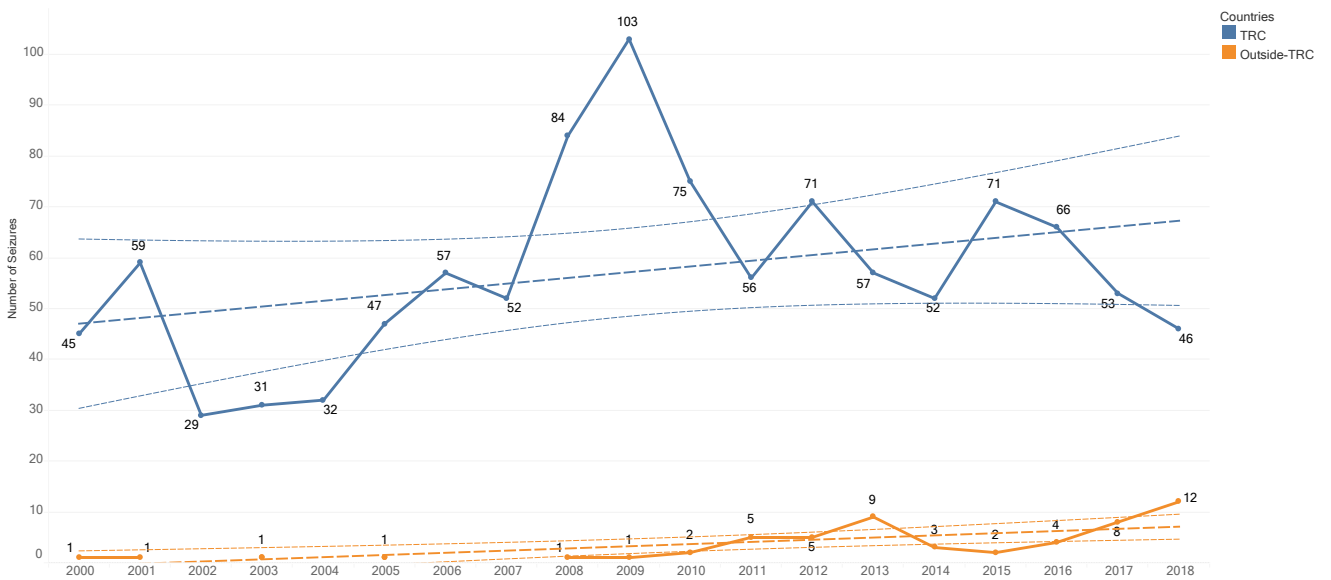
A total of 1,142 seizure incidents involving Tigers were recorded for the 19-year period from 2000–2018. The vast majority of these occurred in Tiger Range Countries (TRCs), accounting for 95.1% (1,086 incidents) of all Tiger seizures globally (Table 3). India (40.5%), China (11.0%) and Indonesia (10.4%) recorded the highest number of seizures. The higher rate for India and Indonesia could be indicative of these Tiger strongholds continuously being targeted for poaching and illegal trade, or their law enforcement mechanisms being able to capture an increasing share of such criminal activities. Seizure numbers in China (126) as well as Viet Nam (89) are significant given that official data reported a combined population of only 14 Tigers (0.3% of the total extant population) in 2016.

Table 3: Number of Tiger related seizures by country

Country	No. of Seizures	% of total
Bangladesh	33	2.9%
Bhutan	7	0.6%
Cambodia	5	0.4%
China	126	11.0%
India	463	40.5%
Indonesia	119	10.4%
Lao PDR	9	0.8%
Malaysia	53	4.6%
Myanmar	5	0.4%
Nepal	94	8.2%
Russia	34	3.0%
Thailand	49	4.3%
Viet Nam	89	7.8%
Outside TRCs	56	4.9%
Grand Total	1,142	100.0%

Trend data show a moderate long-term increase in the number of seizures over the 19 years considered, with a peak of 103 seizures in 2009 (Figure 3). From 2015 onwards, while TRCs saw a decreasing trend, the opposite was true for Outside TRCs as they experienced a six-fold increase in the number of seizures.

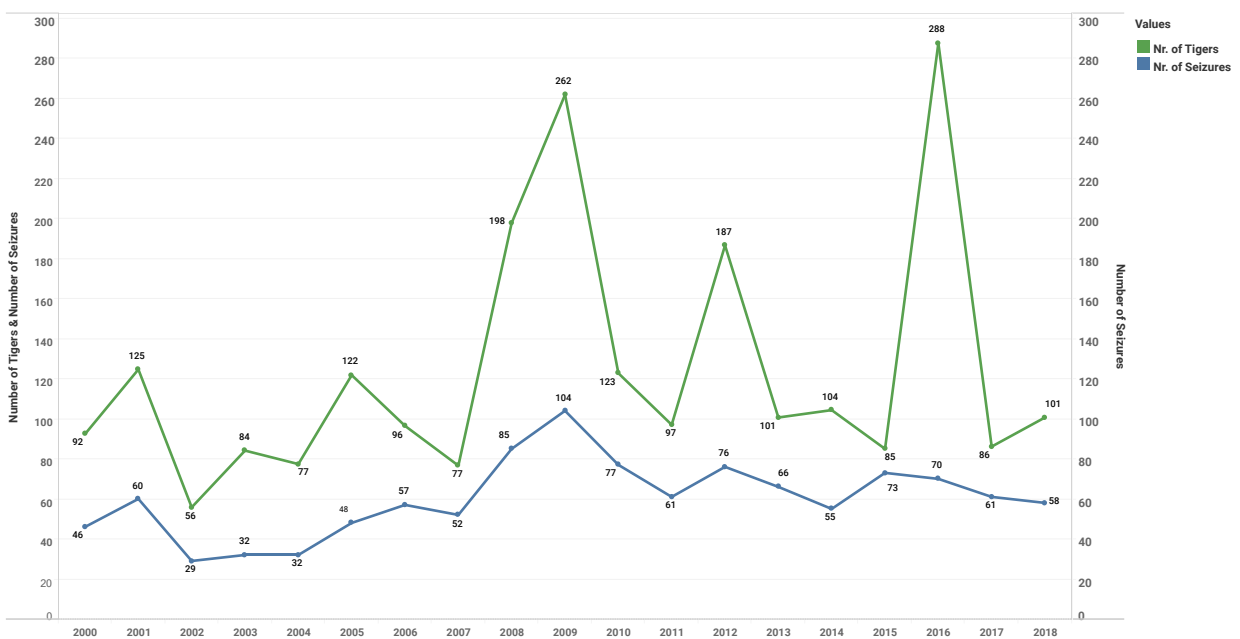
Figure 3: Trend in the number of Tiger-related seizures from 2000–2018 in TRC (blue) and outside range countries(orange).



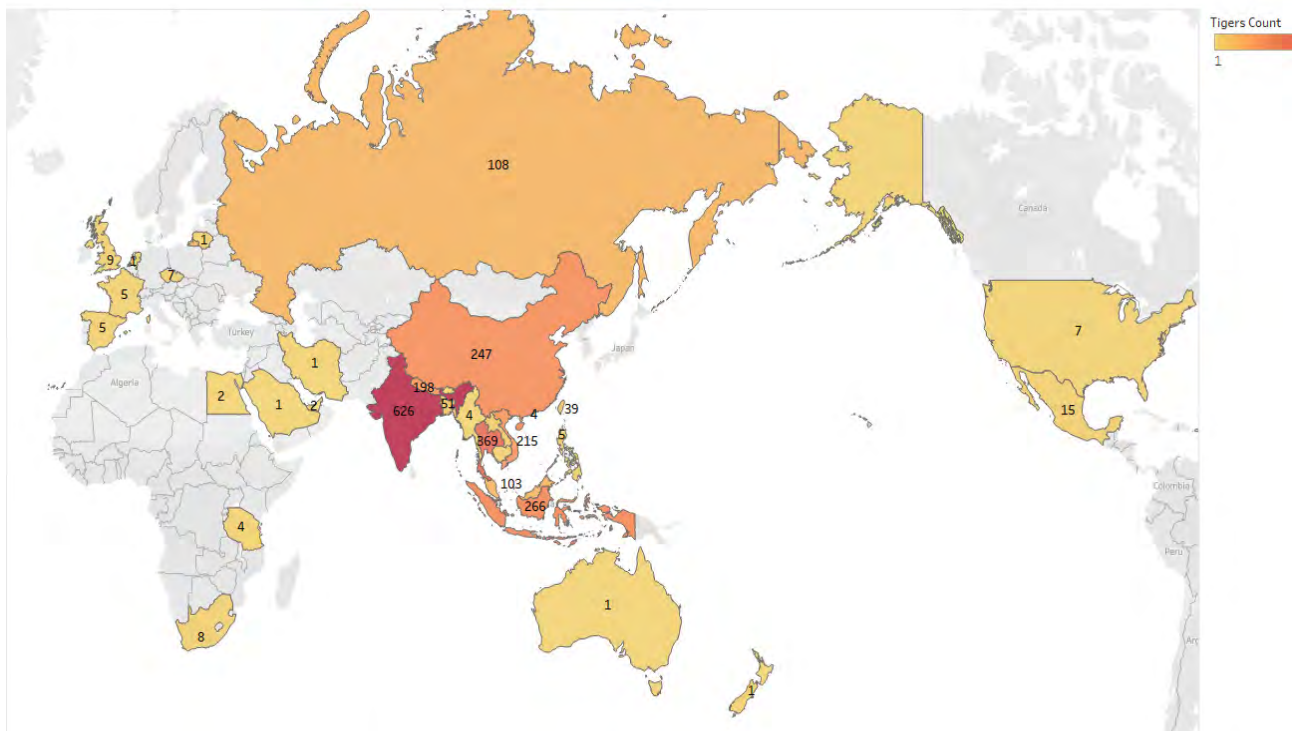
Tigers Seized

An estimated minimum of 2,359 Tigers were seized during the assessed period, with 2,241 of these being seized in the TRCs, generally showing an increasing trend (Figures 3 and 4). This trend could be attributed in part to better reporting of seizures, inclusion of a wider dataset (for example, Tiger seizures outside of range countries and territories), or improved law enforcement efforts rather than an actual increase in Tiger-related crimes. However, when applying statistical tests to assess the linear trend model, despite the variability of the data over the years that limits the trend statistical confidence, an overall increase is evident despite these limitations. Regular fluctuations with peaks followed by 3–4 years of troughs have been recorded consistently throughout the time frame of this analysis. The latest of such peaks was recorded in 2016 accounting for 287 Tigers. Such a pattern is also observed when looking at the number of Tigers seized (Figure 4).

Figure 4: Trend in the number of Tigers seized (green) and seizures (blue) from 2000–2018



Map 2: Distribution of the number of Tigers seized per country/territory from 2000–2018.



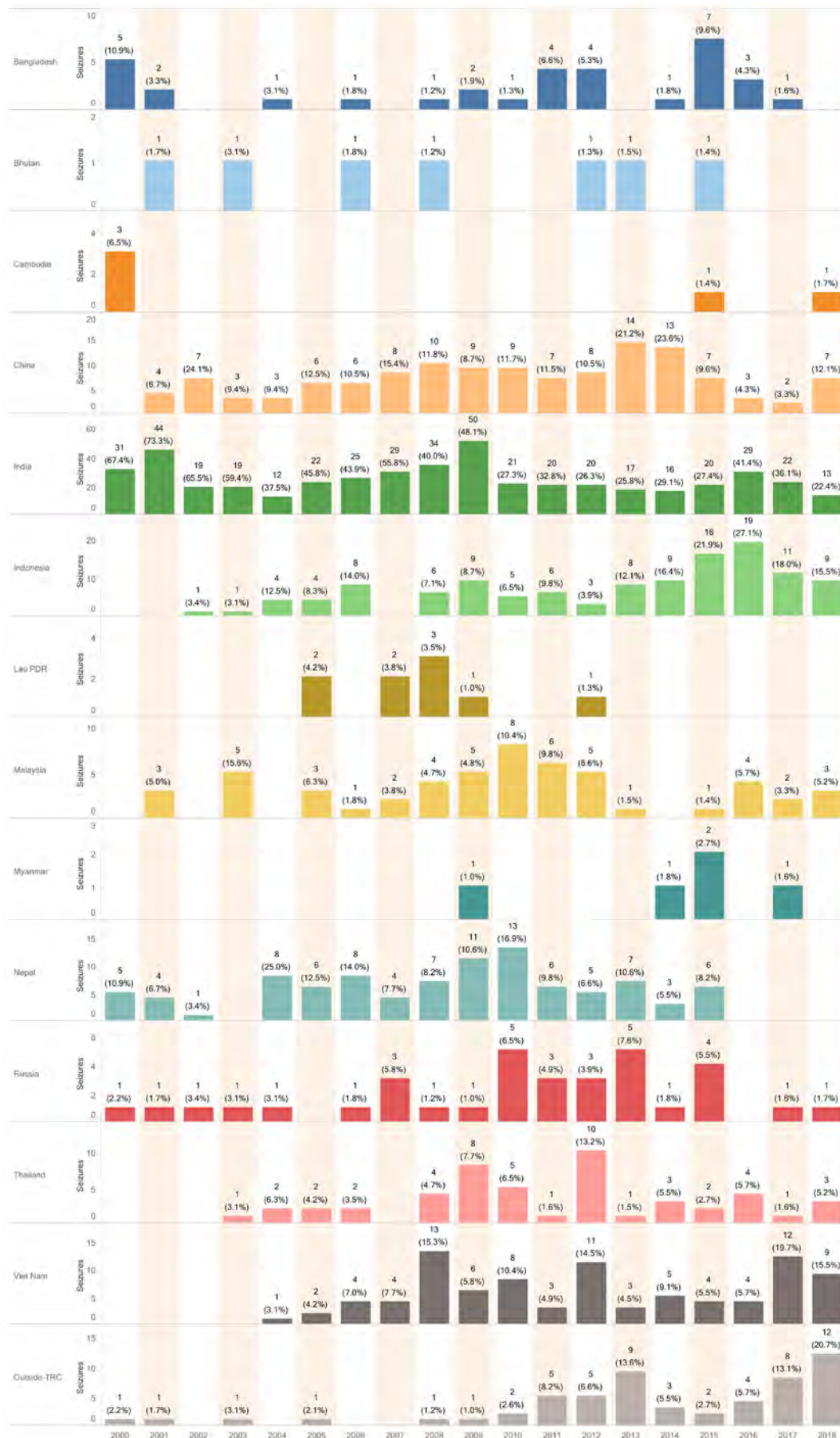
Overall, the largest number of seized Tigers was recorded in India (626), followed by Thailand (369), and Indonesia (266)—all TRCs with a sizable wild population of Tigers (Map 2). Although not in the top three, Nepal recorded the seizure of a minimum of 198 Tigers. China (247) and Viet Nam (215) also accounted for a relatively high number of individuals seized, despite their wild population being largely depleted during the past decade, with less than 14 Tigers currently reported (Table 1) for each of the two countries. Therefore, there is reasonable suspicion that the tiger commodities seized in China and Viet Nam were sourced from other range countries and/or territories or originated from captive facilities.

Country Trends

Nineteen years is a considerable timeframe for data aggregation, and admittedly numerous changes have occurred in the wildlife protection legislation and regulations, as well as in the management and enforcement of Tiger habitats in a number of range countries. Recent heightened global attention on illegal wildlife trade may have contributed to increased enforcement at national levels, which may be reflected in the seizure trends reported in this analysis.

While India has consistently been the most active country, executing over 40% of the global seizures total in the 19-year period (Figure 5), in recent years Indonesia has experienced the most noticeable almost seven-fold increase from 4% in 2012 to an all-time high of 27% in 2016 of all Tiger seizures recorded globally. In subsequent years, sizeable increases were recorded in Viet Nam and outside TRCs. The latter witnessed a twenty-fold increase within the decade 2008–2018 in the rate of Tiger seizures, recording as much as 21% of the global incidents in 2018. It should be noted however, that this could be influenced by a data collection bias, where comprehensive information on seizures taking place outside TRCs, particularly prior to 2008, was lacking.

Figure 5: Breakdown of number and share of Tiger seizures from 2000 - 2018, across all countries for each year



Confronting the yearly average number of seizures and number of Tigers seized between 2015–2018 and across the whole 19-year period, some interesting cues on recent trends can be evidenced.

Most notably, seizures outside TRCs⁹ experienced a substantial increase between 2015–2018, averaging on a yearly basis four times as much as in the preceding period and resulting in a 2.8 times increase in the average number of Tigers seized. Taiwan Province of China reported the largest number of Tiger individuals historically seized (39), however Mexico has recorded the most increasing activity in recent years, with 11 seizures (13 Tigers) between 2015 and 2018.

Within TRCs, Indonesia recorded a 4 times increase in yearly average number of seizures in 2015–2018 (from 2.3 to 13.8 per year), resulting in the almost doubling of the numbers of Tigers involved. Viet Nam and Bangladesh also reported more than doubling average yearly seizures, and an increase in the number of Tigers seized.

Seizure rates were substantially stable in India, China, Malaysia, Russia, and Thailand. However, looking at the number of Tigers seized, these more than halved in Malaysia, almost halved in China, and decreased in India and Russia. Recent trends in Thailand showed a marked increase in Tigers, although these data were heavily influenced by one large seizure of 187 captive Tigers from a temple (Tanakasempipat, 2016).

Nepal is the only country reporting a 3 times drop in seizures associated with an almost 4 times drop in Tigers, with no seizures recorded from 2016 onwards, possibly as part of its national Zero Poaching initiative.

Table 4: Seizures, equivalent Tigers seized, and yearly averages in the two time periods.

Country/ territory	Seizures				Tigers			
	2000–2014		2015–2018		2000–2014		2015–2018	
	No. of seizures	Yearly avg	No. of seizures	Yearly avg	No. of Tigers seized	Yearly avg	No. of Tigers seized	Yearly avg
Bangladesh	22	1.2	11	2.8	38.8	2.0	12.6	3.1
Bhutan	6	0.3	1	0.3	5	0.3	1	0.3
Cambodia	3	0.2	2	0.5	7	0.4	1	0.3
China	107	5.6	19	4.8	223.2	11.7	23.6	5.9
India	379	19.9	84	21.0	527.6	27.8	98.2	24.5
Indonesia	64	3.4	55	13.8	194	10.2	72.2	18.1
Lao PDR	9	0.5	dd	dd	39	2.1	dd	dd
Malaysia	43	2.3	10	2.5	94.4	5.0	8.8	2.2
Myanmar	2	0.1	3	0.8	1.2	0.1	3	0.8
Nepal	88	4.6	6	1.5	189.2	10.0	8.7	2.2
Russia	28	1.5	6	1.5	92.9	4.9	15	3.8
Thailand	39	2.1	10	2.5	151	7.9	218	54.5
Viet Nam	60	3.2	29	7.3	163.1	8.6	53.2	13.3
Outside TRCs	30	1.6	26	6.5	74	3.9	44.2	11.0
Taiwan POC	7	dd	dd	dd	39	dd	dd	dd
Mexico	2	dd	11	dd	2	dd	13	dd

Notes: “dd” indicates that not enough or sufficiently distributed data were available for the country/territory, thus preventing reliable analysis of the trends. The number of Tigers is expressed in decimals given the calculation methodology detailed in the Methodology section. Aggregated numbers in the narrative are always rounded to the upper unit. Note also that Taiwan Province of China and Mexico are a subset of the Outside TRCs, but highlighted here separately due to the higher number of seizures that implicated them, compared to others.

⁹ Here and throughout the report, countries and territories with separate jurisdiction are accounted for separately, particularly in the context of the Tiger’s current range

Impact of the Illegal Trade

Based on the number of seized Tigers reported, it was possible to estimate the impact of such illegal trade since 2016, against the reported wild Tiger population in TRCs. This analysis found that a conservative estimate of 5.5% of the reported wild Tiger population in 2016 was captured for trafficking. This is based on an estimated minimum 216 Tigers seized from illegal trade between 2016 and 2018 in 152 seizure incidents. This estimation also excluded the number of Tigers seized having come from known or suspected captive sources, determined on the basis of the available descriptions of seizures at the time of writing.

This estimated loss is based on the following assumptions:

- a) The 2016 Tiger population baseline as officially reported by each TRC is accurate;
- b) Seizures recorded by TRAFFIC, and used in this analysis according to the described methodology (see page 10) is an accurate representation of this problem;
- c) Seizures that excluded the reported or suspected captive Tigers between 2016–2018 were indeed related to Tigers captured from the wild in the same period;
- d) Reporting of the captive Tigers confiscated was accurate and available in the respective circumstances.

Given the knowledge limitations regarding the poaching and trafficking taking place at country level, and based on the above assumptions, loss here is not taken to mean a direct decrease. In considering whether or not this estimate might be indicative of a population decrease, the following considerations are necessary:

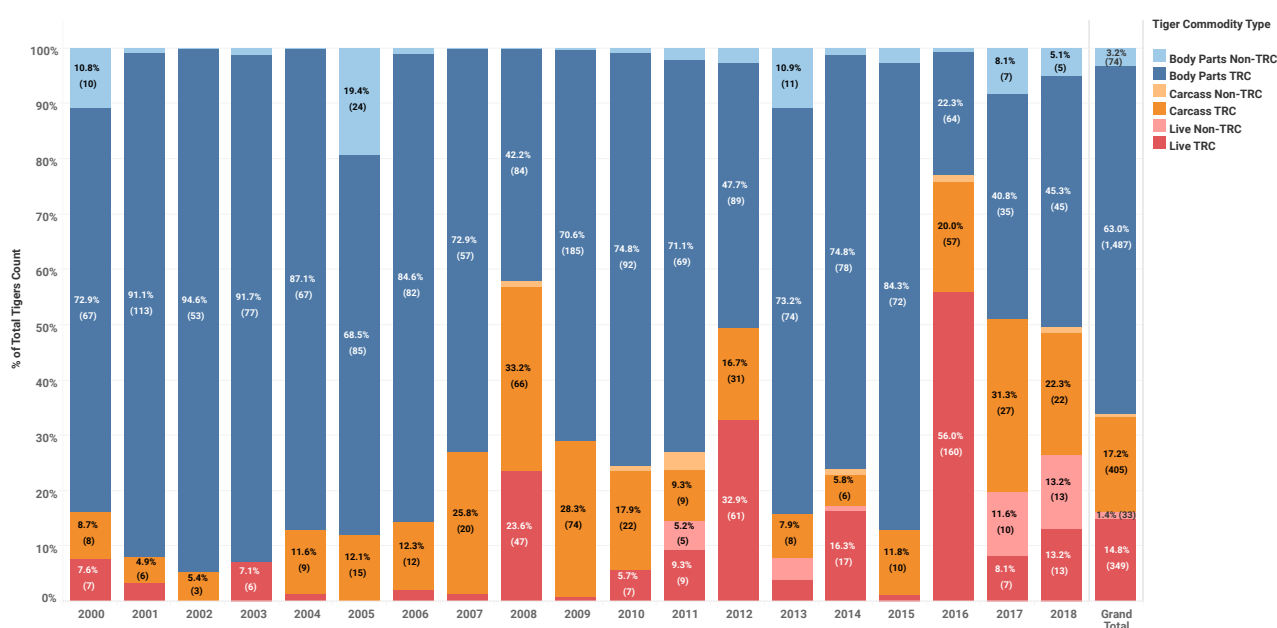
- a) Seizures are only a fraction of the true scale of illegal trade; meaning far more has likely gone unnoticed or unreported and that the true number of Tigers poached and trafficked are higher than currently reported
- b) Wildlife populations are not static and can increase over time when there are favourable conditions;
- b) Productivity of the breeding population is linked to both the number of Tigers and their prey: a reduced availability of prey may result in a reduction of Tigers, and vice versa;
- c) Wildlife populations of trafficked species like Tigers are subject to decline also for reasons other than wildlife trade, including but not limited to natural death, human-wildlife conflict, habitat encroachment, accidents, etc. This analysis therefore only takes into consideration seizure incidents, and explicitly excludes from all calculations Tigers poisoned, poached or otherwise killed that did not result in a documented law enforcement seizure;
- d) TRAFFIC has no knowledge on when a Tiger may have been killed (i.e in the year of the reported seizure, or previously)
- e) The official Tiger population were calculated by respective governments and partners. Declines may have taken place since the 2016 population estimates (e.g. Malaysia has since noted that its Tiger population has declined to less than 200 individuals since 2016);

Commodities

Commodity Types and Trends

From 2000 to 2018, a total of 382 live and 416 whole Tiger carcasses were seized (Figure 6). The bulk of the seizures involved Tiger body parts (66.2%, inclusive of skin, bones, claws, teeth, etc.), which were derived from approximately 1,561 Tiger individuals. However, while seizures in the earlier periods focused largely on body parts, starting from 2016 the seizure of live Tigers and carcasses accounted for close to half of all the Tigers trafficked annually. As noted earlier, the peak in 2016 is largely attributed to the single large seizure of 187 Tigers held captive in a temple in Thailand (Tanakasempipat, 2016). Nonetheless, subsequent years confirmed a greater volume of full specimens, accounting for 51.0% of the animals in 2017 and 49.7% in 2018. As expected, TRCs accounted for the vast majority of seizures of live Tigers, carcasses and body parts throughout the 19-year timeframe. However, in 2017 Outside TRCs surpassed TRCs in the number of live Tigers seized (11.6% vs 8.1%), reaching an all-time high of 13 Tigers (13.2%) in 2018.

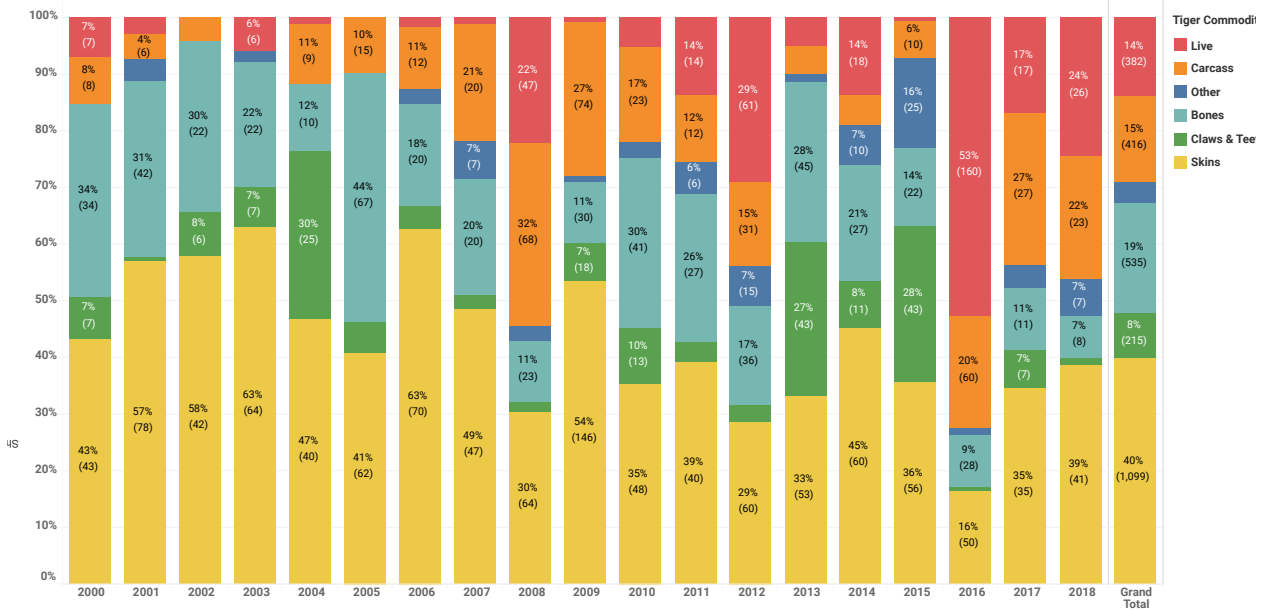
Figure 6: Proportion and number of live Tigers, carcass and body parts seized from 2000–2018



To illustrate the equivalent number of Tigers each type of commodity may have come from, further analysis was performed on the commodity type level of detail. Due to the nature of the Tiger trade, where one Tiger yields multiple commodity types that are often trafficked together, in Figure 7 the reader should exercise caution in not stacking together the equivalent number of Tigers across multiple commodity types (except for live and carcasses). For determining the total number of Tigers seized please refer to Figure 4.

Overall, skin and bones accounted for the highest proportion of Tiger commodities seized over the 19-year period, where a change in the prevalent composition of Tiger commodities trafficked was recorded over the years (Figure 7). When looking at overall trends, the proportion of skins seized hovered at around half until 2009 and then shrunk to a third in more recent years—2009 was the year when the largest number of Tigers were trafficked for their skins (146, or 54% of the total skins seized for the year). Similarly, the seizure in Tiger bones shrunk to one fourth to less than 15% of the total share starting from 2015. On the contrary, the aggregate share of carcasses and live Tigers substantially increased in recent years as already detailed in the previous paragraph.

Figure 7: Proportion and number of Tigers trafficked across different commodities.



Note: the number of Tigers involved should not be stacked together as a single Tiger yields multiple commodities and for this reason may be represented multiple times across different commodities. Figures are included only to provide an indication of how many Tigers these commodities would have been derived from.

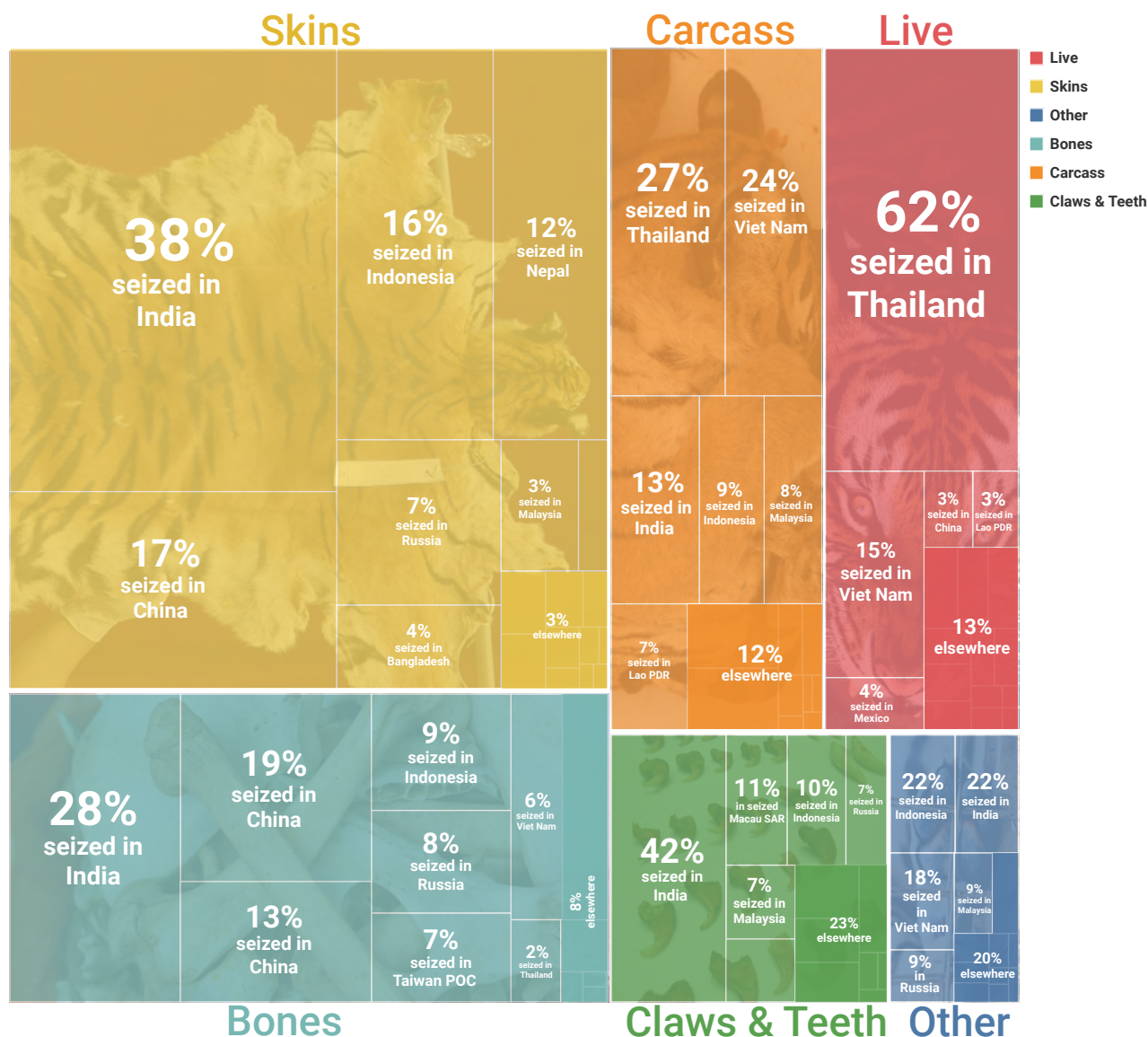
Country Prevalence

Overall, Tiger skins and bones were the top two seized commodities in India, Indonesia, Nepal, and China according to seizure records. As countries making the largest number of seizures, the seized commodity types were also commensurate with the overall seized commodities (Table 3; Figure 7). India in particular, accounted for 38% of the skins and 28% of the bones seized globally between 2000 and 2018 (Figure 8). Claws and teeth were most frequently captured in India, Macau SAR and Indonesia. Live Tigers and whole Tiger body parts were most prevalent in Thailand and Viet Nam, which together accounted for over half of the total.

An Indonesian official displays a tiger skin, bones and smoking pipes made of elephant ivory at a natural resources conservation agency (BKSDA) office in Bengkulu on January 24, 2018. Indonesian authorities on January 24 destroyed endangered tiger body parts from 2017 as part of their efforts to stop the illegal animal trade



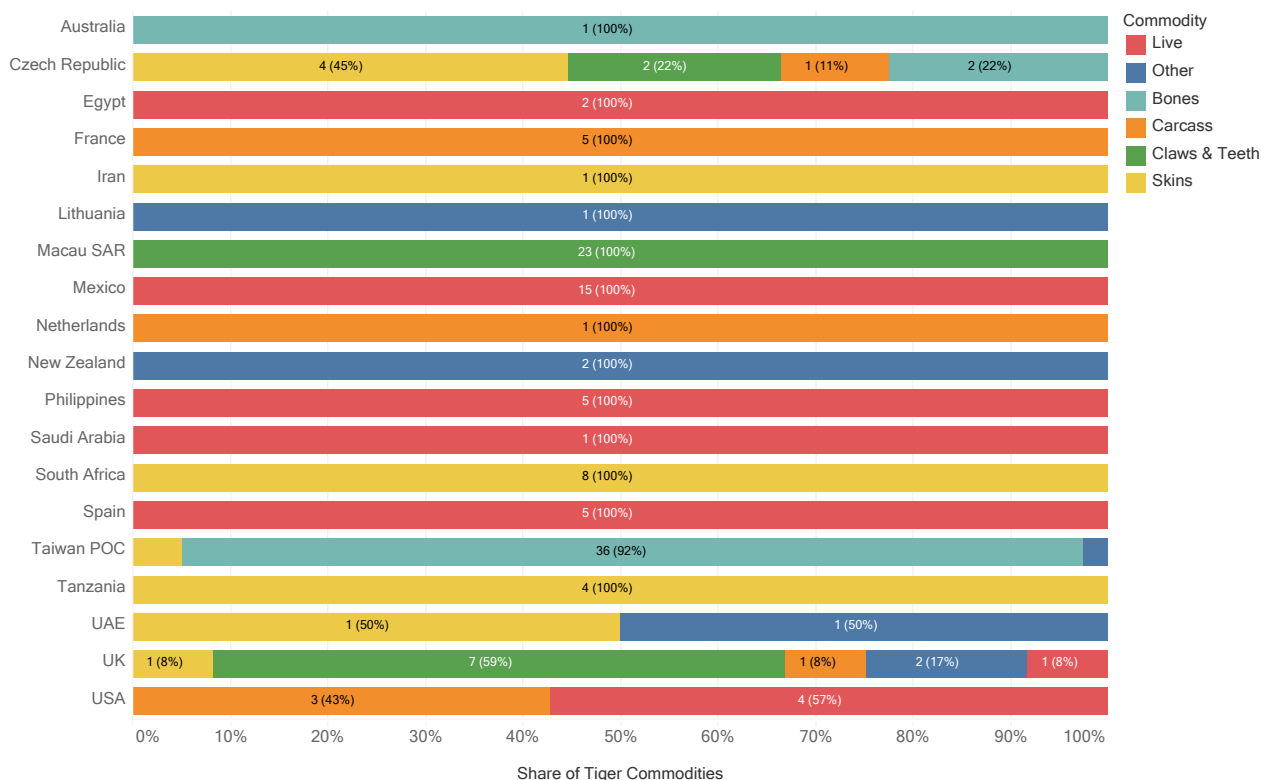
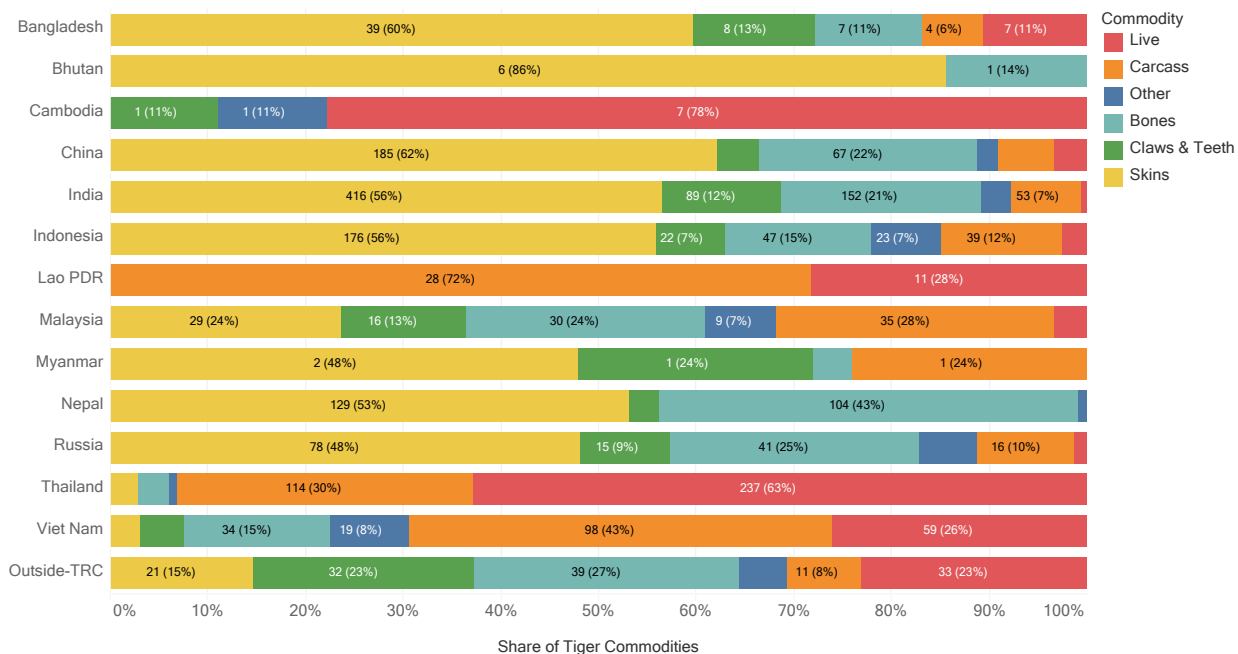
Figure 8: Proportion of the number of equivalent Tigers seized for each commodity type by country/territory from 2000–2018. Colours identify different commodity types, squares identify different countries/territories, the percentage expresses the country/territory share for each commodity expressed in number of equivalent Tigers.



Note: the number of Tigers involved shall not be stacked together as a single Tiger yields multiple commodities and for this reason may be represented multiple times across different commodities.

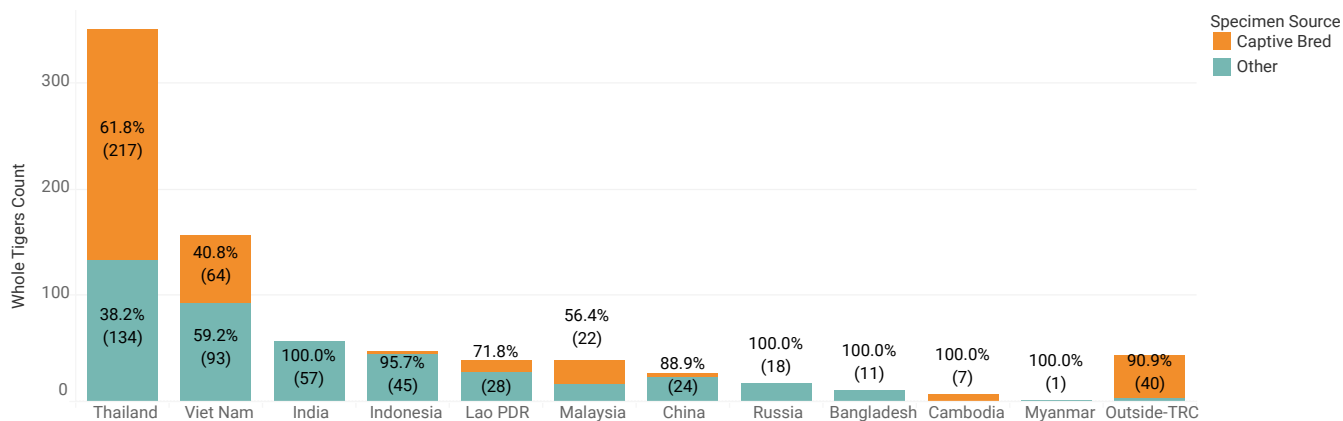
The findings above are confirmed when analysing the distribution of different Tiger-derived commodities within each country (Figure 9, top). Over half of the trade volume involved skins in 6 out of 13 TRCs, with Bhutan leading by share (86%) and India leading in absolute numbers (416). Live Tigers and carcasses represented the primary commodities seized in four TRCs, led by Thailand (93% from 351 Tigers), and Viet Nam (69% from 157 Tigers). Bones were most frequently seized in Nepal (44% from 104 Tigers) and also in Outside TRCs (27% from 39 Tigers). Data from Outside TRCs (Figure 9, bottom) were collected opportunistically, yet they show a prevalence of whole Tigers (live and carcasses) amounting to 31% of the commodities and 44 Tigers, mainly in Mexico, USA, Spain, Philippines and France, whereas skins (15% of the total in Outside TRCs equivalent to 21 Tigers) were mostly trafficked from Africa (South Africa, Tanzania).

Figure 9: Proportion of the different Tiger commodity types seized in TRCs (Top) and in Outside TRCs (Bottom) and the equivalent minimum number of Tigers involved between 2000–2018. Note: the number of Tigers involved should not be stacked together as a single Tiger yields multiple commodities and for this reason may be represented multiple times across different commodities. Outside of TRCs only countries/territories where two or more seizures were recorded are listed.



Over half (58%) of the Tigers seized in Thailand and 30% in Viet Nam were identified as originating from captive facilities, with the largest proportion coming from a single seizure of 187 Tigers in Thailand in 2016 (Figure 10). When considering all seized whole carcasses and live Tigers as captive bred, this percentage rises to 61.8% for Thailand and 40.8% for Viet Nam. Malaysia also reported a number of seizures involving Tigers of captive origin, amounting to 56.4% of the country's total carcass and live-individuals seized.

Figure 10: Number and share of whole carcasses and live Tigers seized from captive or other origin. Note: This estimate refers to the period 2000–2018 for consistency with the other analyses in this report.



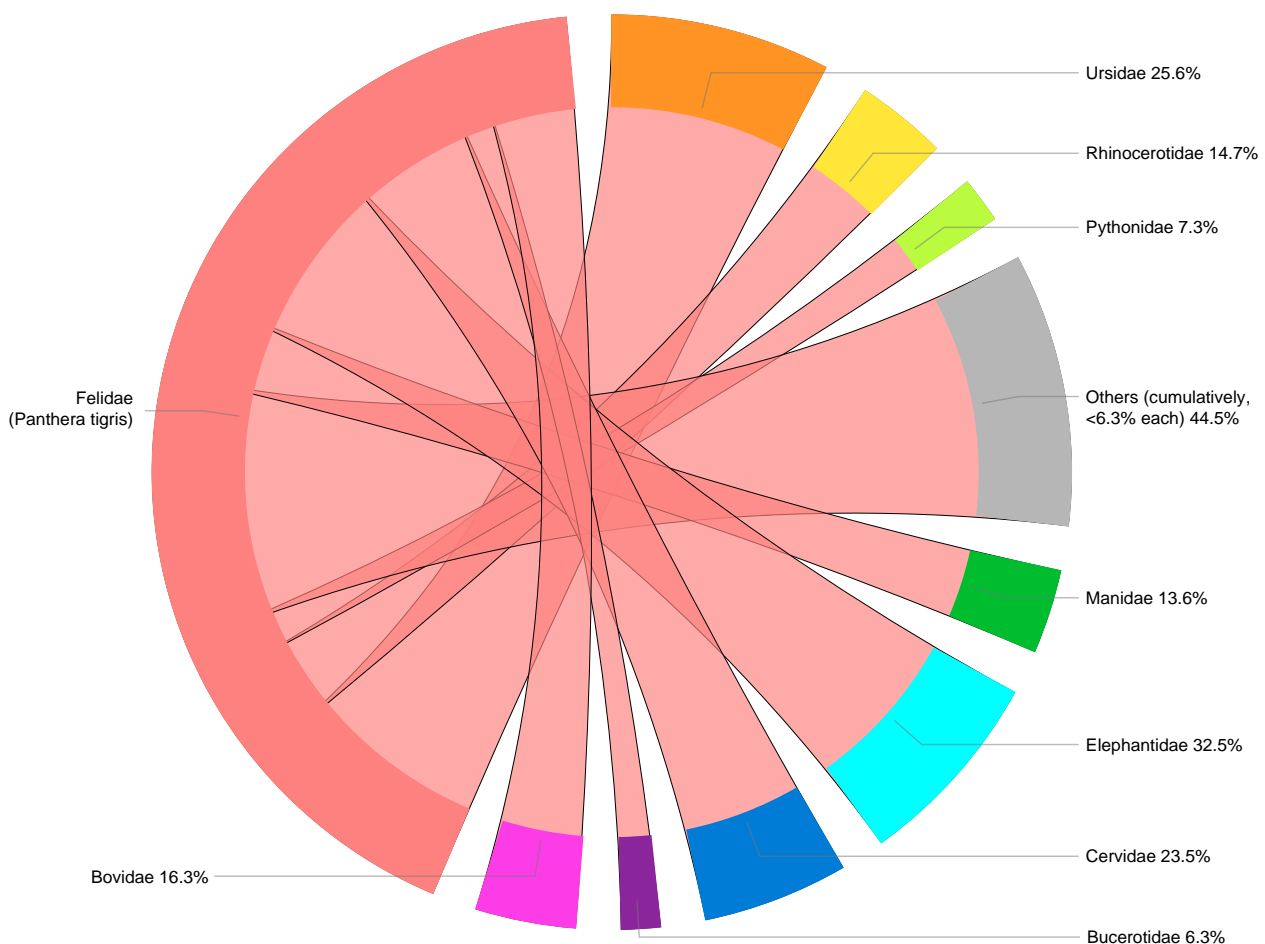
Thai DNP officers carry a sedated tiger out of its cage at the Wat Pha Luang Ta Bua Tiger Temple on June 1, 2016 in Kanchanaburi province, Thailand. Wildlife authorities in Thailand raided a Buddhist temple in Kanchanaburi province where over a hundred tigers were kept, following accusations the monks were illegally breeding and trafficking endangered animals. Forty of the tigers were rescued by Tuesday from the country's infamous 'Tiger Temple' despite opposition from the temple authorities.



Species Correlations

Wildlife trafficking often involves different species at one time. When looking at other species associated with these seizures, it was possible to characterise further the profile of species being targeted by poachers and traders. Tigers were seized along with other species in at least 230 incidents over the reported period. Bear claws and teeth were the most frequently (35.6% of the cases) associated with Tiger seizures (Figure 11). Given the similarity in the look and use, these are sometimes used as substitutes for Tiger claws and teeth ornaments. It is a combination that is also commonly found in selected open markets in Asia (Shepherd and Nijman, 2008; Nijman and Indenbaum, 2017). Elephant ivory also featured fairly prominently (32.5%) in association with Tiger seizures, in most cases involving ivory ornaments. Deer horns (23.5%), rhino horns (14.7%) and buffalo horns (16.3%) were found trafficked along with Tiger products but in a smaller percentage.

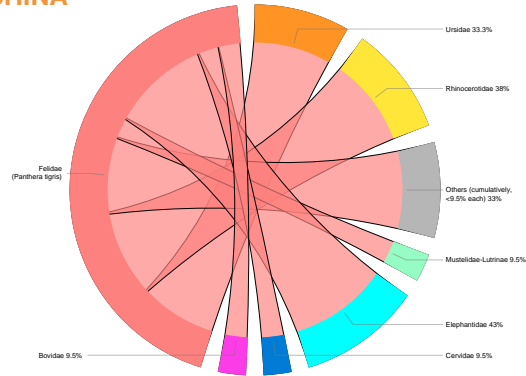
Figure 11: Proportion of the most popular species families seized in association with Tigers. Percentages refer to the proportion of seizures featuring both Tigers and the single other species. "Others" refers to species individually discovered in less than 5% of the seizures. Cumulative percentages exceed 100% as these trafficking incidents involved more than two species at one time (i.e. Tigers + different taxons).



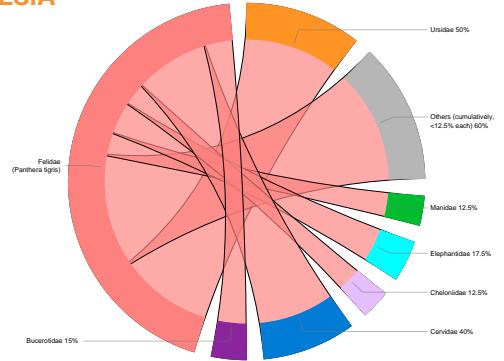
Analysing most frequent species associations in trafficking at the country-level sheds more light on the different types of combined taxa in trade. Data show particular affinities in China, Malaysia and Thailand between Tiger products and elephant ivory with a frequency ranging between 43% and 50% of the seizures involving multiple species (Figure 12). Rhino horn appeared to be more frequently trafficked along with Tiger products in China (38%) and Viet Nam (26%), especially from 2008 onwards. It should be noted however, that limitations in the data availability and comprehensiveness might have influenced these findings.

Figure 12: Proportion of seizure incidents featuring combinations of Tiger and most frequent other species in selected countries where enough data were available. "Others" refers to species individually discovered in a percentage of seizures inferior to the minimum figure reported in each chart. Cumulative percentages exceed 100 because of trafficking incidents involving more than two species at one time (i.e. Tigers + different taxons).

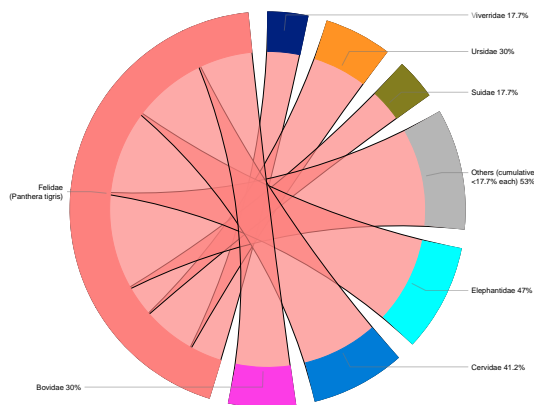
CHINA



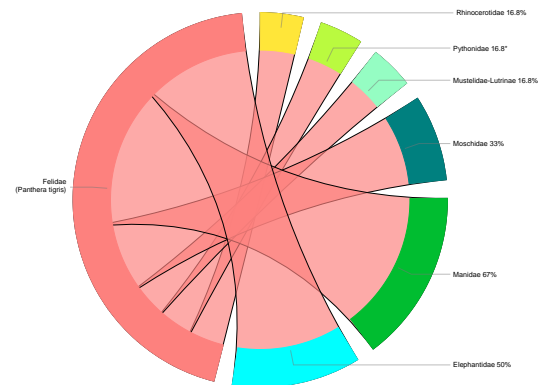
INDONESIA



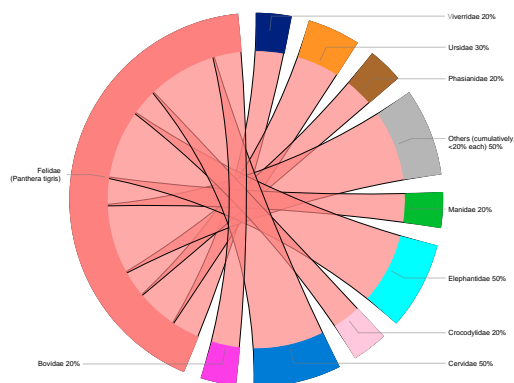
MALAYSIA



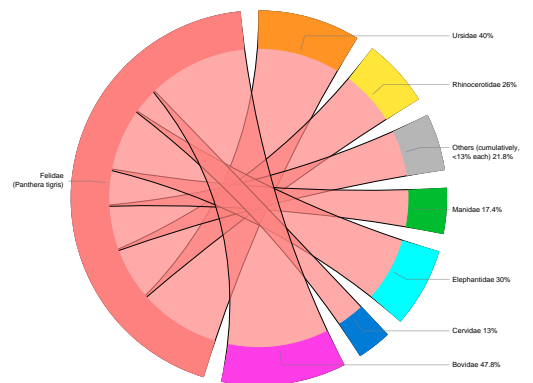
NEPAL



THAILAND



VIET NAM

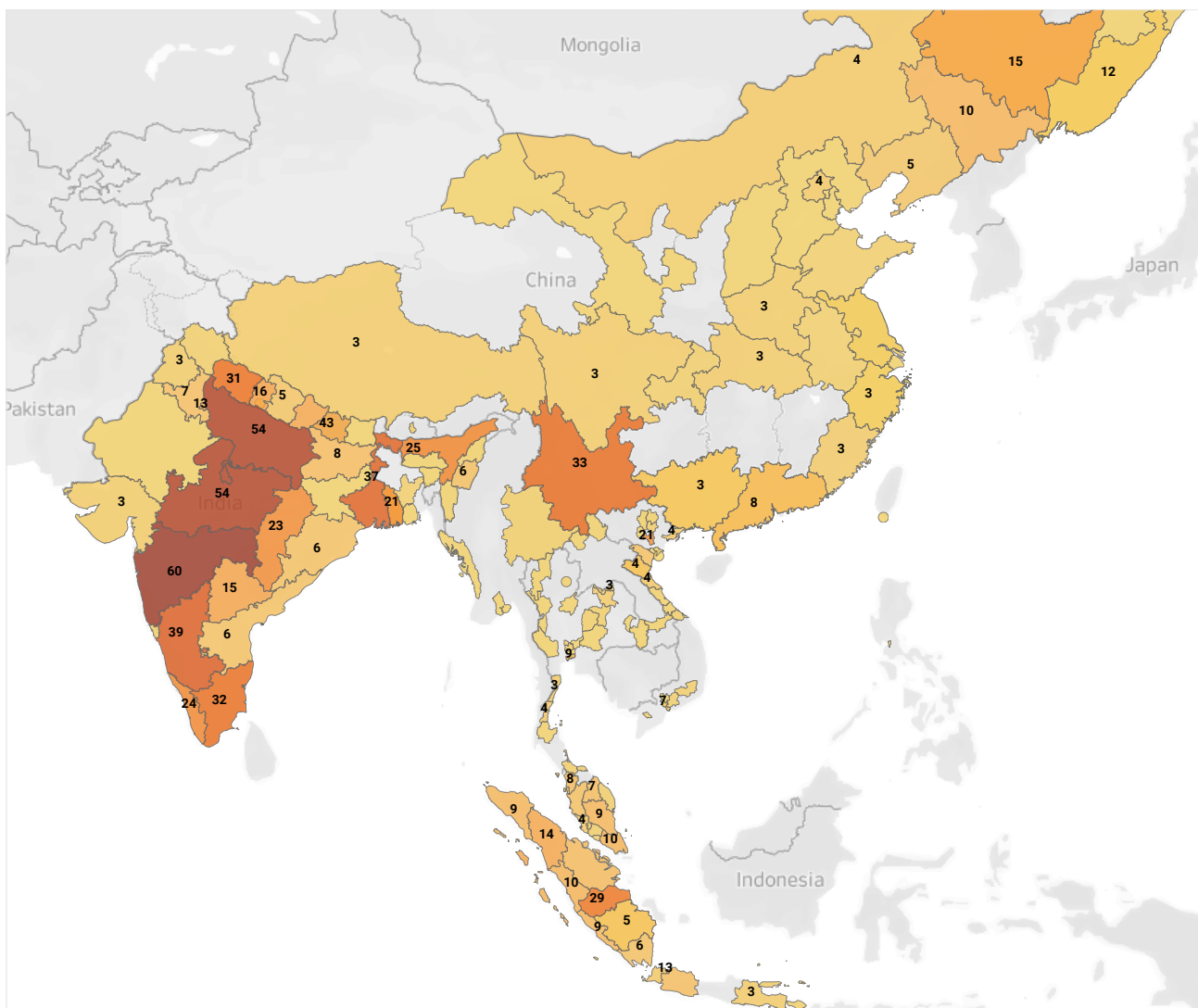


Locations hotspots and routes

Hotspots by seizure incidents

India recorded the largest overall number of seizures (463), headed at the state/province level by Maharashtra (13.0%), followed by Madhya Pradesh and Uttar Pradesh (both 11.8%) (Map 3). The second largest country by number of seizures was China (126), with a higher prevalence of seizures in Yunnan (26%) and Heilongjiang (12%), both provinces close to extant Tiger habitats. The largest proportion of Indonesia's seizures took place in Jambi Province (24.4% of the country total).

Map 3: Number of seizures in Asia. Note: Where no number is specified, the province has recorded between 1 and 2 seizures.



Hotspots by Tigers seized

Looking at the number of Tiger individuals involved in the trafficking highlights a partially different geography, offering a more thorough understanding of the phenomenon. In the top 20 provinces/states with the highest number of Tigers seized, India unsurprisingly featured the most (seven times)—being the country with the highest number of seizures and with the largest wild Tiger population—with Uttar Pradesh the most heavily affected state (133 Tigers seized across 54 seizures) (Table 6). Thailand is featured twice in the top five, with Kanchanaburi Province (the location of the Tiger Temple raided in 2016 with 187 Tigers seized) and Khon Kaen Province recording 99 Tigers, although both were the result of only three seizure incidents altogether.

Outside of India, the central business areas such as Province Number 3 in Nepal (103 Tigers, 43 seizures), Jakarta Capital Region (85 Tigers, 13 seizures), and Bangkok (80 Tigers, 9 seizures) saw the strongest concentration of seized Tigers. Most likely stemming from transnational wildlife trafficking are incidents recorded in Yunnan Province (78 Tigers, 33 seizures), Hanoi (76 Tigers, 21 seizures), and Tibet Autonomous Region (44 Tigers, 3 seizures), which have known nearby Tiger populations, but none within the province or in proximity within the country.

Table 6: Top 20 locations where the highest number of equivalent Tigers were seized between 2000–2018.

Country	Province/state	No of seizure incidents	% of seizure incidents	Min. No. of Tigers seized	% of Tigers seized
Thailand	Kanchanaburi	1	0.1%	187.0	7.1%
India	Uttar Pradesh	54	4.7%	133.1	5.0%
Nepal	Province No. 3	43	3.8%	102.6	3.9%
Thailand	Khon Kaen	2	0.2%	99.0	3.8%
Indonesia	Jakarta Capital Region	13	1.1%	84.8	3.2%
Thailand	Bangkok	9	0.8%	80.0	3.0%
China	Yunnan	33	2.9%	77.7	2.9%
Viet Nam	Ha Noi	21	1.8%	75.6	2.9%
India	Madhya Pradesh	54	4.7%	70.9	2.7%
India	Maharashtra	60	5.3%	64.2	2.4%
India	Uttarakhand	31	2.7%	51.2	1.9%
Russia	Primorsky Krai	12	1.1%	46.8	1.8%
China	Tibet	3	0.3%	44.0	1.7%
Viet Nam	Binh Duong	1	0.1%	42.0	1.6%
India	Karnataka	39	3.4%	41.7	1.6%
India	West Bengal	37	3.3%	41.1	1.6%
Nepal	Province No. 7	16	1.4%	39.1	1.5%
Malaysia	Kedah	8	0.7%	39.0	1.5%
Indonesia	Jambi Province	29	2.6%	36.2	1.4%
India	Tamil Nadu	32	2.8%	33.5	1.3%

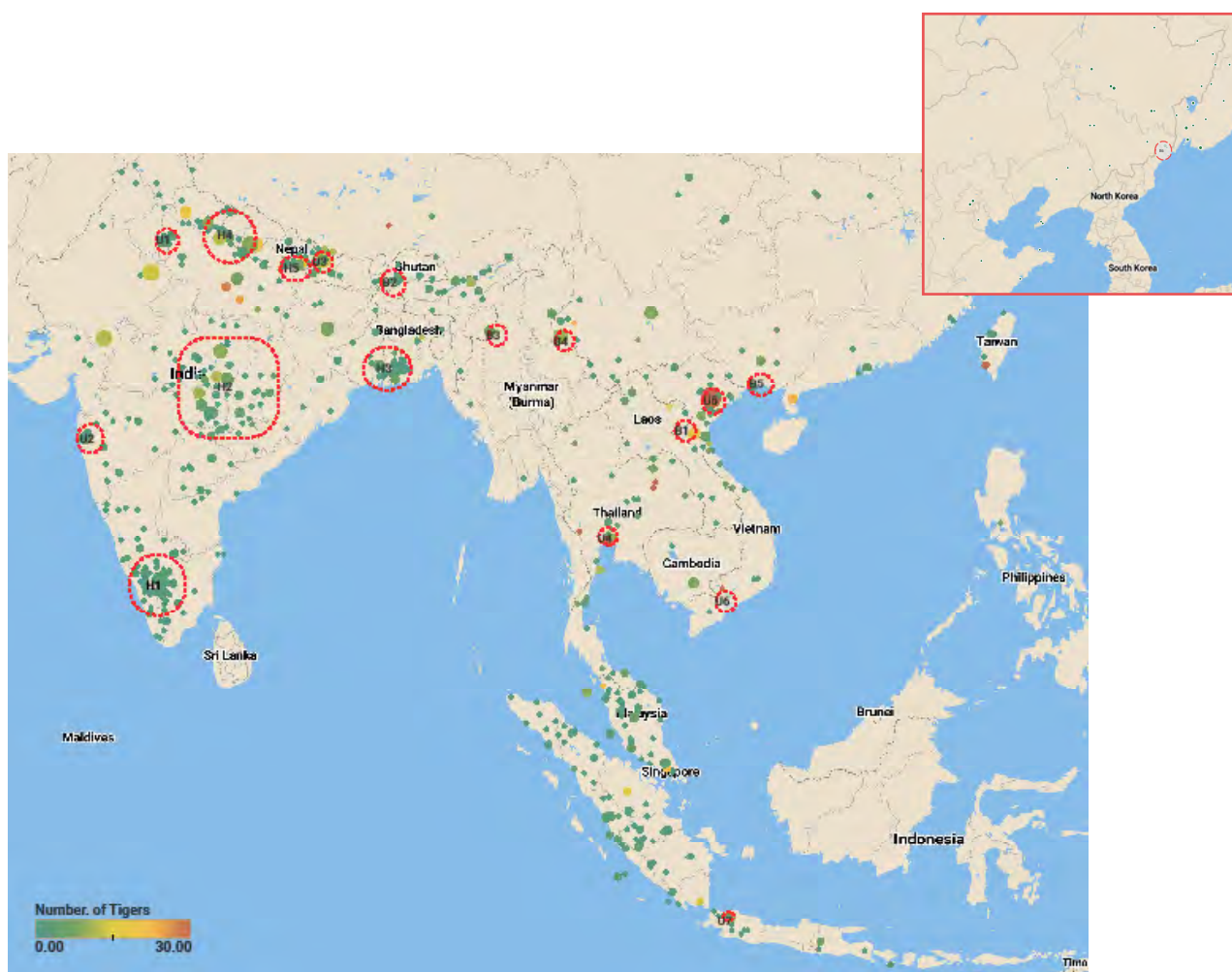
Note: geographical, social and economic characteristics may differ considerably across districts, therefore direct comparison is not advisable.

Seizure data also allowed the identification of a number of high-density location clusters. These largely involved India and Bangladesh, with five hot areas in proximity to Tiger habitats (Map 4). Meanwhile, eight hotspots¹⁰ in India, Indonesia, Nepal, Thailand, and Viet Nam showed proximity to urban areas.

In proximity to Tiger habitats:

- H1: Nagarhole, Bandipur, Silent Valley, Aanaimalai Tiger Reserve (India)
- H2: Kanha Tiger Reserve, Bhandar, Dongargarh-Dhaara, Malwenda forest complex, eastward of Chhattisgarh state (India)
- H3: Sundarban Park (India) and Sundarban Forest (Bangladesh)
- H4: Pilibhit Tiger Reserve, Uttar Pradesh (India)
- H5: Chitwan Park (Nepal) and Valmiki Tiger Reserve, Bihar state (India)

Map 4: Locations of Tiger trafficking hotspots across the Indian subcontinent and Southeast Asia. Size is proportional to the number of incidents ranging from 1 to 26 seizures, colour is proportional to the total number of Tigers seized in the location ranging from dark green = 1 to dark red >30.



¹⁰ No mention of the number of incidents and number of Tigers is provided because no precise methodology for counting these values in relation to hotspots and hot areas was available at the time of writing.

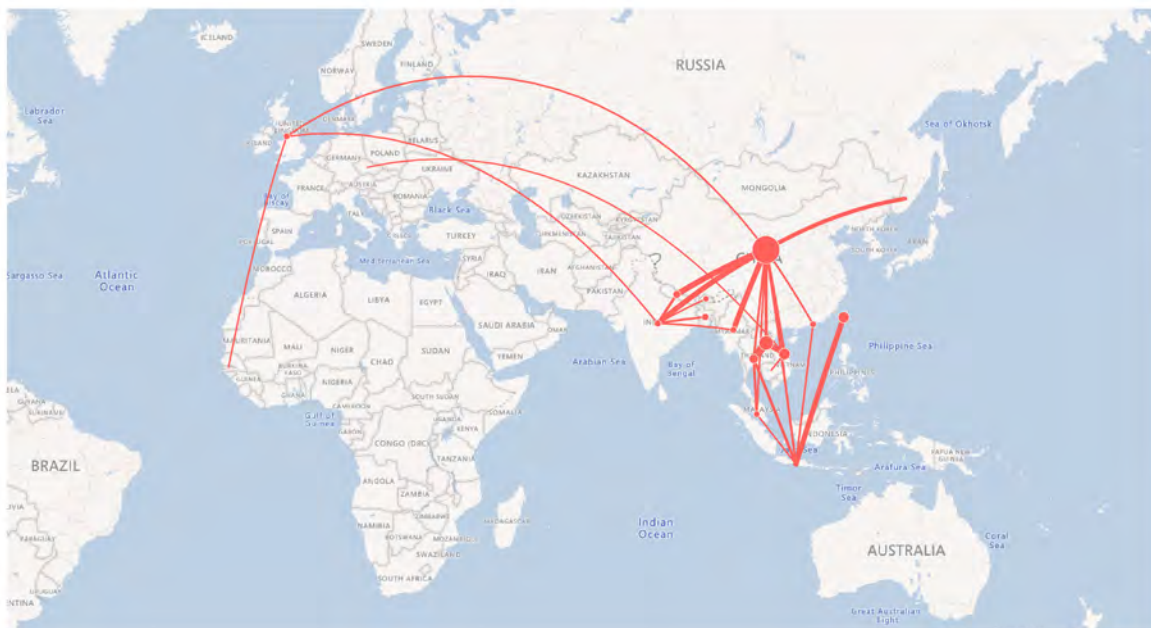
In proximity to dense urban areas:

- H3: Kolkata (India)
- U1: New Delhi (India)
- U2: Mumbai (India)
- U3: Kathmandu (Nepal)
- U4: Greater Bangkok (Thailand)
- U5: Ha Noi (Viet Nam)
- U6: Ho Chi Minh City (Viet Nam)
- U7: Jakarta Capital Region (Indonesia)

When analysing Tiger trafficking routes, a number of challenges were met in relation to the size and reliability of the dataset. For example, confidence on the preceding and following route legs may vary considerably for each seizure event, and be influenced by factors such as evidence quality, reliability of testimonies, and even a politically motivated reporting of the seizing country cannot be excluded. While utmost diligence was exercised in ensuring only accurate data were reported, the reader is advised to consider the following information as preliminary findings based on the limited information available at the time of writing: 157 route legs involving the trafficking of 453 Tigers seized across 231 incidents.

Cross-border smuggling of Tigers is predominant throughout Asia, with trade only occasionally documented between Asia and Europe or Africa. None of the seizures involving the Americas or the Middle East explicitly reported international trafficking originating from TRCs, though there was smuggling between the US and Mexico. Looking at the direction of the trade, this was inbound to Europe, outbound from Africa (possibly in relation to local Tiger farms), and with more complex patterns in East and Southeast Asia, with China and its territories, Viet Nam and Lao PDR being noted in a number of these routes. In this regard, it should be noted that a country destination of a trade route is not necessarily the final destination of said trade, and may well represent an intermediate ring of the trade chain. Because the dataset spans a considerable timeframe, bi-directional trade relationships were also identified, for example between India and Bangladesh.

Map 5: Most common Tiger trafficking routes, based on 157 seizure incidents where this information was available. Destinations are indicated by a circle, whose diameter is proportional to the total number of Tigers seized on the route.



China's reported route involved Hong Kong SAR, India, Indonesia, Macau SAR, Myanmar, Nepal, Russia and Taiwan Province of China. Almost 90% of Viet Nam's reported route implicated a supply of Tigers from Lao PDR. Given that Lao PDR has no viable Tiger population at about 2 individuals, the most plausible source of these Tigers was from captive sources. Lao PDR also featured with an estimated 59 inbound Tigers, entirely originating from Thailand.

Hot Crossings

Limited to transboundary trafficking of Tigers on land, the following border crossings were identified as showing a noticeable concentration of seizure incidents. This may represent both frequent trade routes or gateways where law enforcement has been most effective in capturing trafficking events. Not enough information was readily available to investigate them further at the time of writing. Note: there is no reference to airports or seaports as the frequency of this information was very low and too little to be significant.

Geographical points referred below are reported on Map 4 on page 26 .

B1: Nghe An-Ha Tinh (Viet Nam) – Bolikhamxay (Lao PDR)

H4: Along Sarda river, India – Nepal

B2: Route 16 between Bhutan and India

B3: Route AH1 between Moreh (India) and Tamu (Myanmar)

B4: Muse (Myanmar) – Ruili (China)

B5: Mongcai (Viet Nam) – Dongxing (China)

B6: Hunchun (China) – Primorsky Krai (Russian Federation)

In this photo taken on July 23, 2019 seven tiger carcasses seized by police are pictured in Hanoi. A haul of frozen tiger carcasses found in a Hanoi parking lot has led to arrest of a key wildlife trafficking suspect, Vietnamese state media said July 26, as the country tries to tackle a well-worn smuggling route from Laos.



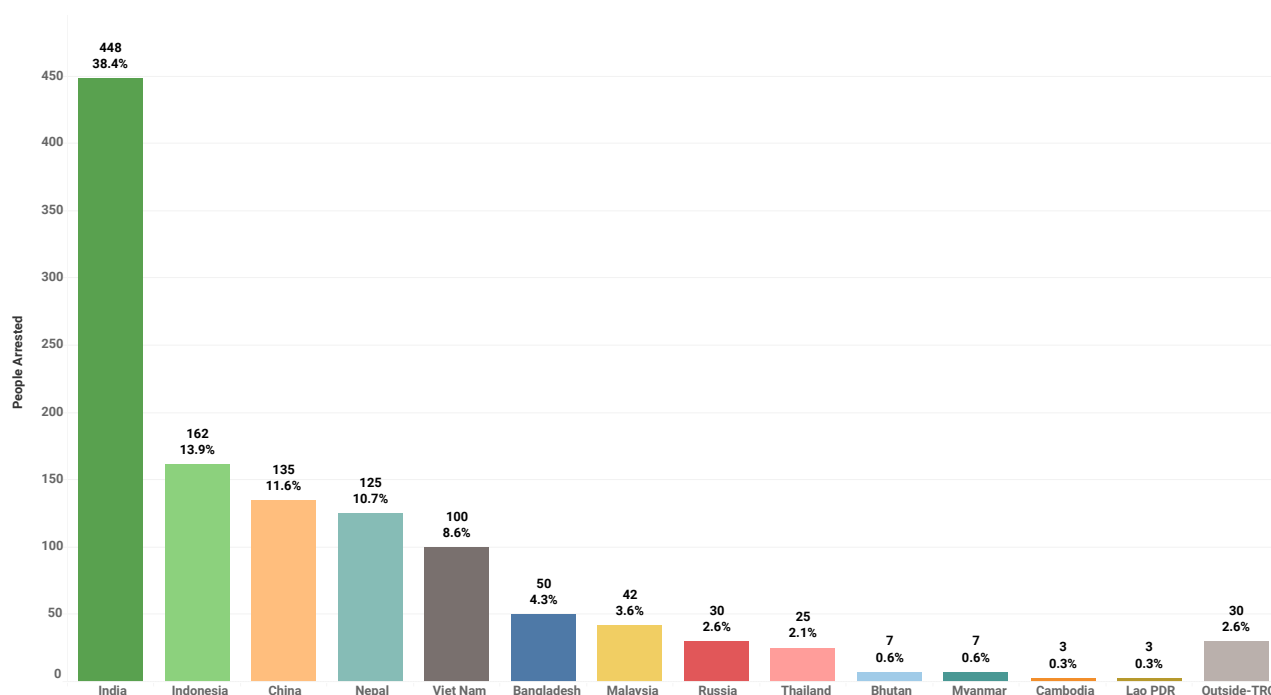
Outcomes

In 65.5% of seizure records, outcomes from Tiger seizures were reported, which included arrests, prosecution and convictions. Conviction information was not comprehensive, and available in only 15% of these cases over (or just under) 10% of all seizures during the 19-year period. While incomplete information prevents TRAFFIC from presenting a thorough picture of the law enforcement effectiveness or the national judicial processes, this analysis provides some insights into the penalties imposed for Tiger crimes.

Arrests

At least 1,167 people were arrested in relation to 591 cases (51.7% of the total) across 32 countries between 2000 and 2018. The largest share, over 38.4% of cases involving arrests, took place in India, commensurate to the high number of cases recorded there (Figure 13). This was followed by Indonesia (13.9%) and China (11.6%). Thirty people were arrested outside of the TRCs representing 2.6% of the total. In reading this chart it should be noted that India, China and Indonesia host a combined 2.9 billion people and 65.8% of the wild Tiger population as of 2016. This chart takes into account only the jurisdiction in which the arrest was made—not the nationality of the criminal—in consideration that domestic laws apply equally to nationals and foreigners.

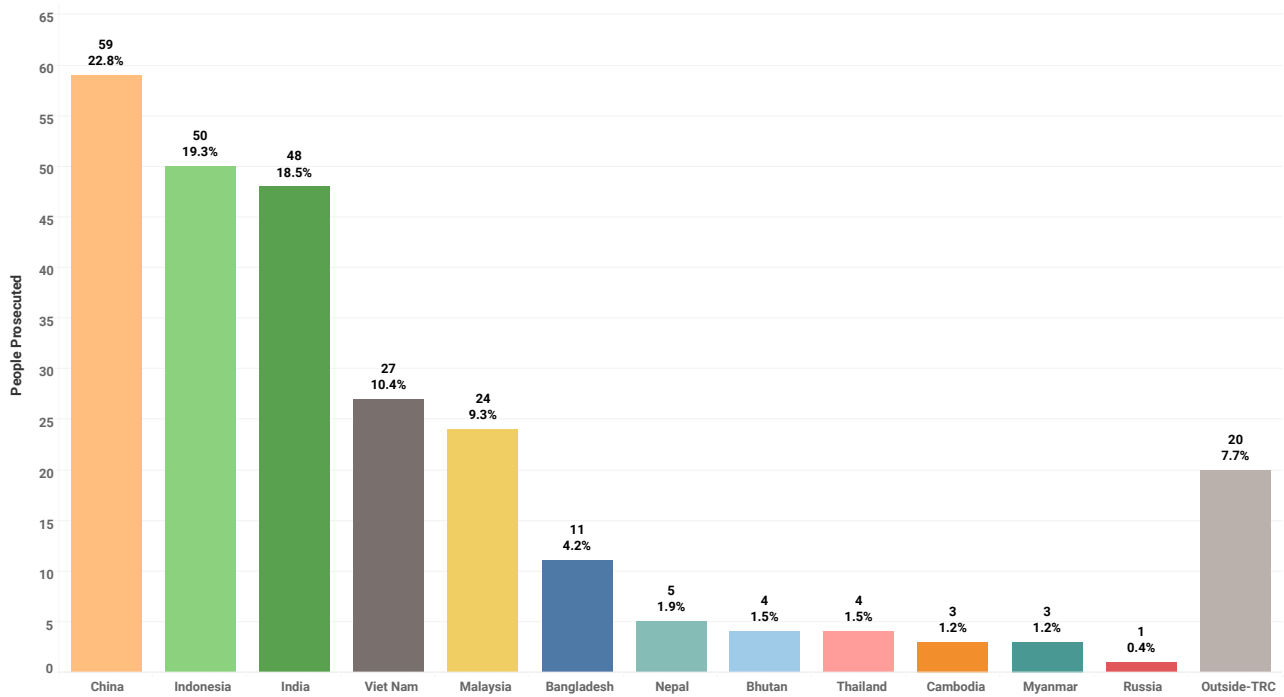
Figure 13: Number of people arrested for Tiger trafficking and proportion by country, from 2000–2018



Prosecution and conviction

Of the 1,167 people arrested, at least 259 were prosecuted (22.2%), largely in China, Indonesia and India for being implicated in the trafficking of Tigers (Figure 14). China prosecuted the most criminals (59), followed by Indonesia (50) and India (48). Between 2000 and 2018 Outside TRCs prosecuted around one person each year. It is important to keep in mind however that for many of the cases TRAFFIC has no detailed information on whether arrests led to prosecution or not. It should also be noted that when outcomes from prosecution were reported, it was not always a combination of imprisonment and fine. This included either one of the two penalty options, or sometimes both. For this reason, the outcomes for imprisonment and fines are analysed separately.

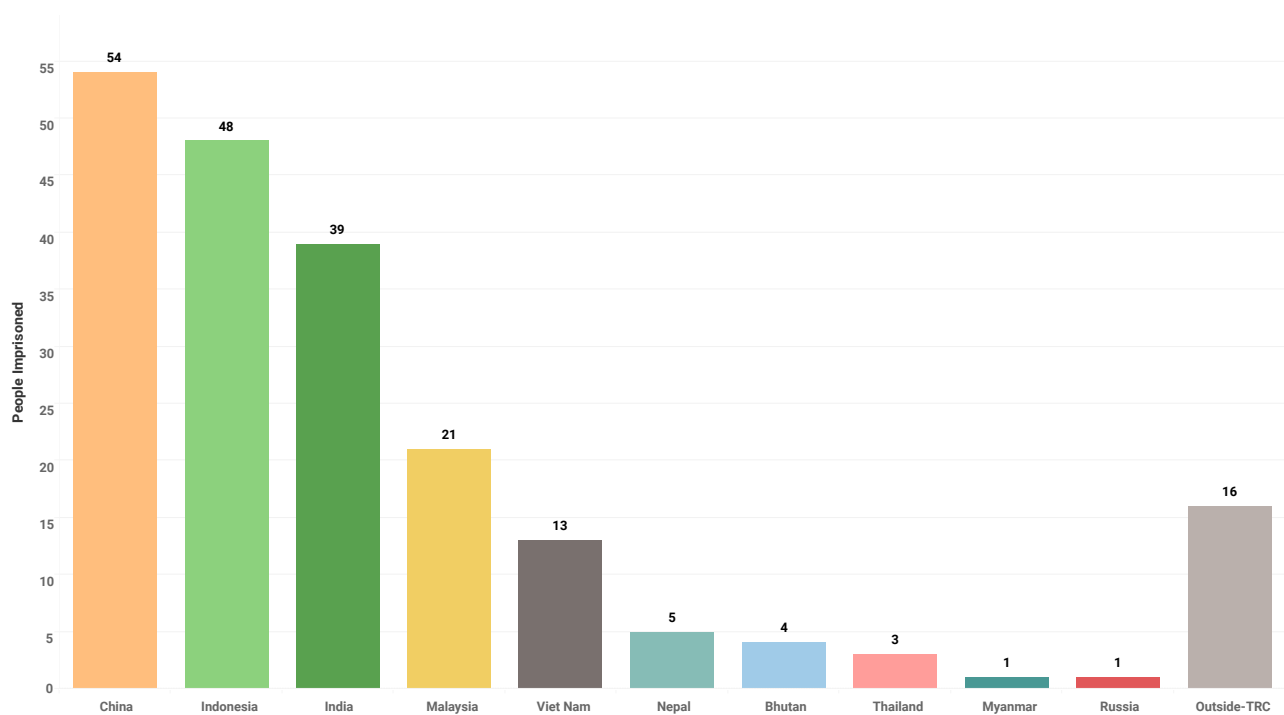
Figure 14: Number of people prosecuted by country.



Penalties – Imprisonment

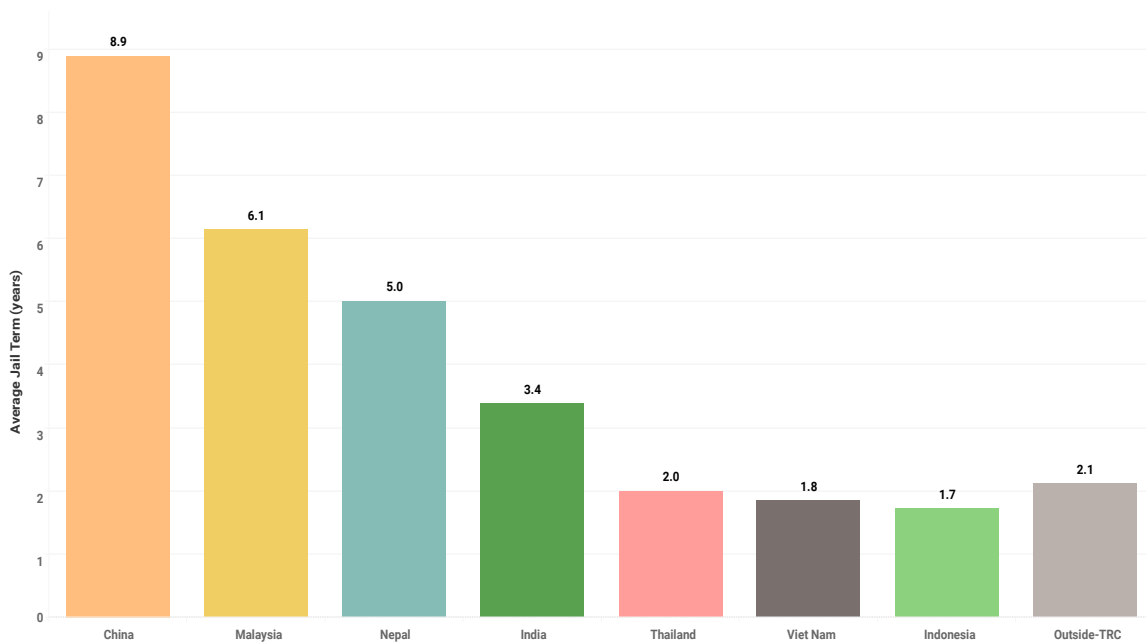
TRAFFIC was able to access reports identifying 203 people (17.4% of those arrested) sentenced to serve jail time. China recorded the largest number of people imprisoned (54), closely followed by Indonesia (48) and India (39) (Figure 15).

Figure 15: Number of people imprisoned by country.



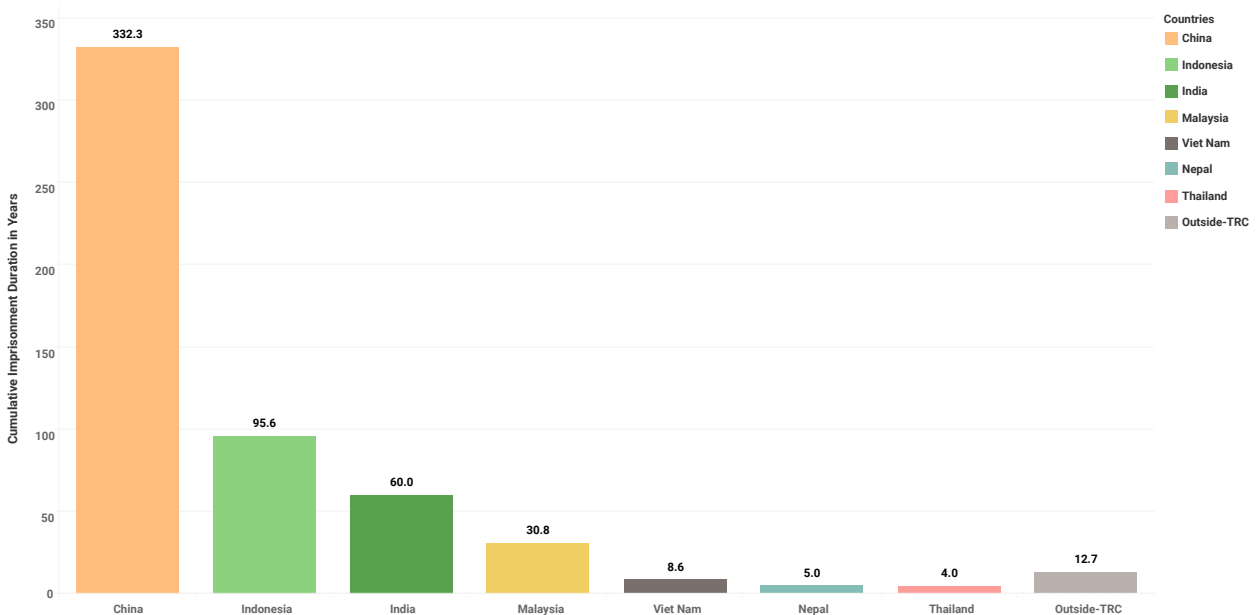
Of the 203 cases that resulted in successful conviction, the average jail term served was 3.9 years. China, as the top country by number of convictions also imposed the longest jail terms averaging 8.9 years (Figure 16). When China imposed lifetime sentences, these have been calculated as lasting at least 13 years for the purpose of this analysis. On the contrary, despite being in the top three countries by number of convictions, India and Indonesia imposed relatively short sentences: with India ranking fourth with 3.4 years and Indonesia ranking seventh with 1.7 years of jail imposed per person on average.

Figure 16: Average duration of imprisonment per person and by country.



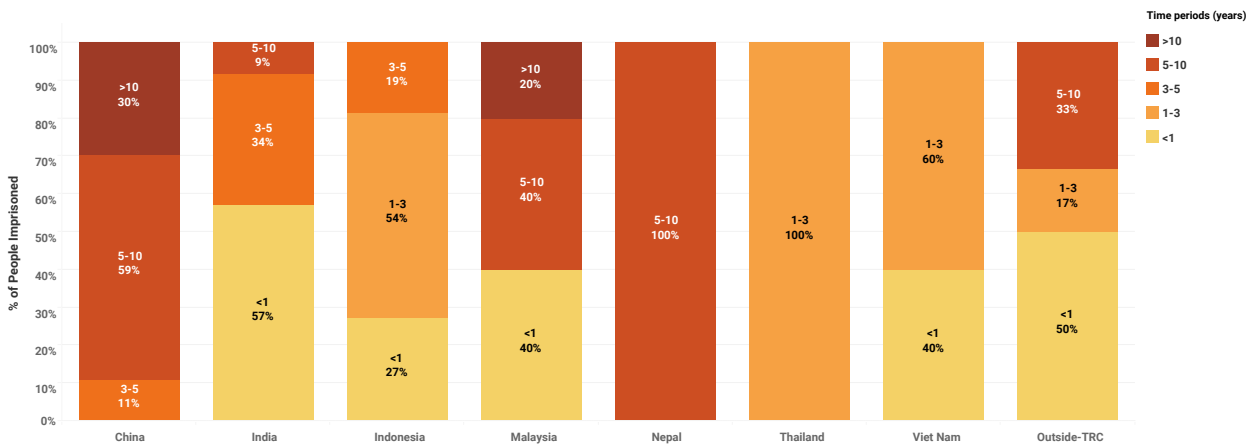
A different perspective on the penalties associated with Tiger-related wildlife crimes stemming from Tiger seizures is looking at the cumulative jail terms, which aggregate the sentence duration of all convicted Tiger-related wildlife criminals. Along with the higher average duration per country, China imposed the longest cumulative jail time with 332 years of jail—over 5.5 times longer than India (60 years), and over 38.6 times longer than Viet Nam (8.6 years) (Figure 17).

Figure 17: Cumulative years of imprisonment. This is an aggregation of the jail terms of all the people imprisoned for Tiger trafficking.



A review of the jail terms meted out based on the number of cases shows similar findings. Noteworthy is Nepal where Tiger-related wildlife crime appears to result in convictions with a certainty of a penalty of at least 5 years (Figure 18). Similarly, in China 89% of the sentences resulted in at least 5 years of imprisonment, with almost one in three (30%) imposing over 10 years in jail time. Conversely, Tiger-related wildlife crimes stemming from Tiger seizures resulted in short sentences of less than one year in over half (57%) of the cases in India and 40% in both Viet Nam and Malaysia. Outside TRCs also showed a marked leniency towards such crimes, with half of the convictions resulting in less than one year of jail time.

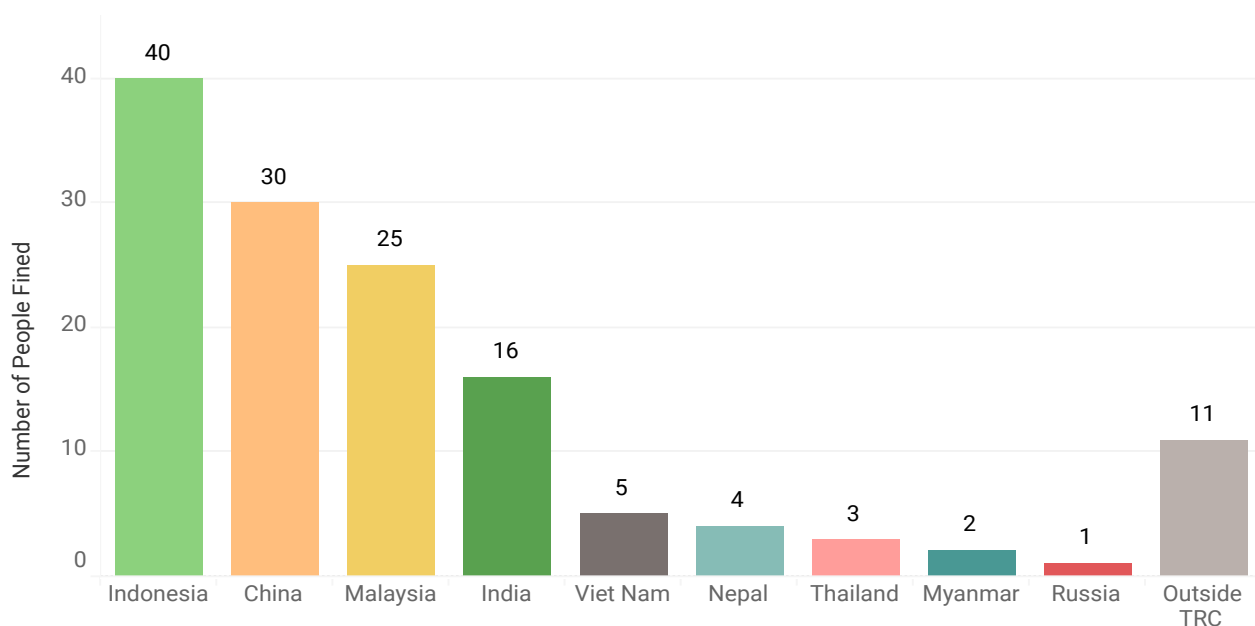
Figure 18: Jail term time periods across countries for convictions stemming from Tiger seizures. Percentages indicate the share of people receiving a sentence term within each time period.



Penalties – Fines

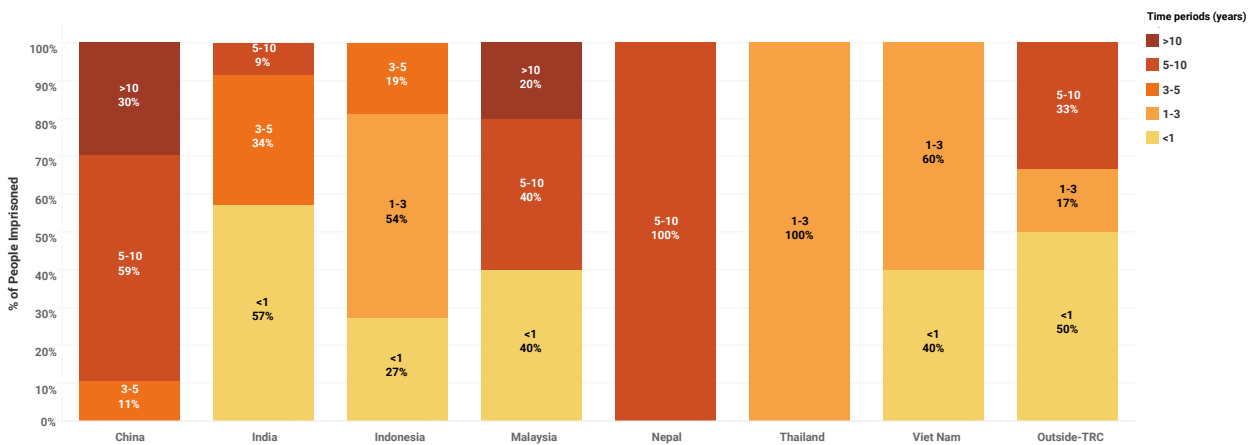
At least 137 people were fined, stemming from 78 seizures across 28 countries. In 83% of the cases the amount of the fine was reported, totaling USD765,300. Indonesia and China ranked top with 40 and 30 people fined respectively over the 19-year period (Figure 19).

Figure 19: Number of people fined stemming from Tiger seizures from 2000–2018.



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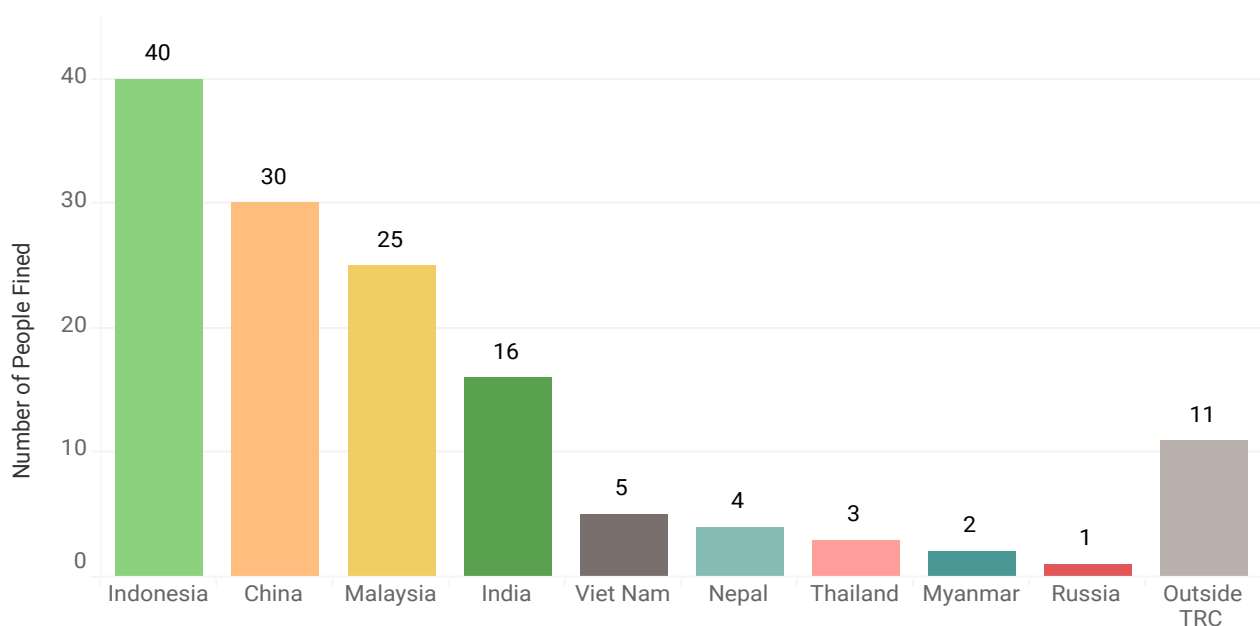


Figure 21: Average fines per person convicted; the number of people to which a fine was imposed in brackets.

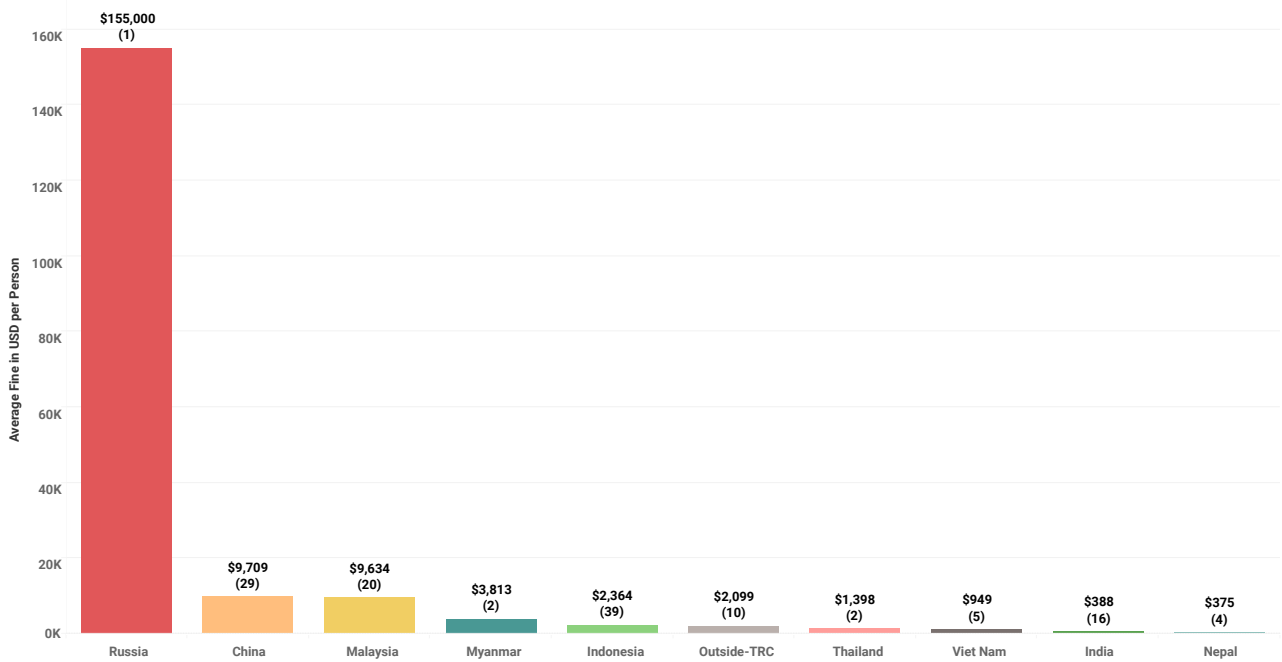
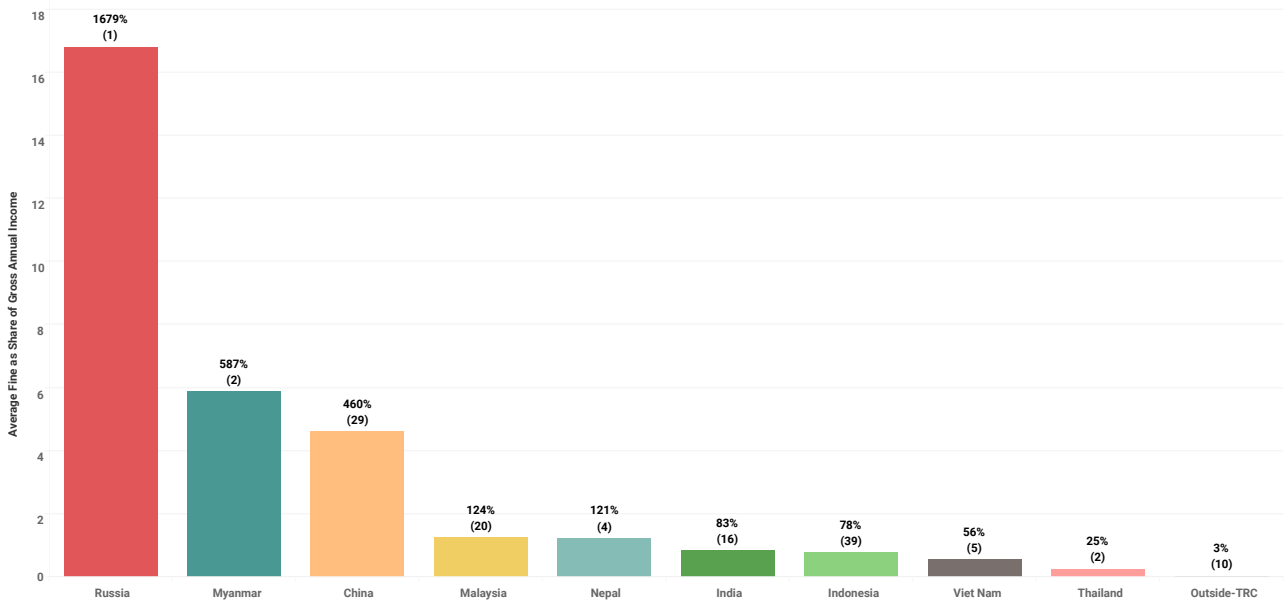


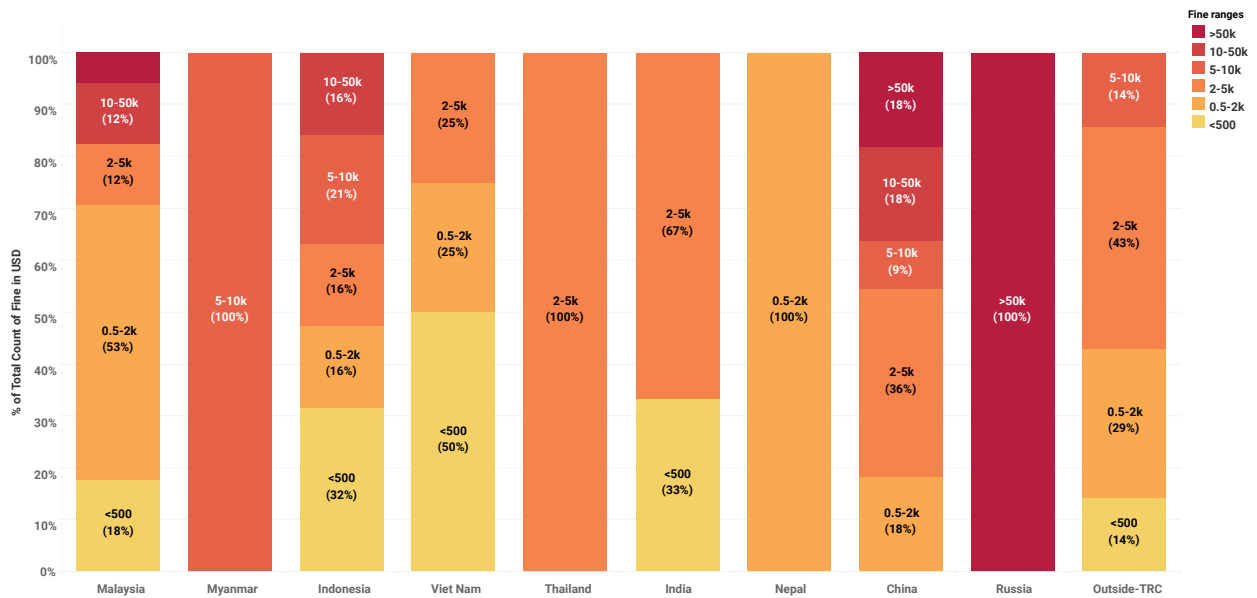
Figure 22: Proportion between the average fine per person convicted and the average annual income per capita in each country averaged from calculations of the respective years the fine was imposed; the number of people to which a fine was imposed in brackets.



Note: Average annual income data were retrieved from the World Bank and sourced from World Bank and OECD National Accounts data.

Average representation of values may at times be distorted by strong outliers. For example, when looking at the distribution of imposed fine values, the actual deterrence of the sanction in Malaysia is considerably more limited than one would assume from the average fine per case (USD12,042): 70.6% of the 17 documented cases involved fines lower than USD2,000 (Figure 23). This is even more evident when considering that USD500 was not even reached in half of the fines levied in Viet Nam, and one third of those imposed in Indonesia and India for wildlife trafficking crimes.

Figure 23: Distribution of fine ranges (USD) per case across Countries.





Over 2,300 Tigers are known to have been seized since the turn of the past decade; an average of 60 seizures are recorded annually, accounting for almost 124 Tigers seized each year, which greatly emphasizes the severe threats wild populations face from continued poaching and illegal trade. This analysis also found that the reported number of Tigers seized by TRCs from 2016–2018 equates to a conservative estimate of 5.5% of the declared wild Tiger population in 2016¹¹. This is equivalent to a minimum estimated 216 Tigers seized within the TRCs. Given that seizure data represent only a fraction of illegal trade, and that the true origin in most incidents was not known or reported, the true loss and likely ensuing decline in wild Tiger populations is expected to be much higher.

The significant number of Tigers from captive sources seized during this period underpins the recurrent threat regarding the leakage of captive Tigers into the illegal market, one that is in severe need of scrutiny at a country level in all the implicated countries. This becomes more apparent when considering that this dataset was unable to comprehensively determine the true sources of all incidents based on a lack of information, particularly in the Asian TRCs that have a very low viable wild population and were likely from captive sources, meaning the amount of tigers in trade from captive sources is likely to be much greater than reported here. There is no evidence that trade from captive sources is relieving pressure of wild Tiger populations, and in fact there is a continuous and higher proportion of seizure incidents taking place in Tiger range strongholds that are directly impacting wild populations.

Because the poaching and illegal trade in Tigers has been an unresolved problem for decades, with Tiger strongholds experiencing increased pressure, this report underscores an urgency to galvanise action—by both range and consumer countries and territories—including improvement of law enforcement effectiveness, strengthened legislation, regulation and monitoring of captive facilities, as well as reduction in Tiger part demand and consumption. TRAFFIC reiterates these recommendations, in line with earlier expressed¹² prioritisation required by Parties under the Convention on the International Trade in Endangered Species of Wild Fauna and Flora (CITES), and specifically, calling on full and effective **implementation of Resolution Conf. 12.5 (Rev. CoP15) on Asian big cats (ABCs)** (Annex 1) and associated CoP Decisions (Annex 1).

The need for continued **intelligence-led law enforcement**, leading to strong and deterrent **convictions** remains critical in the fight against poaching and illegal Tiger trade. **Information sharing** between countries, particularly when an incident is known to have crossed a border, is absolutely pivotal in any effort to crack down on international smuggling operations. The analysis showed changes in the types of commodities seized over the years, with, for example, proportion of whole live or dead specimens being seized more frequently compared to previous years. Sharing information across borders would allow for such trends to be noted in real-time allowing for adaptive management of enforcement approaches.

As Tiger skins alone constituted the highest proportion of Tiger commodities seized in 2017 and 2018 (35–39%)—by countries sharing images of those skins, they can determine their provenance from the stripe pattern, which would greatly bolster knowledge, understanding and the patterns of criminal networks that trade in this commodity. This recommendation needs to be supported by countries through establishing a standardised and systematic database containing forensic markers and photographic information, at a minimum, involving both wild and captive Tigers. While this is being established, bilateral sharing of photographic and genetic data from countries of seizure to countries holding national databases would strengthen law enforcement efforts and cross-border co-operation.

11 <http://tigers.panda.org/wp-content/uploads/Background-Document-Wild-Tiger-Status-2016.pdf>

12 Stoner et al., 2016

Legislation and regulations—and their active and consistent enforcement—must be implemented as a matter of urgency, especially in **closing loopholes** that facilitate illegal trade or where **penalties** are too low to represent an effective deterrent. While this report does not directly analyse legislation, effective legislation and regulations are key to enforcement and deterring criminals from engaging in tiger crimes. Other reports¹³ demonstrate that in many countries, including TRCs, there is a lack of sufficient legislation to protect Tigers from trade: for example, not addressing non-native species, products labelled as or claiming to contain specimens of ABCs and interpretation of the term “readily recognisable part or derivative”. The trade in non-native Tigers becomes particularly relevant for countries and territories implicated in captive Tigers.

Strength of prosecution and the outcomes have much room for improvement, as the analysis in this report demonstrates—although information was available in only a small number of cases—fines continue to be too low in many places to represent an effective deterrent. **Sensitisation of the judiciary** could contribute towards better outcomes for Tiger-related crimes. In the case of Thailand, for example, analysis from this dataset showed that the average fine per person barely amounts to three months of the average yearly income for the year individual fines were given, a percentage which increases to 56% of the annual average wage for Viet Nam, 78% for Indonesia and 83% for India. In all these countries, the profit opportunity from trafficking in Tigers far outweighs the potential profit losses. This is even more evident when considering that USD500 was not reached in half of the fines levied in Viet Nam, and one third of those imposed in Indonesia and India for such crimes.

Provisions to **register, manage, monitor, audit and control captive facilities**, particularly those with a sizeable stock of captive Tigers in any location or facility (including those considered to be farms that also hold non-native species) is paramount. Transparency in this process is fundamental to **prevent laundering or leakage of stocks**, especially when considering that a large number of captive-held Tigers continues to be seized due to illegal operations. Where infractions are consistently recorded and within the same countries, these farms should be phased out. As farms are not economically viable without involvement in some trade activity and their continued existence will likely mean ongoing (illegal) trade, those found to be breeding for trade should be closed. Closure of farms is also in line with Decision 14.69¹⁴ prohibiting Tiger breeding for the purpose of trade. **A CITES mission** to facilities of concern is urgently needed to understand fully the role they play in illegal trade.

DNA profiles and other markings (such as photographic evidence) of captive-held Tigers must be taken and maintained in a centralised registry, and reported to the CITES Secretariat to prevent any illegal laundering activity. This will also be inherently important during investigations into cases implicating captive Tigers. Without these measures, it is impossible to ascertain if seized Tigers from such captive sources are part of previously held stocks or were newly acquired ones including those potentially from the wild. This has been a long-identified problem, and one that will continue to undermine the effective implementation of CITES unless it is promptly addressed.

13 <https://cites.org/sites/default/files/eng/cop/18/doc/E-CoP18-071-01.pdf>

14 <https://www.cites.org/eng/dec/valid17/81842>

ANNEX 1

Resolution Conf. 12.5 (Rev CoP 17)¹⁵

RECALLING Resolution Conf. 11.5, adopted by the Conference of the Parties at its 11th meeting (Gigiri, 2000), relating to Conservation of and trade in tigers;

NOTING that wild populations of tigers and other Asian big cat species (snow leopard, *Uncia uncia*, clouded leopard, *Neofelis nebulosa*, all subspecies of leopard *Panthera pardus* within its Asian range, and Asiatic lion, *Panthera leo persica*) are threatened by the combined effects of poaching and habitat loss caused by disturbance, fragmentation and destruction;

AWARE that all tigers and other Asian big cat species are included in Appendix I, and that commercial international trade in Asian big cat species and their parts and derivatives has been prohibited by the Convention since 1975 (with the exception of the Asiatic lion and the Amur tiger *Panthera tigris altaica*, which were included in 1977 and 1987, respectively);

CONSCIOUS that three subspecies of tiger, *Panthera tigris*, have become extinct within the last 50 years and NOTING with concern that, despite inclusion of Asian big cat species in Appendix I, illegal trade in specimens of nearly all these species has escalated and further threatens their long-term survival in the wild;

CONCERNED that the use of medicines and products containing parts and derivatives from the tiger and other Asian big cat species continues in many countries around the world and that the bones of some of these species may be used in traditional medicine systems as a substitute for tiger bone;

CONCERNED further that, despite some improvements, trade in skins from the tiger and other Asian big cat species continues to fuel poaching that could lead to extinction in the wild;

NOTING that the Standing Committee has called upon all Parties and non-Parties to the Convention to take such measures as are required to halt the illegal trade in tigers and tiger parts and derivatives;

COMMENDING the positive actions taken by some range and consumer States to address the illegal trade in tiger specimens and to facilitate cooperation with other Parties, but NOTING that measures are required to address illegal trade in specimens of all Appendix-I Asian big cat species;

CONSCIOUS that the driving forces behind the illegal killing of tigers and other Asian big cats and the illegal trade in specimens thereof vary from region to region and may include financial gain from the sale of live specimens, parts and derivatives, protection of people living in Asian big cat habitats and protection against or response to the predation of livestock;

RECOGNIZING that strengthened technical cooperation between range and non-range States and financial support, would contribute to more effective conservation of tigers and other Asian big cat species;

ACKNOWLEDGING that increased political commitment, financial resources and expertise in some range and consumer States will significantly improve control of the illegal killing of Asian big cat species, trade in their parts and derivatives and protection of their habitats;

ACKNOWLEDGING the progress made through the CITES Tiger Enforcement Task Force, and the results of the second CITES Enforcement Experts Group meeting in 2009, and NOTING that the causes of conservation problems could be relevant to other Asian big cat species and that the solutions to reduce illegal trade in tiger specimens could be applied to benefit these species;

¹⁵ Amended at the 15th, 16th and 17th meetings of the Conference of the Parties.

ACKNOWLEDGING further the actions and reports of members of the Snow Leopard Network and of the Global Tiger Forum in reviewing the threats to the long-term survival of the species in the wild and the recommended measures to address those threats;

WELCOMING the establishment of the International Consortium on Combating Wildlife Crime (ICCWC);

AWARE of the important role of ICCWC in bringing coordinated support to the national wildlife law enforcement agencies and to the subregional and regional networks that, on a daily basis, act in defence of natural resources;

ENCOURAGING all stakeholders to take note of the final report of the ICCWC Seminar on Tiger Crime for Heads of Police and Customs, held on 14 February 2012 in Bangkok, Thailand;

CONCERNED that the failure to provide regular detailed reports on progress in implementing measures aimed at conserving tigers and other Appendix-I Asian big cats has prevented adequate assessment of the effectiveness of the measures taken; and

RECOGNIZING also that long-term solutions to the protection, conservation and management of tigers and other Asian big cat species and their habitats requires the adoption of bold and innovative actions based on a sound base of information;

THE CONFERENCE OF THE PARTIES TO THE CONVENTION

1. URGES:

- a) all Parties and non-Parties, especially range and consumer States of Asian big cat species, to adopt comprehensive legislation and enforcement controls which clearly define the administrative responsibilities of the various government agencies responsible for regulating trade within and outside of protected areas and in outlets for parts and derivatives, such as in wildlife markets and shops, etc., as a matter of urgency;
- b) all Parties seeking to improve their legislation prohibiting international commercial trade in specimens of tiger and other Asian big cat species, and products labelled as, or claiming to contain, their parts and derivatives, to adopt such legislation, to include penalties adequate to deter illegal trade and to consider introducing national measures to facilitate implementation of CITES, such as voluntarily prohibiting internal trade in such parts, derivatives and products, as provided for in Resolution Conf. 9.6 (Rev. CoP16);
- c) all Parties, especially range and consumer States, to introduce innovative enforcement methods and, as a matter of priority, strengthen enforcement efforts in key border regions, and develop or improve implementation of regional enforcement networks;
- d) all range States and other relevant Parties to implement systems for the recording of information relating to illegal trade in Asian big cats and to share this information as appropriate to ensure coordinated investigations and enforcement;
- e) all range States shall seek to ensure enforcement units and personnel receive relevant and effective support in anti-poaching operations; the gathering and use of intelligence; targeting offenders; wildlife crime investigative techniques; collecting evidence; inter-agency liaison and cooperation; and preparing cases for prosecution;

f) Parties to contribute financial and technical assistance to enable range States to comply with the implementation of this Resolution and enhance capacity building, improvement of conservation measures and sustainable livelihoods, so as to contribute towards the conservation of Asian big cats;

g) those Parties and non-Parties on whose territories tigers and other Asian big cat species are bred in captivity to ensure that adequate management practices and controls are in place to prevent parts and derivatives from entering illegal trade from or through such facilities;

h) those Parties and non-Parties on whose territories there exist stocks of parts and derivatives of tiger and other Asian big cat species (such as tiger bone stocks), but not including pre- Convention specimens, to consolidate and ensure adequate control of such stocks, and where possible destroy the same, with the exception of those used for educational and scientific purposes;

i) range and non-range States of the tiger and other Asian big cat species to support and participate in international conservation programmes, such as the Global Tiger Forum, the Snow Leopard Network, the CITES Tiger Enforcement Task Force and the Global Tiger Initiative; and

j) all range and consumer States that are not party to CITES to accede to the Convention at the earliest possible date in order to improve control of international trade in parts and derivatives of tiger and other Asian big cat species; and

k) all Parties that make seizures of tiger skins within their territories, when possible, to share images of the seized tiger skins with the national focal points or agencies in tiger range States, which have photographic identification databases for tigers, and the capacity to identify tigers from photographs of tiger skins, so as to identify the origin of illegal specimens. The images should be taken from above with the skin spread. In the case of whole tiger carcasses seized with the skin intact, images should be taken of both sides of the carcass.

2. INSTRUCTS the Secretariat to:

a) report to the Standing Committee and the Conference of the Parties on the status of Asian big cats in the wild, their conservation, and trade controls in place in Parties, using information provided by the range States on measures taken to comply with this Resolution and related relevant Decisions and any relevant additional information provided by relevant countries; and

b) work with ICCWC partners to promote increased awareness amongst the law enforcement community of the serious nature and impact of illegal trade in Asian big cat species, and to improve cooperation and a multidisciplinary approach in the detection, investigation and prosecution of crimes related to these species;

3. RECOMMENDS that:

a) the range States of the tiger and other Asian big cat species ensure that anti-poaching teams and enforcement units are established and effectively resourced to counter the illegal killing of and trade in Asian big cat species, and that intelligence is shared between relevant enforcement agencies to counter illegal killing and trade;

b) range States of the tiger and other Asian big cat species carry out appropriate education and awareness campaigns directed at urban and rural communities and other targeted groups, on the ecological and cultural significance and the significance for ecotourism of Asian big cats, their prey and habitats;

c) all range and consumer States take measures to increase awareness of wildlife crime and illicit wildlife trade among their enforcement, prosecution and judicial authorities;

d) the enforcement agencies in range and consumer States of the tiger and other Asian big cat species establish cooperative bilateral and multilateral arrangements, especially for the management of shared wildlife species and protected habitats with common boundaries, in order to achieve more effective control of illegal international trade in specimens of Asian big cat species;

e) Parties and non-Parties convene regional workshops on law enforcement needs associated with illegal cross-border movement of specimens of Asian big cat species, including the extent of the trade, smuggling routes, methods and final consumer markets for live specimens and parts and derivatives, with technical assistance from the CITES Secretariat and, where available, financial support from interested governments and organizations; and

f) the range States of Asian big cat species conduct, where appropriate, studies to examine the motivation behind the illegal killing of these species and to recommend appropriate measures to address such motivation;

4. REQUESTS:

a) countries and organizations with the relevant expertise to encourage and support range and consumer States, as a matter of urgency, in the development of practical identification manuals to aid the detection and accurate identification of parts and derivatives of Asian big cats; and

b) that, since biological and distribution data are essential for the implementation of the Convention, donor nations assist in funding the infrastructure and the provision of expertise to develop computer databases and mapping as well as any other necessary conservation management techniques;

5. RECOMMENDS that the consumer States of specimens from the tiger and other Asian big cat species:

a) work with traditional medicine communities and industries to develop and implement strategies for gradually reducing and eventually eliminating the use of Asian big cat parts and derivatives;

b) where necessary and appropriate, remove references to parts and derivatives of Appendix-I Asian big cats from the official pharmacopoeia and include acceptable substitute products that do not endanger other wild species, and introduce programmes to educate the industry and user groups in order to eliminate the use of substances derived from Appendix-I Asian big cats and promote the adoption of appropriate alternatives; and

c) carry out appropriate education and awareness campaigns to eliminate illegal trade in and use of Asian big cat skins

as trophies, ornaments and items of clothing or for the production of other materials;

6. CALLS UPON all governments and intergovernmental organizations, international aid agencies, and non-governmental organizations to provide, as a matter of urgency, funds and other assistance to stop illegal trade in specimens of Asian big cat species, and to ensure the long-term survival of the Asian big cat species in the wild; and
7. REPEALS Resolution Conf. 11.5 (Gigiri, 2000) – Conservation of and trade in tigers.

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TRAFFIC, the wildlife trade monitoring network, is a leading non-governmental organisation working globally on trade in wild animals and plants in the context of both biodiversity conservation and sustainable development.

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