

VOL. 30 NO. 2

2

TRAFFIC

B U L L E T I N



OCTOBER 2018

OTTER PELT SEIZURES IN NEPAL

REPTILE PET MARKET IN JAPAN

MEDICINAL USE OF PRIMATES IN BENIN

The journal of TRAFFIC disseminates information on the trade in wild animal and plant resources

TRAFFIC

the wildlife trade monitoring network

TRAFFIC was established in 1976 to perform what remains a unique role as a global specialist, leading and supporting efforts to identify and address conservation challenges and solutions linked to trade in wild animals and plants.



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TRAFFIC's Vision is of a world in which trade in wild plants and animals is managed at sustainable levels without damaging the integrity of ecological systems and in such a manner that it makes a significant contribution to human needs, supports local and national economies and helps to motivate commitments to the conservation of wild species and their habitats.

TRAFFIC

Trade in wildlife is vital to meeting the needs of a significant proportion of the world's population. Products derived from tens of thousands of species of plants and animals are traded and used for the purposes of, among other things, medicine, food, fuel, building materials, clothing and ornamentation.

Most of the trade is legal and much of it sustainable, but a significant proportion is not. As well as threatening these resources, unsustainable trade can also lead to species declining in the wild to the point that they are threatened with extinction. Illegal trade undermines local, national and international efforts to manage wild natural resources sustainably and causes massive economic losses.

The role of TRAFFIC is to seek and activate solutions to the problems

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TRAFFIC's reports and advice provide a technical basis for the establishment of effective conservation policies and programmes to ensure that trade in wildlife is maintained within sustainable levels and conducted according to national and international laws and agreements. The journal of TRAFFIC, *TRAFFIC Bulletin*, is the only publication devoted exclusively to issues relating to international trade in wild plants and animals. Provided free of charge to over 4000 subscribers and freely available from the TRAFFIC website (www.traffic.org), it is a key tool for disseminating knowledge of wildlife trade and an important source of information for those in a position to effect change and improve awareness.



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Much of the content published in the *TRAFFIC Bulletin* arises from investigations carried out by TRAFFIC staff, whose wide-ranging expertise allows for a broad coverage of issues. TRAFFIC has also built up a global network of contacts with, for example, law enforcement agents, scientists, and wildlife experts, some of whom are regular contributors to the *TRAFFIC Bulletin*.

TRAFFIC welcomes articles on the subject of wildlife trade that will bring new information to the attention of the wider public; guidelines are provided in this issue and online to assist in this process. For more information, please contact the editor: Kim Lochen (kim.lochen@traffic.org).

The *TRAFFIC Bulletin* is a publication of TRAFFIC, a leading non-governmental organisation working globally on trade in wild animals and plants in the context of both biodiversity conservation and sustainable development.

The *TRAFFIC Bulletin* publishes information and original papers on the subject of trade in wildlife, and strives to be a source of accurate and objective information.

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BULLETIN

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When the first London Conference on Illegal Wildlife Trade (IWT) was held in February 2014, the world was seeing unprecedented levels of poaching and illegal trade in many species. The year before had been the worst year on record for rhinoceros poaching in South Africa thus far, with over 1,000 animals killed illegally. The report of the Elephant Trade Information System that was presented at the 13th meeting of the Conference of the Parties to CITES (Convention on International Trade in Endangered

EDITORIAL

Species of Wild Fauna and Flora) that year also showed illegal trade in ivory at its highest levels in nearly two decades, with 2011 the worst year on record for ivory seizures. Political attention at the highest levels was urgently needed to address the crisis and many hoped that the London Conference would provide the global response that was needed.

That meeting concluded with the London Declaration that was adopted by acclamation by 41 countries, setting out an international call for action to eradicate markets for illegal wildlife products; strengthen law enforcement efforts and ensure effective legal frameworks and deterrents are in place; and promote sustainable livelihoods through positive engagement with local communities.

Four years on, some progress is being made on these fronts, with co-operative efforts to address wildlife crime increasing in quality and quantity. While levels of poaching and illegal trade for many species remain unacceptably high, we are seeing the international community, as well as key countries, tackling illegal wildlife trade as a serious organised crime. Evidence of this can be seen from the outcomes of the 2018 London Conference on Illegal Wildlife Trade that was held in October.

The Conference was the fourth in the series of high-level events which aimed to mobilise international action on IWT; the London Conference in 2014 was followed by IWT meetings in Kasane, Botswana, in 2015 and Ha Noi, Viet Nam, in 2016. However, the Conference this year took a fresh approach, providing the high-level political attention that will allow the international community to address the strategic and systemic problems that are driving illegal wildlife trade, such as growing consumer demand for illegal wildlife products, financial crime linked to wildlife crime, wildlife-related cybercrime and greater engagement by the private sector.

For example, just prior to the meeting, the Duke of Cambridge spearheaded the launch of a financial task force to disrupt international money flows linked to wildlife trafficking. The United for Wildlife Financial Taskforce will initially comprise representatives from 30 global banks and financial organisations such as Standard Chartered, HSBC, RBS and Citi Group, as well as agencies, regulatory bodies and organisations such as TRAFFIC. Firm action in this critical area will help prevent money laundering and the corruption associated with wildlife trafficking, while asset seizures would act as a strong deterrent to those perpetrating wildlife crimes.

The Taskforce will also be working to identify criminals using legitimate financial institutions to conduct their businesses and illuminate the confluence of proceeds from wildlife and other illicit trades.

Illegal wildlife trade on the internet was another focus of the Conference, recognising that e-commerce and online auction sites, as well as social media platforms, are increasingly used to sell illegal wildlife products, providing as they do an alternative to physical markets which may be perceived to be or may actually be more exposed to monitoring and enforcement action.

Showcased at the Conference was the work of the Global Coalition to End Wildlife Trafficking Online. The Coalition, which includes 23 global e-commerce, social media and technology companies including Tencent, Alibaba, eBay, Google, Microsoft and Rakuten, in partnership with TRAFFIC, WWF and IFAW, aims to reduce wildlife trafficking through web-based platforms by 80% by 2020.

Another strong display of private sector engagement in championing global efforts to tackle wildlife crime at the Conference was the announcement by the World Travel and Tourism Council that over 100 travel and tourism companies have now signed up to the Buenos Aires Declaration, working towards a common goal to educate over one billion travellers about the nature, scale and consequences of illegal wildlife trade.

The need to address demand for illegal wildlife products was another issue highlighted at the Conference, with Defra announcing the establishment of a consortium of global behavioural change specialists, including TRAFFIC, the Oxford Martin School at the University of Oxford, Wildlife Conservation Society, United for Wildlife, UNEP, and USAID. The consortium aims to share knowledge and experience in order to develop recommendations on the approach and scope of targeted illegal wildlife trade demand reduction initiatives.

The Conference saw delegates recognise that illegal wildlife trade affects a far broader range of species and commodities beyond just elephants and rhinos. In terms of monetary value, for example, more significant is the illegal trade in timber, which deprives local communities of food, income, and well-being, undercuts legitimate businesses and deprives governments of income from sustainable exploitation of natural resources. It was therefore good to see sessions at the Conference address the issue of illegal timber trade and forest governance. The global reach and influence of the Conference has also expanded beyond Africa and Asia, with Peru announcing that it will host the first regional conference in Latin America focused on illegal wildlife trade next year.

Over 1,300 delegates from more than 70 countries attended the Conference and over 50 countries adopted the London 2018 Declaration committing to action to tackle the illegal wildlife trade. However the success of the Conference can only be gauged by how effectively individual governments, businesses and organisations implement the commitments they made in London and if those actions ultimately result in measureable and meaningful declines in poaching and illegal trade.

Sabri Zain, Director of Policy, TRAFFIC
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After three years leading the AFRICA-TWIX programme from TRAFFIC's office in Yaoundé, Cameroon, FRANÇOIS ABESSOLO KPWANG left TRAFFIC in August 2018.

NGANTRAN BAO was appointed Communications Officer in September 2018, based at the Viet Nam office, where she will focus primarily on the USAID Wildlife Asia Activity/Chi Initiative and support TRAFFIC's communications in Vietnamese.

bulletin board

PAULINUS NGEH will retire towards the end of 2018 after more than four years as Director of TRAFFIC's Central Africa office. Transitioning into this position, ELIE HAKIZUMWAMI will start with effect from 1 November 2018.

FARIL NOOR joined TRAFFIC's Communications team in October 2018 and is based in the office in Malaysia.

DOMINIQUE PRINSLOO joined the Southern Africa office in June 2018 as Project Support Officer for the TRAFFIC component of a five-year USAID-sponsored project: Combating Wildlife Crime in Namibia and the Kavango-Zambezi (KAZA) Transfrontier Conservation Area (TFCA), which includes Angola, Botswana, Namibia, Zambia and Zimbabwe.

ALESSANDRA ROSSI, Wildlife Projects Officer for Wildlife TRAPS in East Africa, left TRAFFIC in June 2018.

XIN WEIHUA was appointed Project Officer in May 2018, based in the China office, and will focus on reducing the supply of illegal wildlife products in China via physical and online market surveys, enforcement training, and co-operation with the business sector.

YUQI YANG (Yvonne) was appointed Associate Programme Officer in October 2018, and will focus on timber trade issues; she is currently working on the Champions of Change EU project: Addressing the Demand for Illegal Wildlife Products.

ZHANG KE left TRAFFIC in August 2018 after six years in the China office. Ke was instrumental in setting up the EGP-MAPS team and the FairWild initiative in China.

BEI ZHANG has been appointed Programme Manager for the Champions of Change EU project: Addressing the Demand for Illegal Wildlife Products, with effect from June 2018.

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IN MEMORIAM

Peter Bowles



TRAFFIC is sad to announce the loss in July 2018 of our former colleague Peter Bowles. Peter joined TRAFFIC in 2015 as the Wildlife

Crime Initiative Africa co-ordinator and then, for a short time, was the Project Manager for a project in South Africa on specialised investigator training and mentoring. Peter left TRAFFIC in 2016 to head up operations for a refugee repatriation programme in Afghanistan but he was always keen to return to the conservation field. Towards the end of 2017 he joined WWF in Namibia as Chief of Party on a large, multi-country combating wildlife crime project focusing on the Kavango-Zambezi, Transfrontier Conservation Area.

Prior to joining TRAFFIC, Peter had been the Deputy Chief of Party of the Wildlife Conservation Society (WCS) Afghanistan programme for over eight years where he was also in charge of all security for WCS, which was no small feat in those times. He participated in forming the very first protected areas of Band-i-Amir National Park and the Wakhan Protected Landscape, areas that he visited whenever he got the chance. When he left Afghanistan, he was honoured by the head of the Environment Agency of Afghanistan, Prince Mostapha Zaher, the grandson of the last king of Afghanistan, for his service to conservation in the country.

At TRAFFIC, Peter was an enthusiastic, passionate, dedicated conservationist and colleague, who shared a deep concern for protecting wild animals and plants from over-exploitation across the world. He was well-known for his warm personality and he would happily converse with people at all levels concerning wildlife trade issues. But he also had a wonderful witty and dry sense of humour—so important when tackling seemingly insurmountable conservation challenges.

When I last spent time with Peter in Namibia towards the end of 2017 he expressed to me how happy he was to be back in southern Africa working in the conservation sector and that he was able to spend more time with his family. It is very difficult to come to terms with the fact that someone who was so alive and so clearly fascinated by people, history and the natural world is no longer with us.

Peter will be sorely missed by all who were lucky enough to know him; we extend our deep condolences to his family.

Markus Bürgener,
Senior Programme Officer, TRAFFIC

Report by Nur Hazwani Hassan and Salman Saaban

In early 2017, scientists warned of an emerging extinction crisis in South-east Asia driven in part by the rising use of snares to poach wildlife (Gray *et al.*, 2017). Commonly referred to as the landmines of the forest, snares are an illegal hunting method and their use punishable by law in Malaysia. Yet a snare—often a cheap length of cable or wire—is among the most common hunting tools used across the region, both in and outside protected areas. It is simple in form but devastating in impact, claiming the lives of hundreds of wild animals.

Malaysia has seen snare use grow over the years. From only 44 snares removed in 2013, the Department



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ANTI-SNARE CAMPAIGN: A YEAR OF COMBATING SNARES IN MALAYSIA

of Wildlife and National Parks Peninsular Malaysia (PERHILITAN) has recorded more than 200 snares deactivated from 79 hotspot areas in each subsequent year to a total of 2,890 snares until May 2018. Between 2015 and May 2018, PERHILITAN patrol teams encountered at least 52 animals, both dead or alive, caught in active snares in these hotspot areas, including Malayan Tiger *Panthera tigris jacksoni* (one), Asian Elephant *Elephas maximus* (two), Sun Bear *Helarctos malayanus* (11), Wild Boar *Sus scrofa* (11), Malayan Tapir *Tapirus indicus* (eight), Sumatran Serow *Capricornis sumatraensis* (two) and Barking Deer *Muntiacus muntjac* (seven). Recognising the heightened threat and need to bring wider attention to the issue, PERHILITAN called on conservation groups to join a campaign to tackle the incidence of snare trapping. The year 2018 has been declared the “Year of Combating Snares” in Peninsular Malaysia. In conjunction with commemoration of World Wildlife Day 2018, the campaign was launched by the Honorable Minister of Natural Resources and Environment (NRE) on 1 April 2018 at Ledang Square, Tangkak, State of Johor.

No single approach to combat the use of snares will work in isolation. The campaign was therefore designed to include a variety of approaches and partners that would address several issues: bring greater awareness of the impact of snares; allow the sharing of resources for patrolling and snare-removal operations; and, encourage the public to report the use of snares. The year-long campaign will work towards strengthening the level of protection of wildlife in protected areas and national parks in Peninsular Malaysia via a multi-agency enforcement taskforce consisting of enforcement agencies, and local NGOs, namely TRAFFIC, WWF-Malaysia, WCS (Wildlife Conservation Society) Malaysia Program, MNS (Malaysian Nature Society), MYCAT (Malaysian Conservation Alliance for Tigers), Rimba, and Pelindung. The majority of snare removal efforts have been and will continue to be carried out by PERHILITAN in collaboration with the Malaysian Armed Forces and the Royal Malaysian Police. These



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operations, supported by NGOs working within their respective study sites across Peninsular Malaysia, form an integrated, wide-reaching approach covering several protected areas and national parks. In addition, PERHILITAN is co-ordinating a rescue-rehabilitate-release programme for snared wildlife found alive during these actions. Alongside the forest-based operations, authorities will step up inspection at key locations in the country's entry and exit points, deploying teams to set up roadblocks to detect smuggled wildlife in vehicles, and spot-checking business premises or workers' camps.

In order to raise public awareness about the destructive impact of snares, the department and NGOs, including TRAFFIC, are jointly contributing to a public awareness programme that includes exhibitions, programmes for forest-fringe communities and schools, lectures on wildlife conservation, specially designed materials for social media messaging and a series of interviews with local newspapers. Two short videos on snares were also launched for streaming via mass media.

▲ Snare removal operation by PERHILITAN, at Merapoh, Pahang, at the border of Taman Negara National Park (top); a camera trap image of a snared Sun Bear *Helarctos malayanus* in Endau-Rompin National Park, Johor.

These one-minute public service announcement videos were created by local production house, Nuvista Media, to reach a much broader audience on poaching issues, encouraging those watching to report wildlife crime and reminding consumers of the high penalties wildlife offenders may face under the *Wildlife Conservation Act 2010*, Peninsular Malaysia's primary wildlife legislation.

While penalties are high for snare use—a maximum fine of RM100,000 (USD24,792) and up to two years' imprisonment—images of trapped and injured wildlife make the headlines fairly frequently. Many include specimens of severely threatened species: a Clouded Leopard *Neofelis nebulosa* bearing snare wounds was found dead not far from a snare in early 2018; a Malayan Tiger was discovered with a wounded front leg caught in a snare in 2016; and there were several cases of snared Sun Bears in 2014 (Aris, 2016; Krishnasamy and Or, 2014; Maharan, 2018; Sharma, 2017). All were found in the country's northern State of Perak, home to wildlife-rich forests such as the Belum-Temengor Forest Complex (BTFC). A sprawling landscape of jungles and waterways, the BTFC boasts a Royal State Park and forest reserves, yet hasn't been spared the scourge of poaching with snares.

Between 2008 and 2010, at least 142 snares were also discovered and de-activated by a WWF-Malaysia wildlife monitoring unit working with authorities in the BTFC (WWF, 2014). In the same period, TRAFFIC recorded the loss of over 400 animals, one of which involved a well-publicised case of a tiger found alive after several days in a snare, which later died from its injuries (TRAFFIC, 2009). Detection of snares in this area has continued, with 27 removed over 18 months beginning August 2011, and 60 more between January 2016 and March 2017 alone (Krishnasamy and Or, 2014; Sharma, 2017).

Snares plague other protected areas too: between 2010 and 2013, 2,241 snares and 1,728 illegal campsites were destroyed by NGOs working in three priority tiger landscapes (MYCAT, 2014). These incidents highlight the illegal use of snares and how active poaching activities involving their use may be having a detrimental impact on Malaysia's wildlife.

A period of 12 months may be insufficient to make significant impacts on poaching, but the campaign has placed this pervasive but little-discussed threat in the spotlight. This provides an opportunity for those working on wildlife protection to solicit solid information on the use of snares and establish just how extensive is their use. Such data will be valuable for informed decision-making in any future wildlife policy that seeks to eliminate the use of snares from Malaysia's forests.

ACKNOWLEDGEMENTS

The authors thank Kanitha Krishnasamy and Elizabeth John of TRAFFIC for reviewing an early draft of this article. WWF-Malaysia are thanked for supporting TRAFFIC's work in the Belum-Temengor Forest Complex. Much gratitude is owed to Tierpark Zoo, Zoological Association of America (ZAA) and Taronga Zoo for their generous financial support.



PERHILITAN official during an anti-snare operation, Gunung Inas Forest Reserve, Kedah.

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Emerging international trade in vulnerable species of South Asian freshwater turtles

Report by Sarah Stoner

BACKGROUND

The illegal trade in freshwater turtles and tortoises for pets is widespread and is increasingly characterised as transnational, organised wildlife crime (Nijman and Stoner, 2014; Leupen, 2018). This trade poses a substantial threat to numerous species, many of which are already Critically Endangered (Gong *et al.*, 2009; Nijman and Shepherd, 2015). The demand to own live wildlife is often coupled with a desire for rarer and harder to obtain species and is particularly prevalent for freshwater tortoises and turtles as exotic pets, the latter having become one of the most threatened vertebrate groups globally (IUCN, 2018). Furthermore, freshwater turtles are one of the most desired and highly threatened chelonian groups in the world (van Dijk *et al.*, 2000).

In March 2015, the Wildlife Justice Commission (WJC), a non-profit organisation based in The Hague, Netherlands, was established with the aim of disrupting and helping to dismantle transnational criminal networks. They do this by collecting evidence and turning it into accountability by, *inter alia*, empowering mandated law enforcement agencies to tackle wildlife crime by providing actionable investigative findings that have been diligently documented. One such case, described here, set out to investigate the illegal trade in freshwater turtles and tortoises; to galvanise law enforcement action and remove enabling criminal factors. As a result, the WJC identified individual traders and organised criminal networks operating out of India and Bangladesh transporting considerable quantities of illegally obtained freshwater turtle and tortoise species through South-east Asia for sale, predominantly to markets in Hong Kong and mainland China. Malaysia featured predominantly during the investigation as a key transit country, and has historically hosted a strong pet trade, especially for species such as the Indian Star Tortoise *Geochelone elegans* (Shepherd *et al.*, 2004). Similarly, the investigation focused on the suppliers and those operating at the wholesale end of the trade chain, some of whom were known to be providing stock to many of the traders operating at Chatuchak Market, Bangkok.

INTRODUCTION

As part of the WJC's mission to disrupt and help dismantle transnational criminal networks, the WJC sought to tackle the freshwater turtle and tortoise trade in Asia, which is particularly prevalent in this region (Nijman and Shepherd, 2015). Between January 2016 and January 2018, WJC conducted "Operation Dragon" an investigation designed to support law enforcement

agencies in targeting those individuals responsible for enabling and benefiting from wildlife crime the most. This focused and closely co-ordinated investigation resulted in the arrest of 30 high-level persons of interest across Malaysia, India and Bangladesh, of which five have been given custodial sentences and one remains outstanding on INTERPOL's Red Notice. During this two-year investigation, the WJC operatives were offered and often directly sighted several species of tortoises and freshwater turtles, allowing for corroboration of species for sale. As part of the evidence collection, all such instances and the species, quantity and value of these offers were documented. During "Operation Dragon", an estimated minimum of 20,400 specimens of 16 species of tortoises (four) and freshwater turtles (12) listed in Appendix I and II of CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) were offered for sale. While this approach made it possible to quantify the scope of illegal trade, it also meant that species of concern not commonly seen on the international market could be detected.

METHODS

The WJC undertakes undercover, intelligence-led investigations and will often engage directly with traders and brokers as prospective buyers. Using intelligence and analysis of social media, the WJC identified a network of Indian males based in Chennai and Kuala Lumpur engaged in the trafficking in primarily CITES Appendix I-listed species such as Black Spotted Turtles *Geoclemys hamiltonii* and Indian Star Tortoises (Appendix II). However, the authors also detected the emergence of several other species of freshwater turtles less frequently encountered in trade during the investigation. The WJC seeks to substantiate offers of products for sale made online or via mobile messaging by arranging meetings to view the products, and to discuss purchase. All engagements with traders are recorded, transcribed and documented for evidential purposes. To contextualise investigative findings, the WJC also undertook several desktop reviews to understand the occurrence of these species in trade.

RESULTS

Some of the wildlife traders engaged with during the course of the investigation in India and Malaysia were trafficking species of South Asian freshwater turtles, such as Red-crowned Roofed Turtles *Batagur kachuga* and Three-striped Roofed Turtles *B. dhongoka*, as well as other popular, well-recognised species on the market such as Black Spotted Turtles. While the number of these turtles offered during the investigation is relatively low in comparison to other species (Table 1), there is concern that any removal from the wild is likely to have a detrimental impact on populations. Black Spotted Turtles featured significantly during the investigation and have been included in Table 1 for comparative purposes.

Species	Distribution	*IUCN Status	CITES Appendix	Indian Wildlife Protection Act	No. of individuals offered to WJC
Assam Roofed Turtle <i>Pangshura sylhetensis</i>	Bangladesh, India	E (Bangladesh) (CR in India)	II	Schedule I	125
Black Spotted Turtle <i>Geoclemys hamiltonii</i>	Bangladesh, India, Nepal, Pakistan	E (Bangladesh) V (India)	I	Schedule I	7,342
Brown Roofed Turtle <i>Pangshura smithii</i>	Bangladesh, India, Pakistan	NT	II	Not Listed	265
Red-crowned Roofed Turtle <i>Batagur kachuga</i>	Bangladesh, north-east India, central Nepal	CR	II	Schedule I	306
Three-striped Roofed Turtle <i>Batagur dhongoka</i>	Bangladesh, north-east India	CR (Bangladesh) E (India)	II	Not listed	172

Table 1. Species and no. of South Asian freshwater turtles offered to the WJC, 2016–2018, and their protection status. CR=Critically Endangered; E=Endangered; V=Vulnerable; NT=Near Threatened. *assessed 2000

Species	Total no. sighted/ offered to the WJC	2014	2015	2016	2017	Total no. seized from trade
Assam Roofed Turtle <i>Pangshura sylhetensis</i>	125	0	0	0	0	0
Brown Roofed Turtle <i>Pangshura smithii</i>	265	0	0	0	3	3
Black Spotted Turtle <i>Geoclemys hamiltonii</i>	7,342	4,627	3,362	1,653	28	9,670
Red-crowned Roofed Turtle <i>Batagur kachuga</i>	306	0	0	1	27	28
Three-striped Roofed Turtle <i>Batagur dhongoka</i>	172	0	0	0	0	0

Table 2. No. of individuals seen in trade by the WJC (2016–2018) compared to no. seized from trade (2014–2017).

It was noted that traders would place an emphasis on a species' rarity on the market. This was substantiated to the WJC by a trader based in Malaysia, who was known to source products from India, claiming he had many buyers from Hong Kong and Thailand who sought *Batagur kachuga* and *B. dhongoka* specimens on account of their rarity and that he had stocks of these species available for sale.

Conversely, it appears that while the WJC observed these four species of freshwater turtles being offered for sale covertly, it is apparent that they are seldom reported as being seized from trade, as is illustrated in Table 2 which records reported seizures between 2014 and 2017 across Asia according to open source research. It also highlights how frequently Black Spotted Turtles are seized from trade in comparison. This disparity between what is being documented in underground trade compared to the number recorded in illegal trade may mean that current efforts by law enforcement agencies are not sufficient to detect such species in illegal consignments. Furthermore, according to the CITES Trade Database, none of these four species has featured in legal trade between 2014 and 2017, with fewer than 15 individuals recorded for 2013.

The author suspects that the occurrence of these four species in trade could be attributed to several factors:

VALUE: The species appear to command a higher price than other more commonly traded species such as Black Spotted Turtles. Consequently, smaller consignments can be transported more easily and still yield a healthy profit, requiring less complicity of corrupt officials, keeping costs low. During the investigation the WJC collected over 200 different data points on prices of species offered for sale; the median price per head for Black Spotted Turtles was calculated to be USD110, compared to USD1,150 for a Three-striped Roofed Turtle or USD1,700 for a Red-crowned Roofed Turtle.

LEGALITY: The species are listed in CITES Appendix II. Although documentation is still required for trade in these species to be permitted, they may not be targeted, or as well known, by law enforcement agencies compared to specimens listed in CITES Appendix I.

CRIME DISPLACEMENT: As enforcement cracks down on the high-volume species found in trade, such as Black Spotted Turtles, lesser-known species may become appealing to wildlife criminals. The species appear to be less well known in international trade and therefore may not be easily identifiable by port and Custom officers, thus reducing the risk of detection.



Advertisements featuring Red-crowned Roofed Turtle (left) and Three-striped Roofed Turtle provided to the WJC by a trader via Facebook Messenger, October 2016.

OPPORTUNITY: These species occur in the same areas being used as a trade route by traffickers. Specifically, these species originate from geographic ranges in north-east India, Nepal and Bangladesh, and local populations, particularly in Bangladesh, are severely threatened (Table 1). The investigation found that many of the Red-crowned Roofed Turtles and Three-striped Roofed Turtles on offer had originated from Uttar Pradesh (in north-east India) and are transported to Bangladesh via West Bengal, before being smuggled overseas.

The occurrence of these species on the international markets in Thailand, Malaysia and Hong Kong appears to be rarely reported. While some literature exists in relation to the threatened status of the species, there is little published research and/or sufficient data supporting this. However, WJC was frequently offered these species during the investigation, albeit to a lesser extent to other, better-known species. Of note is that the rarity of these species is cited as a selling feature, facilitated by the above factors, which may be aiding crime. This desire is further compounded by harder to obtain species, where “the rarer the species the better”. This is likely to encourage an anthropogenic allee effect, where the value attributed to rarity may precipitate the extinction of rare species (Hall *et al.*, 2008; Courchamp, 2014). Rarity in the wild is a particularly unique characteristic of the freshwater turtle and tortoise trade—the Critically Endangered Ploughshare Tortoise *Astrochelys yniphora* likely qualifies as testament to this phenomenon.

CONCLUSIONS AND RECOMMENDATIONS

The possibility of these species of South Asian freshwater turtles being targeted for international markets such as Hong Kong and mainland China, with Thailand and Malaysia facilitating the trade, is great cause for concern given the fragile status of these species in the wild (Table 1). This article should form sufficient basis to direct further research to assess the extent to which these species are in demand at an international level. This will assist in the formulation of recommendations to tackle trade to prevent these species being further threatened and

foster closer collaboration between countries implicated in the trade. It will also provide much needed data to update assessments of population levels in the wild.

Of further note is that the Three-striped Roofed Turtle and the Brown Roofed Turtle, despite being threatened, are not included in India’s *Wildlife Protection Act, 1972* (Table 1). As a matter of urgency, they should be considered by wildlife agencies for inclusion in the law in order to prevent further exploitation of legal loopholes.

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TRADE IN PRIMATE SPECIES FOR MEDICINAL PURPOSES

IMPLICATIONS FOR CONSERVATION

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IN SOUTHERN BENIN:

INTRODUCTION

Primates are among the most persecuted of animals, relentlessly hunted for their meat and fur, or killed for stealing crops in fields that were once their home (Mittermeier *et al.*, 2007; Taylor *et al.*, 2015, Ripple *et al.*, 2016). In some cultures and contexts (e.g. Hindu practices across Asia and among the Fon people in Benin), primates are viewed as sacred; in others, such as in China or Japan, they are considered mythical creatures of cunning and deviousness, while for most of the world's subsistence farmers living in close proximity to monkeys and apes, they represent a significant crop pest (Alves and Rosa, 2013). Their role in folk practices has been recorded in different socio-cultural contexts throughout the world.

In southern Benin, primates are commonly used in traditional medicine, both for the treatment of ailments and for folkloric or magical purposes, such as improving relationships and attaining good fortune. The authors conducted interviews with animal-based medicine traders in six main cities of southern Benin. In order to estimate the use value and fidelity level of the different primate species and their products, the authors asked questions related to their origin and their uses.

This study is a preliminary assessment of primates for animal-based medicine purposes in southern Benin and aims to provide an overview of the use of primates in traditional folk medicine in that location. The specific objectives were: (1) to assess the diversity and the use value of each primate species in relation to their conservation assessment using IUCN criteria; (2) to identify the origin of the primates found in targeted markets; and (3) to evaluate the ethno-medicinal purposes of these animals. Further investigation is required to increase our understanding of the harvesting and trade of these species, and to assess the impacts caused by commercial exploitation.

Family of baboons *Papio* sp.

BACKGROUND

The Government of Benin is party to the Convention on Biological Diversity (CBD) Global Strategic Plan for Biodiversity 2011–2020 and endorses its 20 Aichi Biodiversity Targets (CBD, 2010). In the Fifth National report of Benin on Biodiversity for CBD, it was highlighted that the Aichi Targets are not on track to meet the 2020 deadline. In that report, it was pointed out that wildlife species face a number of complex challenges including depleted resources, competition for habitats used by wildlife, overharvesting and poaching, and changing habitats. In order to address wildlife conservation and ensure sustainable livelihoods, decisions at multiple levels across multiple sectors need to be guided by information on the state of all wildlife conservation. However, numerous challenges hamper access to, and use of, wildlife data in Benin, including scarcity of scientific research, gaps or other inadequacies in indicators, datasets and capacity. In this context, mobilising traditional knowledge of wildlife species could be useful in the management of some threatened species.

Various studies have addressed the conservation concerns arising from the use of medicinal products from primates, especially because many of them are threatened species (Ahmed, 2001). The importance of primates in the traditional folk medicine of different ethnic groups in Benin has frequently been overlooked, even though there is widespread anecdotal evidence for their use as medicine. Such uses represent important threats to certain primate populations. There is therefore a need to improve our limited understanding of the use of primates and the specific impacts of these practices and to formulate some recommendations regarding the public health risk, as it is well recognised that numerous infectious diseases can be transmitted from animals to humans (i.e. zoonoses), especially within the primates order (Wolfe and Fuentes, 2007).

LEGISLATION

Hunting is permitted in Benin under authorisation from the government, but is limited to certain species. According to Law N° 2002-16 of 18 October 2004 on wildlife protection in Benin and Decree N° 2011-394



Fig. 1. Location of sampled markets in southern Benin.

of 28 May 2011, setting the modalities of conservation and sustainable management of fauna and its habitats in the Republic of Benin, the Senegal Bushbaby *Galago senegalensis*, White-thighed Black-and-White Colobus *Colobus vellerosus* and Red-bellied Monkey *Cercopithecus erythrogaster* are integrally protected; the Vervet Monkey *Chlorocebus tantalus*, Patas Monkey *Erythrocebus patas*, Mona Monkey *Cercopithecus mona*, and Olive Baboon *Papio anubis* are partially protected and may be hunted outside protected areas, while other primate species are not listed. Despite these hunting restrictions, poaching represents the major threat to this taxonomic group in Benin (Nobimè *et al.*, 2008).

METHODS

Identification of study sites

This study, undertaken between March and June 2012, required the full contribution of traditional healers, who are the principal holders of knowledge of ethno-therapeutic resources. The choice of animal-based medicine markets has a double advantage because concerned actors combine their profession as traditional healers and as traders. Markets were selected based on their proximity to protected areas, their scale (local,

City	Ethnic groups ¹	Sample size	Description of interview location
Cotonou	Fon	20	International market of Dantokpa and the biggest market in Benin.
Porto-Novo	Goun	20	The market in administrative capital of Benin and close to wetlands (Ouémé valley, Hlan river) part of Ramsar ² site I,017 and close to Nigeria.
Comè	Mina	15	Close to wetlands (Ramsar site I,018), close to Togo.
Azové	Mina	10	Close to wetlands (Ramsar site I,018), close to Togo.
Abomey	Fon	15	A city of great historical and cultural importance and attached to traditions.
Bohicon	Fon	15	A city of great historical and cultural importance and attached to traditions.

Table 1. Sample size of markets and identification of study sites in southern Benin.

¹the local language used is called the same as the ethnic group; ²<https://www.ramsar.org/fr/zone-humide/benin>

national or international), and dominant ethnic groups in the area. Considering all these aspects, 95 animal-based medicine traders were interviewed in the animal markets in six main cities of southern Benin (Table 1; Fig. 1). All interviewees were males over 40 years old.

Data collection

The authors visited outdoor markets, occasional markets (markets set up for special events), and outlets selling religious articles, where products derived from wildlife are commonly sold (e.g. Fig. 2). Data were collected on the medicinal importance of each primate species, as well as their functions and uses, the organs requested, the prices of each primate by-product, the species richness and abundance of specimens displayed and their likely origin of supply. The species diversity recorded was based on the interviews and from direct observations.

Data analysis

In order to determine their status classifications, all recorded primate species were checked against the IUCN Red List Categories and Criteria version 3.1 (<http://www.iucnredlist.org/>), Benin's official list of endangered species (Neuenschwander *et al.*, 2011) and against the Appendices of CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) (<https://www.cites.org/eng/app/appendices.php>). The authors calculated the use value for each species, a quantitative method that illustrates the relative importance of a species known locally. This value was calculated using the following formula: $UV = \Sigma U/N$, where: UV is the use value of a species; U the number of times a species was mentioned as being in use by a survey participant/interviewer; N is the number of informants. The relative abundance of each primate species was assessed by calculating the ratio of the number of individuals represented by body parts out of the total per category. The fidelity level (FL) indicates the percentage of informants claiming the use of a certain animal species for the same medicinal purpose (Friedman *et al.*, 1986). It is useful for identifying the informants' most preferred species for treating certain ailments. The FL was calculated as follows:

$$FL(\%) = \frac{N_p}{N} \times 100$$

Where N_p is the number of informants that claim a use of a species to treat a particular disease, N is the number of informants that use the animal as a medicine to treat any given disease. The authors also performed the Pearson correlation analysis to understand the relationship between the percentage of the traders selling primate species and the average selling price of the items for sale.

RESULTS AND DISCUSSION

Primate species traded on the animal-based medicine market in Benin

In the markets studied, the trade in primate body parts for animal-based medications was shown to be common



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▲ Olive Baboon *Papio anubis*

▼ Fig. 2. Patas Monkey *Erythrocebus patas* heads (below left), and the hand and skin of a Chimpanzee *Pan troglodytes* Djougou market (below right); the skulls of different primate species (bottom) on display at Dantokpa international market, southern Benin.



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Patas Monkey *Erythrocebus patas*

practice in southern Benin. Eleven primate species occurring in Benin were recorded at the animal-based medicine markets. Of these, nine were found to be offered or traded at select markets in southern Benin; apart from the species that were observed for sale, it was not always possible for the authors to verify whether all those being offered by the sellers were available; in addition, two

species that do not occur in Benin—gorillas *Gorilla* sp. and Chimpanzees *Pan troglodytes* (Fig. 2) (Sinsin and Kampmann, 2010)—were also recorded, although were the least commonly recorded primate species for sale. Chimpanzee and gorilla species are listed in CITES Appendix I and, as such, international trade in these species is prohibited; the specimens on display must therefore have been illegally imported. The species most commonly sold—recorded to be offered for sale by more than 50% of the traders—were Vervet Monkey, Patas Monkey, Mona Monkey, Olive Baboon and Senegal Bushbaby. The use value (UV) of all primate species used for zoo-therapeutic purposes ranged from 0.04 to 0.57. The species which had the highest use value were White-thighed Black-and-White Colobus (0.57), Vervet Monkey (0.35), Olive Colobus *Procolobus verus* (0.28), Patas Monkey (0.21). Conversely, Olive Baboon (0.04), Potto Gibbon *Perodicticus potto* (0.06), Chimpanzee (0.08), Demidoff's Galago *Galagoides demidoff* (0.08) and Senegal Bushbaby (0.09) were the least used. Table 2 summarises the primate species used for medicinal purposes, the commonly traded species, the use value of a species and the conservation status.

The principal origin of the primate products displayed in the markets was Nigeria, but several countries of West and Central Africa also feed the trade in primate products on sale in Benin. All species are believed to have both medicinal and magical values, however their use for magical purposes predominates.

The abundance of species sold in the traditional medicine markets partly mirrored the same trend of species abundance in their natural habitat (Nobimè *et al.*, 2008). This was true for some species such as the Patas Monkey, which is very common throughout the country, but not for other species; specimens of species threatened in Benin, such as the Mona Monkey, were found with almost all the traders interviewed.

Species	Frequency of traders selling the species (%)	Use-value of a species ¹	IUCN Red List ²	Benin Red List ³	CITES listing ⁴
Mona Monkey <i>Cercopithecus mona</i>	97.3	0.13	LC	VU	II
Patas Monkey <i>Erythrocebus patas</i>	85.3	0.21	LC	LC	II
Olive Baboon <i>Papio anubis</i>	75.1	0.04	LC	LC	II
Vervet Monkey <i>Chlorocebus tantalus</i>	68.8	0.35	LC	LC	II
Senegal Bushbaby <i>Galago senegalensis</i>	30.5	0.09	LC	LC	II
Demidoff's Galago <i>Galagoides demidoff</i>	23.6	0.08	LC	LC	II
White-thighed Black-and-White Colobus <i>Colobus vellerosus</i>	20.4	0.57	VU	EN	II
Potto Gibbon <i>Perodicticus potto</i>	25.4	0.06	LC	LC	II
Chimpanzee <i>Pan troglodytes</i>	11.2	0.08	EN	⁵	I
Olive Colobus <i>Procolobus verus</i>	10.4	0.28	LC	EN	II
Gorilla <i>Gorilla</i> sp.	9.7	0.15	CR	⁵	I

Table 2. The diversity, abundance, use value and conservation status of primate species traded for zoo-therapeutic purposes across southern Benin.

¹Higher figure indicates higher use value; ²<http://www.iucnredlist.org/>; ³See: Neuenschwander *et al.*, 2011;

⁴<https://www.cites.org/eng/app/appendices.php>; ⁵not occurring in Benin

Source of primate species traded in southern Benin

According to information received from traders, most of the primates and other animals sold in Benin markets come from the country's national parks or gazetted forests. However, although most of the primates on sale occur in Benin, the authors discovered that traders also imported them from other African countries. The traders identified 10 countries from where wildlife products derived from primates are imported (Fig. 3). Primates in the traditional medicine markets in Benin primarily come from Nigeria (34%), followed by Burkina Faso (16%), Ghana (14%), Niger (11%), Togo (8%), Gabon (5.6%), Côte d'Ivoire (4.8%) and Mali (3%). Central African countries as a source of supply, including Congo and Cameroon, were cited only by 2.5% and 2% of traders respectively. The fact that more than 30% of the primates traded at the animal medicine markets were reported to have come from Nigeria is likely attributable to Nigeria's close proximity. Moreover, Nigeria is more densely forested compared to Benin's other neighbouring countries such as Burkina Faso and Niger, which are in the Sahelian region (CILSS, 2016) and have lower densities of primates. Establishing the impact of traditional medicine on wildlife is notoriously difficult because traders are reluctant to reveal the exact source of their stocks, which is why the data collected relate to the country of origin only. The authors' findings on the source of the primates traded on the traditional medicine market in Benin suggest the existence of transnational organised wildlife crime as the trade is undertaken without CITES permits. The authors also suspect that the efforts of border security forces in controlling primates and other species being imported into Benin are hindered either by corruption or circumvention of current border management policies.

Primate consumption levels and species rarity vs. selling price

Primates were mostly sold as individual body parts, and bones and skulls were the most frequently documented items ($n=564$). Senegal Bushbabies recorded at the markets were mostly live specimens owing to customer preference, according to the sellers, but also possibly because their small size enables poachers to transport specimens to market more easily and discreetly compared with other primates. On average, primate traders ($n=20$) sold to seven customers per day, but this ranged from two and up to 30 customers on a very busy day. However, no data were available on the actual turnover of specific species and the rate at which stocks were replaced. The authors found a positive and significant correlation between the percentage of traders selling a primate species and the average selling price of the given species in southern Benin markets ($r=0.83$; $n=11$; $p<0.0001$, Fig. 4). Therefore, the rarer a species is on the market, the more expensive it is. It would have been interesting to assess the number of individuals of each species traded in the markets in order to assess the importance of the

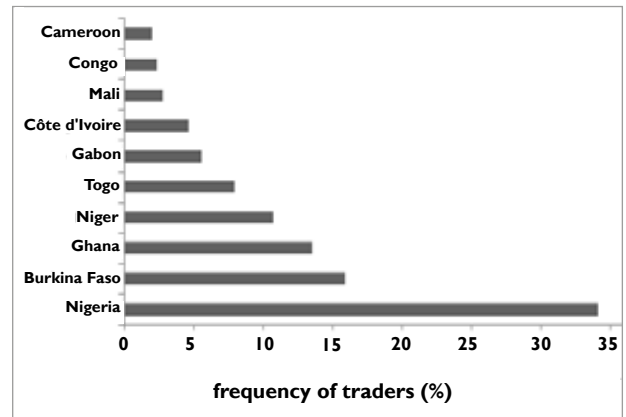


Fig. 3. The origin of imported primates offered on traditional medicine markets in southern Benin.

Source: trader interviews

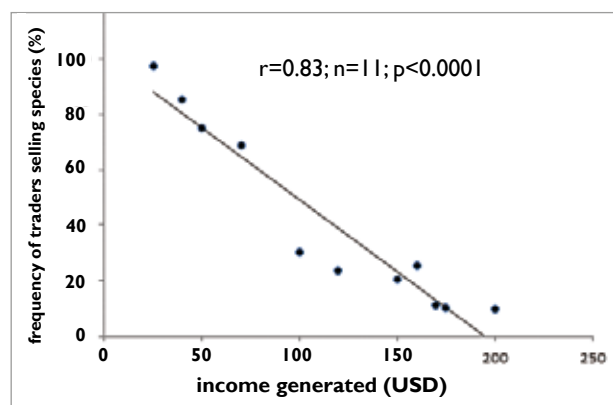


Fig. 4. Correlation between the percentage of traders selling primate species and the average selling price of the given species in southern Benin.

trade to the natural population depletion, especially for endangered species. As most of the time only parts of the bodies were found, this was not possible. Only prohibitively expensive DNA analysis would allow such estimation (Scott, 2008).

Traditional uses of primate species

While the body parts of some wildlife species sold in southern Benin markets all have medicinal uses, for others only some parts are used. These can be from live or dead animals. However most parts are traded or used in their raw and dried forms. The following animal parts/products are sold separately as remedies: bones, skins, tails, furs, skulls, bile, hands, legs and teeth. The zoo-therapeutic value of primate species was classified into two categories: medicinal or magico-religious value. Table 3 records the medicinal or the magico-religious value of the primates with their degree of fidelity level in citation. Different ways of preparing and administering such remedies were reported by the interviewees. Frequently,

when used for medicinal purposes, the body parts are sun-dried, crushed into powder and applied to the part of the body that needs treating. For magical purposes, the body part is used alone or in conjunction with other products. A slightly greater number of parts are used for magical purposes than for medicinal purposes. This also shows the importance of magic in traditions in Benin. Alves *et al.*, (2008) reported on the commercialization of similar raw materials used as remedies in certain Brazilian cities owing to the similarity in *vodoun* culture practiced in both countries, according to the history of the slave trade. Primates are commonly associated with myths in the faiths of different countries and used in magical or religious rituals (Mittermeier *et al.*, 2007). The species most used for medicinal purposes are the Mona and Patas Monkeys, while the ones preferred for magical purposes are Demidoff's Galago and Olive Colobus. This could be explained by the greater availability of the Mona and Patas Monkeys compared to other primate species (Campbell *et al.*, 2008). Indeed, numerous animal species are hunted or poached for their meat rather than for their supposed medicinal use (Ripple *et al.*, 2016). Nevertheless, there is often an overlap between the two purposes, and transmission of diseases can occur in both instances. Unfortunately, the potential health risk of animal-based medicine is ignored by the actors involved. Several species of monkeys have been identified as harboring infectious diseases transmissible to humans, with potentially grave consequences (Still, 2003). Organs and various tissues, including bones and bile, can be a source of *Salmonella* infection, causing chronic diarrhoea and endotoxic shock, but also the recently emerging disease Ebola that can *inter alia* be caused by the consumption of infected primate parts. The possibility of transmission

of other serious and widespread zoonoses such as tuberculosis or rabies should be considered whenever animal tissues from unknown sources are handled and used as remedies (Alves and Rosa, 2007). Additionally, it is essential that traditional drug therapies be vetted by a government and/or independent health agency regarding benefit/risk issues. Unfortunately, little research has been done to prove the claimed clinical efficacy of primate products for medicinal purposes. The use of animals for medicinal purposes is a component of traditional knowledge that is increasingly becoming more relevant to discussions on conservation biology and within multilateral environmental agreement negotiations (e.g. the CBD discourse on "Traditional Knowledge"), public health policies, and sustainable management of natural resources, biological prospection, and patents.

CONSERVATION IMPLICATIONS

This study confirms that several primate species are used in traditional folk practices in Benin. The species are usually collected in the wild and many are threatened by overharvesting according to Linder and Oates (2011). Despite the fact that the link between trade and the current status of primates in Benin is not well known, or understood, the extent of the trade and the decline of most primate populations in their natural habitat suggests that the problem is important, and that there is an urgent need to monitor the volume of the trade and its impact on primate populations. In Benin, the authors found that the rarest species on display were more expensive than more commonly available species. This may be an important factor in the reduced numbers of a given species as

Vervet Monkeys were among the primate species reported to be the most commonly sold during the survey period in southern Benin.



selective hunting is carried out to supply demand and make more profit. In addition, as reported by the interviewees, the rarer a species is and the more difficult to hunt, the more likely it is used as a traditional medicine ingredient. For the rarest mammal species, demand almost exceeds supply. Thus, the high prices and corresponding demand for some of these species increases hunting pressure, as the traders likely prefer to display high value, rare species. The authors found that 92% of respondents were not aware of the IUCN or Benin Red List conservation status of the species they traded. However, they did confess to being aware that some primate species sold are protected by law and that they were prepared to take the risk of being arrested. Also, many are likely to be illegally traded from neighbouring countries. This indicates an extensive lack of awareness crucial for the effectiveness of conservation strategies. It is important to remark that the use of certain animal remedies may have been more understandable in the past, when no other therapeutic alternatives were available, and when most species were probably plentiful in their natural habitat and the extent of the trade was on a smaller-scale. There is a need to incorporate indigenous knowledge systems and facilitate the effective participation of local communities in policy making and implementation concerning the sustainable use and conservation of biodiversity resources through participatory management. The trade of several of these primate species is illegal in Benin and there is a need for effective law enforcement. Moreover, the presence of gorillas and Chimpanzees in the markets surveyed raises both conservation concerns as well as concerns over the effective implementation of CITES in Benin (see also CITES Secretariat, 2017). Corrupt security agents and porous borders in Benin are suspected to be the main drivers of likely illegal trade in contravention of CITES. It is also important to raise awareness of the status of endangered species and of the Benin Red List. There are numerous reasons to re-evaluate the medicinal use of primate products in traditional medicine. In doing so, account should be taken of the rarity of some species, the unnecessary suffering that hunting incurs, and the possible health risks linked to the administration of animal-based remedies.

SPECIES	TYPE OF USE / VALUE	BODY PARTS	USES	FIDELITY LEVEL(%)
Vervet Monkey <i>Chlorocebus tantalus</i>	Medicinal Magic	Bile Skull	Malaria, jaundice, heart problem, gout Drive off evil spirits when kept in the house	68.8 45.3
Mona Monkey <i>Cercopithecus mona</i>	Medicinal Magic	Skin Head	Burns, area of fractured bone and sprains Drive off evil spirits	97.3 38.2
Patas Monkey <i>Erythrocebus patas</i>	Medicinal Magic	Bone Skull	Against snakebite Accident prevention	85.3 15.3
Olive Baboon <i>Papio anubis</i>	Medicinal Magic	Tibia bone Bones, teeth, claws	Assist children who take longer to start walking Charms	75.1 61.2
White-thighed Black-and-White Colobus <i>Colobus vellerosus</i>	Medicinal Magic	Bone Body	Burns, wounds Preventive measure from snakebite	20.4 60.3
Olive Colobus <i>Procolobus verus</i>	Medicinal Magic	Bone Body	Cure different body ailments Protection against evil influences/ manipulation and appeasing witches	74.4 80.2
Senegal Bushbaby <i>Galago senegalensis</i>	Medicinal Magic	Bone Skull/head	Burns, wounds Make spirit association with a fetish	30.5 10.3
Demidoff's Galago <i>Galagoides demidoff</i>	Medicinal Magic	Bile/fat Skull	Jaundice, malaria, gout, burns, wounds Frighten the enemy and witches	23.6 91.5
Gorilla <i>Gorilla</i> sp.	Medicinal Magic	Bone Head/skull + fore hind arms	Cure different body ailments Protection against evil influences/manipulation	9.7 79.3
Chimpanzee <i>Pan troglodytes</i>	Medicinal Magic	Male organs Body	Aphrodisiac/potency for men Protection against evil influences/ manipulation and appeasing witches	11.2 1.3

Table 3. Categories of diseases treated with primate species in surveyed cities.

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UN FAO's efforts towards sustainable wildlife management and improved food security and livelihoods

Report by Kristina Rodina

INTRODUCTION

In many tropical and sub-tropical regions of the world, wild meat provides an important source of protein and nutrients for rural communities. It has been estimated that, for example, in the Congo Basin some 4.9 million tonnes of wild meat are consumed annually (Fa *et al.*, 2002). If hunting wildlife for food is not reduced to sustainable levels, not only will species be threatened with extinction, but many communities will suffer rising levels of food insecurity.

In the 1960s, the Food and Agriculture Organization of the United Nations (FAO) was pioneering internationally funded field projects on wildlife and protected areas management, a role that has been evolving and which, between 1975 and 1996, involved assisting some 85 member countries with their activities relating to wildlife and protected areas management across more than 200 projects. By the 1990s, FAO's field activities had reduced in response to requests by FAO member countries to focus more on policy and legislation consultative work (Baldus *et al.*, 2008).

Today, FAO's work relating to wildlife and protected areas management forms an integral part of the FAO Forestry Programme, and contributes to one of the organisation's five Strategic Priorities: *making agriculture, forestry and fisheries more productive and sustainable*. The FAO Forestry Department's Wildlife and Protected Area Management Programme (referred to here as the "Programme") works to conserve terrestrial fauna and its natural habitats, and to improve the livelihoods of rural communities, particularly in developing countries, through normative work and field programme activities, in collaboration with major international partners.

FAO has been contributing to sustainable wildlife and protected areas management in Africa since these issues

were placed on the agenda of the first session of the African Forestry and Wildlife Commission (AFWC) in 1960. Since its entry into force in 1993, FAO has had a history of collaborating with the Convention on Biological Diversity (CBD), as evidenced by a number of decisions (e.g. CBD/COP/DEC/XIII/8) and joint work programmes (i.e. on sustainable use through the Collaborative Partnership on Sustainable Wildlife Management). This paper highlights some of the work undertaken by FAO and partners during 2017 to date in relation to its programme on wildlife and protected area management.

Central Africa: Sustainable management of the wildlife and wild meat sector

In June 2017, FAO completed a five-year project entitled *Sustainable management of the wildlife and wild meat sector in Central Africa* in four countries in Central Africa (Congo, Central African Republic, Democratic Republic of the Congo, and Gabon). Undertaken in collaboration with the Central African Forest Commission (COMIFAC), the Center for International Forestry Research (CIFOR), the French Research Centre for International Development (CIRAD), and the International Union for Conservation of Nature (IUCN), and with the financial support of the Global Environment Facility (GEF), the project demonstrated that participatory community-based approaches to wildlife management and control of wild meat production helps to address issues related to the control of access to wildlife resources, weak governance and ineffective institutions at the national level.

The project was implemented in response to the request of the 19th Session of the FAO's African Forestry and Wildlife Commission in 2013 to support member countries in their efforts to design and implement community-based

Top, clockwise: monitoring wildlife use in Liouesso, D.R. Congo; participants at the ninth meeting of the Collaborative Partnership on Sustainable Wildlife Management (CPW), Rome, June 2018; rhinoceros and wildebeest, Zimbabwe.

forest and wildlife management programmes. Outputs from this project include a book providing insight into the lessons learnt on community-based wildlife management and sustainable hunting practices in Central Africa, and two guides relating to implementation of community hunting management and the development of a management plan (FAO, CIFOR, CIRAD, 2017).

Global: Sustainable Wildlife Management Programme

In October 2017, FAO and partners launched the Sustainable Wildlife Management (SWM) Programme. This is a seven-year initiative involving a group of African, Caribbean and Pacific States (ACP), funded by the European Union and implemented by a consortium of partners including FAO, CIRAD, CIFOR and the Wildlife Conservation Society (WCS). The aim is to work initially with 12 ACP countries to tackle unsustainable levels of wild meat hunting, conserve their biodiversity and natural heritage, and to strengthen people's livelihoods and food security.

The SWM Programme activities are taking place in a wide variety of forest, savannah and wetland ecosystems. The emphasis is on developing new and innovative approaches to regulate wildlife hunting, strengthen the management capacities of indigenous and rural communities and increase the supply of sustainably produced meat products and farmed fish. The SWM Programme is also working in close collaboration with the national authorities in each country to develop policies and strengthen legal frameworks to reduce wild meat consumption to sustainable levels without compromising the food security of people who depend on wildlife hunting.

The participating ACP countries are Chad, Democratic Republic of the Congo, Gabon, Guyana, Madagascar, Mali, Papua New Guinea, Congo, Senegal, Sudan, Zambia and Zimbabwe. The experiences from these pilot countries will be developed into models that can be adapted and replicated in other ACP countries with similar contexts and challenges.

Partnerships: Collaborative Partnership on Sustainable Wildlife Management (CPW)

In recent years, wildlife management has been the focus of considerable international debate because of its importance for conservation, human safety, livelihoods and food security. The CPW was established in Bangkok, Thailand, in 2013 in response to CBD Decision XI/25¹. It is a voluntary partnership of 14 organisations² with substantive mandates and programmes for the sustainable use and conservation of wildlife resources and an important forum for the discussion of key global issues related to sustainable use, management, and conservation of terrestrial and semi-terrestrial vertebrate wildlife. It works together with its members and local players worldwide to generate a better understanding of the multiple benefits and values of wildlife, and to support the development of strategies and policies to conserve wildlife and benefit the people who depend on wild resources for their survival and livelihoods (UNEP/CBD/SBSTTA/20/INF/48).

As a member of the CPW, FAO is currently involved in the preparation of the second Wildlife Forum in the margins of the upcoming UN Biodiversity Conference to be held in Egypt in November 2018. The purpose of the Forum is to advance policy dialogues and define priorities on sustainable wildlife management post-2020, including the increased participation of Indigenous Peoples and Local Communities. The meeting will build on the first Wildlife Forum³ held in 2015, which featured a series of multidisciplinary debates on key issues and opportunities pertinent to sustainable use of wildlife across geographical regions.

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¹<https://www.cbd.int/decision/cop/?id=13186>; ²CPW members: CBD Secretariat (Chair); Center for International Forestry Research (CIFOR); Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) Secretariat; Convention on Migratory Species (CMS) Secretariat; Food and Agriculture Organization of the United Nations (FAO); International Council for Game and Wildlife Conservation (CIC); International Indigenous Forum on Biodiversity (IIFB); International Trade Centre (ITC); International Institute for Environment and Development (IIED); International Union for Conservation of Nature (IUCN); International Union of Forest Research Organizations (IUFRO); TRAFFIC (Vice-chair); United Nations Environment Programme (UN Environment); World Organisation for Animal Health (OIE).³<http://www.fao.org/about/meetings/world-forestry-congress/programme/special-events/wildlife-forum/en/>



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The illegal trade in otter pelts in Nepal

Report by Melissa Savage and Mohan Bikram Shrestha

INTRODUCTION

Illegal trade in wildlife has been taking place in Nepal on a large scale in recent decades. While the country is not regarded as a primary consumer of wildlife, much of South Asia's wildlife trade moves through Nepal to markets in East Asia (Shakya, 2004). Nepal's central location in the Himalayan range places it at a key position along this trade route. Wildlife products sourced from India, Bangladesh, and Pakistan pass through Nepal, and to a lesser degree from Nepal itself, along long, porous international borders, to markets in China (Wright and Kumar, 1997; Li *et al.*, 2000). To date, conservation efforts in Nepal, as elsewhere, have focused largely on high profile species, notably the Greater One-horned Rhinoceros *Rhinoceros unicornis*, Tiger *Panthera tigris*, and Leopard *P. pardus*, neglecting smaller, yet often threatened mammals, including otters.

This study documents otter seizure data for Nepal between 1989 and 2017. The trade in otters is chiefly known because their pelts are often sold alongside other high-value wildlife products, such as tiger skins. Otters are prized for their luxurious fur, made into clothing for consumers in China, particularly in the Tibet Autonomous Region. The clandestine nature of the illegal trade means that the true scale is far greater than seizure numbers reveal (Gomez *et al.*, 2016).

Three species of otter occur in South Asia: the Eurasian Otter *Lutra lutra*, Smooth-coated Otter *Lutrogale perspicillata*, and Small-clawed Otter *Aonyx cinereus*. The Eurasian Otter is listed as Near Threatened on the IUCN Red List™ (IUCN, 2018) and in Appendix I of CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). Smooth-coated and Small-clawed otters are listed as Vulnerable on the IUCN Red List™ (IUCN, 2018), and in Appendix II of CITES. Eurasian and Smooth-coated Otters appear to be the most extensively traded otter species in South Asia (Gomez

et al., 2016). The Eurasian Otter has experienced a steep population decline; unlike the Smooth-coated and Small-clawed otters, however, which have undergone population declines of more than 30% over the past 30 years, the Eurasian Otter is recovering slowly due to greater protection in Europe (Pacifi *et al.*, 2013).

Protection of otters in Nepal

The status and distribution of otters in Nepal is poorly documented, making implementation of legal protection difficult. In 2007, Nepal's National Red List Series listed the Smooth-coated Otter as Endangered, with an estimated population of fewer than 1,000 individuals and the Eurasian Otter as Near Threatened, with an estimated population of between 1,000 and 4,000 individuals (Jnawali *et al.*, 2011). The Small-clawed Otter is classified as Data Deficient as its status in Nepal is too poorly known to assess (Jnawali *et al.*, 2011). All three otters are rarely observed, although sightings have been reported within protected areas, particularly those with rivers and wetlands, as well as in locations outside protected areas (Jnawali *et al.*, 2011).

The *National Parks and Wildlife Conservation Act* of 1973 prohibits possession without a permit of 27 mammal species, but no otter species are included in the Act (Government of Nepal, 1973). A 2002 amendment to the 1961 *Aquatic Life Protection Act* (Government of Nepal, 2017), however, prohibits the hunting and killing of Eurasian and Smooth-coated Otters in the country, both within and outside protected areas. The Small-clawed Otter is not afforded protection by the *Aquatic Life Protection Act* and lacks any legal protection.

Notwithstanding Nepal's role as a leader in wildlife conservation in Asia, illegal trade in wildlife is prevalent and remains difficult to control. Nepal was an early signatory of CITES (1975). Political turmoil, social and economic constraints, and geographic factors present significant challenges to wildlife protection in the country. During the civil war, from 1996 to 2006, insurgents dominated many rural areas, including protected areas. The Nepalese Army, which had been responsible for protecting national parks and wildlife reserves since the 1970s, was redirected to address the insurgency (Heinen and Shrestha, 2006). Poaching proliferated within and outside protected areas, along with increased use of powerful weapons that replaced traditional methods of hunting (Bhuju *et al.*, 2009). The earthquake in 2015, measuring 7.8 on the Richter scale, devastated Nepal's infrastructure, further hampering conservation efforts.

In spite of these challenges, Nepal has recently begun to address the illegal wildlife trade more effectively. The return of the army to protected areas serves as a strong physical and psychological deterrent to trafficking (Bhuju *et al.*, 2009). New anti-poaching units resulted in increases in megafauna populations in Chitwan, Bardia and other national parks (Dudley, 2017). Yet a 2018 document reported that all three species of otter are among the most hunted, poached and illegally traded species in Nepal (Department of National Parks and Wildlife Conservation, 2018).

▲ Eurasian Otter

Year of seizure	Place of seizure	No. of skins	Source
1989	Darchula	85	a
1994	Dhulabari	9	a
1996	Tamku	6	a
1996	Pashupatinagar	94	a
1997	Kathmandu	1	a
1998	Dhung Gad	5	b
2000	Thankot	1	a
2001	Kakadvitta	36	a
2002	Kathmandu	14	c
2003	Kathmandu	14	d
2004	Kathmandu	14	e
2004	*Kathmandu	109	f
2004	Kathmandu	6	g
2004	Daklang	6	e
2004	Kathmandu	14	g
2004	*Kathmandu	1	f
2004	Kathmandu	38	e
2004	Kathmandu	12	h
2004	Thankot	11	e
2005	Dunche	238	c
2005	Kathmandu	38	e
2013	Lalitpur	1	e
2014	Gaidakot	1	e
2017	Kathmandu	1	i
Total		755	

Table 1. Documented seizures of illegal otter pelts in Nepal, 1989–2017. Sources: see footnote¹;

*seizure location unknown, recorded in Kathmandu.

The otter trade

Rising incomes in Asia have led to a burgeoning demand for wildlife products and target species in the region face intense pressures from poaching (Gomez and Bouhuys, 2017). The trade offers high profits and little risk of detection or prosecution. Traditional consumers of otters have long sought the dense, durable, and luxurious fur of their pelts, but demand has increased with rising human populations and growing affluence (Gomez *et al.*, 2018). At a market in Linxia, China, over 1,800 otter pelts were reportedly for sale in 2009 (Bhuju *et al.*, 2009). There appears to be little trade in live otters in the region, even though the trade in live juvenile otters for pets is burgeoning in South-east Asian countries (Gomez and Bouhuys, 2018).

The value of wildlife products multiplies rapidly moving along the supply chain from source to market. Villagers and tribal peoples mostly poach to supplement incomes. Choosing the wildlife trade as a profession is not seen as unethical, and in many communities near protected areas at least one member of a family

is in prison for wildlife-related crimes (Bhuju *et al.*, 2009). Middlemen brokers are active in the capital, Kathmandu, in central Nepal, and in nearby towns, for example, Hetauda to the south, Butwal to the south-west, and Pokhara to the west of Kathmandu (Bhuju *et al.*, 2009). These brokers then pass the illegal wildlife commodities on to well-financed criminal networks that have resources for undertaking long distance smuggling on well-established international trade routes (Shakya, 2004).

METHODS

A database of seizure records of illegally traded otter pelts in Nepal between 1989 (about when reliable records began to be kept) and 2017 was constructed from government crime reports, published reports, NGO databases, and national and regional newspapers (Table 1). A challenge faced was that identification of the species of otter, mode of transportation, and origin and destination are rarely reported.

RESULTS

Trade volume

A total of 755 otter pelts were recorded as seized in Nepal in 24 incidents during the survey period (Table 1). All confiscations occurred either in or near Kathmandu or near an international border. Towns near international borders where seizures have been reported include Darchula, Tamku, and Dunche near the northern border with Tibet Autonomous Region; Dhung Gad near the western border with India; Dhulabari, Kakadvitta and Pashupatingar near the eastern border with India; and Gaidakot near Chitwan National Park on the southern border with India. One hundred and thirty-four pelts were seized in or near Kathmandu. [Not included in the analysis is the 2003 seizure of 778 otter skins in Sangsang, Tibet Autonomous Region, 100 miles north of the Nepal border, which transited Nepal from India en route to Lhasa (TRAFFIC, 2004; 2005a)].

In addition to the figures documented in Table 1, 787 otter skins were seized in Delhi, India, in 23 incidents between 1989 and 2011, most or all intended for trade through Nepal². The Indian capital of Delhi, located in the north of the country, serves as a hub for the collection of wildlife products from across India to be shipped into Nepal to points north. Some skins seized in Delhi bore signatures in Tibetan script, suggesting that the pelts were to be sent to China via Nepal (Gomez *et al.*, 2016). More otter skins are seized in India than any other South Asian country, a total of 2,949 between 1980 and 2015 (Gomez *et al.*, 2016). A decline in seizures in Delhi after 2011 parallels a similar trend in Nepal.

¹Sources: a. Shakya, 2004; b. Yonzon, 1998; c. Environmental Investigation Agency, 2016; d. Banks and Newman, 2004; e. Wildlife Conservation Nepal, 2017; f. Wildlife Crime Information and Database, 2017; g. WWF, 2009; h. Gajurel, 2004; i. Robin des Bois, 2017.

²Sources: WPSI, 1980–2015; Banks and Newman, 2004; TRAFFIC, 2005b; 2007a,b; WWF India, undated; Gajurel, 2004; The Indian Express, 2009.

Trade routes

The rugged topography and porous borders of Nepal facilitate the illegal wildlife trade, with Kathmandu serving as a “staging point” (Banks and Newman, 2004). Smuggling routes involve transport by lorry or bus, and in remote areas by animals or porters. In 2005, for example, the Royal Nepal Army seized a consignment of wildlife goods transported by lorry to the town of Syphrubensi, near the border with Tibet Autonomous Region, and carried by porters on foot across the border. The shipment contained 238 otter skins, together with tiger and leopard skins and bones hidden in noodle cartons (TRAFFIC, 2008). On occasion, wildlife products are transported by charter plane within Nepal (Shakya, 2004).

Along the southern border of Nepal, the Indian States of Uttarakhand, Himachal Pradesh, and West Bengal are sources of poached wildlife (Shakya, 2004). To the north, the border with Tibet Autonomous Region lies in rugged, high elevation terrain, with few roads and weak Customs oversight. Small consignments cross mountain passes through a chain of couriers, often with the collaboration of Customs officials (Bhuju *et al.*, 2009). Surveillance is also weak in the huge protected areas on the border with Nepal/Tibet Autonomous Region, Shey Phoksundo National Park, Annapurna Conservation Area, Kanchenjunga Conservation Area, and others. Trafficking routes pass through traditional trading towns in the north, such as Tinker, Chhangaru, Darchula, Rolpa, Tamku, Tatopani, Taplejung, and Manang (Shakya, 2004).

Illegal wildlife goods from India are channelled through West Bengal and Sikkim across the eastern border of Nepal, and onwards to Tibet Autonomous Region (Ziegler *et al.*, 2010). The cities of Kolkata, Siliguri and Darjeeling in West Bengal, India, are significant hubs for trade into Nepal (Martin, 1999). Trade routes also pass directly between India and China, to the east and west of Nepal’s borders. Three direct access routes now open to facilitate legal trade between India and China may also abet the illegal trade. These are the Nathula Pass between Sikkim and Tibet Autonomous Region, the Shipkila Pass from Himachal Pradesh into Tibet Autonomous Region, and the Lipulekh Pass, at the tri-district point of Nepal, China and the Indian State of Uttarakhand.

Arrests and penalties

Although conviction rates and sentences for poachers and traffickers in South Asia have historically been low and sentences light, there appears to be a strengthening of sentencing in Nepal. Penalties for killing and trading tigers and Snow Leopards *Panthera uncia* now carry a



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substantial fine or a prison term of five to fifteen years, or both. Four men arrested in 2005 for smuggling 238 otter skins, as well as tiger and leopard parts, were fined the equivalent of USD1,500 and sentenced to between five and 15 years in prison, since tigers and leopards were also seized (TRAFFIC, 2008). Yet arrests often target only the carriers, who are just one link in the chain of trade, and one that is easily replaced.

The movement of wildlife obtained illegally in India and brought into Nepal is likely facilitated by lack of enforcement at the border. In India, conviction in wildlife cases carries a prison term of between three and seven years. However, conviction rates are low. Of the 784 cases pertaining to otter, tiger, or leopard seizures in India between 1994 and 2003, only 14 of the 1,400 individuals arrested were convicted and sentenced (Banks and Newman, 2004). By contrast, the single largest seizure of otter skins on record (778), which occurred in China in 2003, resulted in one Chinese national from Tibet Autonomous Region being sentenced to death and another person to life imprisonment (TRAFFIC, 2005a).



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- ▲ **Smooth-coated Otters** are highly social, with family groups consisting of the mother and her young offspring, often joined by the father and older siblings.
 - **Otter pelts, Harbin, China, 2007.** Species of cured otter pelts are hard to identify.

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Otter pelt, Litang, China, 2005. Otter pelts are favoured for use in traditional garments in Tibet Autonomous Region.

CONCLUSIONS

Seizures of otter pelts in Nepal peaked between 2003 and 2005, mirroring a similar trend in the record of seizures throughout South and South-east Asia (Gomez *et al.*, 2016). Similarly, a decline in otter seizures between 2005 and the present parallels a decline in otter seizures in all South Asia records (Gomez *et al.*, 2016). This could reflect a decline in the trafficking of otters. However, numerous reports document a thriving trade in otters across Asia (e.g. Gomez *et al.*, 2016; Gomez and Bouhuys, 2017).

It is unclear why there was a lull in seizures of otter pelts between 2006 and 2012. The decline could be a reflection of weaker enforcement efforts or lower

seizure reporting. Alternatively, the trend may reflect an increasing scarcity of otters. This is supported by reports of steeply declining populations of all three otter species throughout Asia (Pacifi *et al.*, 2013). For example, a Smooth-coated Otter population documented in Chitwan National Park (e.g. Acharya and Lamsal, 2010) now appears to be extirpated (S. Thapa pers. comm. to M. Savage, April 2018). Most likely, a decline of seizures reflects a combination of difficulty of detection of increasingly sophisticated traffickers combined with declining otter populations in the region.

The illicit wildlife trade in Nepal has received increased attention and judicial scrutiny in recent years, and while otters have benefited from the crackdown on the tiger and leopard trade, they remain largely below the law enforcement radar. Mitigation of the otter trade requires the same remedies as wildlife trafficking in general, including more effective attention from law enforcement, judicial, and political agencies, a better conviction rate and stiffer penalties, a better understanding of trade routes and methods, closer scrutiny of trading towns, increased training of Customs agents, and a cross-border standardised database of criminal trafficking. Banks and Newman (2004) suggest the creation of a multinational specialised wildlife crime unit to track the trade across the borders of Nepal, India and China. In January 2011, the South Asia Wildlife Enforcement Network (SAWEN, <http://www.sawen.org/>) was officially created as an inter-governmental wildlife law enforcement support body of eight South Asian countries, including Nepal. SAWEN would be well advised to take a closer look into the illegal trade in otters and their products. In addition, ecotourism is a robust contributor to regional economies and is an incentive for shutting down the illegal wildlife trade. All three otter species in the region are threatened, and without more effective policing, face an uncertain future in Nepal and elsewhere in South Asia.



◀ Small-clawed Otters

are among the most heavily traded otter species in South Asia. Along with Smooth-coated Otters, populations are thought to have declined by more than 30% in the region in the past 30 years.

Photograph: © N. Duplaix

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SCALING UP:

THE CONTEMPORARY REPTILE PET MARKET IN JAPAN

*Report by Keiko Wakao,
Jordi Janssen and
Serene Chng*

INTRODUCTION

The reptile pet industry has been scrutinised by the international conservation community for its role in the trade of a wide range of species, many of which are threatened by collection for trade (Herrel and van der Meijden, 2014; Auliya *et al.*, 2016). In terms of monetary value, Japan was the fourth largest importer of live reptiles in 2016 (Comtrade, 2016). In that year, Japan imported 192,357 live reptiles and exported 8,702 live reptiles (Ministry of Finance, 2017). Visitors to reptile expos have increased over time, with over 20,000 people attending the Tokyo Reptiles World 2016 Show, up from 8,343 in 2011 (Secretariat of Tokyo Reptiles World, *in litt.*, December 2015; Tokyo Reptiles World, 2016). Besides keeping reptiles as pets, reptile cafes (where customers can watch and interact with reptiles in a café setting) have become popular in recent years (e.g. Hochiminh Keizai Shimbun, 2014; Asahi Shimbun Digital, 2018).

In 2007, TRAFFIC documented 410 reptile species in a market survey of 40 reptile pet shops in the east, west and central regions of Honshu Island (Kanari and Auliya, 2011). Approximately a quarter of the species recorded were native to South-east Asia. A new study was carried out in 2017 to provide an update and to identify conservation concerns regarding the Japanese reptile trade market, thereby guiding future interventions to ensure the legality and sustainability of the trade.

LEGISLATION

The reptile trade in Japan is covered by several national laws. Japan's principal law governing wildlife is the *Law for the Conservation of Endangered Species of Wild Fauna and Flora*, which regulates the trade in CITES Appendix I-listed species once they enter Japan, and the capture and trade of "the nationally endangered species of wild fauna and flora" in Japan. CITES Appendix II and III species that have entered Japan are not covered by this law. The *Foreign Exchange and Foreign Trade Law* and the *Customs Law* regulate the import/export of CITES species at the nation's ports of entry. Additionally, the *Invasive Alien Species Act* prohibits possession of specified non-native species.

Under the *Act on Welfare and Management of Animals* it is mandatory for a trader wishing to sell live reptiles to register as a Type I Animal Handling Business Operator. Since 2013, the direct sale of live reptiles online for pets is prohibited under the same Act (Article 21, paragraph 4). The number of registered live reptile retailers increased slightly from 699 in 2010 to 733 in 2016 (Yasei-sha, 2016). However, this is likely to be an underestimate: according to the Japan Reptiles and Amphibians Association, there are over 1,400 retailers who have declared that they sell reptiles (JPRAS, 2016).

METHODS

• Market survey

In order to investigate the reptiles for sale in pet shops and expos in Japan, TRAFFIC investigators carried out surveys of eight outlets in Tokyo, six in Kanagawa Prefecture, and two in Osaka Prefecture in February 2017. The Reptiles Fever—an exotic pet trade expo and the largest in the Kansai area, with about 40 trading stalls, was also surveyed. All reptile species were recorded to species or subspecies level where possible, as well as information on the number of animals, price, origin, and source (captive-bred or wild-caught), where possible. No animals were purchased as part of the survey. Prices were converted to USD using the rate USD1=JPY113.35143.

• Online advertisement survey

Fifteen websites advertising the sale of reptiles were selected from reptile magazines and leaflets from previous reptile expos. Information on species, number of animals, price, origin and source was recorded for all unique advertisements posted between February and May 2017, and in a follow-up survey in July 2017 to complete the survey. Posts stating that the animals were not available for sale (e.g. "sold out", "not for sale") were not included in the dataset.

RESULTS

Market survey

A total of 5,491 animals of 606 taxa, including 543 distinct species (63 subspecies), were observed during the survey period in the 16 shops and at the reptile expo. Of the 5,491 animals, 257 individuals could not be identified as they were not clearly visible and bore no labels, and 20 were hybrids. Reptile shops displayed an average of 187 animals (range: 6–728) and an average of 87 identified species (range: 6–264). At the reptile expo, each stall had on average 87 animals (range: 4–311) of 20 species (range: 4–58).

Lizards were the most numerous reptiles with 2,335 individuals (45%) of 295 taxa (49%) (Fig. 1). The lizard family Eublepharidae was the most frequently observed with 699 individuals, followed by the snake families Colubridae (602 individuals) and Pythonidae



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The Reptiles Fever expo, Osaka, 2017 ►

	CITES Appendices			Not listed in CITES	Total
	I	II	III		
Critically Endangered	6	11	0	1	18
Endangered	1	23	3	9	36
Vulnerable	1	37	2	14	54
Near Threatened	0	16	1	29	46
Least Concern	1	55	8	141	205
Data Deficient	0	2	0	6	8
Not on IUCN					
Red List	0	71	0	168	239
Total	9	215	14	368	606

Table 1. Observed taxa listed in the IUCN Red list and CITES Appendices.

(523 individuals). Colubridae also comprised the most species with 51 species, followed by Geoemydidae with 45 species (377 individuals).

The species with the greatest number of individuals observed were the Leopard Gecko *Eublepharis macularius* with 614 individuals, followed by the Ball Python *Python regius* (374 individuals), Corn Snake *Pantherophis guttatus* (349), Bearded Dragon *Pogona vitticeps* (150) and the Japanese Pond Turtle *Mauremys japonica* (102). These species are likely to have been bred in captivity.

Of all species observed, 367 are listed on the IUCN Red List (2017), of which 18 are classified as Critically Endangered (CR), 36 as Endangered (EN), 54 as Vulnerable (VU) and 46 as Near Threatened (NT) (Table 1). The remaining species have either not been assessed or are classified as Least Concern or Data Deficient. Most were non-native species, with only 16 of 606 taxa native to Japan, of which 10 species are endemic.

Species protected by national legislation

Fifteen native taxa were recorded during the physical survey, of which three are protected under Japanese legislation. Of particular note is the Ryukyu Black-breasted Leaf Turtle *Geoemyda japonica* (four individuals). This endangered turtle is designated as a “National Monument” under the Law for Protection of Cultural Properties, and the capture and commercial trade is not allowed. The other two taxa (Yellow Pond Turtle *Mauremys mutica kami* and Sakishima Grass Lizard *Takydromus dorsalis*) are protected in parts of their range by the relevant municipal ordinances.

CITES-listed species

Of the 606 observed taxa, 41% (238 taxa) are listed in the CITES Appendices. Nine are listed in Appendix I: seven Testudines, one lizard (Chinese Crocodile Lizard *Shinisaurus crocodilurus*) and one alligator species (Chinese Alligator *Alligator sinensis*). Commercial trade of wild-caught individuals of CITES Appendix I species is prohibited. Six Appendix I species observed are also assessed as Critically Endangered on the IUCN Red List (Table 1).

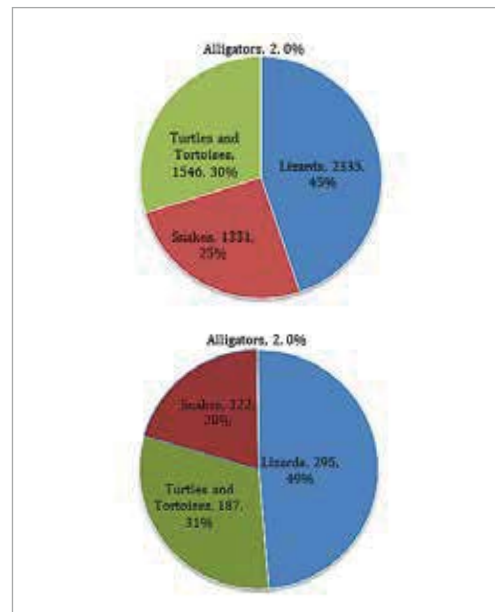


Fig. 1. No. of animals (top) and taxa (bottom) of each reptile taxa recorded during the survey (excluding unidentified and hybrid species).

The majority of CITES-listed taxa (90%, 215 species) are listed in CITES Appendix II, which requires a permit from exporting countries. A further 14 species are listed in Appendix III, trade in which requires a certificate of origin.

Origin of non-native species

Species from almost every continent were recorded from the surveys. North American species were the most commonly observed, comprising 19% of all species, followed by Africa and South-east Asia, with 16% of all species originating from both regions (Fig. 2). However, South Asia and East Asia combined and Oceania followed closely with 15% of all species from these regions. Species endemic to their range States include four Malagasy tortoise species, all of which are Critically Endangered and listed in CITES Appendix I.

Wild caught vs captive bred

For the majority of all animals observed (91%, 5,017 animals), no source information was displayed or disclosed in the shops. Only 389 animals (7%) were specifically labelled as bred in captivity, while the source of 75 animals was claimed to be from the wild. For some of the most commonly observed species (e.g. Bearded Dragon, Ball Python, Corn Snake, Green Iguana *Iguana iguana* and Leopard Gecko) a captive-bred origin is very likely. Most of these species are available in colour morphs, an indication of captive breeding. On the other hand, for some species claimed as captive-bred, there is little evidence of the species reproducing in captivity (e.g. Boelen's Python *Simalia boeleni*) or for which laundering of wild-caught individuals as captive-bred has been documented (e.g. Green Tree Python *Morelia viridis*) (see Discussion).



◀ **Fig. 2. Region of origin of surveyed reptiles.** Some species occur in multiple regions; these were counted in each region (e.g. a species occurring in Asia and Oceania was counted in both).

Prices

Price data were gathered for 442 taxa and ranged from USD9 for a Chinese Pond Turtle *Mauremys reevesii* to USD52,932 for a Perentie *Varanus giganteus*. Prices varied greatly according to certain factors, such as rarity of the species, condition, size and colour morph of the individual. The total documented value of the animals recorded with price data in the survey is JPY121,366,670 (~USD1,070,711), with the average price of JPY146,870 (~USD1,304) per animal.

Critically Endangered species appeared to be more expensive than others, with the average observed prices of such species ranging from JPY148,000 (~USD1,306) to JPY430,000 (~USD3,793). However, the most expensive species (Perentie) is not assessed on the IUCN Red List. While it seems likely that an IUCN status may increase the value of species, other factors like abundance in trade and protection status (e.g. CITES listing) may also influence prices.

Online advertisement survey

A total of 753 unique advertisements were recorded from 15 websites during the survey period, of which many were websites for physical reptile shops. The advertisements in total offered a minimum of 1,343

animals for sale, comprising 357 taxa, excluding hybrids. The most numerous advertisements were for snakes (279 advertisements), followed by lizards with 263 advertisements and freshwater turtles and tortoises (205 advertisements). No advertisements for crocodilians were observed. For the number of animals advertised, lizards were the most common with 146 taxa (550 individuals), followed by 113 snake taxa (434 individuals) and 98 taxa of freshwater turtles and tortoises (359 individuals). The Ball Python was the most common species, with 39 individuals advertised.

A total of 220 of the taxa recorded in the physical survey were also observed during the online survey, which means 137 taxa are unique to the online survey. Some genera, such as whip snakes *Ahaetulla*, wolf snakes *Lycodon* and red-bellied turtles or cooters *Pseudemys*, were only observed online. Many of the websites surveyed are online portals for the physical shops (i.e. the same business), but offered different taxa to those sold in the physical outlets.

Three taxa are classified as Critically Endangered on the IUCN Red List—all freshwater turtles and tortoises. Fourteen individuals of five species recorded are assessed as Endangered, and seven species and fourteen individuals as Vulnerable. Twenty taxa are native to Japan. In 150 out of 220 advertisements, species were

Species	Range country	No. of individuals	IUCN Red List 2017	CITES listing
Philippine Pond Turtle <i>Siebenrockiella leytensis</i>	Philippines	2	Critically Endangered	II
Oaxaca Spiny-tailed Iguana <i>Ctenosaura oaxacana</i>	Mexico	1	Critically Endangered	-
Roti Island Snake-necked Turtle <i>Chelodina mccordi</i>	Indonesia	1	Critically Endangered	II
Spider Tortoise <i>Pyxis a. arachnoides</i>	Madagascar	2	Critically Endangered	I
Ryukyu Black-breasted Leaf Turtle <i>Geoemyda japonica</i>	Japan	4	Endangered	II
Giant Sungazer <i>Smaug giganteus</i>	South Africa	9	Vulnerable	II
Shingleback Lizard <i>Tiliqua rugosa</i>	Australia	14	-	-
Borneo Earless Monitor <i>Lanthanotus borneensis</i>	Indonesia, Malaysia	12	-	II
Perentie <i>Varanus giganteus</i>	Australia	1	-	II

Table 2. Examples of reptiles protected from trapping, trade and/or export in range countries observed for sale in physical and online markets in Japan.

claimed to be captive-bred and 59 as wild-caught. Most advertisements (90%) included price information. The Common House Gecko *Hemidactylus frenatus* was the cheapest (JPY380 or USD3.35), and at the opposite end of the spectrum a Lace Monitor *Varanus varius* was offered for JPY880,000 (USD7,763).

DISCUSSION

In 2007, TRAFFIC conducted a survey of the reptile pet market in Japan (Kanari and Auliya, 2011), recording 410 species for sale, of which 18% were assessed as threatened (Critically Endangered, Endangered or Vulnerable) on the IUCN Red List, and 39% were CITES-listed species. While the present survey was more extensive than the 2007 study, and involved different shops, it appears likely that the reptile market in Japan has grown since the previous study, based on the sheer range of species recorded in this survey. A combined 743 taxa were recorded from both the physical market and online surveys.

There appears to be a particular demand in Japan for unique and rare species, as Critically Endangered species appeared to have above average prices. A good number of species recorded in this survey are rarely recorded in trade (e.g. Rusty Monitor *Varanus semiremex*). Taxonomically distinct species such as the Borneo Earless Monitor *Lanthanotus borneensis* (Nijman and Stoner, 2014) and newly discovered species like the Yingde Leopard Gecko *Goniurosaurus yingdeensis* have been recorded as being popular in Japan (pers. obs.). While it is important to assess accurately the level of conservation threat that a species is facing, this needs to be balanced against unwittingly promoting the rarity value of a species (Nijman *et al.*, 2009).

In addition to the demand within the country, Japan's geographic location between Asia and the Americas, as well as the professional links Japanese traders have to European dealers, makes it an important location for the reptile trade. Both the 2007 and 2017 surveys included a large diversity of Asian and American species, and Japanese traders are active in the Hamm reptile fair in Germany and have openly stated their connections to dealers in Germany and the Czech Republic during both surveys (Auliya, *in litt.*, 24 July 2018; authors' observations).

The study results indicate the occurrence of illegal trade. This illegality is suspected to take place along the trade chain, from the point of collection to the point of sale. Of the species recorded in 2017, several are suspected to have an illegal origin, as no import records could be found for several CITES-listed species (e.g. Perentie, Marbled Water Monitor *V. marmoratus*, Sago Monitor *V. obor*). However, current legislation in Japan does not adequately cover the possession and trade of non-native, CITES-listed species. Furthermore, a notable number of species recorded are protected from trade in range countries (Table 2). While range countries prohibit the export of these species, for many international trade is not regulated under CITES. This means that enforcement authorities in importing countries have little legal ground

Examples of species (top and bottom) recorded at the Reptiles Fever expo, Osaka, 2017.



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BROMELIAD ARBOREAL ALLIGATOR LIZARD

▲ The Bromeliad Arboreal Alligator Lizard

Abronia taeniata, endemic to eastern Mexico, occurs in primary humid montane forest, cloud forest and humid pine-oak and fir forest. In addition to being collected for the illegal pet trade, this lizard is threatened by deforestation of its habitat through conversion of land for agricultural use. While it is a common species in suitable habitat, there is a decreasing population trend. It is classified in the IUCN Red List of Threatened Species as Vulnerable because its extent of occurrence is less than 20,000 km², its distribution is severely fragmented, and there is continuing decline in the extent and quality of its primary forest habitat (Canseco-Márquez and Mendoza-Quijano, 2007). At CITES CoP17, *Abronia* species were listed in the CITES Appendices (A. *taeniata* in CITES Appendix II).

▼ The Monkey-tailed Skink *Corucia zebrata*,

native to the Solomon Islands, can only be legally exported as captive-bred. A seller offering a specimen during the survey disclosed that the specimen was ranched, which would still have meant sourcing from the wild.



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MONKEY-TAILED SKINK



The Carrot-tail Viper Gecko *Hemidactylus imbricatus* occurs in Pakistan and southern India.

to stop these animals from entering the country once they have been smuggled out of range countries. As further evidence, several Japanese nationals have been arrested for attempting to smuggle reptiles from range countries into Japan, some of them repeat offenders (AFPBB News, 2013; The Times of India, 2015; Bangkok Post, 2016; The Hindu, 2017; Mainich Shimbun, 2018).

Laundering of illegally-sourced wild animals as captive-bred is a regulatory and conservation issue for live reptiles (Nijman and Shepherd, 2009, 2015; Auliya *et al.*, 2016; Tensen, 2016; Janssen and Chng, 2018). CITES Appendix I species can be internationally traded for commercial purposes only if they are “pre-Convention” (i.e. acquired before they were listed in Appendix I), commercially bred in captivity from a CITES-registered breeding facility or bred for non-commercial purposes with a certificate for captive-breeding (CITES, 2009); this presents a loophole that collectors exploit to trade in and keep CITES Appendix I species. One such species is the Radiated Tortoise *Astrochelys radiata*, a Madagascar endemic that is heavily exploited by illegal trade (Leuteritz and Paquette, 2008). The species has been introduced to Mauritius from where it can be legally exported by registered and legitimate breeding facilities for the global pet trade. There is concern that this legal trade could provide opportunities for unscrupulous traders to mix illegally acquired animals with the legal trade. Nevertheless, thousands continue to be poached and smuggled out of Madagascar, where no CITES-registered captive breeding facilities exist for this species. In April 2018, almost 11,000 Radiated Tortoises were confiscated from a property in Madagascar, a record-breaking number of animals collected for the illegal pet trade (Actman, 2018) which indicates that large numbers continue to be poached from the wild to supply international demand.

For CITES Appendix II species, many of them are protected from capture and export under national legislation, and traders sometimes circumvent such

restrictions by exporting illegally wild-sourced animals as captive-bred (Janssen and Chng, 2018). There is prior evidence that several species recorded in this survey are laundered. The Giant Sungazer *Smaug giganteus* is exported as captive-bred despite the difficulty of breeding this species in captivity in commercially-viable numbers and evidence of animals being illegally captured from the wild in South Africa (Loehr *et al.*, 2016). There is little evidence of Boelen’s Python reproducing in captivity (Lettoof, 2015), and laundering has been documented for Green Tree Python (Lyons and Natusch, 2011). Another species—the Monkey-tailed Skink *Corucia zebrata*—is native to the Solomon Islands and can only be legally exported as captive-bred. A seller offering this species disclosed that the animal was ranched (which would still have meant sourcing from the wild). Several shops from the 2007 study offered adult specimens, another indication of the wild provenance of these animals (Auliya, *in litt.*, 24 July 2018).

CONCLUSIONS AND RECOMMENDATIONS

Japan’s reptile market is extensive and includes rare and endangered species. Many are non-native and protected in their range States, from which export is prohibited. Some CITES-listed non-native species are brought into and traded in Japan without legal export records from their range States or import records into Japan, in violation of CITES. Yet these animals are documented for sale in Japan. The Japanese government needs to recognise the scale of the Japanese reptile market and its demand for exclusive and often protected species, and that it is an important driver in the global pet reptile trade. While a proportion of the reptile pet trade is legal and consists of domesticated species, illegal and unsustainable trade is clearly taking place. It is recommended that the following action is taken:

- As there are indications from this study of unregistered retailers under the *Act on Welfare and Management of Animals* and of the illegal collection of the species protected by Japan’s domestic legislation, the Japanese government is urged to improve the implementation of existing laws. Ensuring that all pet shops selling reptiles are operating legitimately will improve regulation of the reptile pet trade within the country.
- Japanese enforcement authorities should refuse imports of species protected in their range States unless a captive-bred origin can be proven. Likewise, they should ensure at border points of entry that captive-bred specimens have a legal origin and such information should be traceable.
- Japan’s legislation needs to be reviewed and updated to cover the trade of non-native, CITES-Appendix II- and III-listed species and/or species protected in their range States.

- In conjunction with government authorities, reptile traders and keepers in Japan play an important role in self-regulating the pet market, ensuring that the keeping of reptiles in Japan is legal, and that the country's demand for reptiles as pets does not have a negative impact on wild populations.
- Consumer research should be conducted to understand the preferences and motivations of Japanese reptile keepers and hobbyists, and how to encourage them to purchase legally and sustainably sourced animals.

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THE TRAFFIC BULLETIN SEIZURES AND PROSECUTIONS SECTION IS SPONSORED BY THE FORESTRY BUREAU, COUNCIL OF AGRICULTURE, TAIWAN: COMMITTED TO SUPPORTING CITES ENFORCEMENT

The following section features a selection of seizures and prosecutions reported between April and mid-October 2018. Sources are cited at the end of each country section. Readers are referred to the TRAFFIC website (<https://www.traffic.org/news/>) for regular updates on cases reported from around the world.

BIG CATS

CZECH REPUBLIC: On 16 July 2018, authorities seized a freshly killed Tiger *Panthera tigris* (CITES I), the skins of tigers and other big cats, as well as the frozen bodies of various protected animal species during raids around the country, including at Sapa, a large Vietnamese market on the outskirts of Prague, and at a zoo park in Doksy, in north Bohemia. The owner of the park, who was arrested, is accused of breeding tigers and supplying their bodies to a taxidermist, who processes them and offers the resulting products for sale on the black market. Three men have been charged with unlawful treatment of protected wildlife and a further two have been detained. The raids are the result of more than two years of gathering material. Investigations continue.

Radio Praha: <https://bit.ly/2LloSsO>, 19 July 2018; VN Express International: <https://bit.ly/2NZ7iBj>, 19 July 2018

MALAYSIA: On 4 July 2018, authorities acting on information seized 60 animal parts from a sawmill in Kuala Lipis, Pahang, including two complete Tiger *Panthera tigris* (CITES I) skins, 10 smaller pieces of tiger skin, one piece of Clouded Leopard *Neofelis nebulosa* (CITES I), four horns of Sumatran Serow *Capricornis sumatraensis* (CITES I) and suspected serow tails, seven bear canine teeth, 20 bear claws (CITES I/II) and 39 kg of unspecified animal ivory. Three wire snares were seized. Six Vietnamese nationals were arrested.

The Star Online: <https://bit.ly/2q6CDZg>, 7 July 2018; FMT News: <https://bit.ly/2Pd2AnV>, 6 July 2018

PERU: On 23 September 2018, it was reported that a team of journalists visiting markets over the course of a week in the port of Iquitos found body parts derived from an estimated 24 Jaguars *Panthera onca* (CITES I) including 44 teeth, four skulls, five skins and 70 claws.

Mongabay: <https://bit.ly/2OEEqDn>, 23 September 2018

CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) establishes international controls over trade in wild plants and animals, or related products, of species that have been, or may be, threatened due to excessive commercial exploitation. Parties have their own legislative instrument by which to meet their obligations under CITES. The species covered by CITES are listed in three Appendices, according to the degree of protection they need:

APPENDIX I includes species threatened with extinction which are or may be threatened by trade. Trade in specimens of these species is permitted only in exceptional circumstances. An export permit from the country of origin (or a re-export certificate from other exporting countries) and an import permit from the country of importation are required.

APPENDIX II includes species not necessarily yet threatened, but which could become so if trade is not strictly controlled. Species are also included in Appendix II if they are difficult to distinguish from other species in Appendix II, in order to make it more difficult for illegal trade to take place through misidentification or mislabelling. An export permit from the country of origin (or a re-export certificate from other exporting countries) is required, but not an import permit.

APPENDIX III includes species that any Party identifies as being subject to regulation within its jurisdiction for the purpose of preventing or restricting exploitation and as needing the co-operation of other Parties in the control of trade. Imports require a certificate of origin and, if the importation is from the State that has included the species in Appendix III, an export permit is required.

All imports into the European Union of CITES Appendix II-listed species require both an export permit/re-export certificate and an import permit.

SOMALIA: On 5 August 2018, two people were sentenced to three years in prison and each fined the equivalent of USD300. The case relates to the seizure in Berbera district, Somaliland, of six Cheetah *Acinonyx jubatus* (CITES I) cubs and a further two cubs in a remote part of the Hargeisa region. This is reportedly the first wildlife conviction in the region. It is reported that some 35 cubs have been offered for sale by traders in the Gulf, including two sellers in the United Arab Emirates in 2018. The rescued cubs are in the care of the Cheetah Conservation Fund.

The National, UAE: <https://bit.ly/2CYB0oM>, 5 September 2018

UK: On 20 September 2018, at Croydon Magistrates' Court, Timothy Norris from Surrey was found guilty of selling clothing fashioned from Leopard *Panthera pardus*, Ocelot *Leopardus pardalis* (both CITES I), lynx *Lynx* spp. and wolf *Canis* spp. (CITES I/II), which he had illegally listed for sale on a social media site. Police wildlife unit officers seized from his home 24 items of clothing made from the above species. He was ordered to serve 200 hours of community service.

Shropshire Star: <https://bit.ly/2Am7ly4>, 21 September 2018

USA: On 1 August 2018, at Sherman, Texas, Arogkron "Paul" Malasukum, of New York, was sentenced to nine months in prison followed by one year of supervised release for the illegal trade in Lions *Panthera leo* (CITES II) and Tigers *P. tigris* (CITES I). He admitted to meeting undercover agents from the US Fish and Wildlife Service and purchasing a tiger skull from the agents; he also admitted to purchasing lion skulls from an auction house in Texas via the undercover agents who were acting as

"straw buyers" for him. Malasukum provided them with cash and directed them on which items to bid for. He shipped the tiger and lion skulls to his home in New York, from where he sent some 68 packages containing skulls, claws and other wildlife items to Thailand for sale to a wholesale buyer.

US Department of Justice new release: <https://bit.ly/2ytst9r>, 1 August 2018

ZAMBIA: On 6 August 2018, at Lusaka Subordinate Court, Scholastica Chisimba was sentenced to five years' imprisonment with hard labour for unlawful possession of two Leopard *Panthera pardus* (CITES I) skins. Beatrice Lupazula was given the same sentence for possession of one Lion *Panthera leo* (CITES I) skin.

Zambia Reports: <https://bit.ly/2J99SDG>, 6 August 2018

ELEPHANTS

The African Elephant *Loxodonta africana* is listed in CITES Appendix I (except the populations of Botswana, Namibia, South Africa and Zimbabwe, which are included in Appendix II); the Asian Elephant *Elephas maximus* is listed in Appendix I.

AUSTRIA: On 22 June 2018, at Vienna Provincial Court, a man was sentenced to one year of imprisonment for the illegal possession of ivory. The case relates to an investigation during which 88 elephant tusks (560 kg) were recovered from the defendant's flat in Vienna (see TRAFFIC Bulletin 29(1):33).

Wien.org.at: <https://bit.ly/2CZaU5I> (in German), 22 June 2018

BENIN: On 23 July 2018, at Ouidah Court of First Instance, six people were sentenced to 24 months in prison for possession of two ivory tusks and ordered to pay CFA500,000 (USD880) in fines and CFA10 million (USD17,600) in damages. The six were absent at the hearing, and an arrest warrant was issued.

La Nouvelle Tribune: <https://bit.ly/2J9mOcQ>, 7 December 2017; *Quotidien Béninoise: Le Matinal:* <https://bit.ly/2Ra0seb>, 5 July 2018

CAMEROON: On 16 September 2018, it was reported that two people had been sentenced at Bertoua Court of Appeal to 15 years in prison after being arrested in May 2017 in possession of 160 tusk tips. They were also ordered to pay a fine of CFA14 million (USD25,000) and CFA253 million (USD446,000) in damages. The duo had already served three months in custody before filing an appeal (see also Other/multi-seizures).

Le Bled Parle: <https://bit.ly/2OCsXEI>, 16 September 2018

CHINA: Between January and May 2018, a wide-ranging law enforcement sweep of Yunnan border areas, with a focus on elephant products, ended with the confiscation of some 1,900 ivory items, including at least five elephant tusks and hundreds of pieces of ivory jewellery. Authorities also seized 1,500 other products of threatened animal species and illegally imported timber reportedly from sources in Lao PDR and Myanmar. There were 45 arrests for a range of offences (see also Rhinoceroses and Other/multi-seizures).

GoKunming: <https://bit.ly/2PLEGNI>, 26 June 2018

CONGO: On 19 May 2018, at Ouésso District Court, Sangha, five Congolese nationals were sentenced to between two and three years in prison in relation to elephant poaching and the illegal possession of and attempt to sell 15 ivory tusks, representing eight elephants. The three defendants who were sentenced to three years' imprisonment were also fined CFA500,000 (USD880), plus CFA5 million (USD8,800) in damages.

Infos Plus Gabon: <https://bit.ly/2NWsiZ2>, 19 May 2018

FRANCE: During dates in May and August 2018, authorities seized a total of 292 ivory pieces and other assorted wildlife items, and arrested 32 people during investigations of flea markets in Sens, Aillant-sur-Tholon and Mézilles, Auxerre.

France bleu: <https://bit.ly/2S8WKCO>, 17 August 2018; *L'Yonne Républicaine:* <https://bit.ly/2R6yCIN>, 17 August 2018

HONG KONG SAR: On 25 June 2018, Customs officers near the city's boundary with mainland China seized 47 kg of suspected ivory in a joint operation with their counterparts

in mainland China; six people were arrested. The raid followed an investigation by mainland authorities into a suspected ivory-smuggling syndicate.

On 2 July, Customs officers raided a warehouse used by the syndicate in San Tin, near Lok Ma Chau, where they recovered some 277 kg of ivory; eight people were arrested.

South China Morning Herald: <https://bit.ly/2q7EwVf>, 4 July 2018

INDIA: On 13 June 2018, at Kotagiri Magistrates' Court, three Indian nationals K. Annadurai, M. Premkumar and B. Sankar from Bhavani, Erode, were each sentenced to three years' imprisonment and fined Rs.10,500 (USD155) for poaching an elephant for its tusks in Kookalthorai in 2011.

The Hindu: <https://bit.ly/2yWyZou>, 14 June 2018

KENYA: In June 2018, at Mombasa Magistrates' Court, Morris Molimu was sentenced to eight years in prison for possession of 13 pieces of ivory (28 kg) without a permit. He was arrested in April 2017 at a petrol station while looking for buyers for the ivory.

On 3 August 2018, at the High Court in Mombasa, Feisal Mohammed Ali, who was convicted in July 2016 of involvement in the illegal ivory trade (see *TRAFFIC Bulletin* 28(2):74), had his 20-year prison sentence overturned following an appeal. The court deemed his sentence unconstitutional and ruled that the prosecution had failed to prove he was the owner of the ivory or engaged in trafficking trophies. The case relates to the seizure of two tonnes of ivory in June 2014.

In October 2018, it was reported that two men had been sentenced to six years in prison for possession of 15 kg of elephant tusks. Erastus Mugambi and Lawrence Mugambi were found with the trophies in Kibumbu, in Chuka/Igambang'ombe, in August 2017. They have been in remand for the past year and were given the option of paying a KES2 million (USD19,750) fine each.

allAfrica: <https://bit.ly/2yu6YVX>, 20 June 2018; *Daily Nation:* <https://bit.ly/2AnQCQa>, 20 June 2018; <https://bit.ly/2OEAE2EI>, 3 August 2018; <https://bit.ly/2EzJSD6>, 6 March 2017; *Standard Media:* <https://bit.ly/2NXqfEm>, 14 October 2018

MALAWI: On 16 April 2018, in the district of Mzimba, Eliza Mtonga and Gideon Ngwenya of Zambia were each sentenced to four years in prison for possession of 16 pieces of raw ivory (41 kg) and a further one year in prison for attempting to sell the items. The sentences are to run concurrently. Another Zambian, Richard Phiri, was sentenced to 36 months in prison (suspended for 36 months) for carrying the pieces into the country. The three attempted to sell the ivory (derived from four elephants) to undercover police officers at Jenda Trading Center in Mzimba.

Zodiak Online: <https://bit.ly/2CvR6Fq>, 16 July 2018; *Nyasa Times:* <https://bit.ly/2CYK5hc>, 12 July 2018

MOZAMBIQUE: On 12 April 2018, Customs officials at Maputo port seized from a lorry some 867 pieces (3.4 t) of ivory concealed in bundles of plastic bottles destined for recycling. The lorry driver was arrested. The containers, declared to be destined for Cambodia, came from a Chinese company based in Beluluane, in Maputo province, which was subsequently searched and found to be locked and unattended. The case is being investigated.

Club of Mozambique: <https://bit.ly/2Hx8Lgu>, 12 April 2018; <https://bit.ly/2OCus5o>, 13 April 2018

TANZANIA: On 15 August 2018, at Serengeti District Resident Magistrates' Court, Paul Ryoba, Petro Mikwabe, and Yagara Mang'era, were each sentenced to 20 years' imprisonment for possession of two ivory pieces. They were found guilty of entering Serengeti National Park in January 2017 and of hunting elephants without valid permits and the illegal possession of national trophies.

Azania Post: <https://bit.ly/2R3Q33x>, 16 August 2018; *The Citizen:* <https://bit.ly/2ODNZyA>, 15 August 2018

UGANDA: On 24 June 2018, police officer Abel Immanuel was sentenced to two years in prison for selling ivory. He was arrested in May at the Uganda Manufacturers' Association showground after police officers caught him in the process of receiving a bag containing the pieces from another person who was also taken into custody and is awaiting trial.

New Vision: <https://bit.ly/2OITKis>, 27 June 2018; <https://bit.ly/2MhfoEA>, 25 June 2018

UNITED ARAB EMIRATES: On 4 July 2018, it was reported that officials at Dubai International Airport had seized some 1,849 pieces (76 kg) of ivory smuggled in a shipment in transit from Africa to Asia; the shipment was en route from Djibouti to Hong Kong. The pieces, painted and camouflaged with black material, were concealed in parcels labelled "imported shoes".

UAE CITES Management Authority in litt. to ETIS, 7 July 2018; *Gulf Today:* <https://bit.ly/2S93Hnm>, 4 July 2018

ZAMBIA: On 27 July 2018, at Chipata Subordinate Court, Howard Nyirenda was sentenced to five years' imprisonment with hard labour for unlawful possession of two ivory pieces (6.6 kg).

Zambia Reports: <https://bit.ly/2J99SDG>, 6 August 2018

ZIMBABWE: On 11 April 2018, at Gokwe Magistrates' Court, Cuthbert Sibanda of Ngondoma Village was imprisoned for nine

years for illegally trading in ivory. On 23 March 2018, police received information that Sibanda was at Gokwe Centre looking for buyers for the ivory. Authorities posing as prospective buyers approached him and agreed on a price for the pieces. Sibanda was arrested when he took them to the place where he was hiding the ivory.

On 8 October 2018, it was reported that Juliet Simango of Muzondakaya Village, Chipinge, had been sentenced to seven years' imprisonment for the illegal possession of two ivory tusks. Simango was herding cattle when she reportedly stumbled upon a dead elephant; she removed one tusk and took it home and returned the following day to collect the second tusk. These were seized from her home by the authorities acting on information.

The Herald: <https://bit.ly/2q7BWIL>, 12 April 2018; <https://bit.ly/2EAsuHd>, 8 October 2018

MARINE

CANADA: On 20 June 2018, it was reported that 18 t of eel meat, much of it believed to be from the European Eel *Anguilla anguilla* (CITES II), had been seized from a shipping container in the Port of Vancouver, destined for the food market. According to Sheldon Jordan, director of wildlife enforcement for Environment Canada, it is probably the country's largest-ever seizure and formed part of Operation Thunderstorm, a global effort of law enforcement bodies to crack down on illegal wildlife trade (see Other/multi-seizures).

"We're estimating that at least 50% of the eel on the Canadian retail market is probably European Eel that was brought in unlawfully", said Jordan. "It's mainly being used in sushi."

The case is being investigated and, according to Jordan, is complicated by the existence of a legal and regulated harvest of American Eel *Anguilla rostrata*; the two species are reportedly often mixed in illegal shipments and can only be distinguished from each other by DNA analysis.

CTV News: <https://bit.ly/2Pk9VIA>, 20 June 2018; <https://bit.ly/2MOFH15>, 21 June 2018; <https://bit.ly/2K9M2KU>, 20 June 2018

CHINA: On 11 May 2018, Xiamen Customs seized a total of 662 nautilus *Nautilidae* spp. shells (CITES II) and 2.8 t of stony corals *Scleractinia* (CITES II) imported from the Philippines. Two suspects who fled were later apprehended.

China National Times: <https://bit.ly/2q4MKNW> (in Chinese), 8 October 2018

HONG KONG SAR: On 4 June 2018, Customs officials at Kwai Chung Customhouse Cargo Examination Compound seized 140 kg of suspected dried seahorses *Hippocampus* spp. (CITES II) and 220 kg of dried shark fins from a container arriving from Indonesia declared to contain fish maw. Two directors of a dried

seafood shop were arrested on 6 June and released on bail pending further investigation.

On 13 August 2018, Customs officials at Man Kam To Control Point seized about 316 kg of suspected dried abalones *Haliotis* spp. from luggage contained inside two outgoing vehicles. Four people arrested have been released on bail pending further investigation.

The Government of Hong Kong Special Administrative Region press release: <https://bit.ly/2CxoHib>, 7 June 2018; *Customs and Excise Department, the Government of Hong Kong Special Administrative Region press release*: <https://bit.ly/2CXImZK>, 14 August 2018

INDIA: On 3 September 2018, officials seized some eight tonnes of shark fins from Mumbai and Gujarat which were to be exported illegally to China and Hong Kong (see Malaysia).

Zee News: <https://bit.ly/2CxxOQ4>, 6 September 2018

ITALY: On 3 May 2018, at Venice Marco Polo Airport, officials seized some 700,000 (500 kg) European Eels *Anguilla anguilla* (CITES II) bound for Asia. The eels, which were in their larval state, were contained in 90 goatskins filled with water; they were later released in locations along the Sile river. One Italian national was arrested.

Venezia Today: <https://bit.ly/2AnKyY9>, 3 May 2018; *Robin des Bois On the Trail* No. 21 July 2018

MALAYSIA: On 4 September 2018, a container from Chennai, India, bound for Hong Kong and suspected to contain some four tonnes of shark fins, was intercepted at the request of the Indian authorities following raids in India during which eight tonnes of shark fins were seized in early September (see India). The contents of the Malaysia seizure were labelled as "dried ray skins". According to an alleged organiser known to have hired shark hunters and who has been arrested, the fins are sundried at a warehouse in Sewri, Maharashtra, sent to Veraval in Gujarat for polishing and processing and returned to Sewri for onward shipment to Chennai and Kerala; they are then packaged and loaded onto containers. Four people were taken into custody.

This case comes a week after five tonnes of marine life, including 230 live Tiger Sharks *Galeocerdo cuvier* that had been kept in modified water tanks, were seized from three trawlers off Sabah, manned by Vietnamese crew. The case is under investigation.

Free Malaysia Today: <https://bit.ly/2EFOwzj>, 5 September 2018

SÃO TOMÉ AND PRÍNCIPE: On 22 September 2018, authorities seized approximately two tonnes of sharks from a Senegalese-flagged, but Spanish-linked, long-line fishing vessel; the cargo included shark fins severed from their torsos. Although the

vessel was licensed to fish for "tuna and similar species", inspections revealed their fish holds were solely filled with sharks, predominantly Blue Sharks *Prionace glauca*. Fishing line tracers, or snoods—monofilament segments that support the fishing hooks—were reinforced with steel wire, which are used to prevent sharks from biting through fishing line. This finding underlined the suspicion that the targeted species were mainly sharks, not tuna. Fish on board were also gutted and processed which, unless authorised, is a violation of São Toméan fisheries regulations.

EcoWatch: <https://bit.ly/2yqUjDm>, 26 September 2018

SOUTH AFRICA: A selection of incidents involving abalone *Haliotis midae*:

On 22 May 2018, authorities seized 7,670 abalones from a residence in Ottery, Western Cape. One arrest.

On 13 June 2018, at Cape Town District Court, government officials were among a number of people allegedly associated with a large abalone smuggling network who were granted bail (two were not). The nine government personnel were believed to have converted the local anti-poaching office in Gansbaai into a criminal enterprise. The group was arrested in early 2018 in an undercover police operation aimed at taking down syndicates involved in the harvesting of abalone stocks between Cape Town and Cape Agulhas.

On 13 June 2018, police seized 8,330 shelled abalones from a car that was abandoned after a high-speed chase through Gordon's Bay, Western Cape.

On 22 June 2018, bags containing 2,326 shucked abalones were seized from a vehicle outside Aliwal-North, Eastern Cape Province, reportedly en route from East London to Johannesburg.

On 26 July 2018, authorities arrested three men at an address in Plumstead who were found in possession of over 19,000 abalones and abalone processing machinery.

On 17 August 2018, for the fourth time in three years, the government's stock of confiscated abalones was stolen from the central depot in Paarden Island, Cape Town. Gunmen held up guards at the warehouse and left with an undisclosed volume of dried abalones.

On 29 August 2018, 350 kg of abalones were confiscated from a vehicle in Winburg, Free State Province, travelling from Cape Town to Johannesburg. One arrest.

On 12 September 2018, police in the Western Cape acting on information searched a residence on Burgundy Estate where bags containing 2,064 shucked abalones and abalone processing equipment were found.

On 13 September 2018, authorities in Cape Town searching premises in Bur-Hein Estate,

Kraaifontein, discovered an illegal abalone processing facility and racks holding large [unspecified] amounts of abalones, as well as bags of dried abalones. Further investigation led to two other residences where numerous containers filled with bags of shucked abalones, cash and processing equipment were seized. Four men were arrested and vehicles seized.

On 20 September 2018, at Port Elizabeth High Court, Morne Bignaut, the mastermind behind an abalone poaching enterprise, was sentenced to 20 years in prison. He pleaded guilty to two charges of racketeering and one charge of contravening the *Marine Living Resources Act*. Sentencing of five co-accused was postponed.

On 26 September 2018, two Chinese nationals appeared at the East London Magistrates' Court after being arrested for processing abalones in a house in Greenfields. Over 1,000 abalones were seized.

On 3 October 2018, at Groblersburg port of entry, Limpopo, at the border with Botswana, officials searching a vehicle found a concealed compartment containing potato bags, inside of which was over one tonne of abalones. The shipment was bound for Zimbabwe via Botswana but more details of the origin and destination are under investigation; the suspects are being sought.

The Citizen: <https://bit.ly/2POfyWc>, 27 August 2018; *South African Police Service media release*: <https://bit.ly/2Ra2tdad>, 23 May 2018; *Times Live*: <https://bit.ly/2q6TRFM>, 13 June 2018; *News24*: <https://bit.ly/2q3jQxM>, 25 July 2018; *Times Live*: <https://bit.ly/2S99vxa>, 13 June 2018; *eNews Channel Africa*: <https://bit.ly/2AmomgL>, 24 June 2018; *South African Police Service media statement*: <https://bit.ly/2R2o8Rs>, 27 July 2018; *Sowetan Live*: <https://bit.ly/2NVVnnB>, 18 August 2018; *South African Police Service media release*: <https://bit.ly/2SeUQAG>, 12 September 2018; *South African Police Service media release*: <https://bit.ly/2NYioGD>, 13 September 2018; *Pressreader*: <https://bit.ly/2CYXOQo>, 26 September 2018; *Herald Live*: <https://bit.ly/2PdZ55p>, 19 September 2018; *Dispatch Live*: <https://bit.ly/2YG8ES>, 1 October 2018; *South African Police Service media statement*: <https://bit.ly/2yVrUVu>, 4 October 2018

TAIWAN: On 5 October 2018, it was reported that the company and captain of *Jin Chang 6* fishing vessel had been fined TWD9.5 million (USD307,000) and TWD1.9 million (USD61,000), respectively. Their fishing licences were also suspended for six months.

On 5 September 2018, port inspectors at Kaohsiung Xiaogang Fishing Port seized from the vessel some 3,260 trunks (>34 t) that were subsequently identified as Silky Sharks *Carcharhinus falciformis* (CITES II). The vessel violated Taiwan fisheries regulations banning the harvest of Silky Shark and contravened the stipulation that shark fins should be attached to the shark's body at landing.

Taiwan Environmental Information Center (TEIA): <https://bit.ly/2jdiOmA>, 14 September 2018; *The News Lens*: <http://bit.ly/2OhaXef>, 5 October 2018

USA: On 4 October 2018, it was reported that Ramon Mayorquin and David Mayorquin, had been sentenced to 12 years of probation and fined USD1.25 million for their roles in trafficking sea cucumbers. The funds will be distributed to the US and Mexican governments.

On 9 October 2018, it was reported that Anthony James Buccola, the owner of an antiques shop in Los Angeles who sold two Narwhal *Monodon monoceros* (CITES II) tusks to an undercover officer, had been fined USD20,507 and sentenced to 36 months of probation, and either 200 hours of community service or 20 days in prison. His company is required to pay the same fine.

US Fish and Wildlife Service Law Enforcement news release: <https://bit.ly/2S9uWxZ>, 4 October 2018; *The Sacramento Bee*: <https://bit.ly/2yDKqf>, 9 October 2018

PANGOLINS

All eight species of pangolins *Manis* spp. are listed in CITES Appendix I, effective 2 January 2017

CAMEROON: In September 2018, it was reported that four people, including a policeman, had been arrested in Yaoundé with 270 kg of pangolin scales; the group are allegedly part of a well-organised ring operating in the south of the country.

In August 2018, six people, including Cameroonian and Central African nationals, were arrested while trying to sell 718 kg of pangolin scales in Douala. They were released on bail; only three attended court (see also Other/multi-seizures).

Eagle Network: www.facebook.com/plugins/post.php?href=https%3A%2F%2Fwww.facebook.com%2Fenforcement%2Fposts%2F1896359927115022&width=500, September 2018; *Journal du Cameroun*: <https://bit.ly/2R1CL7I>, 23 August 2018

CHINA: On 26 September 2018, Guangzhou Customs held a press conference to report the recent seizure of 7.2 t of pangolin scales in three shipments. One consignment was uncovered when the declared weight of the cargo, labelled as granite slabs, was found to be suspicious. On inspection, concealed under granite slabs were 113 woven bags each containing some 20 kg of pangolin scales (total 2.2 t). A task force was set up and further shipments containing 2.6 t and 2.3 t of pangolin scales were intercepted. Four people were arrested.

Guangzhou Customs press release, <https://bit.ly/2SaQJpk> (in Chinese), 26 September 2018

CONGO, DEM. REP.: On 3 August 2018, authorities in Zongo, South Kivu province, seized 230 kg of pangolin scales from a person preparing to cross into the Central African

Republic, destined for Asia; the goods had reportedly originated in North Ubangi.

On 21 June 2018, four men were arrested as they crossed a coastal border point from the Democratic Republic of the Congo to Brazzaville, Congo, in possession of 1.8 t of pangolin scales; a fifth person was subsequently arrested. The suspects were reportedly planning to transport the contraband via Brazzaville to the port city of Douala, Cameroon, and on to Lagos, Nigeria. The group are allegedly part of a major criminal supply chain that has been smuggling elephant tusks and pangolin scales from Africa to Asia for several years. Officers from six African countries are involved in investigating the case and in efforts to identify the financiers behind the shipments, which are said to represent hundreds of elephants and thousands of pangolins.

Afrique News: <https://bit.ly/2PNe4vr>, 21 August 2018; *AsiaTimes*: <https://bit.ly/2PjrjNK>, 26 July 2018

CÔTE D'IVOIRE: On 20 July 2018, at the Court of First Instance, Abidjan, Yao Kouassi Sébastien, Angha Agnan Joseph, Assi Seka Jocelin, and Kanga Raymond received the maximum sentence of one year in prison and were each fined CFA300,000 (USD528) after they were apprehended in July 2017 in possession of three tonnes of pangolin scales. The court ordered the scales to be incinerated.

Fratmat.info: <https://bit.ly/2JbOc9Y>, 22 July 2018

HONG KONG SAR: On 15 May 2018, authorities at the Tsing Yi Customs Cargo Examination Compound, Kwai Tsing, seized a shipment from Indonesia declared as plastic scrap which was found to contain circa 630 kg of suspected pangolin scales.

On 20 July 2018, Customs officials at Tsing Yi Customs Cargo Examination Compound seized 284 bags containing seven tonnes of suspected pangolin scales. The shipment had arrived from Nigeria, bound for Guangdong province, mainland China, and was declared to contain plastic materials (see also Congo).

7th Space: <https://bit.ly/2PMJ8LV>, 15 May 2018; *Government of the Hong Kong SAR press release*: www.info.gov.hk/gia/general/201807/20/P2018072000784.htm, 20 July 2018; *South China Morning Post*: <http://bit.ly/2EPEIDI>, 20 July 2018

MALAYSIA: A man has been charged with attempting to export to China via Sepangar Port, Sabah, some eight tonnes of pangolin scales in July 2017. On 8 October 2018, the case was transferred to the Sessions Court in Kota Kinabalu and the suspect released on bail. The case is significant as it is the first trial linked to Malaysia's transit role in the global illicit pangolin trade.

New Straits Times: <https://bit.ly/2vL3H4N>, 11 August 2017; *Daily Express*: <https://bit.ly/2q3IRtQ>, 25 September 2018; *Pressreader*: <https://bit.ly/2NVGiCF>, 9 October 2018

NIGERIA: On 1 August 2018, it was reported that authorities had seized from a shop in Oba Elegushi international market, Ajah, some one tonne of pangolin scales (and four pieces of elephant tusks (29 kg)). The occupants of the shop are at large. Three other pangolin seizures took place in early 2018 (see also *TRAFFIC Bulletin* 30(1):32), all reportedly involving Chinese nationals.

Oracle Today: <https://bit.ly/2ysRAJo> [undated]; Africa Sustainable Conservation News: <https://bit.ly/2AoMq2N>, 15 August 2018

VIET NAM: On 27 April 2018, Customs officials in Cat Lai port, Ho Chi Minh City, seized 3.8 t of pangolin scales from two containers imported from Congo declared as logs. This is reported to be the largest-ever seizure of animal parts by Ho Chi Minh City Customs. The authorities were alerted to the shipment by Congolese Customs and had been monitoring the containers since their arrival from a transit port in Singapore. Scanners revealed suspicious empty spaces at the centre of each container, surrounded by logs. As no recipient came to claim the consignment, officials opened it up on 1 June to discover the full contents.

On 3 May 2018, at Saigon Port, Ho Chi Minh City, authorities seized 3.3 t of pangolin scales in transit from Nigeria bound for Cambodia in a shipment of cashew nuts (see also Other/multi-seizures).

Tuoi Tre News: <https://bit.ly/2w7mtEP>, 27 April 2018; Viet Nam.net: <https://bit.ly/2JbOmI4>, 4 May 2018

ZIMBABWE: On 11 April 2018, in Masvingo, Zimbabwe nationals Brighton Ngwenyama, Tatenda Mhango and Kudzai Shava were each sentenced to the mandatory nine years in prison for possession of a pangolin (CITES I). Police received information in April 2016 that the trio was selling a pangolin at a location near Mushandike and posed as buyers. After being offered the live pangolin for sale, they asked the three to place the animal in the car while the payment was being processed. Other detectives moved in and arrested the suspects; Shava tried to flee, but was shot in the leg.

The Herald: <https://bit.ly/2AnbpTZ>, 11 April 2018

REPTILES

INDIA: On 4 August 2018, some 1,125 Indian Star Tortoises *Geochelone elegans* (CITES II) concealed in cloth bags were seized from three passengers travelling by train from Vijayawada; they were arrested at Visakhapatnam railway station, Andhra Pradesh. The reptiles were reportedly to be passed over to an accomplice in Howrah before being smuggled to Bangladesh.

On 6 September 2018, authorities seized 523 Indian Star Tortoises from a passenger

at Lokmanya Tilak railway station who was arrested.

On 6 October 2018, authorities acting on information seized 584 Indian Star Tortoises and arrested two persons at Triplicane, Chennai, breaking up an inter-state gang operating in Madhya Pradesh, Tamil Nadu and Andhra Pradesh (AP). The tortoises were reportedly destined for export and had been brought from AP for onward transportation through Tamil Nadu.

NDTV, <https://bit.ly/2ODkiBD>, 6 August 2018; Zee News: <https://bit.ly/2CxxOQ4>, 6 September 2018; The Business Standard: <https://bit.ly/2yQaRUw>, 6 October 2018

INDONESIA: In September 2018, Jakarta police arrested a man in Tangerang, Banten, for his involvement in the illegal trade in and possession of 128 Pig-nosed Turtles *Carettochelys insculpta* (CITES II). The turtles were being traded illegally via social media.

The Jakarta Post: <https://bit.ly/2S7W40o>, 28 September 2018

SPAIN: In August 2018, it was reported that authorities in Mallorca had shut down what has been described as the largest illegal turtle hatchery in Europe, and seized 1,110 turtles and tortoises of 62 species, including Radiated Tortoises *Astrochelys radiata* (CITES I) and box turtles (CITES II) and species endemic to Mexico, USA, and Canada. The farm was not registered with the CITES Secretariat as required for the commercial breeding of CITES species. Three people were arrested and more arrests are expected.

National Geographic: <https://on.natgeo.com/2R-749RA>, 23 August 2018

USA: On 23 July 2018, Chinese nationals Huaqian Qu and Renfeng Gao were fined USD5,500 (to be paid to the US Fish and Wildlife Service) and were ordered to return to China within 72 hours after they attempted to smuggle 31 Spotted Turtles *Clemmys guttata* (CITES II) and 14 box turtles *Terrapene* spp. in carry-on bags on a flight from Los Angeles to China without the requisite CITES permits. Flight attendants Qu and Gao were arrested at Los Angeles International Airport on 12 May 2018.

San Bernardino Sun: <https://bit.ly/2qIsexU>, 21 June 2018; Whittier Daily News: <https://bit.ly/2AmNpAp>, 23 July 2018; Newsweek: <https://bit.ly/2PdMISC>, 11 October 2018

VIET NAM: On 20 September 2018, it was reported that the People's Court of Dien Bien district, Dien Bien province, had sentenced Cao Xuan Nai to 10 years in prison after he was found guilty of violating wildlife regulations. He was arrested near the Tay Trang Border Gate in April 2018 with 27 (10.5 kg) Big-headed Turtles *Platysternon megacephalum* (CITES I) and four Asian Black Bear *Ursus thibetanus* (CITES I)

paws. The arrest was processed over three months, after the revised 2015 Penal Code had taken effect, which raises the maximum penalty for wildlife-related violations for individuals to 15 years or VND2 billion (USD85,900) in fines.

Viet Nam Plus: <https://bit.ly/2CX6ED3>, 20 September 2018

RHINOCEROSES

All species of Rhinocerotidae are listed in CITES Appendix I except the South African and Swaziland populations of *Ceratotherium simum*, which are listed in Appendix II.

CHINA: As part of a nationwide investigation into wildlife crime code-named "Operation Thunder", which was launched on 1 April 2018, authorities in Yunnan province uncovered a network selling illegal wildlife products online and seized 53 rhino horn pieces.

On 3 July 2018, authorities seized 5.5 kg of rhino horns and 121 suspected rhino products (273 kg) in Chongzuo, Guangxi province. Four suspects were transporting the items to the border city of Pingxiang in two vehicles, reportedly en route from Africa to Viet Nam. The suspects were apprehended following investigations undertaken by multiple police forces in Pingxiang City, Longzhou County, Guangxi and Xia Shizhi (see also Other/multi-seizures).

China News: <https://bit.ly/2PNNX7K> (in Chinese), 8 May 2018; Legal Daily: <https://bit.ly/2ysFTCW>, (in Chinese), 23 July 2018

MALAYSIA: On 13 August 2018, authorities at Kuala Lumpur International Airport discovered 50 rhino horns at a postal aviation centre in what is believed to be South-east Asia's largest single seizure of rhino horns. The horns were packed in boxes that also contained nine whole carnivore carcasses, all bound for Ha Noi, Viet Nam; their provenance is not reported.

<https://bit.ly/2Pe8I4Y>, 18 August 2018

MOZAMBIQUE: On 7 October 2018, at Maputo International Airport, a Chinese citizen bound for Viet Nam was detained after nine rhino horns wrapped in aluminium foil and mixed with food products were found in his luggage.

Club of Mozambique: <https://bit.ly/2y9HxJ4>, 8 October 2018

SOUTH AFRICA: On 7 May 2018, at Lephalale Regional Court, Limpopo, Antonio Xavier Freitas was fined R1 million (USD72,000) or sentenced to 10 years' imprisonment. Freitas was charged with hunting specially protected animals without a permit, possession/donation of rhino parts without a permit, and selling rhino meat without a permit.

On 17 May 2018 at the Zeerust Regional Court, four people accused of rhino poaching received prison sentences of between 10 and 30 years. The accused entered Madikwe Game Reserve on 29 March 2017 and allegedly killed a rhino; they abandoned their vehicle and fled on foot after being pursued by the authorities. Their vehicle was found to contain two rhino horns, a rifle, and knives. The suspects were arrested in Winterveldt near Soshanguve on 4 April 2017. Patrick Khoza and Samuel Masive were each sentenced to 30 years in prison; Johannes Mthopa was sentenced to 10 years' imprisonment and Monda Ndlovu to 20 years.

On 31 May 2018, at Cape Town Regional Court, Alexandre Dias Shintlangu was gaoled for five years for attempted rhino poaching. He was found guilty of: conspiracy to commit a crime by attempting to kill a rhino in Karoo National Park (five years' imprisonment); entering, residing and hunting in a national park without authorisation (five years' imprisonment); possession of a firearm (five years' imprisonment) and possession of ammunition without a licence (three years' imprisonment). All four counts will run concurrently.

The case relates to an incident in August 2017 when three men allegedly from a rhino poaching syndicate in Limpopo province illegally entered Karoo National Park, Western Cape, with the intention of killing a Black Rhinoceros *Diceros bicornis bicornis* (CITES I) for its horns. They gained entry by cutting a hole in the electrified fence. Discovering the hole, field rangers tracked the spoor of the suspects and arrested Shintlangu; the other two fled (one was later arrested in Vaalwater but charges were withdrawn pending DNA results). Poaching equipment was recovered.

On 2 August 2018, at Saselamani Magistrates' Court, Limpopo, Joseph Molapo and Sebastian Mbombhi were sentenced to 15 years and six months' imprisonment following their arrest in Kruger National Park in October 2014. They were sentenced to four years for rhino poaching; six months for trespassing; eight years and three years respectively for possession of an unlicensed firearm and ammunition.

On 18 September 2018, six key syndicate members implicated in the trafficking of poached rhino horns were arrested in various locations in Mpumalanga. Included among them were two alleged syndicate leaders, two police officers and a former policeman; another police officer was arrested on 20 September.

The arrests relate to an investigation, Project Broadbill, which is focused on the criminal supply chain of poached rhinos within Kruger National Park, Kwazulu Natal, Gauteng and other private or state-owned reserves. The syndicate members allegedly ran poaching groups with the support of corrupt police officials as well as authorities from private game farms. More seizures and arrests are expected.

On 20 September 2018, authorities conducting a raid on a property in Standerton, Mpumalanga,

seized 20 rhino horns as well as firearms and ammunition. Two people were arrested.

Capricorn Voice: <https://bit.ly/2O2Klx6>, 9 May 2018; *South African Police Service media statement*: <https://bit.ly/2Cw74PU>, 18 May 2018; *South African National Parks*: <https://bit.ly/2NWREej>, 27 June 2018; *The Citizen*: <https://bit.ly/2JdsxA>, 27 June 2018; *South African Police Service media statement*: <http://bit.ly/2Saoffl>, 2 August 2018; *South African Police Service media statement*: <http://bit.ly/2PmFyLH>, 19 September 2018; *News24*: <http://bit.ly/2q4XCve>, 20 September 2018; *South African Police Service media release*: <http://bit.ly/2PmFyLH>, 21 September 2018

TURKEY: On 7 August 2018, Customs officials at Atatürk Airport, Istanbul, seized nine rhino horns from luggage arriving from South Africa and belonging to a passenger who had left the airport without collecting his luggage. The horns were detected by x-ray machine.

Hurriyet Daily News: <http://bit.ly/2yTJDMV>, 8 August 2018

VIET NAM: On 24 May 2018, Lao Cai City police discovered more than 20 kg of rhino horns being illegally transported in a car from Vinh Phuc to Lao Cai. The pieces had been wrapped in black bags and concealed in vases of hyacinths that were destined for sale to China. Two arrests.

On 15 July 2018, authorities at Tan Son Nhat International Airport, Ho Chi Minh City, seized 12 rhino horns (7 kg) from luggage belonging to a Vietnamese man arriving from Angola. The horns were concealed in cans of milk powder.

RFA: <http://bit.ly/2NVLM0d>, 25 May 2018; *TUOITRE.VN*: <http://bit.ly/2EFEoqt>, 13 July 2018; <http://bit.ly/2PON7rt>, 17 July 2018

ZIMBABWE: On 11 July 2018, in Masvingo, Godfrey Makechemu, Ignatius Maiga, Farai Chauno and Celestino Shate were each sentenced to nine years' imprisonment after being convicted of unlawfully hunting rhinos and for the illegal possession of a firearm and silencing device. The defendants shot and wounded a male Black Rhinoceros *Diceros bicornis* (CITES I) in the Save Valley Conservancy, in Bikita, in December 2017. The rhino escaped, bleeding heavily.

The suspects were picked up after rangers on patrol discovered rhino spoor and traces of blood alongside human footprints and lay in wait for the suspects after tracking the spoor.

NewsDzeZimbabwe: <http://bit.ly/2PkkMvQ>, 21 July 2018; *Nehanda Radio*: <http://bit.ly/2Jb8C2X>, 11 July 2018

OTHER / MULTI-SEIZURES

During May 2018, an international operation codenamed Thunderstorm initiated by INTERPOL and involving intergovernmental

organisations, police, Customs, and wildlife agencies in some 92 countries, resulted in nearly 2,000 wildlife seizures and the identification of some 1,400 suspects. Further arrests and prosecutions are foreseen. Total worldwide seizures reported during May include: 43 t of wild meat (including bear, elephant, crocodile, whale and zebra); 1.3 t of raw/processed ivory; 869 alligators/crocodiles, 9,590 turtles and 10,000 snakes; some 4,000 birds; several tonnes of timber; 48 live primates; 14 big cats; the carcasses of seven bears; eight tonnes of pangolin scales including almost four tonnes by Vietnamese maritime authorities on board a ship arriving from the Democratic Republic of the Congo (see also Marine and Pangolins).

INTERPOL: <http://bit.ly/2S9CTTS>, 20 June 2018

ANGOLA: On 4 June 2018, police handed over to the Environment Ministry 60 African Elephant *Loxodonta africana* (CITES I) tusks (262 kg) and 266 kg of pangolin *Manis* (CITES I) scales that had been seized at Luanda's Quatro de Fevereiro International Airport. The remaining amount [undisclosed] was in France in the possession of INTERPOL. Seven Angolan citizens were reportedly aiming to trade the ivory in the United Arab Emirates.

On 22 August 2018, five Vietnamese nationals were arrested in São Paulo district and the following were seized: 535 kg of raw ivory, 263 kg of worked ivory, 895 kg of pangolin scales and 10 kg of CITES-listed medicinal plants. Two workshops had been set up in a residential property to work the ivory. Of the four detainees, two were reportedly preparing to travel to Viet Nam with suitcases containing 20 kg of rhino horns concealed in packs of toys, lamps and fruit.

The case was triggered when another Vietnamese citizen was detained on 12 May; he had reportedly been intending to board a flight from Luanda International Airport on 4 February with 20 kg of rhino horn (see also Elephants and Pangolins).

Angola CITES Management Authority in litt. to *ETIS*, 25 August 2018; *allAfrica*: <http://bit.ly/2AnPts5>, 21 June 2018; *Observador*: <http://bit.ly/2NYHUv8>, 23 August 2018

CAMEROON: On 6 April 2018, at Douala International Airport, one tonne of pangolin scales and an unconfirmed number of elephant tusks were seized from containers of cocoa that were to be transported to China. The country of origin was being investigated. Three Chinese nationals were arrested (see also Elephants and Pangolins).

Voice of America (VOA): <http://bit.ly/2EMITke>, 13 April 2018

CHINA: On 26 March 2018, Jilin forest police uncovered a chain of illegal purchasing and sale of wildlife; 18 people were arrested and 26 rhino horns and 110 ivory products were seized (see also Elephants and Rhinoceroses).

On 26 April 2018, Harbin Customs officials in Hulin port, Heilongjiang, noticed irregularities with the shape of a vehicle chassis they were inspecting and that rivets had been replaced. The trailer was demolished to access the interior and the following wildlife items were found: 1,276 Saiga Antelope *Saiga tatarica* (CITES II) horns (from an estimated 638 animals), 156 pieces of mammoth ivory, 406 Walrus *Odobenus rosmarus* (CITES III) tusks, two African Elephant *Loxodonta africana* (CITES I) tusks, 226 Narwhal *Monodon monoceros* (CITES II) tusks, 70 bear (CITES I/II) teeth and 44 bear gall bladders, and 320 kg of sea cucumbers. Eight Chinese and Russian nationals were taken into custody and the case is under investigation.

CCTV.com: <http://bit.ly/2yspAps>, 8 October 2018; Guizhou People.cn: <http://bit.ly/2RafhgN>, 18 July 2018; Robin des Bois, On the Trail No. 21 July 2018

CONGO: On 4 October 2018, at a court in Owando, Cuvette, Henri Roland Botata was sentenced to two years' imprisonment for killing a gorilla *Gorilla* sp. and an African Elephant *Loxodonta africana* (both CITES I). The offences took place in Ntokou-Pikounda National Park.

Agence d'Information d'Afrique Centrale (ADIAC): <http://bit.ly/2ysLwke>, 4 October 2018

MALAYSIA: On 24 September 2018, more than 400 animals, including two young Orang-utans *Pongo pygmaeus* (CITES I), dozens of marine crocodiles, 350 "flying gliders" [likely *Petaurus* spp.] and parrots were seized as they were being transported by boat from Sumatra, Indonesia, via the Strait of Malacca, bound for Thailand. Three suspected traffickers were arrested.

Journal du Cameroun.com: <http://bit.ly/2R78Jzg>, 24 September 2018

SOUTH AFRICA: In July 2018, police in Rust De Winter, Limpopo, launched a search for suspects who killed six Lions *Panthera leo* (CITES II) at a local farm. Four of the animals had been decapitated and their paws removed.

South African Police Service media release: <http://bit.ly/2D2qfSq>, 1 July 2018

VIET NAM: On 29 August 2018, at Ha Noi's People's Court, former Customs officer Pham Minh Hoang and accomplice Tran Trong Cuong were each sentenced to 16 years in prison for embezzlement after they were caught stealing seized ivory and rhino horn (both CITES I) stocks from a Customs warehouse and replacing the goods with fakes. A third man, Hoang Van Dien, was sentenced to two years for trading prohibited goods. The group stole nearly 240 kg of ivory and 6 kg of rhino horn pieces over April and May 2017. Ivory, including bracelets, statues, and a tusk, were recovered from Dien's house (see also *TRAFFIC Bulletin* 29(2):74).

On 28 September 2018, at Noi Bai International Airport, Ha Noi, authorities seized 805 kg of pangolin *Manis* (CITES I) scales and 193 kg of ivory (CITES I) hidden inside boxes on a flight from Nigeria. The goods, reportedly sent from two companies based in Nigeria, had arrived on 21 September but were not collected.

On 4 October 2018, authorities at Tien Sa port, Danang, seized six tonnes of pangolin scales and two tonnes of ivory in reportedly one of the country's largest wildlife trafficking cases for years. The items were found hidden in a plastic waste container, owned by a Vietnamese company and originating in Nigeria.

TRAFFIC: <http://bit.ly/2OGuNnJ>, 29 August 2018; ManilaStandard.net: <http://bit.ly/2R7obf0>, 30 September 2018; US News: <http://bit.ly/2PcNFua>, 5 October 2018

FLORA

CAMBODIA: On 23 August 2018, wildlife rangers conducting a patrol in Phnom Tnout Wildlife Sanctuary, Preah Vihear province, seized over 2 m³ of rosewood (CITES II), chainsaws, guns, bullets and 40 m of net for wildlife traps. Five people have been given prison sentences of between five and 10 years.

Wildlife Alliance: <http://bit.ly/2R4vtA7>, 25 August 2018

HONG KONG SAR: On 19 April 2018, authorities at Kwai Chung Cargo Examination Compound seized nearly 24 t of Honduras Rosewood *Dalbergia stevensonii* (CITES II) that had been concealed in a shipping container arriving from Honduras.

On 27 June 2018, authorities at Tsing Yi Cargo Examination Compound seized 29 t of Guatemalan Rosewood *Dalbergia tucurensis* (CITES III) from a container arriving from Honduras.

On 6 July 2018, 8.7 t of suspected Siamese Rosewood *Dalbergia cochinchinensis* was seized from a container arriving at Kwai Chung Cargo Examination Compound from Cambodia.

On 10 September 2018, Cai Huimian was given a three-month prison sentence for importing from Guatemala a 29 t shipment of Honduras Rosewood *Dalbergia stevensonii* (CITES II) in January. The cargo was bound for mainland China.

On 5 June 2018, Customs officers at Kwai Chung Cargo Examination Compound, discovered 5.7 t of suspected Red Sandalwood

Pterocarpus santalinus (CITES II) in a shipment of gypsum boards arriving from Port Klang on 30 May. The container was selected for inspection because it contained gypsum boards, which are rarely shipped from Malaysia. Investigations are continuing. No arrests.

On 8 August 2018, Customs officers at Man Kam To Control Point intercepted a vehicle and seized 6.4 t of suspected American Ginseng *Panax quinquefolius* (CITES II).

Hong Kong Customs and Excise press release: <http://bit.ly/2PVu9z6>, 20 April 2018; South China Morning Post: <http://bit.ly/2JbsHGq>, 11 June 2018; Hong Kong Customs and Excise press release: <http://bit.ly/2PcOt2a>, 7 July 2018; South China Morning Post: <http://bit.ly/2EEImka>, 28 June 2018; The Government of the Hong Kong Special Administrative Region: <http://bit.ly/2CySnnx>, 9 August 2018; Organized Crime and Corruption Reporting Project (OCCRP): <http://bit.ly/2yXZsC7>, 11 September 2018

INDIA: On 29 September 2018, police reported that four persons had been arrested for their alleged involvement in the smuggling of Red Sandalwood *Pterocarpus santalinus* (CITES II). Police, acting on information, recovered 133 logs (4.5 t) arriving by lorry, reportedly from Bengaluru. In order to mask the smell of sandalwood, the suspects had placed incense sticks in the cartons carrying the timber. The cargo was destined for Delhi, for onward shipment within India and overseas.

The Hindu: <http://bit.ly/2CxZkNc>, 30 September 2018



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Hong Kong Customs seized over six tonnes of suspected American Ginseng *Panax quinquefolius* (CITES II) at Man Kam To Control Point in August 2018.

SPOT SURVEY: insights into medical students' perspectives on the use of wildlife products in traditional medicine in Viet Nam

Report by Vinh Dang and Madelon Willemsen

INTRODUCTION

Viet Nam has a long history of using wildlife products as ingredients in traditional medicine (TM) to treat illnesses and improve general health (Nguyen and Nguyen, 2008), with a record of such use dating back to the 14th century (Ministry of Health (2017); Nguyen and Nguyen, 2008). TM continues to play a key role in Vietnamese society and is sometimes used as primary treatment, especially in rural areas of the country where there is a lack of affordable Western medicine available. However, more generally, and especially in urban regions, TM is seen as being important to support well-being and general health, and the perceived benefits of the traditional wild animal-derived medicine and tonics are deeply rooted in Vietnamese society (Drury, 2011).

Viet Nam's efforts to curb illegal wildlife trade are compromised by lack of effective law enforcement to deter illegal practices and the embedded societal norms around the use and consumption of threatened fauna species. The enactment of a revised Penal Code in 2018, with increased fines and punishment for the illegal trade and/or possession of threatened wildlife species products, has provided Viet Nam with a regulatory framework to tackle the illegal practices of use and consumption of threatened fauna species.

The use of threatened species products in TM practice, such as pangolin scales, bear bile and rhino horn, and other threatened and/or illegal species products, is found to be increasing with rising urban wealth (Drury, 2011). In Ha Noi and Ho Chi Minh City, TM practitioners are trusted sources of information regarding the ingredients considered to be the most suitable—whether legal or illegal—to promote wellness and treat illness (IPSOS, 2013). There is evidence that TM practitioners play a significant role in the promotion of the purchase and consumption of threatened and/or illegal wildlife products. For example, the latest edition of the national pharmacopoeia published by the Vietnamese Ministry of Health (Ministry of Health, 2017), includes references to several wildlife products in TM including the use of pangolin scales, antler glue and seahorses (Ministry of Health, 2017). Further, TM practitioners are openly advertising illegal wildlife products and their perceived benefits, as was found in the case of bear bile (Willcox *et al.*, 2016). A recent survey into rhino horn use in TM has revealed a consistent interaction of the TM sector in accessing and providing rhino horn to patients and customers (MacMillan *et al.*, 2017).

In order to tackle the supply of and demand for illegal wildlife products in TM practices in Viet Nam, it is critical that the role and the perspective of the TM practitioners in prescribing and offering these kinds of

products to patients is better understood. Through this understanding it becomes possible to develop demand reduction programmes to influence and change the practices of TM professionals towards a zero-tolerance of the use of threatened and/or illegal species products. The development and delivery of these types of targeted behaviour change interventions need to be informed by the knowledge, attitudes and practices (KAP) of the audience involved (TRAFFIC, 2017).

This survey was part of a project funded by WWF-Germany that aimed to reduce the desire and practice of using wildlife products in TM from threatened and/or illegal species, and had a specific focus on impacting young and upcoming professionals in Viet Nam. An online survey was completed by 1,050 students at three medicine universities in Viet Nam. The specific objectives of the survey were to identify the knowledge, attitudes and practices of the medical students towards the use of threatened and/or illegal wildlife species in TM in order to inform the development and delivery of a behaviour change campaign for TM students, in partnership with the National Centre for Health Education and Communication of the Ministry of Health. The survey was also used as a baseline to evaluate the impact of the demand reduction campaign after its delivery. This paper outlines the key findings of the survey and provides recommendations for a Social and Behavioural Change Communications initiative that will change the knowledge, attitudes and practices of those studying to become TM practitioners and lead to a zero-tolerance of the use of threatened species.

METHODOLOGY

The study took place between 1 and 20 December 2017. A total of 1,055 students at two medical universities in Ha Noi and one medical university in Ho Chi Minh City took part. The universities were selected based on their size, regional representation and willingness to take part in the research; both traditional and western medicine practices are taught at medical universities in Viet Nam. Three research co-ordinators (one at each university) were recruited and trained to select the students as well as to ensure the questionnaire was completed. The survey was introduced by the co-ordinator and the link to the online questionnaire was sent to the selected participant. The students used computers or smartphones with internet access to visit the link and fill in the questionnaire. Once the survey reached the desired number of respondents, the link was automatically disabled. Each student who took part in the survey received a mobile phone top-up card to the value of VND50,000 (about USD2) as a token reward for their time and effort.

A structured questionnaire was developed consisting of 34 predominantly scaled and multiple-choice

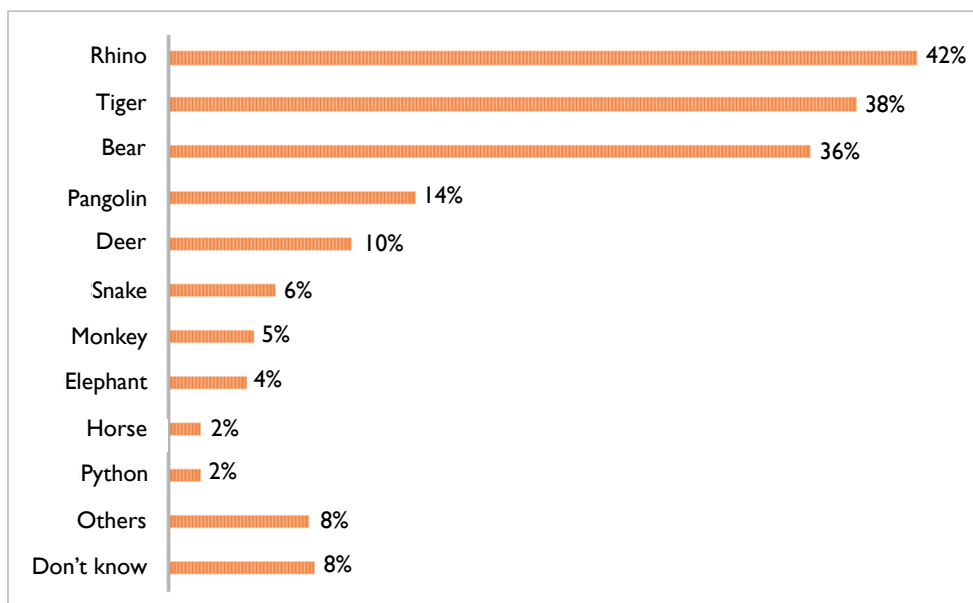


Fig. 1. Results from the question: “What do you think are the most commonly used fauna products in TM?” (n=979. Students could tick one or more species).

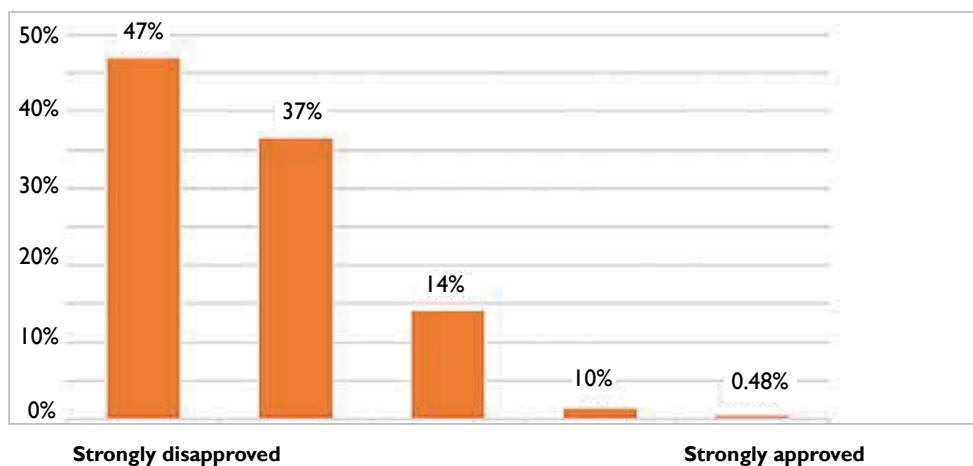


Fig. 2. Responses to the question: “Do you agree with the use of products made from threatened wildlife in TM?” (n=1,047)

Fig. 3. Results of the scenarios (n=1,055)

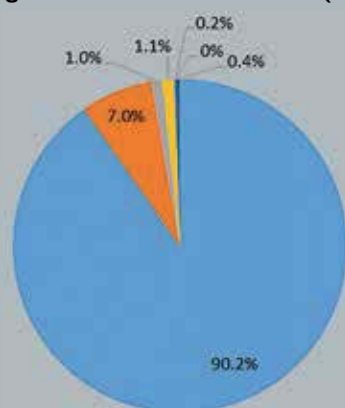


Fig. 3a. No. indicating whether they would use threatened fauna products if they know they could be fined.

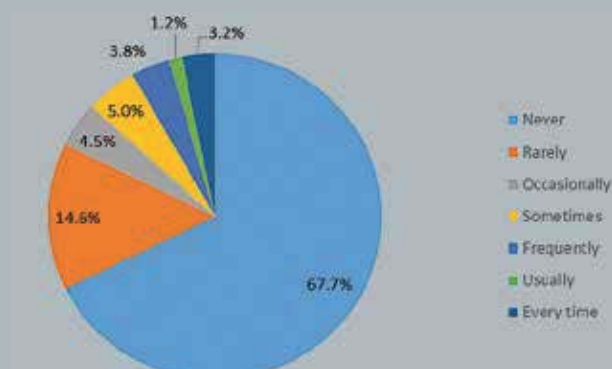


Fig. 3b. No. prepared to use threatened fauna products when patients are family members or friends.

questions in the Vietnamese language, with open-ended options to allow for further exploration of unaddressed dimensions of the question's theme. The questionnaire included socio-economic questions, and questions on the knowledge around TM practices, on what kind of lectures the students were receiving, and the perceived reputation and status of the TM practices and practitioners in Viet Nam. The questionnaire was developed to elicit unbiased and honest responses from the participants. The word "threatened" was used, without reference to the illegality or the protection of the species by law; the illegality of the use of threatened fauna products for TM was not introduced until the end of the questionnaire.

The online survey software Survey Monkey was used as the questionnaire platform as a cost-effective approach to achieve a large sample size. Moreover, online surveys were generally perceived as more impersonal and anonymous (Blumberg, Cooper and Schindler, 2014), thus allowing for collected responses to reflect better the participants' opinions. Additionally, Survey Monkey offered a number of innovative features which streamlined the survey management process and improved data quality, including:

- monitoring the flow and length of the questionnaire to ensure that respondents strictly follow the survey procedures;
- requiring participants to answer all the questions;
- allowing one questionnaire response only per electronic device, thus reducing the possibility of one person providing multiple responses;
- flexibility for the participants to take part in the survey at a time convenient within a set deadline.

Throughout the data-collection period, continuous reviews were conducted on submitted responses to ensure that the sample was robust. The sample was assessed against criteria including whether the respondents were on the list of participating TM students and whether their personal details, such as student IDs and date of birth, matched the information provided. Where necessary, a cross-check with the research co-ordinator was made to ensure all valid responses were accounted for.

In total, 1,055 valid survey responses were collected. However, some of these contained answers that were either incomplete or found as outliers (e.g. students had misunderstood the question, based on the answers provided in the open-ended part of the questions). These specific outliers were removed from the analysis for those particular questions, resulting in a reduction in sample size for some of the analysis. The number of responses used in the analysis is identified by "n" for each question.

RESULTS

In this paper a summary of key results of the surveys provide self-reported insights into the knowledge, attitude and practices of the medical students in regards to the use of fauna species products in Ha Noi and Ho Chi Minh City.

Survey results show that rhinos or rhino parts were the most commonly identified fauna products amongst the students for use in TM, accounting for 42% of the valid responses (n=979) (Fig. 1), closely followed by tiger (38%) and bear (36%) products. Other identified species were pangolin, deer, horse and snake. Eight percent of the students could not recall any fauna products used in TM.

More than three quarters of the students were opposed to the use of threatened fauna species products for TM, with 47% reporting that they strongly disapproved and 37% stating that they disagreed with this practice. Fourteen percent of the students were indifferent to the practice of using protected species products and a total of 20 students expressed their approval of the practice, with 15 students agreeing and five students strongly agreeing to such practices (Fig. 2).

To generate insights into the perspectives of the students for future practices of the use of threatened fauna species, different scenarios were presented. When it was pointed out that there were laws and regulations against the use of threatened species in TM (Fig. 3a), 90% of the students (n=1,055) responded that they would never prescribe or recommend using fauna products. However, when the scenario involved family and friends, this number reduced to 68% (Fig. 3b). Thus, more students

Fig. 3 ctd. Results of the scenarios (n=1,055)

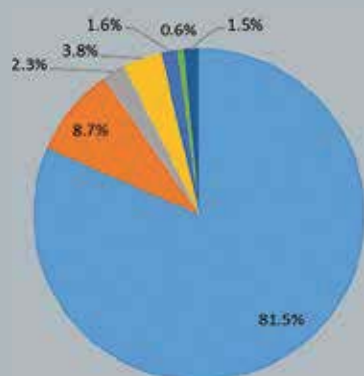


Fig. 3c. No. who would consider using threatened fauna products unprompted by customers.

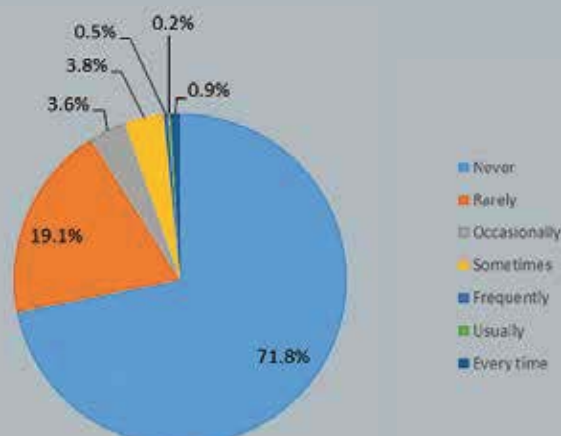


Fig. 3d. No. who would consider using threatened fauna products when customers ask for such products.



A pharmacist with traditional Vietnamese medicine.

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would prescribe or recommend threatened fauna products when it concerned their family and friends.

It was found that 18.5% of the students would consider (rarely, to every time) prescribing threatened wildlife products unprompted by customers or patients (Fig. 3c). This number increased to 28% (rarely, to every time) if customers or patients were to ask the TM practitioner for wildlife products or for their opinion of the benefits of these products (Fig. 3d).

Of the 20 students who endorsed the use of threatened wildlife species for TM, the majority (55%) believed in the perceived effectiveness of these products. Thirty-five percent of this group stated that the effectiveness of these products was well-known and 15% reported that they just followed the advice of other TM practitioners (Fig. 4).

Out of the students who were against the use of threatened wildlife products in TM ($n=877$), 67% responded that this position was driven by the illegality of the practice. Other reasons also included the unsustainability of the practice (40%), the ineffectiveness of these products in treating patients (31%), and the expense of the wildlife products (13%). Other reasons not to recommend or prescribe wildlife products included the difficulty in obtaining wildlife products (7%), altruism and kindness to the animals (5%), and the availability of alternative treatments both for TM and Western medicine (3%). Interestingly only 3% quoted the lack of scientific evidence on the effectiveness of the wildlife products. In China and Viet Nam the uninformed application of medicine and/or its use not being informed by scientific evidence has been found to be commonplace, even in Western medicine (Mao *et al.*, 2015).

Survey questions were also directed at understanding what content the students received as part of their course. Students were more likely to receive classes on pollution (84%), resource depletion (69%) and environmental health (69%), subjects that do not directly address the use of threatened and/or illegal wildlife products in TM. Only 35% of surveyed students received some content on environmental laws and regulations during their studies.

With respect to the reputation of TM's practitioners, 93% of all medical students recognised the importance of protecting TM practitioners' reputations. Thirty-two per cent of the students considered it "extremely important", 38% regarded it as "very important" and 22% ranked it as "moderately important" (Fig. 5).

When asked about their willingness to take part in wildlife conservation programmes, 57% of the students who disagreed with the use of threatened wildlife products in TM ($n=877$) showed a high level of willingness to participate in such campaigns ("will participate usually, frequently or every time"). Thirty-eight percent of students in this group responded to such programmes with a medium level of willingness ("will participate occasionally or sometimes"). Five percent of these students were not willing (rarely or never) to participate in such activities. However, in the group of students who supported the use of threatened wildlife products in TM ($n=20$), the low level of willingness to participate increased to 25% (Fig. 6).

CONCLUSIONS

This research confirms that the use of threatened and/or illegal fauna products is embedded in TM practices and has generated some insight into the knowledge, attitudes and practices of the young and future TM practitioners in Ha Noi and Ho Chi Minh City.

It was found that the main motivations behind the potential deterrent of the use of threatened species were their illegality and the unsustainability of their use. This indicates that future TM practitioners are deterred by the risk of being penalised and therefore improved training on environmental and criminal regulations may prevent TM practitioners from supporting the use of protected wildlife species. Although most of the medical students surveyed reported that they were against the use of protected wildlife species for TM, they can be influenced by friends and family members to prescribe protected wildlife products. The data suggest that maintaining positive relationships with friends and family in

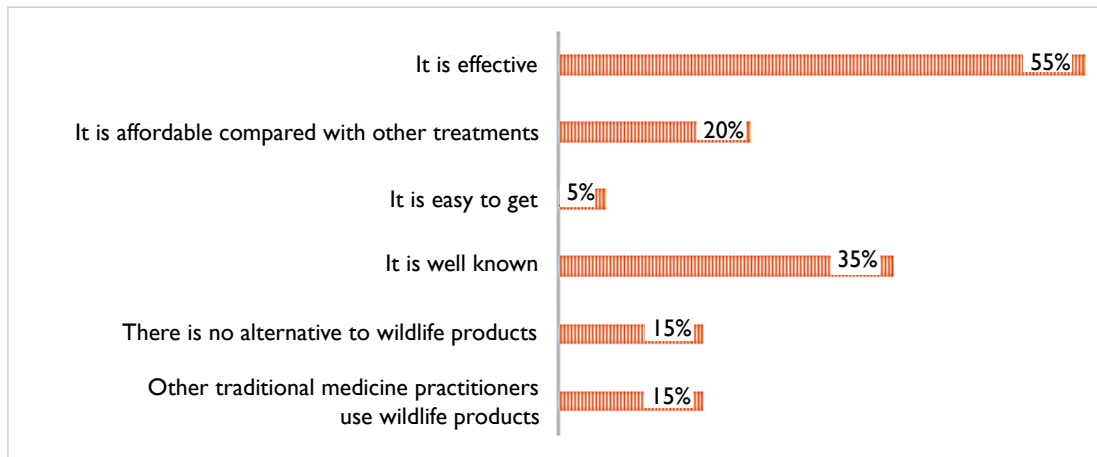


Fig. 4. The reasons to recommend the use of protected wildlife products (n=20).

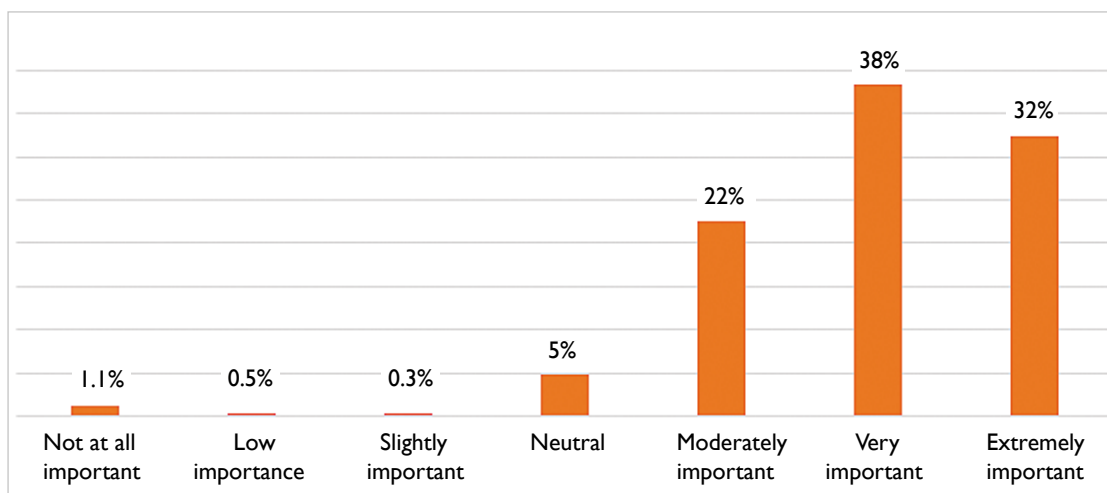


Fig. 5. Results of the question "how important is it to protect the reputation of TM practitioners?" (n=1,055).

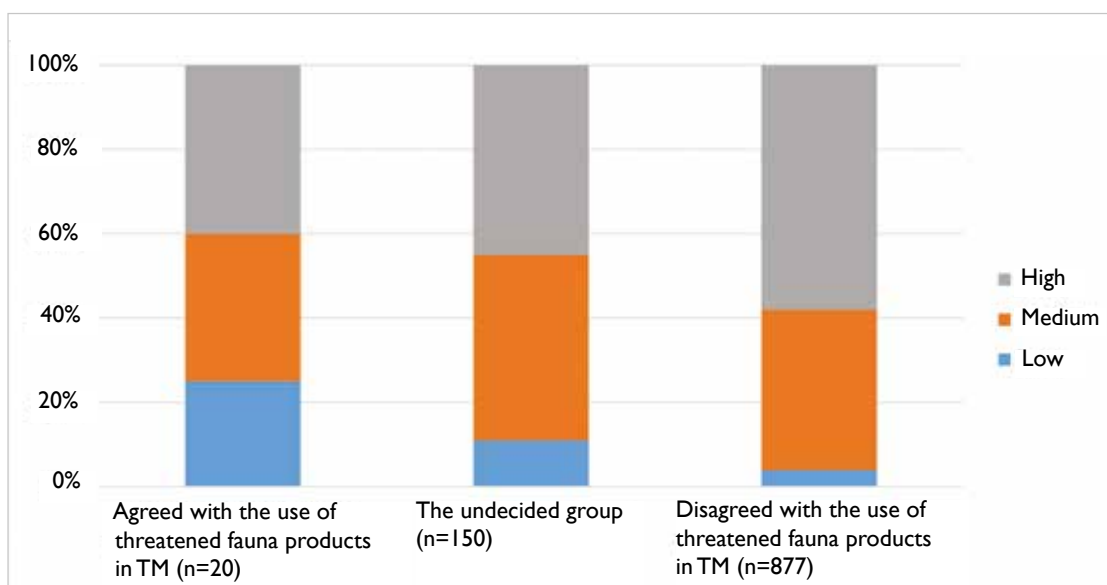


Fig. 6. Willingness to participate in a wildlife conservation programme organised by university (n=1,047).

Vietnamese culture overrules the risk of breaking the law and of illegally prescribing fauna products to family and friends, as well as to customers and patients asking for products.

Even though the size of the survey sample was small, the results seem to suggest that the students' support of the use of wildlife products in TM was largely based on knowledge of the products' perceived benefits that had been gained from more senior TM practitioners rather than based on any scientific evidence. Behaviour change efforts should include the undecided group (about 10% of the sample size for this survey) as they do not have a clear perspective on the use of wildlife products for TM.

While the results demonstrate that criminal activity and punishment can act as deterrents for TM practitioners to prescribing and recommending protected wildlife products, the relevant regulations and laws are not subjects covered in the TM curriculum. The survey findings suggest that increased and improved education on laws and regulations is critical if the use of wildlife products in TM is to be reduced.

Overall, a change in social norms is required to make it unacceptable to consume threatened and/or illegal wildlife products as TM. The importance and further enhancement of the reputation of TM practices and its practitioners could be highlighted if this behaviour is to shift. This survey has identified that TM students do and would like to participate in conservation programmes; this presents environmental organisations with an opportunity to target behaviour change campaigns that will lead to a zero-tolerance of wildlife products used in TM.

RECOMMENDATIONS

This research provides insights into the perceptions of medical students of the use of threatened and/or illegal wildlife products in TM and identifies the importance and opportunities for shifting social norms around such use. Targeted behaviour change campaigns in Viet Nam have been demonstrated to be able to deliver a reduction in desire to consume wildlife products, such as rhino horn (TRAFFIC, 2017).

It is recommended that a behaviour change initiative is focused around enhancing the reputation of TM practitioners as champions for sustainability and protection of natural resources, including wildlife. Furthermore, it is critical that universities include content on the environmental laws and regulations, as the risk of fines and punishment was identified to be a deterrent for the students. The authors therefore encourage engagement by NGOs and other relevant organisations with the Ministries of Health and Education to integrate into the curricula subjects and content regarding environmental laws and regulations as well as on biodiversity conservation.

Using online surveys is an effective and affordable way to develop an understanding of the knowledge,

attitudes and practices of a target audience and to create a baseline. The survey can easily be repeated during and/or at the end of the behaviour change intervention to evaluate its impact and importance, to carry out further adjustments and to identify whether the campaign has had the desired effect.

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