

VOL. 25 NO. 1

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TRAFFIC

B U L L E T I N

EELS

NIGERIA'S IVORY TRADE

CAVIAR

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

APRIL 2013

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.



MIKE GOLDWATER / WWF-CANON

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.

TRAFFIC is a joint programme of WWF and IUCN, the International Union for Conservation of Nature. The role of

TRAFFIC is to seek and activate solutions to the problems created by illegal and/or unsustainable wildlife trade. TRAFFIC's aim is to encourage sustainability by providing government, decision-makers, traders, businesses, consumers and others with an interest in wildlife trade with reliable information about trade volumes, trends, pathways and impacts, along with guidance on how to respond where trade is illegal or unsustainable. Eight regional TRAFFIC programmes are co-ordinated by the TRAFFIC International headquarters in Cambridge, UK.

TRAFFIC's reports and advice provide a technical basis for the establishment of effective conservation policies and programmes to ensure that wildlife is maintained within sustainable levels and conducted according to national and international laws and agreements. The journal of the TRAFFIC network, *TRAFFIC Bulletin*, is the only journal 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.



MARTIN HARVEY / WWF-CANON

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).



NATIONAL ARCHIVES OF AUSTRALIA / WWF



SIMON RAWLES / WWF-CANON

The *TRAFFIC Bulletin* is a publication of TRAFFIC, the wildlife trade monitoring network, which is the leading non-governmental organization working globally on trade in wild animals and plants in the context of both biodiversity conservation and sustainable development. TRAFFIC is a strategic alliance of WWF and IUCN.

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

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Ploughshare Tortoise *Astrochelys yniphora*
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Seizure of Tiger *Panthera tigris* cub skins at Russia-China border (© Favel Fomenko / WWF-Russia);
Ivory bangles, Nigeria
(© Lucy Vigne)

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A glow of cautious optimism was evident in Thailand, the Land of Smiles, as the 16th meeting of the Conference of the Parties (CoP16) to CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora) concluded its two-week proceedings on 14 March 2013. Member governments had taken much-needed action to extend CITES trade controls to a range of vulnerable and valuable timber and shark species as a complement to other sustainable management measures. There were also critical agreements about action and accountability with respect to efforts to close down illegal trade and markets for elephants, rhinoceroses and other endangered species banned from trade under CITES.

EDITORIAL

In many respects the positive results of the Conference were a pleasant surprise. Just three years ago, the conclusions of the 15th meeting of the Conference of the Parties to CITES (CoP15) were greeted with a chorus of dismay about the apparent prevalence of interests vested in short-term commercial gains from unsustainable wildlife trade and the increasing symptoms of CITES being an ailing treaty struggling for relevance in the global politics of the time.

So what changed and why? The tone was set from the opening statements of the Conference: the Thai Prime Minister's bold statement of intent to close down the country's ivory markets; UNEP Executive Director Achim Steiner's recognition of the relevance of CITES in a world of increasing demand for natural resources and on a planet where unsustainable patterns of consumption and production are shrinking, rather than husbanding, that crucial resource base; and CITES Secretary-General John Scanlon's remark that illegal trade in wildlife has reached a scale that poses an immediate risk to wildlife and to people, including those serving in the front-lines to protect wildlife, in part owing to increasing involvement of organized crime syndicates and in some cases rebel militias. Each echoed the growing voice of global concern about the seriousness of wildlife crime and its increasingly harmful environmental, economic and social impacts.

Sadly, a principal trigger for this concern is the wave of poaching and illegal trade that has built up to crisis levels for rhinoceroses and elephants over the past few years. For rhinoceros horn trade, new market demands in Viet Nam have been the central driver of runaway poaching levels in South Africa. For elephant ivory, indicators of poaching and illegal trade levels indicate that commercial pressure is increasing, despite the existence of a CITES action plan that aimed to motivate efforts to close down illegal markets and trade routes.

As reported in the editorial of the last issue of this journal, the policy-level response to these facts has been

vigorous, with wildlife trafficking raised for the first time in the UN General Assembly, high level statements by Gabon's President and the US Secretary of State, among others. New resources have been mobilized for engagement by INTERPOL, the World Customs Organization, the UN Office on Drugs and Crime, and for the development of regional wildlife enforcement networks.

That said, arguably the biggest practical impact of this policy concern at CoP16 was a change in tone in the critical debates about CITES-listings for shark and timber species under serious exploitation pressure and for which proponents argued that regulatory controls under CITES would complement other management measures and help ensure sustainable trade levels in future. For the sharks, a tough debate largely focused on valid questions about practical implementation challenges, rather than opposition to the principle of CITES listing for commercial fishery species that has been heard at previous CoPs. And for the timber species, including Malagasy ebony and rosewood species subjected to high levels of illegal harvest in recent years for trade to Asian markets, a CITES Appendix II-listing was remarkably agreed by consensus.

For the pachyderm species in the spotlight, a range of measures were agreed that greatly increase compliance pressure on source, transit and market countries to take rapid action to address illegal trade, along with new initiatives to support those individual national efforts through new international law enforcement approaches, such as use of forensic methods to assess origin of ivory seizures.

It would be wrong to paint an unblemished picture of this reinvigoration of CITES. Its Secretariat remains woefully under-funded and debate at the CoP sometimes drifted back to the days when listing in the CITES Appendices was viewed simply as a flag of conservation concern, rather than an evidence-based judgement that the treaty's specific trade measures could help prevent unsustainable international trade. Nevertheless, the concerns driving key decisions at CoP16 were undeniably powerful and the policy outcomes overall demonstrated an intent by governments to seek solutions.

As ever, the real test of this intent will be the actions taken—the implementation of trade measures introduced for those shark, timber and other newly-listed species, and whether countries under the CITES compliance spotlight make effective interventions and whether they are held to account if they fail to do so. The level of global policy concern about illicit wildlife trade is arguably stronger now than at any time in CITES's 40-year history. If this can indeed be translated into effective action, the glow of optimism might well be brighter still when the Convention's member governments convene again in South Africa in 2016.

*Steven Broad, Executive Director,
TRAFFIC*

KAHORU KANARI will leave in May 2013 after a period of seven years working at TRAFFIC's office in Japan. Among the many projects Kahoru contributed so successfully towards was TRAFFIC's work on the trade in medicinal plants, reptiles and the role of the internet in wildlife trade.

bulletin board

RACHEL KRAMER was appointed Programme Officer at TRAFFIC's office in North America in September 2012. She has spent three years working on conservation in Madagascar with expertise in ecological monitoring and community-based development initiatives.

SHEKHAR KUMAR NIRAJ was appointed Head of the TRAFFIC office in India in January 2013. Shekhar has spent 19 years with the Indian Forestry Service and most recently acted as Conservator of Forests and Director of the Gulf of Mannar Marine Biosphere Reserve.

LOUISETTE NGO-YEBEL has joined the Regional office for Central Africa, in Cameroon, as their Communications Officer. She is currently completing a Master's degree in Environmental Management and Sustainable Development.

LIN PANQIU has been appointed Communications Officer for the China programme with effect from February 2013. Lin has six years' experience working as an editor and communications consultant on a range of publications.

JULIE THOMSON, was appointed East Africa Programme Coordinator in January 2013 and will be based at the TRAFFIC office in Tanzania. Julie was previously Deputy Director for the South-east Asia office based in Hanoi, Viet Nam, a post that she left some seven years ago.

ZHANG SHENG has been appointed the China Campaign Project Manager, leading work on the WWF/TRAFFIC Illegal Wildlife Trade Campaign.

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Emmanuel Tamounang

With deep sadness TRAFFIC announces the death of Emmanuel Tamounang, staff member at TRAFFIC's Central

Africa office, on 9 February 2013 following a brief illness. Emmanuel, from Santa village, Bamenda, Cameroon, joined TRAFFIC's Central Africa office in March 2011 as a driver and car mechanic. Everyone who visited TRAFFIC in Cameroon knows how much Emmanuel contributed to the success of the organization's core work there, ensuring safe travel for staff, whatever the time or location. When visitors arrived in Cameroon, Emmanuel was their first welcoming image of TRAFFIC, and to everyone he was much more than a driver: he was always available and ready to help.

Spending time with Emmanuel was always memorable thanks to his excellent sense of humour and his many jokes about everything from everyday life to sports in Cameroon. Moreover, many will also recall the intense and passionate discussions with Emmanuel about the socio-economic and political situation in Cameroon.

Emmanuel was a reliable, responsible, engaging and passionate man who will be sorely missed by his family, friends and colleagues.

Emmanuel is survived by his wife, two children, two brothers and a sister.

LEBANON JOINS CITES

The Lebanese Republic has become the 178th Party to CITES, effective 26 May 2013.

CITES Secretariat: www.cites.org/eng/news/party/20130228_lebanon.php

PUBLICATION DATES OF TRAFFIC BULLETIN

With effect from this issue, Vol. 25 No. 1, there will be two issues per volume of the *TRAFFIC Bulletin* published each year, in April and October.

Police in Nepal seized a total of over 1.5 t of shahtoosh (wool derived from the Tibetan Antelope *Pantholops hodgsonii*) in January 2013 in just two seizures, one of which amounted to more than 1.1 t. This is probably the biggest ever such seizure made in Nepal, both in size and monetary value. Together, these amounts represent around 10 000 dead Tibetan Antelopes or Chiru.

The Chiru is fully protected under the National Parks and Wildlife Conservation Act 1973 of Nepal and under Schedule I of the Wildlife (Protection) Act, 1972 of India. The species is classified on the IUCN Red List as Endangered and is also listed in Appendix I of CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora), meaning that international trade is not permitted in Chiru or its products.



A lorry loaded with 1000 kg of shahtoosh (wool from the Tibetan Antelope), seized in January 2013. This consignment is probably the largest ever in Nepal, both in terms of size and monetary value.

MASSIVE SEIZURE OF TIBETAN ANTELOPE WOOL IN NEPAL

Formerly found across the whole Qinghai-Tibet Plateau in China, the range and population of Chiru have decreased massively and the species is now absent from all or most of the eastern plateau. Although much reduced, hunting on a commercial scale in the late 1980s and 1990s was once the major threat to the Chiru that resulted in the severe decline in numbers. Current estimates put the global population in the region of 100 000 to 120 000 animals.

The 1.1 t seizure of shahtoosh, found stuffed into 46 sacks, was said by police to be en route from the Tibetan Autonomous Region through Nepal into India, where the specialized looms and shawl-making skills have traditionally been available in Srinagar in Kashmir. However, intelligence reports suggest that shahtoosh weaving may have shifted to the Punjab (S.K. Niraj, Head, TRAFFIC India, *in litt.*, 2013). The wool was confiscated from a house in northern Gorkha district, about 160 km west of Kathmandu. It was said to have been smuggled across the Ngula Dhojang pass into Nepal, then transported to Soti Khola after passing through several villages on the Manaslu circuit trekking route. Two suspects have been arrested and further investigations are under way to identify others involved in the smuggling ring. Anyone convicted of shahtoosh smuggling in Nepal could be fined up to NPR75 000 (USD860) and/or face up to 10 years' imprisonment.

These two shahtoosh seizures formed part of Operation Cobra, a month-long initiative that brought together international Customs officials and other law enforcement bodies from across range, transit and consumer countries in Asia, Africa and the USA, in an effort to track and dismantle wildlife criminal networks. The operation, which took place between 6 January and 5 February 2013, also yielded a large haul of other wildlife items in the countries taking part, including 42 t of Red Sanders *Pterocarpus santalinus*, 6.5 t ivory, 800 kg of pangolin scales, 22 rhinoceros horns, and led to hundreds of arrests.

TRAFFIC has previously highlighted the dangers posed by the shahtoosh trade to the survival of the Chiru

and has collaborated with the Wildlife Institute of India in producing a simple manual for quick identification of shahtoosh hair by enforcement officials.

Operation Cobra was proposed by China's National Inter-Agency CITES Enforcement Coordination Group and ASEAN-Wildlife Enforcement Network in 2012, and organized by China, South Africa and USA in co-operation with ASEAN-WEN, South Asia Wildlife Enforcement Network (SAWEN) and Lusaka Agreement Task Force (LATF) with the assistance of the World Customs Organization (WCO), the CITES Secretariat and INTERPOL (see: www.wcoomd.org/en/media/newsroom/2013/february/asia-and-africa-join-hands.aspx and wwfnepal.org/?207229/Biggest-ever-seizure-of-Shahtoosh-in-Nepal).

Richard Thomas, Communications Co-ordinator, TRAFFIC



Shahtoosh is the fine underwool of the Tibetan Antelope or Chiru *Pantholops hodgsonii* that is highly prized for its use in the manufacture of luxury shawls. To obtain the wool, the animals are illegally killed and shaved; each Chiru yields approximately 150 g of wool. The total of 1.5 t of shahtoosh seized in Nepal during Operation Cobra represents around 10 000 dead Chiru.

In the Spermonde Archipelago, Indonesia, demand for valuable living marine resources has caused a number of sequential exploitation waves. The most recent is the catching of moray eels. Over recent months, this activity has been taken up on at least seven islands. The main target is Giant Moray *Gymnothorax javanicus*, but other spotted species are also collected. Moray eels have not been previously exploited in the area as their flesh is considered locally to be non-palatable. Fishing started in February 2012 in order to satisfy a new demand from mainland China, where the species is used in traditional medicine. At present, several hundred kilogrammes of moray eels are caught daily, filleted and exported to mainland China and Taiwan for such purposes. Fishermen targeting moray eels either use spear guns and cyanide or place baited fish traps in the coral reefs. These activities are putting additional pressure on Spermonde's coral reefs, which are already suffering from over-exploitation and from the widespread use of cyanide and dynamite to capture fish. But the fishing of moray eels might also have other consequences. As top predators, they influence the reef fish community structure. The low abundance and strong site-affinity of moray eels makes them extremely vulnerable to over-exploitation. According to fishermen involved, a number of reefs have already been depleted, forcing them to move to new reefs within and out of the archipelago to collect eels.

FIRST EVIDENCE OF TARGETED MORAY EEL FISHING IN THE SPERMONDE ARCHIPELAGO, SOUTH SULAWESI, INDONESIA



BACKGROUND

Indonesia's vast coral reefs are some of the most species-rich ecosystems in the world. Their abundant marine resources provide primary livelihoods for millions of coastal inhabitants, who exploit them both for subsistence and as valuable commodities, including some species exclusively targeted for distant markets. For centuries, large trading networks have connected some of the remotest areas with markets in Asia, Europe and the USA. Mainland China has long played a key role in this maritime trade. At least since the early 18th century, Indonesian sea cucumbers were exported to meet the increasing Chinese demand that could no longer be satisfied by the country's own stocks (Schwerdtner Máñez and Ferse, 2010). Indonesia is also the world's leading shark fin supplier (Tull, 2009), and provides a significant part of the market supply in live reef food fish for Singapore and Hong Kong (Radjawali, 2011).

The Spermonde Archipelago in South Sulawesi hosts one of the largest coral reef fisheries in Indonesia. The archipelago is part of the Coral Triangle (a specific area encompassing the tropical marine waters of Indonesia, Malaysia, Papua New Guinea, Philippines, Solomon Islands and Timor Leste and recognized as the global centre of marine biodiversity), and has long been known for its enormous abundance in marine resources. Spermonde lies in close proximity to Makassar, a major trading hub for maritime resources. The approximately 70 tiny coral atolls provide hardly any land-based alternatives (Schwerdtner Máñez *et al.*, 2012), such that the majority of Spermonde's households strongly depend on marine resource exploitation (Deswandi, 2012).



PHOTOGRAPHS: K. SCHWERTNER MÄNEZ



Since the 1970s, a combination of population growth, technological developments and emerging preferences for specific commodities has led to the development of consecutive waves of marine resource exploitation in the area (Ferse *et al.*, 2012). There are increasing signs of over-exploitation, notably the disappearance of high value species such as the sea cucumber *Holothuria nobilis* or the Humphead Wrasse *Cheilinus undulatus* (Johannes and Riepen, 1995; Massin, 1999).

Alternatives to fishing are currently largely absent. Many fishermen are also involved in so-called patron-client relationships, in which patrons provide credit, fishing gear and social security to their clients who in return fish exclusively for their patrons. Demand for particular resources is communicated from outside the country through fish trader to patrons, who pass this information on to their clients

(fishermen). Upcoming exploitation waves are mostly unpredictable, can spread quickly and might lead rapidly to local over-exploitation. This seems to be the case for the most recent exploitation wave in the Spermonde Archipelago: the targeted fishing of moray eels.

METHODS

First observations of moray eel landings were made by the authors during a ten-day field expedition to the Spermonde Archipelago in October 2012. The expedition took place in the frame of the joint Indonesian-German research project SPICE III (Science for the Protection of Indonesian Coastal Ecosystems). A boat landing moray eels was observed on the island of Langkai during two consecutive days. Each catch consisted of between 30 and 40 specimens, including some large individuals of nearly two metres in length. The fish were cleaned and

filleted on the shore. Several other boats were also observed returning to the shore with buckets of moray eels, and remains of the cleaning were found along the shore.

A follow-up study to investigate moray eel catching was undertaken between October and November 2012, and continued in February 2013. During this time, fishermen, patrons and traders involved in moray eel catching and trade were identified and interviewed. Interviews initially took place with four traders in the fish market in Makassar; further interviews were conducted during three visits to three islands: on Barrang Lompo Island, three traders and five fishermen were interviewed; two traders and six fishermen were interviewed on the island of Langkai; and one trader was interviewed on the island of Bone Tambung. People were asked how long they had been involved in this activity, how they found out about the demand for moray eels, where and to whom they sell their fish, how and where morays eels are caught, how much they catch, and what they earn from their catch. These visits were also used to observe moray eel landings.

DISTRIBUTION AND STATUS

The family of moray eels Muraenidae contains around 200 species worldwide and approximately 150 species within the Indo-Pacific. Moray eels live as solitary predators in reef ecosystems. Top predators like moray eels have a strong influence on the reef fish community structure (Ruttenberg *et al.*, 2011). As poor swimmers, both juveniles and adults maintain high site fidelity (the tendency to return to a previously occupied location) to a few square metres of reef (Böhlke *et al.*, 1989). Particularly large species such as the Giant Moray *Gymnothorax javanicus* may reside in the same cave for several years. Although they are one of the most widespread and common groups of reef fishes, morays are still a poorly studied group of organisms (Reece, 2010). Information on most species is very limited. Fishbase holds information on only two of the species fished in Spermonde, and their IUCN Red List status has not been evaluated.

Photographs, top: a day's catch on Langkai Island; above, left: moray eel being cut, Langkai Island; above, right: moray eel traps, or bubu, on Bone Tambung Island.

LEGISLATION

Moray eels are not covered by CITES. There is also no specific Indonesian law dealing with their harvest or trade and the species is not listed by the Indonesian Nature Conservation Agency as a protected species. Indonesian companies holding an export permit for fish from the Ministry of Trade may trade morays without the need for an additional permit.

RESULTS

Most moray eels are considered to be non-palatable. The larger eels in particular have been found to contain ciguatera toxin, and can be highly poisonous if consumed (Withers, 1982; Allen and Erdmann, 2012). There are, however, some regions where morays are eaten, such as Papua New Guinea. In Indonesia, morays are usually not fished. If caught accidentally, they are used as bait. In mainland China, some species are used in traditional medicine (Sadovy and Cornish, 2000). Soup containing moray flesh is consumed to stop bleeding after physical injuries. Mainland China satisfies a significant part of its demand through imports (Tu-yin *et al.*, 2009).

Fish traders in Makassar reported that the demand for moray eels suddenly appeared in February 2012. It was first spread through a Makassar-based fish-exporting company that started to buy flesh and skin. Both are exported to mainland China and Taiwan, although it is currently unclear what the skin is used for. There are only four species in demand: the Giant Moray *Gymnothorax javanicus*, the Black-spotted Moray *Gymnothorax favagineus*, the Spotted Moray *Gymnothorax isingteena*, and the Peppered Moray *Gymnothorax picta*. Interviewed traders confirmed that they solely buy spotted species. This could mean that the pharmaceutical active ingredients are thought to appear in spotted specimens only. Given that the head and the tail of each fish are removed—which makes the identification of species difficult for non-specialists—all four species might be sold as one species.

Information about the demand for moray eels was quickly taken up by patrons on several islands in Spermonde and passed on to the fishermen they employ. In November 2012, fishermen on seven islands in and around the Spermonde Archipelago were involved in this activity: namely on Langkai, Barrang Lompo, Barrangcaddi, Bone Tambung, Kodingareng Pajenekang, Tana Keke, and Dewakkang. Morays are fished by compressor divers who use a spear gun with an extra-large arrowhead. The fish are sometimes also stunned with cyanide otherwise used to capture live reef fish or ornamental species. Cyanide fishing had been brought to Spermonde by fish traders from Hong Kong in the early 1980s. Although its use is now prohibited because of the damage cyanide causes to corals, it is still widely used throughout the archipelago. In order to retrieve the dead moray eels, divers using metal bars sometimes break open coral crevices in which the fish are hiding. Often two people are necessary to pull large individuals from the reef. On the island of Bone Tambung, baited fish traps—known as *bubu*—are used for moray eel catching. In order to place the trap in a certain spot, fishermen may destroy corals. According to the interviewees, a single boat with

two to three fishermen using spear guns can catch between two to seven morays per day, with an overall weight of between 20–70 kg. The authors have also observed larger catches, with more than 30 individuals and an approximate total weight of more than 100 kg. Information on catches from *bubu* traps is lacking. Fishermen report that their daily catches have decreased, both in numbers and in weight and that, as a consequence, they have moved to new reefs. This could indicate that moray eel numbers are already declining in some locations. According to interviewees, the reefs around the islands of Langkai and Lanyukan, where the photos for this article were taken in October 2012, are now largely fished out.

PRICES

Catches are sold on a daily basis to patrons and traders on the islands, or directly to Makassar. Traders reported daily purchases of up to 500 kg of fish. During February 2013, export numbers decreased because unusually difficult weather conditions did not allow for regular fishing activities. If the morays are already cleaned and filleted, fishermen can fetch between Indonesian Rupiah (IDR) 9000–12 000 (USD0.94–1.25), Makassar-based traders pay from IDR12 000 to 14 000 (USD1.25–1.45), and companies are paying traders between IDR14 000 and 20 000 (USD1.45–2.08) per kilogramme.

DISCUSSION AND CONCLUSIONS

Fishing of moray eels is the most recent development in a series of consecutive exploitation waves in the Spermonde Archipelago. In all cases, the resources exploited are destined for distant markets. This makes it extremely difficult to predict the future development of trade in valuable marine resources because the demand changes in response to societal and political trends outside Indonesia. Patron-client networks play a critical role in this respect. Through well-established trading networks, patrons receive information concerning particular resources in demand, which they then pass on to their clients. Patrons also lend money and equipment, and thereby create a financial and social dependency that gives their clients little room for making their own decisions. Fishing continues as long as there are resources to be taken, and patrons to buy the catch.

A comparative analysis of exploitation patterns over time indicates that consecutive peaks in fishing activities become shorter with each new activity (Ferse *et al.*, 2012). Technical developments, such as the use of diving compressors, enable the exploitation of areas that used to be ecological refugia, for example deeper waters. Others, for example special arrowheads or cyanide, allow fishing for species that are otherwise difficult to obtain, such as moray eels.

The moray eel fishery is highly problematic. Morays are vulnerable to overfishing due to their low abundance and strong affinity to certain sites. Their depletion can have demographic consequences on the fish community structure in coral reefs, for example changes in size and abundance of herbivorous fish. Furthermore, the continuous use of cyanide and the breaking of corals are placing additional pressure on Spermonde's already degraded habitats.



FISHERMAN ON LANGKAI ISLAND
CARRYING CLEANED MORAY EELS.

K. SCHWERTNER MÁÑEZ

RECOMMENDATIONS

The problem of export-oriented fisheries is that management and policy measures are usually developed as *ex-post* responses. Authorities and institutions react after problems appear, once overfishing has taken place and species are already under threat. This is often caused by the fact that little information is available for decision-makers on which they could base their evaluation of a species's status. However, research alone might not be sufficient. There are simply too many species that are exploited. An alternative would be the use of a precautionary approach in the sense that specific permission has to be given for the export of any species. In the case of the moray eel, little knowledge is needed to foresee the potentially detrimental impacts of fishing. Strong limitations need to accompany any request to fish and export these species.

ACKNOWLEDGEMENTS

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Illegal reptilian trade in Chagai Desert, Pakistan: *a narrative of bad governance and weakening of traditional institutions*

Balochistan province, in the west of Pakistan, is home to some of the world's rarest reptile species, many of which are endemic to the province. Owing to illegal exploitation for the pet trade and loss of habitat, many of these species are now vulnerable. The Chagai and Nushki district in the province, which comprises a belt of land that lies south of the border with Afghanistan, harbours some 55 species of amphibians and reptiles, of which a large number of specimens are captured to supply illegal dealers operating out of Karachi. The majority of these animals are exported to Europe and the USA where herpetoculture has become increasingly popular over recent decades. The animals are relatively easy to keep in captivity: non-venomous snakes and lizards—mostly geckos—are the favoured species from the Chagai-Nushki area for the pet trade. The Fat-tailed Gecko *Eublepharis macularius* is most in demand among the gecko species, while Small-scaled Skink Gecko *Teratoscincus microlepis*, Keyserling's Skink Gecko *Teratoscincus scincus keyserlingii* and Persian Spider Gecko *Agamura persica* are also gaining in popularity.

Pakistan banned the export of all reptiles and mammal species in 2000. Twenty nine of the country's 229 amphibian and reptile species are listed in the CITES Appendices, including the Afghan Tortoise *Testudo horsfieldii* (CITES Appendix II and listed as Vulnerable in IUCN's Red Data List of 2009 (Tortoise & Freshwater Turtle Specialist Group, 1996) and Spiny-tailed lizards *Uromastyx* spp. (CITES Appendix II and protected under the *Balochistan Wildlife Act*).

In general, over-exploitation of these reptile species is driven by rapidly growing commercial urban markets, coupled with a breakdown in traditional tenure systems and local rules, along with a lack of awareness, weak governance and a failure of top-down regulation and enforcement. Collection in the region is said to have been initiated in the 1960s with the export of a shipment of *Uromastyx* species to the UK by a collector who encouraged local people to believe that reptile species in the area were hazardous owing to their toxic venom, and enlisted their assistance to capture specimens for export (Mulo Jogi pers. comm. to P. Attaullah, September 2010). Trappers predominantly come from Sindh province to collect specimens in the area during May and June as reptiles are easier to capture in hot months following hibernation during the winter period. The local people largely remain unaware of the real value of these animals and are reportedly agreeable to their capture and removal on account of the potential danger posed by the toxins of some of these species. This illegal trade is principally carried out by some 10–15 wildlife trading parties, mainly based in Karachi, who are registered to carry out legal trade in wildlife for scientific purposes, supplying pet shops and public zoos. The reptiles are collected by members of various nomadic tribal groups, including *Bar*, *Bheel*, *Oad* and *Jogies*, assisted by local people, as well as local tribal chiefs and other notables. Apart from occasional leisure trips to Karachi or countries in the Middle East paid for by the trading parties, for the most part locals are not paid for their services. *Jogies*, who are mainly from Sindh province, work in groups of between five and six people, and are paid a lump sum (PKR.30 000–40 000 (USD300–400) after the successful delivery of a consignment. The former administrative elected head of the district—the District Nazim (now replaced by a District Co-ordination Officer)—reported in a high level meeting in 2006 that between 15 000–20 000 reptiles were collected in Chagai-Nushki by *Jogies* every year, while trading parties had tried to offer him PKR20 million (USD200 000) for his support and facilitation of the illegal collection of reptiles (P. Attaullah pers. comm. to R. Tahir, December 2012).

Responses to reptilian over-exploitation have often emphasized urgent and heavy control measures. For a range of reasons, however, such approaches have not often been effective: capacity for effective enforcement is usually very low in the areas where most hunting takes place, livelihood strategies are not very diverse, and regulatory measures are likely to have little impact. Bearing these facts in mind, it is clear that a sustainable use model should be explored that allows for the sustainable harvesting of reptiles that cultivates a sense of ownership in the local population and which explores the marketing of these resources to generate a sustained source of income. IUCN's Sustainable Use and Specialist Group-Central Asia (SUSG-CASia) took the lead in implementing a GEF (Global Environment Facility)-funded Habitat and Species Conservation Project to conserve the critically endangered habitats and species and to replicate the trophy hunting model for the sustainable harvesting of reptiles of Nushki in Balochistan province. However despite community mobilization and awareness-raising, the sustainable capture of reptiles remains unsuccessful mainly due to bureaucratic hurdles and lack of political will. It is suggested that consideration be given to the breeding of these species in captivity for the purposes of marketing specimens internationally. Packaging would bear a green label with a message indicating that proceeds from sales would be used to conserve species and their habitats.

Quotas for the harvesting of wild specimens would need to be based on the non-detriment findings from periodic surveys, and Customs officials would need to be trained in order to sensitize them to the importance of reptiles and to build on their capacity to differentiate between captive-bred specimens and those harvested illegally from the wild. Communities can play an effective role both in curbing illegal harvest and the breeding of these species in captivity. For such purposes, sustainable-use plans should be prepared providing a detailed mechanism for the equitable distribution of resources among stakeholders.

The encouraging news is that Balochistan's regulatory bodies are beginning to understand the importance of reptiles in the country and are consequently taking measures to revise the *Balochistan Wildlife Act* to facilitate improvements in the conservation of these species, as well as allow for the sustainable harvest/trade of reptiles in the province. However, CITES Parties have to play an active role in informing countries where illegal exports are taking place so that steps can be taken to curb such activity. Finally, workshops and public meetings must continue to take place on a regular basis so as to raise awareness among the relevant stakeholders about the need for strict measures to curb the illegal harvest and trade in reptiles and other species from Balochistan, and from Pakistan as a whole.

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THE PALAWAN FOREST TURTLE UNDER THREAT FROM INTERNATIONAL TRADE

Of the six species of freshwater turtle native to the Philippines, only the Philippine Forest Turtle, or Palawan Forest Turtle *Siebenrockiella leytensis*, is endemic to the country, found only on the Palawan group of islands (Diesmos *et al.*, 2008). Listed as Critically Endangered and among the world's 25 most endangered tortoises and freshwater turtles (Turtle Conservation Coalition, 2011), the species is facing an extremely high risk of extinction in the wild in the immediate future due to a population reduction of at least 80%, projected or suspected to be met within the next 10 years or three generations, based on current levels of exploitation. The extent of occurrence is estimated to be less than 100 km², with a continuing decline, observed, inferred or projected, in area, extent and/or quality of habitat (IUCN, 2012).

The species is fully protected in the Philippines. As well as being one of the world's rarest species of freshwater turtle, the Palawan Forest Turtle is also one of the least known (Diesmos *et al.*, 2004a, 2004b, 2008; Diesmos *et al.*, 2012; Schoppe *et al.*, 2010). Until recently, herpetologists believed that the species, described by Taylor (1920) from two specimens as *Heosemys leytensis* from Leyte, might well be extinct. Only when Timmerman and Auth (1988) reported on a specimen from Palawan which they identified as a Palawan Forest Turtle, did the search for the species resume. It took a decade before its existence in Palawan was confirmed and documented through various studies (Diesmos *et al.*, 2004a, 2004b; Fidenci, 2004; Gavino and Schoppe, 2004; Lopez and Schoppe, 2004; Widmann *et al.*, 2004). Diesmos *et al.* (2004a) describe the rediscovery and provide evidence of the species being endemic to the Palawan faunal region. Morphological and molecular phylogenetic studies subsequently demonstrated that *leytensis* is the sister lineage to the genus *Siebenrockiella* (Diesmos *et al.*, 2005).

Above: Palawan Forest Turtles for sale in a pet market in Manila.

Rediscovery of this protected species has stimulated international demand from hobbyists and collectors. Just months after the rediscovery was published, the Palawan Forest Turtle was available on the international pet markets of Europe, Japan and the USA (Diesmos *et al.*, 2004b). The species is restricted to five municipalities in Palawan, hence collection sites are limited. The species has never been bred in captivity and all individuals in trade are therefore illegal. Despite these facts, the laws are weakly implemented, if at all, and trade in the species continues to flourish. All species noted by the authors to be offered for sale in the Philippines, China, Europe and the USA were declared as captive-bred, except those in China.

LEGISLATION

The Palawan Forest Turtle is listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and is protected in the Philippines under the Republic Act 9147, known as the Wildlife Resources Conservation and Protection Act (or the Wildlife Act). This law prohibits international and domestic trade of wild-caught individuals of this species and violations can lead to fines equivalent to USD120–7150 and/or up to four years' imprisonment; collection permits are limited to research and trade is limited to captive-bred individuals internationally; possession is exceptionally allowed for those who registered with the authorities by 7 March 2005.

HOBBYIST TRADE

Although there is some domestic consumption of Palawan Forest Turtles for food, the greatest threat to the species is the demand for live specimens from international collectors and hobbyists, as is the case for many rare and endemic turtles (Turtle Conservation Coalition, 2011; Horne *et al.*, 2012; Diesmos *et al.*, 2012).

There have been a few convictions for illegal trade in this species but penalties have been negligible: for example, on 8 February 2012, a Chinese national caught arriving in Hong Kong from the Philippines with 60 reptiles in his luggage, including 20 Palawan Forest Turtles, and, again, on 14 June 2012, with a further 43 Palawan Forest Turtles, was fined HKD8000 (USD1030) for the first incident, and sentenced to six weeks in gaol for the second. Under Hong Kong legislation, he could have been sentenced to a maximum penalty of HKD5 million (USD645 000) and two years' imprisonment.

Kadoorie Farm and Botanic Garden (KFBG) in Hong Kong assisted the Agriculture, Fisheries and Conservation Department with the temporary holding and care of the reptiles until they could be returned to the Philippines on 27 April and 1 August 2012, respectively—the first-ever repatriation of wildlife back to the Philippines. The cost of repatriation was borne largely by the Philippines Government. The surviving specimens were cared for by the Katala Foundation Incorporated (KFI)—a Palawan-

based NGO—for quarantine and eventual release. KFI spearheads research and conservation efforts for this species in-situ and holds the only ex-situ assurance colony of the Palawan Forest Turtle. The turtles underwent quarantine and health checks and the first group was released back into the wild in June 2012 after they had been given a clean bill of health and in accordance with IUCN guidelines for the placement of confiscated animals and re-introductions (IUCN, 1998; 2002). The second group remains under the care of KFI while decisions on their final destination are decided. KFI is also lobbying for the protection of the turtles' remaining forest habitat in Palawan through large-scale information education campaigns and the establishment of protected areas for the species.

In a third case during 2012, Regional Maritime Police recovered 27 Palawan Forest Turtles from a bag that had been abandoned on Liminangkong Pier, north-west Palawan. The bag also contained four Asian Leaf Turtles *Cyclemys dentata* and 13 Estuarine Crocodiles *Crocodylus porosus*. The animals had reportedly been destined for Manila, and ultimately for the international market. The animals are in the temporary care of the Palawan Wildlife Rescue and Conservation Centre of the Department of Environment and Natural Resources and their condition is regularly monitored by KFI.

Based on confiscation and seizures data for 2009–2011, the Palawan Forest Turtle is ranked sixth among the 10 most-commonly confiscated species in the Philippines (Schoppe and Acosta, 2011b). Data on mortality during trade are not available but it is known that the species is prone to stress and needs clean and cool waters for its survival (Schoppe, 2010). Fatalities among the three 2012 confiscations ranged from 10–14% for the international confiscations and 26% for those confiscated while still in Palawan (Schoppe, unpublished data).

KFI works with the Philippines CITES Authorities and the Palawan Council for Sustainable Development (PCSD) to conserve the species. Since 2007, KFI is addressing the threats and knowledge gaps with a number of in-situ projects and the maintenance of an assurance colony aimed at conservation breeding (Schoppe and Fernando, 2009; Schoppe, 2010; Schoppe and Acosta, 2010b, Schoppe and Diaz, 2011). In-situ projects include information education campaigns, training on species identification and law enforcement, studies on population size, site fidelity and home range, role in the ecosystem, threats, distribution, and habitat requirements (Acosta *et al.*, 2011; Schoppe, 2009; Schoppe and Acosta, 2010a, 2011a, 2011b, 2012; Schoppe *et al.*, 2010; Schoppe and Ibanez, 2011; Schoppe and Jose, 2011).

RECOMMENDATIONS

As demand for the Palawan Forest Turtle and attempts to smuggle it out of the country increase, so too must monitoring and enforcement efforts. Successful convictions and strong penalties must go hand-in-hand with increased enforcement efforts, in order to serve as deterrents. Protection for the Palawan Forest Turtle needs to improve and an analysis undertaken to assess whether the species meets the criteria for transfer from CITES Appendix II to Appendix I (Horne *et al.*, 2012). More importantly, penalties for individuals found keeping, smuggling or trading this species illegally must be increased significantly if they are to serve as deterrents and ultimately reduce the trade. Research to identify collection sites and trade routes as well as a trade forensic study are urgently needed.



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CONFISCATION OF
PALAWAN FOREST TURTLES,
LIMINANGKONG, PALAWAN,
PHILIPPINES
(TOP AND BOTTOM)

MANILA PET MARKET, 2012
(CENTRE)

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MEDICINAL AND AROMATIC PLANTS OF MOROCCO—NATIONAL STRATEGY PUTS FAIRWILD INTO ACTION

Morocco is blessed with a rich Medicinal and Aromatic Plants (MAPs) flora, its diversity (some 4200 species of which over 800 are endemic) counting nearly 400 species recognized for medicinal and/or aromatic uses. Many of these species are harvested from the wild, and offer good potential for sustainable rural development and exports. As the sector continues to grow, the government entities responsible for the protection of national forests and water are faced with a daunting challenge—how to conserve biodiversity and protect Morocco’s natural resources while creating an environment in which rural populations can participate in economic growth activities to improve their livelihoods.

In 2012, UNDP launched a three-year project for the implementation of the National Strategy for the Sustainable Management and Development of Medicinal & Aromatic Plants (MAPs). Hosted by the Moroccan High Commission for Water and Forests and Fight against Desertification (HCEFLCD), and with financial support from the Global Environment Facility (GEF), the project aims to strengthen the capacity of Moroccan Government institutions, non-governmental organizations and concerned private sector actors and citizens to contribute to biodiversity conservation and poverty alleviation, through increasing the value of wild-collected MAPs, improving market access, and ensuring resource production sustainability.

By strengthening co-operation among national and local pioneers, the project aims to create an environment of transformation, skills development, and technological advancement for MAPs value chain actors. The ultimate aim is to integrate biodiversity conservation concerns into the value chain of the entire sector, fostering an attitude of responsible stewardship on the part of all stakeholders. Following this approach, implementation of the FairWild Standard for sustainable harvest and fair trade is central to the project (www.FairWild.org). Target MAP species selected include rosemary *Rosmarinus officinalis*, thyme *Thymus saturejoides*, pyrethrum *Anacyclus pyrethrum* and oregano *Origanum elongatum* and *Origanum compactum*.

Technical support on FairWild aspects will be led by FairWild Foundation partner ‘ProFound - Advisers In Development’ (based in The Netherlands). Such assistance includes helping the project team and stakeholders (co-operatives, associations, government institutions, private sector enterprises) to meet the FairWild Standard criteria, through developing situation analyses; conservation status assessments; management planning; and establishing appropriate resource assessment and monitoring strategies for each species/collection location.

The general aim of the project is to follow principles of sustainable use and trade through the establishment of national and local resource management schemes and adoption of voluntary guidelines by industry partners. Where FairWild certification is appropriate and feasible, support is also anticipated for market development, trade fair participation and business-to-business facilitation. Such activities will follow analysis of market demand, and identification of species, products and sites with potential for sustainable sourcing efforts.

Project activities are now under way, convening a wide range of different stakeholder groups. Regional connections on conservation and sustainable use were built through participation at the specialist workshop on “Mediterranean Biodiversity and Livelihoods” (22–23 November 2012, Tunisia), organized by the IUCN Centre for Mediterranean Co-operation. MAPs are an essential resource across the North Africa region, and the present project can learn from previous conservation and sustainable use initiatives, besides offering a platform for sharing and discussing outcomes. On the industry side, connections are also being made, recognizing that strong market links and early identification of species of industry interest will be critical to success. An important venue for this is the BioFach organic trade fair, held annually in Nuremberg, Germany. The fair was visited by the project partners in February this year, during which a number of interesting business links were already established (see page 13). Situation analyses are also being undertaken to understand the specific conservation and use issues for the species, sites and value chains concerned.

Beyond the duration of the present project, the aim is to support development of a network of local experts who can drive the further uptake of the FairWild Standard principles in Morocco. With this in mind, the project is initiating a programme of training and capacity building, to ensure that sufficient technical expertise will be available in Morocco over the longer term.

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A. TIMOSHYNNA

Taking action on sustainable wild harvesting: *building relationships, changing markets*

February 2013 saw one of the main events in the annual calendar for efforts to promote the FairWild Standard for sustainable harvest of wild plants. Known as “the place where organic people meet”, the BioFach organic trade fair is an important annual event for those involved in the trade in wild plant ingredients—producers, manufacturers, traders, brokers, NGOs, standard-setters and certifiers alike. This is the fifth year that FairWild Foundation has been present at the fair, and the level of industry interest has been steadily rising.

The FairWild stand proved a useful meeting point for companies interested in sustainable wild collection, hosting meetings between certified operators, new and potential buyers, as well as trouble-shooting sessions for those working on implementing the certification scheme. Industry links were made for TRAFFIC’s project on collection and use of wild plants in Central Europe, and industry interest canvassed for a new project to introduce sustainable harvesting for ingredients from Morocco.

In addition to these direct efforts to promote sustainable sourcing, there was also some time to reflect. Following the theme of the Congress, a session was hosted on “co-operative relationships for wild harvesting”. Through a range of short presentations and a Q&A session, participants explored the challenges that go hand-in-hand with joint actions—sharing first-hand experience from producers, manufacturers, NGOs, and discussing the applicability of the FairWild Standard (and certification scheme) as a framework to guide efforts.



TRAFFIC

TRAFFIC staff representing FairWild Foundation at BioFach, from left: Kristina Rodina, Kahoru Kanari, Anastasiya Timoshyna, Bryony Morgan and Steven Broad.

BioFach event participants discussed how adherence to a set of shared values (sustainable use, social responsibility, and fair trade) can spark co-operative relationships between the different users and stakeholders of wild plants. Examples were drawn from experiences using such principles to stimulate shared commitment to sustainable use and trade. Manufacturing and retailing companies emphasized the significance of the FairWild Standard for their sourcing of wild ingredients. Neal’s Yard Remedies of UK explained past company decisions to discontinue use of some ingredients because of sustainability concerns. FairWild Standard certification provides a framework for sustainable sourcing, which the company plans to test for Frankincense, an aromatic resin obtained from trees of *Boswellia* and similar species and used in a range of popular cosmetic products. Traditional Medicinals Inc. of USA, affirmed the company’s commitment to ensure that 100% of product lines are covered by eco-social certification schemes by 2020. This is underpinned by strong relations with suppliers, and sharing benefits with collectors and communities to ensure that trade is fair and beneficial for all involved. This opinion was shared by one of the suppliers of Traditional Medicinals Inc., Runo sp. z o.o. of Poland, a pioneer of organic certification in Poland. FairWild certification means that collectors receive a 5% higher price for their products, providing incentives to keep the tradition of wild collection alive. TRAFFIC spoke of experiences in supporting market-based approaches to conservation, emphasizing that NGOs can facilitate discussion on the topic in a neutral setting and help make connections in the value chain, share information, and find collaborators. They can also contribute technical expertise, and create consumer draw through awareness-raising efforts. The FairWild Standard provides a valuable reference and tool, but a prerequisite is a common commitment to change, and to invest in developing open and trustful relationships.

Taking time to share knowledge and learn from experience is important. At the IUCN World Conservation Congress in South Korea in September 2012, a Knowledge Café session facilitated by TRAFFIC, the FairWild Foundation, and IUCN Medicinal Plants Specialist Group, similarly focused on the ways development organizations and NGOs can facilitate such establishment of co-operative relations within the wider agenda of supporting livelihoods. Such relationships can develop through different pathways, and from different entry points—linking producers to markets, driving regulatory changes, and introducing sustainability initiatives into existing supply chains.

Encouraging industry leadership on sustainable harvesting now forms the cornerstone of TRAFFIC’s medicinal and aromatic plants trade work. Based on experience over time, the emphasis of the programme has shifted from the producer end of the chain (focusing on priority landscapes and species), to further up the value chain—finding those “change agents” in industry who can help spark a broader change in the market. In the future, the list of stakeholders who need to be brought on board will expand even further, recognizing the role of retailers and consumers in creating demand for sustainable products.

But for now, industry events such as BioFach are firmly on the calendar, providing an important space where voluntary initiatives such as FairWild can take shape among industry leaders, and, it is to be hoped, grow into something much bigger.

The FairWild Foundation representation at BioFach was kindly supported by Traditional Medicinals Inc. and WWF Germany.

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SUSTAINABLE USE OF WILD PLANTS: *CBD CoP11 global framework to national implementation*

An online toolkit designed to support national and regional implementation of the Global Strategy for Plant Conservation (GSPC), technical rationales and draft indicators for 16 GSPC Targets were among decisions approved at the 11th meeting of the Conference of the Parties (CoP11) of the Convention on Biological Diversity (CBD), held in October 2012 in Hyderabad, India.

While sustainable use of biodiversity is critical to the implementation of the CBD and delivery of its Strategic Plan 2011–2020, it is also difficult to achieve, often involving the commitment of stakeholders from various sectors. In the context of GSPC, Target 12 (see box) has been found during a review of progress towards the 2010 GSPC Targets to be among those targets to have made limited progress. Further, in the informal preliminary analysis of available capacity-building tools carried out by the CBD Secretariat prior to CBD CoP11, Objective 3 of GSPC (which includes Targets 11, 12 and 13 [see box]) demonstrates a smaller number of tools being used to support the delivery of the sustainable use objective of GSPC, compared to other objectives. This clearly influences both the capacity of CBD Parties to deliver on their commitment, and to report effectively on progress.

Support to the development and implementation of effective tools for sustainable use of wild plants is at the core of TRAFFIC's Medicinal and Aromatic Plants (MAPs) Programme. The FairWild Standard, developed by TRAFFIC, IUCN, WWF, and other partners for sustainable harvesting and fair trade in wild plants, is included as best practice guidelines in the new GSPC implementation toolkit to support the delivery of GSPC's Target 12, as well as Targets 11 and 13, contributing foremost to the delivery of Aichi Biodiversity Targets. TRAFFIC is also contributing to the implementation of GSPC as a member of the Global Partnership for Plant Conservation (GPPC).

During the meeting, TRAFFIC engaged in the discussion of CoP agenda items and contributed to several side-events related to sustainable use of wild MAPs, which brought together the perspectives of business (producers and buyers), NGOs, governments, and academia in promoting discussion on how tools like the FairWild Standard can help shape trade relations between producers and the wider market, and support the delivery of Parties on their CBD commitments. The involvement of multiple stakeholders—including the private sector—in plant conservation and sustainable use is critical. An estimated 50 000 species are used globally for their medicinal properties, providing an important source of income for rural communities and national economies (Schippmann *et al.*, 2006). At the same time, an estimated one-fifth of plants are threatened due to various issues, including over-harvesting and land conversion (Anon., 2010). TRAFFIC events at the meeting included one co-organized with Botanical Gardens Conservation International (BGCI), IUCN Medicinal Plants Specialist Group (MPSG), the Mexican Commission for the Knowledge and Use of Biodiversity (CONABIO), and the Foundation for Revitalisation of Local Health Traditions (FRLHT/I-AIM), India, which discussed the progress and challenges of achieving the sustainable use targets of GSPC. TRAFFIC was also one of the partners responsible for the launch of the Biodiversity and Community Health Initiative, with the United Nations University



TARGETS AND

THE GSPC HAS FIVE OBJECTIVES:

1. Plant diversity is well understood, documented and recognized.
2. Plant diversity is urgently and effectively conserved.
3. Plant diversity is used in a sustainable and equitable manner.
4. Education and awareness about plant diversity, its role in sustainable livelihoods and importance to all life on Earth is promoted.
5. The capacities and public engagement necessary to implement the strategy have been developed.

TARGETS OF OBJECTIVE 3 OF GSPC:

11. No species of wild flora endangered by trade.
12. All wild harvested plant-based products sourced sustainably.
13. Indigenous and local knowledge innovation and practices associated with plant resources maintained or increased, as appropriate, to support customary use, sustainable livelihoods, local food security and health care.

Above: Some of the participants at the 11th meeting of the Conference of the Parties of the Convention on Biological Diversity (CBD), held in October 2012 in Hyderabad, India.



TRAFFIC

OBJECTIVES

TARGET(S) FROM THE STRATEGIC PLAN FOR BIODIVERSITY 2011–2020 RELEVANT TO SUSTAINABLE USE OF WILD PLANTS:

TARGET 4. By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.

TARGET 6. By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.

TARGET 13. By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.

TARGET 18. By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.

(UNU), the Government of India, FRLHT/I-AIM, UNDP, UNEP and others, drawing attention to the importance of conservation and sustainable use of medicinal plants to ensure their stable supply for health needs, as well as livelihoods, and highlighting the FairWild Standard. Finally, TRAFFIC and the FairWild Foundation organized a discussion on creating effective linkages between the private sector and policy-makers for the sustainable use of wild plants. Speakers included TRAFFIC, UK company Pukka Herbs Ltd., the government of Madhya Pradesh, India, and the Savandurga Village Forest Committee, Karnataka, India.

While the agreed international GSPC Targets, as well as their technical rationales and implementation toolkit provide the global framework for national implementation, there is a clear need for articulation of the GSPC national commitments in the National Biodiversity Strategies and Action Plans (NBSAPs). The CBD Secretariat and BGCI support regional capacity-building efforts, having carried out two regional workshops (in East and South Africa and the Caribbean), with plans for more workshops for GSPC focal points. TRAFFIC promotes the use of the FairWild Standard principles as the reference and tool for the delivery on Target 12 of GSPC, specifically for non-timber products. In 2012, two important policy results were achieved, which are exemplary for other countries. In South Africa, the government approved the Biodiversity Management Plan for *Pelargonium sidoides* (based on FairWild Standard principles), which provides a regulatory framework for the sustainable harvesting and trade in this species. Japan's National Biodiversity Policy includes direct reference to the FairWild Standard as one of the preferred certification frameworks to which the private sector should adhere. The FairWild Standard is also included in the Japan Plant Conservation Strategy as a tool for achieving the sustainable sourcing target.

The next CBD CoP in 2014 will take Parties close to the mid-term reporting on the targets of the Strategic Plan. One of the challenges for understanding the GSPC progress will be to disaggregate information from the National Reports for plants. Increasing Parties' understanding of ways to report against GSPC Targets will enable this process. For sustainable use targets of GSPC—specifically Target 12—the uptake of the FairWild Standard by companies, e.g. those engaged in certification schemes, could provide a useful indicator on changes in the number of species/locations that are sourced sustainably (similar to how the increase in Marine Stewardship Council certified fisheries signifies progress in sustainable use of marine resources), in addition to the number of government policies regulating wild harvesting and trade in a sustainable and equitable manner.

TRAFFIC's representation at CBD CoP11 and side-events were kindly supported by WWF Japan and WWF Germany.

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In July 2011, Indonesia's Natural Resources Conservation Agency seized an illegal wildlife shipment at Merauke Airport in the country's Papua province. The haul included 13 reptiles and 18 echidnas (*Tachyglossidae* spp.). Information obtained at the time did not indicate which of the four echidna species was found, but photographs taken between February and March 2011 show wild-caught Short-beaked Echidnas *Tachyglossus aculeatus* kept at a trader's holding facility in the same town. It is reasonable to assume that this seizure involved that same species.

The Short-beaked Echidna is found in Australia, Indonesia and Papua New Guinea and has been assessed as being of Least Concern (IUCN, 2011). It is not listed in the Convention of International Trade in Endangered Species of Wild Fauna and Flora (CITES) or under Indonesia's legislation. Indonesia allows the harvest



MARTIN HARVEY / WWF-CANON

TRADE IN “CAPTIVE BRED” ECHIDNAS

CLAIMS OF CAPTIVE BREEDING WARRANT FURTHER INVESTIGATION AS EFFORTS TO PRODUCE SECOND-GENERATION SHORT-BEAKED ECHIDNAS OVER LAST 100 YEARS FAIL

and export of non-protected species under licence within a quota system. Despite the absence of any quota for this species, authorities have issued a permit allowing at least one individual to trade in Short-beaked Echidnas declared as captive-bred.

Studies on the breeding biology and behaviour of the species have been conducted in Australia, but little or no published information is available for either the Indonesian or Papua New Guinean populations. In 2001, Temple-Smith and Grant concluded that many important aspects of their reproduction remain unclear and captive breeding has been rare and unpredictable.

The first recorded captive breeding took place in 1908 (Heck, 1908, in Rismiller and McKelvey, 2000), but since this time, few births have been recorded. Prior to 2007, only seven births were recorded in Australia (A. Ferguson, pers. comm. May 2012), but in recent years Perth Zoo has reported the breeding of five young over three years (Ferguson and Turner, 2012). To date there have been no verifiable reports of second generation (F2) captive-breeding in the species. In 2000, Rismiller and McKelvey reported that of 75 Short-beaked Echidnas kept in zoos outside Australia, all but three had been taken from the wild.

The American Zoo Association's (AZA) Regional Studbook for the Short-beaked Echidna provides records of the 119 animals held in American zoos since 1903. Over the past 108 years this captive population has produced just 19 captive-bred animals, only four of which survived beyond 18 months of age. As of 2011, only three were still living. Despite the longevity of some captive individuals, it seems clear that if these animals are to be kept on a long-term basis outside range countries, the captive population will have to be supplemented

through the recruitment of animals sourced directly from Australia, Indonesia or Papua New Guinea.

In November 2011, a pair of Short-beaked Echidnas were added to the AZA Regional Studbook population. Records show the animals were imported from Indonesia as captive bred. Information collected by LEMIS, the US Fish and Wildlife Service (USFWS) data reporting service, indicates that two shipments of Short-beaked Echidnas entered the USA from Indonesia in 2011 comprising five animals, and one shipment containing two specimens arrived in July 2012. All seven were declared as “farmed”.

Photographs: SHORT-BEAKED ECHIDNAS

Tachyglossus aculeatus, Tasmania, Australia.



CLAIRE BEASTALL / TRAFFIC

In April 2011, a single echidna was advertised for sale on a Japanese-language advertisement posted on the internet. This stated that two other echidnas had been offered previously, but had been quickly sold. TRAFFIC has received information from another source on the export of echidnas from Indonesia to Japan.

Considering the failure of any facility to produce second-generation Short-beaked Echidnas in captivity over the past 100 years, the apparent success of Indonesian wildlife traders to produce even the seven animals imported into the USA is without doubt remarkable. Whilst these numbers are small and, if wild-caught, seem unlikely to pose an immediate threat to the species in the wild, the claims of breeding should at the very least be documented. Echidnas mature late in life, give birth to a single young, have a long lactation period (Nicol and Andersen, 2007) and have specialized denning habits while raising their young, characteristics which suggest that commercial captive breeding of the species is unlikely. Recent records obtained from Indonesia indicate that around 40 “farmed” Short-beaked Echidnas were exported in 2012.

Given the difficulties of breeding the species in captivity and the apparent frequent laundering of wild-caught animals declared as captive-bred from Indonesia (e.g. Nijman and Shepherd, 2009), it seems highly likely that any captive breeding claims are false. Furthermore, the thwarted attempt to smuggle wild Short-beaked Echidnas out of West Papua demonstrates that there is an illegal supply of wild-collected animals.

TRAFFIC urges the authorities in Indonesia to investigate claims of breeding this species and to take appropriate legal action against any trader found falsely declaring animals as captive-bred. Importing countries should consult experts on this species, as well as the authorities in Indonesia, to confirm that the provenance of the animals is accurately declared.

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International illicit trade awareness campaign includes wildlife focus

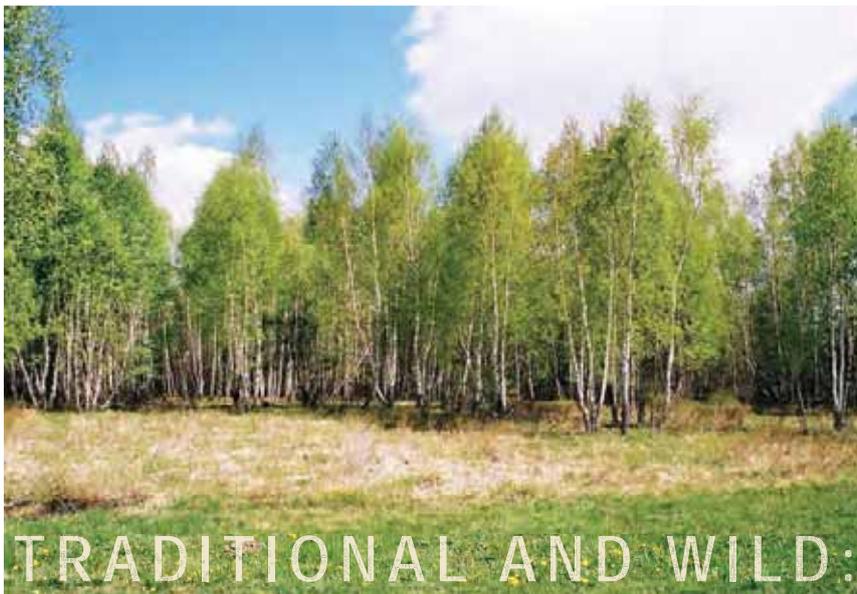
A new awareness campaign calling on tourists to help reduce demand for illicit goods and services linked to transnational organized crime will be launched later this year. Preparations for the campaign were set in motion during the Spring Meeting of the Chief Executive Board of the United Nations in Madrid. A Cooperation Agreement was signed on 5 April 2013 between World Tourism Organization (UNWTO) Secretary-General, Taleb Rifai, and the United Nations Office on Drugs and Crime (UNODC) Executive Director, Yury Fedotov in the presence of United Nations Secretary-General, Ban Ki-moon.

The joint campaign aims to raise awareness among international tourists about the types of illicit goods and services to which they are often exposed during their travels and which directly or indirectly fund organized crime groups. Travellers can play a key role in reducing demand for these products through ethical consumer choices. The campaign will encourage tourists to make informed decisions and help reduce demand for trafficking in persons, cultural artefacts, fauna and flora such as ivory products, as well as counterfeit goods and illicit drugs.

United Nations Secretary-General Ban Ki-moon commended this innovative joint initiative between the two partner UN Agencies: “The illegal trade in goods and services often funds unscrupulous people involved in human trafficking, the illicit ivory trade and other areas that cause immense suffering and destruction. Well-informed tourists can make a real difference in turning the tide against these criminal acts.”

With more than 1 billion tourists now crossing international borders each year, there is a growing opportunity to call on tourists to act and reduce demand for these illicit products which in many cases are providing a funding source for organized crime. The campaign drives the message that while some products may seem harmless, the demand created and their sale can, in fact, have devastating effects on the lives of innocent people, on wildlife or on cultural property. The billions of dollars generated through such trade also fund criminal groups who use this money to branch out into other illicit and unethical lines of business.

The campaign will seek to engage the tourism industry including hotel chains, travel agencies and airlines to lend support in raising awareness among tourists and help contribute to limiting these illicit markets.



TRADITIONAL AND WILD:

establishing sustainable collection of wild plants

Pilot initiatives to establish sustainable management practices for wild-collected plants in Central Europe have been running since 2011 with the aim of providing local inhabitants with related capacity-building tools by 2014. The project—*Traditional and Wild*—focuses on the sustainable harvest of and trade in wild plants in Hungary, Czech Republic, Slovenia and Poland, through the implementation of the FairWild Standard. TRAFFIC was among the organizations that helped develop the Standard, and promote its use through partnership with the FairWild Foundation and, together with WWF Hungary, is one of the partners of this project.

Having successfully completed the first half of the project (May 2011–October 2012), the *Traditional and Wild* partnership has produced several significant outputs, conducted various workshops and promotional events, and participated in numerous internal and external meetings related to wild medicinal plants.

The first undertaking of the project was to develop a list of priority wild plant species with the potential for product development and certification. The list comprised common, but valuable wild plants that have been traditionally used in the four participating countries by target groups, which include the Roma population, unemployed people, the elderly, and women. The plant species selected were: Common Juniper *Juniperus communis*, Goldenrod *Solidago canadensis*, Black Elder *Sambucus nigra*, Silver Birch *Betula pendula*, European Blueberry *Vaccinium myrtillus*, Common Horsetail *Equisetum arvense*, Common Walnut *Juglans regia*, Raspberry *Rubus idaeus*, Common Nettle *Urtica dioica* and Dog Rose *Rosa canina*.

In 2012, TRAFFIC and WWF Hungary contributed to the finalization of a situation analysis for each of the aforementioned species, which included an examination of wild collection and conservation requirements, including determination of the conservation status of selected species, knowledge-based collection practices, collection intensity and species regeneration. Legal and ethical requirements, i.e. compliance with national laws, regulations and agreements and the respecting of customary rights, were also examined by each project partner.

The results of the situation analysis were shared by the partners and their botanists at the transnational workshop on resource assessment and management planning in Lokve, Slovenia, in September 2012, and preliminary suggestions for product development from the target plants were made. In order to ensure the sustainability of wild harvesting, several partners plan to conduct resource assessments for the selected plant species in spring 2013 and to develop management plans based on the available guidance from the FairWild Foundation, and with the support of TRAFFIC.

SILVER BIRCH *applications*

Silver Birch *Betula pendula* has a wide range of pharmaceutical, cosmetic and other uses. The sap is used to produce syrup, wine and vinegar. The bark, juice and essential oil from the leaves are used for medicinal purposes: for example, the leaves and bark contain a pharmaceutically active compound—*betulin*—which has a diuretic and blood-cleaning effect, speeding up the excretion of organic waste products and preventing the formation of kidney stones. A tincture from the buds is recommended against colds, osteoporosis and swellings. Parts of the plant are also used as ingredients in healing cosmetics, for example to prevent hair loss and promote blood circulation, and oil is added to soaps. The compound *betulin* contains a waterproof wax which is used to provide water resistance to leather products.

Source: training materials on plant collection and utilisation activities prepared by Blanka Kocourková, Mendel University in Brno, December 2012, on behalf of the project partner Central Europe Programme of the European Union, co-financed by the European Regional Development Fund.





Left to right:

Blueberry
Vaccinium myrtillus,
 Common Walnut
Juglans regia and
 Goldenrod
Solidago canadensis



Other presentations included experiences of species' resources assessments by the Forest Sciences Center of Catalonia, Spain. In particular, case studies for "*Gentiana lutea* in the Val d'Aran region from the perspective of sustainable traditional wild collection", "*Arnica montana* in Aigüestortes and its sustainable wild collection for commercial trade" and "Looking into maximizing the value of medicinal flora in the Ports de Beseit region". The presentations outlined the major steps needed for the successful assessment of these resources and the methodology described provided useful models for partners to apply to their own resource assessments.

Another significant output designed for the project target groups, the "*Training materials on plant collection and utilization, building entrepreneurial skills, and providing employment opportunities*", was completed by the partnership in December 2012. The general training course aims to demonstrate the importance of plants collected from the wild in Central Europe and their traditional use by local communities, in order to help trainees build their entrepreneurial and marketing skills required for improving unemployment opportunities and increasing possible additional income.

Included with these materials is a training course on aspects of sustainable wild plant collection and FairWild that was prepared by TRAFFIC and WWF Hungary. The course contains a brief overview of the medicinal plants sector in Central Europe, the main principles of good collection practices (based on Good Agricultural Collection Practices for medicinal plants (GACP)), aspects of sustainable wild-plant collection (based on the framework of the FairWild Standard)—including main collection instructions—and the handling of plant material before and after collection. Practical exercises have been designed to make wild plant collection in the participating countries more sustainable.

The training is intended to be delivered to target groups in six project implementation areas in Hungary (Felső-Kiskunság and Ormánság regions), Poland (Podkarpackie province), Czech Republic (South Moravia) and Slovenia (Kozjansko and Dravinjsko area and Northern Primorska area) during April–July 2013.

The project also included a workshop for children which took place at the Folk Museum in the Kolbuszowa region of Poland in October 2012. The aim of the workshop was to spread knowledge among children about the traditional use of common wild plant species as part of the cultural heritage of the region. The children were introduced to the rich and colourful folk traditions of plant use, and taught about the valuable properties of these plants, their history and the folklore surrounding these species.

Another event supported by TRAFFIC was the opening ceremony of a "folklore house" dedicated to preserving traditional knowledge about the use of wild plants in the village of Kunadacs, Hungary, with the aim of focusing attention on the different traditional uses of wild plants, and to help preserve the cultural traditions of the Upper Kiskunsag region of Hungary. The house is located close to Kiskunsagi National Park, where collection of wild plants is regulated to ensure their protection and to secure the management of wild-harvested medicinal plants in the National Park buffer zone. The "folklore house" contains rooms dedicated to training and exhibitions, where schoolchildren, students and other visitors can learn more about traditional plant use and the techniques used for processing wild plants, and to examine pictures and posters of the wild flora of the Kiskunsag region.

A socio-economic analysis of the project implementation areas and a capacity-building strategy for the sustainable collection and use of wild plants has been finalized; these examine ways to reduce social and economic disparities in rural areas of Central Europe and will be used as supplementary training materials.

By the end of the second year of the project (May 2013), an online suite of learning tools will have been developed that will provide scientific and educational institutions, governmental and non-governmental organizations and other stakeholders with a better understanding of the practical skills required for the cultivation, sustainable collection, processing and marketing of wild plant material.

Looking to future events to be carried out within the framework of the project, TRAFFIC and WWF Hungary plan to organize a workshop in October 2013 for project participants and observers on linking sustainable livelihoods with the conservation of nature. The workshop will summarize two years of work on the establishment of pilot initiatives for the sustainable management of wild-collected plants and capacity-building of local inhabitants in Central Europe, as well as share tangible sustainability-related project outcomes.

For more information about the project, which is implemented through the Central Europe Programme of the European Union and co-financed by the European Regional Development Fund (ERDF), please visit: www.traditionalandwild.eu (available in all national project languages).

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PHOTOGRAPHS: CZESŁAWA TRABA (BLUEBERRY); JENO BERNATH, CORVINUS UNIVERSITY, BUDAPEST (WALNUT AND GOLDENROD)

CAVIAR MARKET SURVEYS IN BULGARIA AND ROMANIA

INTRODUCTION

According to the most recent IUCN assessments (carried out in 2009), the status of sturgeon species has significantly declined, such that they are considered to be among the most critically endangered group of animals worldwide (IUCN, 2010a). According to the Action Plan for the conservation of sturgeons (Acipenseridae) in the Danube River Basin, sturgeons are especially vulnerable to overfishing (Bloesch *et al.*, 2006). Owing to their long life cycles and late maturity (eight to 20 years), stocks take many years to recover. In addition, periodic spawning migration enables targeted fishing of aggregating mature animals (Bloesch *et al.*, 2006). Caviar (the unfertilized eggs of the female sturgeon) has a very high value which has led to over-exploitation throughout the species' range. Since 1998, all species of sturgeons and paddlefish (Acipenseriformes) have been listed in the Appendices of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in order to regulate international trade (whether of live fish or in the form of products, such as caviar) through a system of permits. In addition to the requirements for CITES documents, CITES has prescribed further measures, which, among others, includes the labelling of each sturgeon caviar container with a CITES label bearing a specific code. Such a requirement applies to both domestic and international trade, and regardless of whether the caviar originates from the wild or from aquaculture. The labelling requirements in the European Union (EU) are set down in the EU Wildlife Trade Regulations, which are directly applicable in each EU Member State and for which detailed rules are specified in domestic legislation.

This paper summarizes the results of a survey carried out by WWF and TRAFFIC examining the availability of caviar in Romania and Bulgaria, which are key range States for sturgeon species within the EU: Beluga *Huso huso*, Stellate Sturgeon *Acipenser stellatus*, Russian Sturgeon *Acipenser gueldenstaedtii* and Ship Sturgeon *Acipenser nudiiventris* (all classified as Critically Endangered (IUCN, 2010b), and Sterlet *Acipenser ruthenus* (classified as Vulnerable, IUCN, 2010b). (The European Sturgeon *Acipenser sturio* is believed to have become extinct in the Danube (Bloesch *et al.*, 2006)).

The EU has traditionally been one of the main consumer markets of caviar globally. With the accession of Bulgaria and Romania to the EU in 2007, two important sturgeon range States joined the Union thereby making the EU's role in caviar trade more complex. With no internal Customs controls, the inclusion of these caviar-producing States has also resulted in facilitated trade between the traditional caviar consumer States in Western Europe and the recently joined range States.



Russian Sturgeon *Acipenser gueldenstaedtii*

ANDREY NEKRASOV / WWF-CANON

Until some years ago, Bulgaria and Romania were among the world's top-10 caviar exporting countries (TRAFFIC, 2009) with Romania (where the Danube Delta, a key fishing area, is located) reportedly exporting approximately 1144 t of caviar in 1940 (Novadura *et al.*, 1999). The catches, however, significantly declined to less than eight tonnes in 1995. Since the CITES listing of sturgeons in 1998, a further decline of exports of caviar of wild origin from the region (between 1998 and 2008) could be observed (Kecse-Nagy, 2011). During the same period, the overall exports from Bulgaria, however, increased due to the increase of the proportion of caviar in trade from reportedly aquaculture origin as wild taken caviar exports were decreasing (Kecse-Nagy, 2011).

In response to the drastic decline of sturgeon stocks, Romania introduced a 10-year ban on the fishing of and trade in wild sturgeons in 2006. Bulgaria followed with a similar annual ban in 2011 which was extended in 2012 for a further four years, until 2015, the same year as the Romanian moratorium ends.

In spite of the fishing and trade ban in both countries, the difficult economic situation of local people and the few alternative sources of revenue are thought to have resulted in continuing sturgeon poaching and caviar trade.

AIMS

In order to substantiate any claims of illegal activities relating to sturgeon fishing and the sale of caviar, the aim of the surveys was to look for evidence of illegal caviar trade in Bulgaria and Romania.

METHODS

Undercover surveys were carried out by a team of two nationals in each of the target countries. The surveyed sites (shops, restaurants, markets, street vendors and sturgeon farms) were located in big cities, holiday

resorts along the Black Sea coast, and in areas along the Danube where sturgeons used to be fished. The surveys took place between April 2011 and February 2012, with a particular focus on the periods with the highest probability of finding caviar for sale (i.e. spring and autumn sturgeon migrations, Christmas and New Year). DNA analysis was carried out on the samples obtained in order to determine the species from which the caviar was produced.

Obtaining samples for DNA testing was only possible through purchases (only four samples were obtained directly from Bulgarian sturgeon farms and were donated to the study free of charge). However, to limit any negative impact, the project designers took care to limit the number of purchases to a minimum and to ensure that the surveyors purchased only small quantities of caviar.

RESULTS

Caviar was available at 29 out of 79 sites that were visited in the two countries surveyed. In Romania, 38 sites were visited and 14 caviar samples were purchased (see Table 1). In Bulgaria, 41 sites were visited and 14 samples obtained. An additional two samples of caviar labelled as originating in a Bulgarian farm were bought at a fish shop in Vienna, Austria.

As the CITES labels were not visible on 15 samples (of a total of 30), the origin and the source of these caviar samples could not be verified or checked against the DNA test results. The caviar samples without a CITES label were obtained:

- from restaurants (two in Bulgaria, five in Romania);
- from fish shops (two in Bulgaria, three in Romania); and
- from fishermen or street vendors selling caviar (in three different sites in Romania, all close to traditional sturgeon fishing sites).

DNA analysis has determined five of these samples as *Beluga Huso huso*, four of which the vendors claimed had been harvested from the wild.

The DNA analysis has also revealed that six of the 15 unlabelled samples (three from Bulgaria and three from Romania) did not contain sturgeon eggs, despite being offered as sturgeon caviar; these were found to be from other fish or synthetically made from sturgeon meat (or from other material).

Of the labelled samples, some cases of mis-labelling were found, for instance:

- The DNA analysis of caviar labelled as “Sevruga caviar” from a Bulgarian farm and bought in Vienna indicated that the caviar was from Siberian Sturgeon *Acipenser baerii* or Russian Sturgeon *A. gueldenstaedtii* and not from Stellate Sturgeon *A. stellatus*, as displayed on the CITES label.
- The other sample purchased in Vienna was labelled as “Beluga caviar” from Bulgarian aquaculture and did not appear to contain Beluga Sturgeon *Huso huso* as displayed on the label. DNA analysis could not provide a definitive result to identify the species but showed indications that this sample was also from Siberian Sturgeon *Acipenser baerii* or Russian Sturgeon *A. gueldenstaedtii*.
- For five samples, the DNA analysis found that the caviar contained a mix of species, even when (as in two cases) the caviar label sealing the tin indicated the presence of a single sturgeon species only.

The internet was also surveyed to look for offers of caviar for sale. Caviar was found to be on sale in both target countries. While companies appeared to be selling mainly farmed caviar with appropriate CITES labels, the offers by individuals (and the caviar being offered by the street vendors) would warrant further investigation as some of the caviar offered might be harvested from the wild.

Sites	No. of sites visited			No. of sites claiming to have caviar available			No. of samples obtained		
	Bulgaria	Romania	Sub-total	Bulgaria	Romania	Sub-total	Bulgaria	Romania	Sub-total
Fish shops	6	1	7	4	1	5	3	3	6
Russian shops	2	1	3	2	0	2	2	0	2
Other shops	18	7	25	2	5	7	3	3	6
Farms	3	5	8	3	0	3	4	0	4
Restaurants	8	12	20	3	6	9	2	5	7
Street	4	12	16	0	3	3	0	3	3
Total	41	38	79	14	15	29	14	14	28

Table 1. Sites surveyed and caviar samples acquired in Bulgaria and Romania.

Note: An additional two samples of caviar labelled as originating in a Bulgarian farm were bought at a fish shop in Vienna, Austria.



AMELIE KNAPP

◀ Tins of caviar

In addition to obtaining caviar samples, the surveyors also attempted to strike up conversations with traders and fishermen in order to provide a more subjective impression about the caviar trade in Bulgaria and Romania. According to the surveyors, buying caviar which did not meet legal requirements

was not easy for a person who was not familiar to the seller. Vendors reportedly only sell caviar or provide information to people they know.

Unknown players are often treated with suspicion and sometimes caviar is not delivered in spite of a positive initial reaction to an order or of its apparent availability. This may demonstrate that many traders are aware of the regulations in place. In spite of this, surveyors also found that caviar that was claimed to originate from the wild is still used as a sales pitch. In some restaurants in Romania, for example, waiters advertised their caviar as a delicacy from wild sturgeons from the region.

CONCLUSIONS

Some of the key conclusions of the survey are presented here.

Illegal fishing

In spite of the regulations in place banning sturgeon fishing in both countries, poaching appears to be occurring. The survey found indications of Bulgarian fishermen still catching sturgeons in the Danube and allegedly wild-caught specimens of Sterlet *Acipenser ruthenus* have been found for sale in both target countries.

Availability of illegal caviar for sale

Unlabelled and therefore illegal caviar was offered for sale in the target countries, with several such samples obtained in Romania, where the vendors claimed they had been obtained from the wild.

Caviar labelling/enforcement

DNA analysis of caviar samples, has shown that some of the caviar found during the survey was incorrectly labelled. In three samples, species (or hybrids) other than those specified on the CITES labels were found. With indications of illegal fishing going on in spite of the fishing ban, these cases of mis-labelling are cause for serious concerns. An investigation carried out in Germany in 2009 (Kecse-Nagy, 2011) points to wild-harvested caviar having been laundered and sold as if derived from aquaculture operations in Bulgaria. Although the current survey did not find clear evidence of such claims, the finding of several mis-labelled caviar tins warrants further research and action by the relevant enforcement agencies in the range States. Random

controls with genetic techniques are essential to monitor caviar trade.

No security features are prescribed or present on CITES caviar labels in Bulgaria and Romania and, as in most countries, the labels are produced by the companies involved. As a result, CITES labels can be falsified relatively easily and it should therefore not automatically be presumed that caviar tins bearing CITES labels are legal. A major Bulgarian caviar producer claims that he has found his labels on caviar tins that were not produced by his company. Such cases need to be examined by the competent authorities and if warranted, relevant security features on labels should be introduced (either by law or by the producing companies).

In summary, the true volume of illegal caviar trade may be considerably higher than is documented by this survey. It appears that enforcement of controls on caviar trade need to be enhanced in both Bulgaria and Romania. Illegal caviar trade is not merely a form of wildlife crime, it also involves contraband, tax evasion with lost tax revenues for the countries involved, and could pose a health risk. Taking all these factors into consideration, provision of adequate resources (both human and financial) must take high priority if the illegal trade in caviar is to be addressed.

The full survey report “Illegal Caviar Trade in Bulgaria and Romania” will be published in April 2013 and will be available at www.danube-sturgeons.org.

ACKNOWLEDGEMENTS

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Calls for international co-operation to save the Ploughshare Tortoise

In recent years, the Ploughshare Tortoise *Astrochelys yniphora* has become much sought after in the international pet trade, particularly in South-east Asia, owing to its beauty and rarity, such that demand is pushing the species perilously close to extinction.

On 15 March 2013, The Royal Thai Customs and their counterparts in the CITES Management Authority found 54 Ploughshare Tortoises and 21 Radiated Tortoises *Astrochelys radiata* at Suvarnabhumi International Airport, Bangkok. This is the largest single seizure of Ploughshare Tortoises in history. A Thai man was arrested as he attempted to collect a bag containing the tortoises from a luggage carousel. The bag was registered to a woman who had flown from Madagascar to Bangkok via Nairobi; she was also arrested.

The Ploughshare Tortoise, like all four endemic tortoises from Madagascar, is assessed as being Critically Endangered by the IUCN Red List of Threatened Species (Leuteritz and Pedrono, 2008). It is one of the rarest tortoises in the world with an adult wild population numbering in the low hundreds (Pedrono and Sarovy, 2000; Richard Lewis, *in litt.*, 2013) and a range of only 1500 km² (Pedrono and Sarovy, 2000). The species is listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Madagascar became a signatory to CITES in 1975, where this species is also totally protected by national legislation. Thailand became a signatory in 1983.

While commercial exploitation has persisted for centuries (Pedrono, 2000), prior to 2000, the greatest threats to the Ploughshare Tortoise were bush fires (Bour, 2007). However, since the beginning of this century, illegal poaching and trade has dramatically increased, and is now the most severe threat to the species's survival (Bour, 2007). The majority of the animals being smuggled out of Madagascar are bound for growing markets in Indonesia, Malaysia, the Philippines, Thailand and other parts of Asia.

Surveys carried out by TRAFFIC in South-east Asia have found Ploughshare Tortoises to be frequently offered for sale illegally in markets in Indonesia (Shepherd and Nijman, 2007; Stengel *et al.*, 2011) and Thailand (Nijman and Shepherd, 2007). In Jakarta, Indonesia, the species has been observed openly displayed at reptile trade fairs (Stengel *et al.*, 2011).

In an effort to raise the profile of the species—and much needed funds—the Turtle Conservancy hosted a gala dinner and art auction in New York at which four speakers from the Turtle Conservancy, Durrell Wildlife Conservation Trust, and TRAFFIC highlighted the plight of turtles and tortoises, with the focus on the Ploughshare Tortoise.

Two days later a meeting of the International Ploughshare Tortoise Working Group was convened, to discuss practical solutions to combat the immediate threat of extinction facing the Ploughshare Tortoise, including issues pertaining to enforcement, captive breeding, public awareness and more.

High-level commitment is needed to save the species, including increased co-operation between the governments of Madagascar and the end market countries, such as Thailand. Currently, a Memorandum of Understanding between these two countries is being discussed, which will be aimed at increasing co-operation and communication, joint enforcement activities and repatriation of confiscated tortoises.

Increased protection at the site-level, and increased enforcement efforts at airports in transit and consumer countries were also discussed at the Working Group meeting. Current measures being taken to reduce the demand for the species, such as defacing the carapace of the Ploughshare Tortoise to reduce its value and allow for identification, are ongoing but also need to be adopted by countries seizing the animals. The key is international co-operation on all fronts.

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GLASS EELS:

ASSESSING SUPPLY CHAIN AND MARKET IMPACTS OF A CITES LISTING ON *ANGUILLA* SPECIES

Vicki Crook and Miki Nakamura

The various life stages of freshwater eels of the genus *Anguilla* are harvested and traded internationally for farming and consumption, with current demand predominantly driven by East Asian markets. Analysis of production and trade data suggests that harvesting, trade and consumption trends across the globe have changed since the listing of the European Eel *Anguilla anguilla* in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) came into force in March 2009. As part of a broader TRAFFIC study, this article provides examples of recent diversification of the sourcing of, and international trade in, juvenile eels for supplying eel farms in East Asia from three regions of the world.

GLASS EELS: PICTURE ALLIANCE / BERND SETNIK

INTRODUCTION

THE FAMILY ANGUILLIDAE, commonly referred to as freshwater eels, is composed of at least 16 species, all in the genus *Anguilla* (Silfvergrip, 2009; Watanabe *et al.*, 2009). *Anguilla* species are distributed throughout tropical and temperate waters, except for the eastern Pacific and south Atlantic (Silfvergrip, 2009). The various life stages of all *Anguilla* species are harvested and traded on a global scale for farming and consumption, although current demand is predominantly driven by East Asian markets, in particular Japan.

According to the Food and Agriculture Organization of the United Nations (FAO) data, global eel production has risen dramatically—from 17 750 t in 1950 (only 3% coming from aquaculture/farms) to 280 000 t in 2007 (96% from farms), after which production stabilized in 2008 to 2010 (FAO, 2012). Eel farming, which is now responsible for nearly all *Anguilla* production worldwide, is reliant on wild-caught juvenile eels (also called glass eels or “live eel fry”) owing to the, as yet, limited success in reproducing these species in captivity for commercial purposes (Tsukamoto, 2012). The majority of eel farming occurs in mainland China, Taiwan, Japan and the Republic of Korea, with juvenile eels being caught in territorial waters or imported from further afield to supply these farms. In addition, Hong Kong Special Administrative Region is an important international trade hub for juvenile eels destined for farming in this region.

Prior to 1990, eel farming was almost exclusively carried out using species of local provenance: Japanese Eel *Anguilla japonica* in Asia and European Eel *Anguilla anguilla* in Europe. However, a decline in *A. japonica* stocks and recruitment, and the relatively abundant supplies and lower price of *A. anguilla* glass eels led to many Asian eel farms, in particular those in mainland China, switching to *A. anguilla* for their culture material at the end of the 1990s (Ringuet *et al.*, 2002). With further declines in both *A. japonica* and *A. anguilla* stocks in recent years, the market for glass eels has continued to evolve, and new populations and *Anguilla* species such as American Eel *Anguilla rostrata* from the Americas, African Longfin Eel *Anguilla mossambica* from Africa and Giant Mottled Eel *Anguilla marmorata* from South-east Asia are now being exploited to supply East Asian farms with glass eels.

Wild populations of *Anguilla* species have declined considerably over the last 30 years owing to several factors, including fishing for trade (Dekker *et al.*, 2009). Due to concerns that trade was having a serious impact on European Eel populations in particular, this species (currently listed as Critically Endangered on the IUCN Red List (Freyhof and Kottelat, 2008)) was proposed for listing in CITES Appendix II in 2007. The listing came into force in March 2009. International trade in Appendix II-listed species is permitted provided authorities are satisfied that such trade will not be detrimental to the survival of the species in the wild. In December 2010, European Union (EU) Member States concluded that

they were unable to verify this, and, combined with deep concerns over the status of the species, decided to suspend all exports and imports of *A. anguilla* commodities from and to the EU. Trade in *A. anguilla* between non-EU CITES Parties, and also within the EU, however, is still permitted.

Although only trade in *A. anguilla* is regulated through CITES, there are concerns over the impact that international trade may be having on other *Anguilla* species, in particular *A. japonica*, *A. rostrata* and the lesser-known tropical *Anguilla* species. Furthermore, controlling trade in just one *Anguilla* species through CITES and the stricter measures imposed by the EU is likely to have altered global eel trade dynamics and exploitation patterns, in particular for the high value commodity, glass eels.

METHODS

TRAFFIC routinely reviews a number of information sources in order to monitor any changes in both legal and illegal eel trade patterns and to identify emerging trends. These include Customs data from historically important importing and exporting countries/territories; global production (capture and aquaculture) and trade data collated by FAO; online advertisements on Business to Business (B2B) marketplaces/trade platforms such as Alibaba, Food and Beverage Online, Weiku, EC21 and Trade Key; CITES trade data; press releases and literature reviews.

Customs data from East Asian countries/territories, in particular, are useful when researching trade in different life stages of live *Anguilla* eels, as they record trade in “live eel fry” destined for farming, in addition to larger “live eel” destined for direct consumption. Since 2012, the EU has also introduced new Customs codes for various sizes of live eels in trade (see Table 1), however, most other countries/territories only report trade in *Anguilla* species to the genus level, under the four main commodities—live, fresh, frozen and smoked/prepared (see Crook, 2010).

It should be noted that variation in reporting methods used by different countries/territories, lack of availability of species-specific data and mis-reporting, are just some of the factors that can lead to difficulties in reaching unequivocal conclusions. Despite these issues, freely available trade and production datasets are important sources of information, at the very least facilitating a better understanding of the complexities of global patterns in eel trade and consumption and can provide an indication of possible problems, such as illegal trade.

Due to the delicate nature of glass eels and the speed with which they must reach their destination to avoid considerable mortality, it can generally be assumed that the country of export is the origin of such shipments. Therefore, for this specific commodity, geographic provenance can be used to identify the likely *Anguilla* species in trade. In the examples that follow, official national trade statistics are the source of the information, unless otherwise specified. Import/export figures are based on countries'/territories' respective Customs data.

EXAMPLES OF RECENT DIVERSIFICATION OF SOURCING JUVENILE EELS FROM THREE REGIONS OF THE WORLD TO SUPPLY EEL FARMS IN EAST ASIA:

Americas (with a focus on the USA, Canada and Dominican Republic)

Only one *Anguilla* species is known to live in the waters of the Americas: *A. rostrata*. This species is found along the Atlantic coast of the USA and Canada, and ranges as far south as the northern coast of South America, encompassing the waters of the Caribbean. *Anguilla rostrata* has not yet been evaluated under the IUCN Red List criteria, but is currently “under review” for listing as threatened under the US *Endangered Species Act* of 1973 (USFWS, 2011). In April 2012, the US Fish and Wildlife Service announced that it was considering submitting a CITES listing proposal for *A. rostrata* (USFWS, 2012), however no proposal was submitted. In May 2012 the Atlantic States Marine Fisheries Commission (ASMFC) concluded that the *A. rostrata* stock was depleted (ASMFC, 2012).

The USA and Canada have exported *A. rostrata* glass eels to the principal East Asian eel farming countries/territories in small, irregular quantities for a number of decades. Between 1998 and 2010, live eel fry imports from *A. rostrata* range States into mainland China and Hong Kong ranged from 0.1 to 10 t per year, and from 2003, the main source of *A. rostrata* switched from the USA to Canada. However, between 2010 and 2011 there was a sudden leap in Asian imports from both countries: combined imports increased from just under 10 t in 2010 to over 50 t in the first six months of 2011 alone (see Fig. 1).

This sudden change in export quantities coincided with the EU’s decision at the end of 2010 to ban exports of European Eel. US Customs export data and press releases suggest that exports of *A. rostrata* glass eels were equally high in 2012 or increased even further (Trotter, 2012); for the first time in over ten years, Japan also imported live eel fry directly from the USA in 2012. Maine and South Carolina are the only two US States that allow commercial fishing of juvenile eels, however considerable levels of poaching and illegal trade, driven by the ever increasing prices offered for this commodity, have been reported from several States (Anon., 2012a).

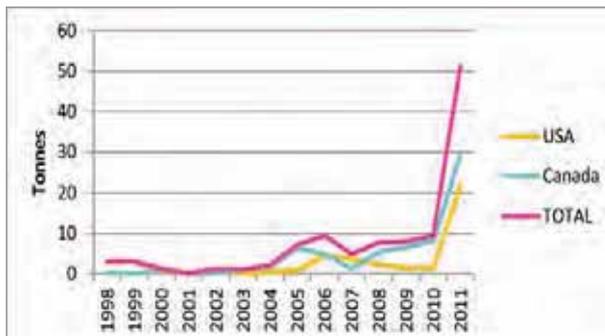


Fig. 1. Imports (tonnes) of *Anguilla* “live eel fry” into mainland China, Hong Kong, Taiwan, Republic of Korea and Japan from the USA and Canada, 1998–2011.

Sources: Asian national trade statistics

Of the more southerly range States of *A. rostrata*, the Dominican Republic has also recently started exporting glass eels to Asia for farming. Research into the status and biology of some of the *A. rostrata* populations of the Caribbean was carried out in the late 1990s (Tzeng *et al.*, 1998), with the aim of determining potential for export to Asian farming operations, and has commenced again in recent years (Anon., 2013a).

Trade data and online forums provide little evidence of any trade from the Caribbean in the last ten years, however, in 2011 Dominican glass eel fishermen placed advertisements online, requesting help to export glass eels (EspaceAgro, 2011) and in 2012, the Republic of Korea reported its first-ever import of live eel fry (250 kg) from the Dominican Republic. A US-based Asian-owned company advertises setting up camps along the US coast and in the Caribbean to harvest and export glass eels to Asia (Glass Eel Farm, 2012). However, at present only two companies (of 34 companies that applied for permits) are authorized to harvest glass eels in the Dominican Republic and illegal harvesting and trade via Haiti has become an issue of considerable concern to Dominican authorities (Anon., 2013b).

Africa (with a focus on Morocco and Madagascar)

African waters are home to six known *Anguilla* species: *A. anguilla*, *A. mossambica*, *A. bengalensis*, *A. bicolor*, *A. marmorata* and *A. nebulosa*. *Anguilla anguilla* is found only in North Africa, *A. mossambica* is endemic to the East African coast and the waters of Madagascar, and the latter four species are found both in African and Asian waters. *Anguilla bengalensis*, *A. bicolor*, *A. marmorata* and *A. nebulosa* are all currently listed as Least Concern on the IUCN Red List, based on their wide distributions. However, very little is known about the status of their populations, threats and harvest levels. Local declines of *A. marmorata* in Réunion Island and Madagascar due to habitat conversion and overfishing have been reported and there are concerns over possible future impacts of over-exploitation driven by the international market (Vishwanath and Mailautoka, 2012).

Various life stages of *A. anguilla* are harvested, farmed and exported from Algeria, Egypt, Morocco and Tunisia. Until recent years, exports were mainly destined for the European market. However, as imports into the EU of *A. anguilla* from non-EU range States have not been permitted since December 2010, North African countries have looked for alternative markets for their *A. anguilla* products. In addition, in the case of glass eels, with Asian demand for *A. anguilla* no longer being met by exports from the EU, a shift to direct imports into East Asia from North Africa has occurred. Hong Kong imported live eel fry (800 kg) from Morocco for the first time in 2009; in 2010, over 4500 kg were imported into mainland China and Hong Kong, and in the first six months of 2011 over 2000 kg were imported, including for the first time into the Republic of Korea (according to Asian Customs data from the late 1990s onwards).

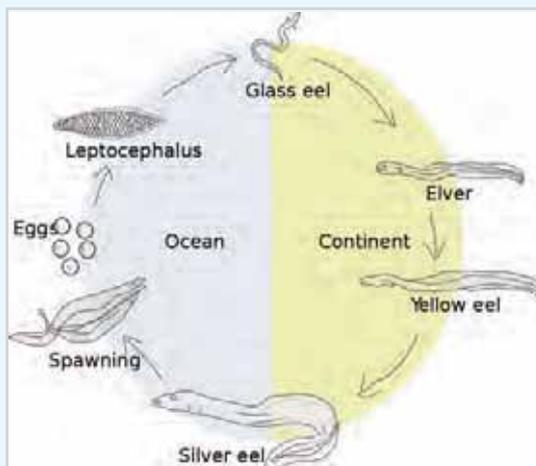
Records of imports of live eel fry into Asia from Madagascar stretch back a little further—since 2005 they have been fluctuating from 20 kg to nearly 1400 kg

GLASS EELS

The life cycle of *Anguilla* species can be divided into five main stages:

1. eggs and leptocephali (larvae) carried inshore from marine spawning sites on currents;
2. “glass eels” (clear juveniles) reaching the continental shelf and estuaries;
3. “elvers” (pigmented juveniles) reaching freshwater habitats;
4. “yellow eels” living in freshwater habitats; and
5. adult or “silver eels” living in freshwater/estuaries before returning to the sea to spawn.

Source: Silfvergrip, 2009



Life cycle of eel, drawing by Salvör Gissurardóttir

The terms “glass eels” and “elvers” are often used interchangeably, for example, elvers is the common term for all juvenile eels in the USA, Canada and the Philippines. Glass eels of the European Eel, as defined in the European Union, are those measuring less than 12 cm in length (EC, 2009), and one kilogramme of European glass eels contains approximately 3000 individuals. Japanese glass eels, for example, however, tend to be smaller, with some 5000–6000 individuals per kilogramme (Ringuet *et al.*, 2002).

Glass eels are predominantly harvested in order to supply eel farms with “seed” for growing out; however they are also consumed directly in some countries, such as in Spain. Fishing is generally carried out at night in coastal and estuarine habitats, using various types of fine mesh nets, including conical/funnel shaped and hand held dip nets. However, in some countries, such as France, more intensive fishing practices including trawling are used, which lead to higher glass eel mortality due to their delicate nature (Ringuet *et al.*, 2002).



Fishing for glass eels for export to Japan. Union River, Ellsworth, Maine, USA.

CAROL BLYBERG

	Customs Code	Commodity
International *	0301.92.00	Live eels “ <i>Anguilla</i> spp.”
European Union	0301.92.10	Live eels “ <i>Anguilla</i> spp.”, of a length of <12 cm
	0301.92.30	Live eels “ <i>Anguilla</i> spp.”, of a length of =>12 cm but < 20 cm
	0301.92.90	Live eels “ <i>Anguilla</i> spp.”, of a length of => 20 cm
China/Hong Kong/Korea**	0301.92.10	Live eel fry “ <i>Anguilla</i> spp.”
	0301.92.90	Live eels, other than fry (<i>Anguilla</i> spp.)
Japan	0301.92.10	Live eel fry “ <i>Anguilla</i> spp.”
	0301.92.20	Live eels, other than fry (<i>Anguilla</i> spp.)
Taiwan	0301.92.10.10.1	Eels, <i>Anguilla japonica</i> , live
	0301.92.10.20.9	Eels, <i>Anguilla marmorata</i> , live
	0301.92.10.90.4	Other eels (<i>Anguilla</i> spp.), live
	0301.92.20.10.9	Glass eel (>5000 pcs per kg)
	0301.92.20.20.7	Eel fry (>500 and <5000 pcs per kg)
	0301.92.20.30.5	Young eel (elver) (>10 and <500 pcs per kg)
	0301.99.29.40.7	Live Australian eels

Table 1. Harmonized system and combined nomenclature Customs codes for live *Anguilla* eels, 2012.

* Used in most countries/territories, unless more specific codes are available, as described in the table.

** Mainland China, Special Administrative Region of Hong Kong and Republic of Korea

GLASS EELS - PETER WOOD

per year, with the majority being imported into Hong Kong. Imports into the Republic of Korea commenced with 300 kg in 2011 and increased to over 700 kg in 2012, and in 2012 a small quantity of Malagasy glass eels (30 kg) were imported into Japan for the first time. Investment into sustainable fisheries and farming of eels in Madagascar and Mauritius, in particular of *A. mossambica*, has been reported in recent years (FIS, 2010) and various Malagasy companies are now offering live eels for sale via B2B marketplaces/trade platforms such as Alibaba. In 2012, the press reported the intentions of a Japanese company to import one tonne of live *A. mossambica* from Madagascar every week for half the price of eels cultivated in Japan, in order to help the industry fulfil consumer demand (Anon., 2012b).

Asia (with a focus on the Philippines)

Eight species of *Anguilla* are known to inhabit Asian waters: *A. japonica*, *A. borneensis*, *A. celebesensis*, *A. luzonensis*, and the four species also found in East Africa. *Anguilla japonica* is the most researched of the Asian species due to its historical importance in East Asian culinary traditions and being endemic to the waters of the principal Asian eel farming and consuming nations/territories. Although not currently evaluated on the IUCN Red List, in February 2013 it was listed as Endangered on the Japanese National Red List, based on recent ecological studies and catches indicating that there has been a 70–90% decline in the species over the last three generations (Anon., 2013c). *Anguilla luzonensis* was newly described in 2009, after being discovered in the waters of northern Luzon in the Philippines (Watanabe *et al.*, 2009).

In addition to looking for alternative *Anguilla* species from other continents around the world, eel farms in mainland China, Taiwan, Republic of Korea and Japan have increasingly been looking to other Asian countries for harvesting relatively under-exploited populations of *A. japonica* and other Asian *Anguilla* species, in particular the Philippines. According to Customs data, the Philippines has intermittently supplied East Asian

farming operations with live eel fry since the late 1990s, however only from 2005 were yearly imports to mainland China, Hong Kong and Taiwan reported. Although fluctuating considerably between 2005 and 2012, imports from the Philippines averaged six tonnes per year during this period. Reported imports of live eel fry from the Philippines to the Republic of Korea over recent decades amounted to a few kilogrammes (35 kg between 1998 and 2010), until in 2011 and 2012, 350 kg and over three tonnes were imported, respectively.

The increase in importance of the Philippines as a supplier of glass eels for East Asian farming operations also became apparent from online B2B marketplaces/trade platforms such as Alibaba, where over the last two years the majority of offers for sale of “glass eels” and “eel fry” were from companies offering eels originating in the Philippines. Several of these companies indicated that they could supply hundreds of kilogrammes of glass eels of a variety of eel species for export every month, including the newly described endemic species *A. luzonensis*.

In 2011, entire families—traditionally non-fishers—made the most of the high prices on the export market by camping alongside the coastal towns of Cagayan (Luzon) to catch *Anguilla* glass eels (De Yro, 2012). Concerns over considerable increases in exploitation of eel populations led the Philippines Government to ban commercial exports of juvenile eels in May 2012 (BFAR, 2012). Following the ban, young eels continued to be traded illegally. In September 2012, 13 boxes of live eel fry bound for Taiwan were intercepted at Ninoy Aquino International Airport (Anon., 2012c), while in July, 949 kg were found being smuggled onto a flight bound for Hong Kong (Santos, 2012). In July 2012, TRAFFIC surveys found almost 50 listings from businesses in the Philippines still offering eel fry or glass eels for sale through online B2B platform Alibaba. After TRAFFIC contacted Alibaba about these potentially illegal exports, the company removed the suppliers’ advertisements from its website and has agreed to try and prevent future listings of eel fry from the Philippines (TRAFFIC, 2012). In October 2012, the Bureau of Fisheries and Aquatic Resources (BFAR) reported a significant decrease in the market price as a result of the ban, and that this was anticipated to lead to a reduction in harvesting pressures (De Yro, 2012).

DISCUSSION

Although the majority of global eel production is derived from farming operations, until considerable progress is made in relation to captive reproduction of eels, such farming will be reliant on juveniles sourced from the wild. Despite reductions in the availability of glass eels from more traditional source countries in Europe and East Asia, according to FAO data, global production has remained stable since 2007. Consequently farm production is being supplied by glass eels derived from new or previously lesser-exploited *Anguilla* populations around the world. A concerning pattern of exploitation is already apparent: when one species or population becomes over-exploited, industry moves to the next



Giant Mottled Eel *Anguilla marmorata*, in the shallows, Kavieng, Papua New Guinea.

JURGEN FREUND / WWF-CANON



EELS FOR SALE IN TSUKIJI FISH MARKET, TOKYO (left, right); EEL DISHES ON SALE IN JAPAN (centre).

in order to supply farms with their stock. The limited availability and soaring prices of live eel fry have also led to considerable enforcement problems, with illegal harvesting and trade in a number of *Anguilla* species known to be occurring.

Increased exploitation and illegal exports of more vulnerable and poorly-understood tropical eel species/populations, such as those found in the Philippines, are of particular concern. In order to ensure that these populations do not follow a similar decline in conservation status as that of *A. anguilla* and *A. japonica*, further research into population numbers, harvesting and trade levels, habitat threats and management measures in place for these species is urgently needed.

The IUCN/SSC Anguillid Specialist Sub-Group (ASSG), of which TRAFFIC is a member, was formed in February 2012 in recognition of this need. The group brings together eel experts from across the world and one of its first tasks is to collate all available information on this genus in order to carry out accurate Red List assessments. Once all *Anguilla* species have been evaluated against the IUCN Red Listing criteria, this will considerably facilitate decision-making in relation to their use and conservation. Furthermore, it will be the first attempt to ensure all available information for each species is collated and will increase accessibility to such data and research for all stakeholders.

This article highlights some of the more dramatic shifts in harvesting and trade patterns related to glass eel supplies for farming that have been identified by TRAFFIC in recent years. However, developments in other regions and in relation to other eel commodities are also known to be ongoing, in addition to changes in consumption patterns. Japan has traditionally been the principal consumer of eel commodities worldwide, however analysis of recent global FAO production data and Japanese catch, farming and trade data suggests Japan's importance as a consumer may be decreasing. According to these data, in 2002 67% (150 t) of global eel production (220 t) was consumed in Japan. This percentage gradually decreased over the next eight years owing to decreases in imports from other farming nations, and in 2010 Japan appeared to be consuming only 27% (75 t) of global eel production (280 t). In support of this downward trend, the Japanese media has reported over

50 eel restaurants closing across Japan in the first half of 2012, due to high prices reducing consumer demand (Anon., 2012d). With Japanese consumption reportedly being such an important driver of the global eel market in the past, it is essential that further research into these changes be conducted and that the implications of any shifts in the distribution of demand between countries or regions are established.

Currently, trade in only one *Anguilla* species is regulated through CITES and generic Customs codes are still being used by the majority of trading nations to report trade in all life stages and eel species as a group. As such, precise knowledge of the global dimensions of trade in other *Anguilla* species, essential for resource management, is lacking. However, despite these limitations, there is considerable evidence that global eel consumption and trade dynamics is constantly evolving and affecting new species and populations across the globe. International co-operation for the management and conservation of all *Anguilla* species is therefore imperative.

It is hoped that further research, such as that being carried out by members of the IUCN/SSC Anguillid Specialist Sub-Group, will facilitate future decision-making in relation to international conservation, management and trade measures, including the case for listing additional, or all, *Anguilla* species, in the CITES Appendices. In the meantime, however, fostering international co-operation for the conservation and sustainable use of eels is essential and there are already a number of endeavours under way: the Sustainable Eel Group (a Europe-wide organization composed of conservation, science, government and industry partners), the East Asia Eel Resource Consortium and a framework for trilateral co-operation to conserve shared eel resources agreed by Japan, mainland China and Taiwan in 2012 (Anon., 2013d).

Collaborative and integrated eel management efforts such as these are vital to the future conservation of this ecologically and commercially important group of species.

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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 *TRAFFIC Bulletin* carries a selection of seizures and prosecutions. Readers are asked to refer to the seizures section of the *TRAFFIC* website (www.traffic.org) for regular updates on cases reported from around the world.

ABALONE

AUSTRALIA: On 23 November 2012, Simon Hillman and Andrew Carpmael of Victoria pleaded guilty to a charge of trafficking in a commercial quantity of abalone following their arrest in November 2010 in possession of 30 kg of abalone. The pair was found to have taken abalone from waters in East Gippsland on six occasions, and once at Cape Otway over four months in 2010, amounting to some 30 and 60 kg on each occasion. The abalone was sold to a co-defendant who owned a restaurant.

Carpmael was sentenced to 18 months' imprisonment, with a minimum of nine months; Hillman received a 12-month gaol sentence suspended for two years. Carpmael was banned for 10 years and Hillman for three years from any dealings with abalone. The co-defendant, who gave evidence against the pair, was given a wholly suspended sentence for his role.

On 1 March 2013, at Joondalup Magistrates' Court, Duy Cam Dao of Girrawheen was fined more than AUD25 000 (USD25 600) for illegally harvesting 326 abalones. Dao had been under surveillance as part of a Fisheries WA operation at Ocean Reef beach to identify people actively involved in the illegal take/illegal distribution of abalone. He was apprehended with the abalone in his backpack, including 13 undersized specimens. Dao was already banned from abalone fishing at the time of the offence and had harvested them during a prohibited period.

His fine consisted of AUD8000 for breaching the original 2007 court-imposed ban, AUD8600 for fishing during a prohibited period, AUD7200 for exceeding the bag limit and AUD1100 for the undersized abalone. He was also issued a court order that banned him from being in possession of abalone.

www.watoday.com.au/national/abalone-poachers-given-jail-sentences-20121123-29z9t.html
23 November 2012; <http://au.news.yahoo.com/thewest/al-lbreaking/16320519/fisher-fined-25-000-for-abalone-haul/>, 7 March 2013

MOZAMBIQUE: It was reported in October 2012 that the Tax Authority had recently seized about a tonne of abalone in Maputo thought to have come from South Africa and believed to be destined for Hong Kong.

<http://allafrica.com/stories/201210121341.html>,
12 October 2012

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.

SOUTH AFRICA: On 21 November 2012, officials arrested 19 people—reportedly the highest number of people in one single incident to date in relation to abalone offences. The men had been diving for abalones at Soetfontein near Gans Bay and were found in possession of 3838 shucked abalones (527.6 kg). Three of the men had been arrested in August 2012 for a similar offence. On the same day, police also found 1351 shucked and 182 whole abalones (291 kg) at a house in Hangklip. On 19 November, three men were also arrested when the SAPS's Flying Squad discovered 36 929 dried abalones—the largest consignment of abalones this year—in a minibus in which the suspects were travelling.

<http://allafrica.com/stories/201211220533.html>,
21 November 2012

BIG CATS

INDONESIA: In December 2012, police in Pekanbaru seized skins of 11 Tigers *Panthera tigris* (CITES I) (in addition to skins of four Sun Bears *Helarctos malayanus* (CITES II) and 13 Sambar Deer *Rusa unicolor* antlers) from the house of a tanner. Police said they were going to have the skins DNA-tested to establish where they had been poached.

www.antaranews.com/berita/349343/polresta-pekanbaru-sita-11-kulit-harimau, 19 December 2012

MALAYSIA: In February 2013, a man was sentenced to a total of 60 months in gaol after being found guilty on two charges of illegal possession of Tiger *Panthera tigris* (CITES I) parts (and one for possession of African Elephant *Loxodonta africana* (CITES I) ivory). However the judge ordered that the sentences run concurrently and the defendant was to serve only 24 months in gaol. A conviction under the section of the law involving Tiger parts carries a mandatory fine of "not less than RM100 000 [USD32 000] and not more than RM500 000 and a jail term not exceeding five years." The court did not issue the mandatory fine.

The man was arrested in northern Malaysia in February 2012 with eight Tiger skins and a bag of Tiger bones including 22 skulls, plus an undisclosed number of elephant tusks.

[PERHILITAN, Department of Wildlife and National Parks, Malaysia](http://perhilitan.gov.my)

NEPAL: In two operations in January 2013, police arrested seven members of a Tiger smuggling ring and recovered seven Tiger skins, hundreds of Tiger body parts, and bones. In the first incident, on 11 January, officers of Manaslu Conservation Area seized four Tiger skins, 53 kg of Tiger bones and arrested four people who were allegedly trying to smuggle the Tiger parts into Tibet, China. The following day, police conducting road checks near the border with China seized five Tiger skins and 114 kg of Tiger bones that were concealed in bags of rice in a van also heading to China. The operation came shortly after members of the Nepalese police undertook a training course in Kathmandu organized by INTERPOL, which aimed to improve environmental law enforcement capacity in the region, with a specific focus on illegal poaching and the illicit trade in Tigers and other Asian big cats.

<http://dailypioneer.com/nation/131309-wildlife-contraband-seizure-case-in-nepal-takes-new-turn.html>, 5 March 2013; www.interpol.int/News-and-media/News-media-releases/2013/N20130123, 23 January 2013

RUSSIA: On 13 November 2012, at Khasan District Court, Primorsky Krai, a hunter was sentenced to 18 months' community service and fined USD18 500 for killing an Amur Tiger *Panthera tigris altaica* (CITES I), reportedly a rare case in the country of punishment for Tiger poaching. The perpetrator's hunting rights were also revoked and his firearm confiscated. The court found the suspect guilty of killing one of the 500 Tigers remaining in the Maritime Territory and the Khabarovsk Territory.

<http://articles.latimes.com/2012/nov/13/world/la-fg-wn-russia-punishment-poaching-tigers-20121113>

13 November 2012; http://www.panda.org/wwf_news/?206730/Tiger-killer-given-strong-punishment, 15 November 2012

THAILAND: In October 2012, authorities arrested a lorry driver after 16 Tiger cubs were discovered in the back of his vehicle. The man was stopped near the border with Lao PDR after avoiding a police checkpoint.

www.scmp.com/news/asia/article/1071285/thai-police-stop-pickup-truck-find-16-tiger-cubs, 27 October 2012

FLORA

CANADA: On 9 October 2012, in British Columbia Provincial Court, Nam Bak Enterprises Limited was fined CAD50 000 (USD49 000) under the *Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act (WAPPRIITA)* for importing without a permit American Ginseng *Panax quinquefolius* (wild and cultivated) (CITES II). Of that amount, the company was ordered to pay a CAD45 000 fine and CAD5000 to the Environmental Damages Fund (EDF); CAD40 000 of the fine was directed by the court to be donated to TRAFFIC.

www.ec.gc.ca/default.asp?lang=En&n=714D9AAE-1&news=188C32A1-1744-4244-AD2F-EBA8A77C4423; E. Cooper, TRAFFIC, in litt., 2 April 2013

INDIA: Red Sandalwood *Pterocarpus santalinus* (CITES II and export from India prohibited under the *Customs Act 1962*)

On 23 October 2012, officials of the Mangalore unit of the Directorate of Revenue Intelligence (DRI) arrested four persons at New Mangalore Port and seized six tonnes of Red Sandalwood concealed under plywood and awaiting shipment to Jebel Ali, Dubai. A raid was also carried out in Kannur, Kerala, where 18 t of Red Sandalwood was seized.

On 13 December 2012, Delhi police acting on information, and working with the DRI, seized 10 t of Red Sandalwood from a warehouse in Janakpuri, destined to be smuggled to China.

On 6 January 2013, police seized 36 Red Sandalwood logs (900 kg) from a car during a routine vehicle check in Gummidipoondi, Tamil Nadu. Two people fled the scene.

On 25 January 2013, Chakan police officers acting on information raided two warehouses at Waki Budruk village, Pune district, Maharashtra, and seized circa 16 t of Red Sandalwood.

On 10 February 2013, during a special anti-smuggling drive undertaken jointly by police and Forest Department officials in Andhra Pradesh, 22 people from neighbouring Tamil Nadu were arrested for their part in smuggling Red Sandalwood from the forests of Kadapa.

On 28 February 2013, police attached to Virinchipuram station arrested four persons who were attempting to smuggle 250 kg of Red Sandalwood from Andhra Pradesh to Bangalore via Vellore district. The gang revealed that they smuggled Red Sandalwood from forest areas on the Tamil Nadu-Andhra Pradesh border to Bangalore via Palamaneri and Vellore. Forest

department officials registered a case against the four under the provisions of the *Tamil Nadu Forest Act*. They were to be remanded to the Vellore Central Prison for Men after being produced in the district court.

All the above cases are being investigated.

www.daijiworld.com/news/news_disp.asp?n_id=153464, 24 October 2012; www.indianexpress.com/news/red-sanders-worth-rs-2-cr-seized-from-west-delhi/1045057/, 14 December 2012; articles.timesofindia.indiatimes.com/2013-01-08/chennai/36215679_1_sanders-logs-red-sanders-police-officer, 8 January 2012; <http://expressindia.indianexpress.com/latest-news/red-sandalwood-teak-wood-worth-rs-3-cr-seized-from-chakan/1065188/>, 26 January 2013; <http://english.samaylive.com/regional-news/others-news/676523738/red-sandalwood-red-sanders-smugglers-police-forest-official-arre.html>, 12 February 2013; http://newindianexpress.com/states/tamil_nadu/article1484402.ece, 2 March 2013

USA: On 16/17 October 2012, rangers at Cumberland Gap National Historical Park caught five people in the process of illegally collecting American Ginseng *Panax quinquefolius* (CITES II); 415 roots were seized in two separate cases. The rangers noticed suspicious behaviour and hid in the woods to make the arrests. Both cases were made in the Virginia portion of the park, where park rangers have been using surveillance to target illegal digging.

Uprooting ginseng is illegal in national parks. In recent years this park and others have cracked down on ginseng poaching using remote sensing cameras and special dyes and metal chips to mark the plants as being property of the parks. Digging is legal on private property with the landowner's permission. It is reported that the ginseng roots confiscated during the second seizure were very small and most likely came from plants that were too young to have developed seeds.

After sorting the ginseng roots by age—the oldest was 31 years old—rangers marked them with a special dye and replanted them in the park.

All the defendants were to appear in court at a later date. It is reported that a conviction typically amounts to a fine plus restitution at a cost of USD15 per root. It was reported that the restitution collected from the poachers would help fund the marking and replanting as a way of recovering the cost of that work.

www.knoxnews.com/news/2012/oct/26/ginseng-poachers-nabbed-at-cumberland-gap-park/, 26 October 2012

IVORY

CAMEROON: On 4 October 2012, police officers in Yokadouma arrested one of Central Africa's most wanted elephant poachers and ivory smugglers. In addition to killing elephants for their tusks, the suspect has also been accused of serving as a guide to Sudanese poachers, who in 2010 crossed the Central African Republic and poached 25 elephants before being stopped by local authorities. He was reportedly mostly active in the Sangha Trinational Protected Area complex, a network of protected areas straddling the countries of Cameroon, the Central African Republic and

the Republic of Congo which, in July 2012, was declared a UNESCO World Heritage Site.

http://www.panda.org/wwf_news/?206372/Cameroon-arrests-one-of-Central-Africas-most-notorious-poachers, 5 October 2012

CHINA: Between 6 January and 5 February 2013, Operation Cobra—a multi-national law enforcement initiative undertaken in some 22 Asian and African countries (see page 3)—saw 80 cases uncovered in China and over 90 people arrested; among many wildlife items seized were ivory and ivory products (200 kg) (plus 10 rhinoceros horns and four rhinoceros horn products, and 50 kg of pangolin scales).

<http://www.globaltimes.cn/content/762127.shtml>

GABON: On 22 January 2013, authorities acting on information intercepted a ship flying a Cameroonian flag at Mole Port, Libreville, and seized 18 elephant tusks (178 kg). The vessel was heading to Benin via São Tomé and Príncipe and Nigeria. Two suspects were detained and were assisting police in the investigation.

www.shanghaidaily.com/article/article_xinhua.asp?id=122140, 28 January 2013

HONG KONG SPECIAL

ADMINISTRATIVE REGION: On 3 January 2013, Customs officials uncovered a consignment of 779 elephant tusks (1300 kg) during x-ray examination of wooden boxes labelled as containing construction stones, which had arrived from Kenya, via Malaysia. The tusks were wrapped in canvas bags that were covered by stones. Officers were reportedly on the alert because imports of construction material from Kenya were unusual and the receiving company was new.

In October 2012, 3800 kg of ivory was found in two shipments, from Kenya and Tanzania, and in November the department seized 1330 kg of tusks in a container of sunflower seeds shipped from Tanzania.

www.scmp.com/news/hong-kong/article/1119782/hong-kong-customs-seize-over-hk10m-illegal-ivory, 4 January 2013

MALAYSIA: In December 2012, Selangor Customs at Westports seized 1500 (24 t) elephant tusks that had arrived by ship in two containers declared as "wooden floor tiles". The contraband originated from Togo, and had been transported via Spain, to Malaysia, for transshipment to China. The tusks were hidden under wooden planks. No arrests have been made, but the local company handling the containers is being investigated.

<http://thestar.com.my/news/story.asp?file=/2012/12/11/nation/20121211191659&sec=nation>, 11 December 2012

SINGAPORE: On 30 January 2013, Customs officials uncovered a shipment of 1.8 t of ivory, in what was described as the biggest ivory haul in the country in more than a decade. The consignment, marked as being waste paper, had come from an undisclosed African country and was reportedly passing through Singapore. A total of 1099 pieces of raw tusks were found in 65 sacks.

www.bbc.co.uk/news/world-asia-21257745, 30 January 2013

THAILAND: On 15 December 2012, at Suvarnabhumi Airport, authorities confiscated 11 African Elephant *Loxodonta africana* (CITES I) tusks arriving on a flight from Ethiopia. One Vietnamese national was arrested while waiting to board a flight to Phnom Penh, Cambodia.

www.bangkokpost.com/breakingnews/326630/ivory-tusks-seized-at-suvarnabhumi, 17 December 2012

TURKEY: On 22 October 2012, it was reported that the Istanbul Police Department's Financial Crime Division had confiscated 635 cylindrically cut ivory pieces that had been sent from D.R. Congo via Europe. This is reportedly the first time that ivory has been seized in Istanbul. The items were confiscated from a shop in Fatih district that manufactures ornaments and beads. The ivory had reportedly been painted red in D.R. Congo and exported as "rosewood". One person was detained.

www.hurriyetdailynews.com/illegal-ivory-pieces-seized-in-istanbul.aspx?pageID=238&nID=32977&NewsCatID=341, 22 October 2012

UK: In November 2012, officers from the Border Force at Heathrow Airport intercepted two courier packages addressed to an individual in Hong Kong from Nigeria, described as "sculptures and engine parts". Both packages were found to contain a total of 130 ivory (Annex A/CITES I) beads, and seven ivory bangles (two kilogrammes) concealed within boxes of engine parts and handicrafts.

In January 2013, officers from the Border Force at Coventry postal depot intercepted three packages on arrival from D.R. Congo. Within the packages, a number of wooden statues were found to be concealing ivory (Annex A/CITES I) artefacts. One person was arrested and investigations are continuing.

UK Border Force

USA: On 13 March 2013, it was reported that Stonex Corp., a Manhattan-based jewellery wholesaler, pleaded guilty to one count of illegal trade in wildlife. Shashikumar Krishnaswamy, the company's owner, will forfeit more than 32 kg of ivory pieces. He was ordered to donate USD10 000 to the Wildlife Conservation Society for use in elephant conservation.

www.jckonline.com/2013/03/13/jewelry-wholesaler-pleads-guilty-to-illegal-ivory-trading, 13 March 2013

PANGOLIN

All pangolin species are listed in CITES Appendix II

CHINA: On 14 November 2012, at Jinshan District People's Court, Zhang Qianjin, a farmer, was sentenced to two years in gaol for illegally transporting five Chinese Pangolins *Manis pentadactyla* from Fujian province to Shanghai. He was also fined 10 000 yuan (USD1606). He had reportedly purchased the pangolins from a street vendor in Fujian Province on 6 June and was stopped at a checkpoint on the Jinshan section of Shenhai Highway, which links Shanghai to Zhejiang province, after he had taken a wrong turning. Prosecutors said Zhang had purchased the pangolins at a high price, which meant he

knew the animals were protected and could be sold for profit. Zhang argued that he had purchased the pangolins to eat.

<http://english.peopledaily.com.cn/90882/8020758.html>, 15 November 2012

FRANCE: On 22 October 2012, Customs officials at Roissy Airport seized several hundred kilogrammes of pangolin *Manis* meat (as well as meat from antelope, monkey or crocodile) that had been concealed in luggage arriving from undisclosed African locations. The wild meat was reportedly bound for sale at the African quarter of the Château-Rouge market, in Paris's 18th arrondissement.

www.metrofrance.com/paris/de-la-viande-de-pangolin-et-de-crocodile-saisie-a-roissy/mjw/ajpLnSLtLpGA/, 23 October 2012

INDIA: In February 2013, Rajaji National Park officials arrested three persons from the Kansrao forest area and recovered about 30 kg of pangolin *Manis* scales. Officials described it as one of the biggest seizures of pangolin scales in the country. The operation was reportedly launched after several SIM cards and mobile phones were recovered from Kansrao forest.

www.thehindu.com/news/national/other-states/30-kg-of-pangolin-scales-seized-three-arrested/article4443776.ece, 23 February 2013

INDONESIA: On 3 January 2013, at Soekarno-Hatta International Airport, Customs officials arrested four Chinese nationals for attempting to smuggle in their luggage 189 pangolin *Manis* scales (and 248 hornbill beaks) to Hong Kong. The case was being investigated by the Jakarta Natural Resources Conservation Center (BKSDA).

www.thejakartapost.com/news/2013/01/04/four-chinese-arrested-smuggling-protected-species-body-parts.html, 4 January 2013

MALAYSIA: On 16 October 2012, a man was arrested trying to smuggle 23 pangolins *Manis* to a neighbouring country at Bukit Kayu Kitam on the border with Thailand. The pangolins were being transported in several sacks weighing a total of 70 kg which had been placed in the spare tyre compartment to avoid detection. A friend who tried to bribe the officers in order to release the offender was also arrested. The pangolins were to be sent to the Wildlife Department for further action.

<http://thestar.com.my/news/story.asp?file=/2012/10/16/nation/20121016173325&sec=nation>, 16 October 2012

NEPAL: On 13 October 2012, personnel carrying out a security check at Lamosangu checkpoint, Sindhupalchowk district, seized 37.8 kg of pangolin *Manis* scales (as well as 28 kg of Walrus *Odobenus rosmarus* and two kilogrammes of orchids) which were being transported to China. One person was arrested.

www.thehimalayantimes.com/fullNews.php?headline=Police+seize+contraband+being+smuggled+to+China&NewSID=350805&a=3, 13 October 2012

NETHERLANDS: On 27 November 2012, Customs officials at Schiphol Airport, Amsterdam, seized a cargo shipment containing 540 000 (630 kg) capsules used in the treatment of prostate-related diseases; according to the

packaging, the product contained pangolin scales. The shipment was sent from Shanghai, China, via Amsterdam to Accra, Ghana, without CITES documents.

Customs Administration of the Netherlands

THAILAND: On 25 March 2013, the navy intercepted an attempt to smuggle 104 live pangolins *Manis* to China, via Lao PDR, on the Mekong River. The animals were believed to have originated in Malaysia or southern Thailand. Two suspects were arrested before they were able to load the live pangolins onto a boat.

www.france24.com/en/20130326-thailand-seizes-104-smuggled-endangered-pangolins

REPTILES

CHINA: On 22 February 2013, almost four tonnes of live snakes were confiscated by police near Ruili, on the border with Myanmar, in one of the largest wildlife seizures along the border in recent history. Police found 176 wooden crates with 4815 live cobras, vipers and Indian rat snakes in a vehicle. One person, nationality undisclosed, was arrested.

Police were acting on a tip-off and had set up roadblocks earlier in February; after 20 days of futile inspections, some roadblocks were relaxed to mislead the smugglers. Roadblocks are reportedly a daily sight along the border, with travellers complaining about going through up to three checks on the five-hour journey to neighbouring Tengchong County.

www.irrawaddy.org/archives/27620, 25 February 2013

THAILAND: On 7 February 2013, at Suvarnabhumi Airport, officials took possession of a cargo containing more than 2000 live snakes that had been returned by authorities in Hong Kong after the shipment had been illegally exported to Hong Kong. The snakes, comprising a range of species, had been placed in 203 boxes falsely declared as containing fruit. The reptiles were believed to be destined for China. An investigation is under way.

On 15 March 2013, authorities at Suvarnabhumi International Airport seized 54 Ploughshare Tortoises *Astrochelys yniphora* and 21 Radiated Tortoises *Astrochelys radiata* (CITES I and both assessed as being Critically Endangered). Two people were arrested (see page 23).



P. TANSOM / TRAFFIC

"TRAFFIC congratulates the Thai authorities for these very significant seizures" said Chris R. Shepherd, Deputy Director of TRAFFIC, Southeast Asia. "The criminals behind this shipment of Ploughshare Tortoises have effectively stolen over 10% of the estimated population in the wild ... They should face the full force of the law. We urge authorities to go after the criminal masterminds behind these shipments and break the trade chains that threaten these incredibly rare animals", he said.

www.bangkokpost.com/breakingnews/334839/customs-seize-2000-live-snakes, 7 February 2013; <http://www.traffic.org/home/2013/11/9/largest-seizure-of-critically-endangered-ploughshare-tortoises.html>

RHINOCEROS

All species of rhinoceros *Rhinocerotidae* are listed in CITES Appendix I.

CHINA: On 20 March 2013, two passengers were arrested at Pudong International airport, Shanghai, after attempting to import illegally 11 rhinoceros horns (and over 30 ivory items). The men stated that they bought the items at "auction houses, antique shops and fairs in Paris". Officials said that while the men "knew it was illegal to bring the products into China" they "anticipated hefty profits."

http://shanghaiist.com/2013/03/21/two_men_caught_attempting_to_smuggle_800000_dollars_worth_of_ivory_into_china.php, 21 March 2013

INDIA: On 16 October 2012, a group of 18 people allegedly responsible for the poaching of at least six rhinoceroses in Kaziranga National Park over the past three years were arrested by Assam police. The apprehensions took place in Bokolia after the gang's leader was arrested and interrogated the previous day. Two forest employees were also held on suspicion of involvement in the poaching.

www.thehindu.com/news/national/other-states/a-gang-of-18-rhino-poachers-nabbed-in-assam/article4002582.ece, 16 October 2012

IRELAND: On 15 March 2013, at Ennis District Court, brothers Jeremiah and Michael O'Brien of Limerick were each fined €500 (USD655) with three months to pay after they were caught illegally attempting to import rhinoceros horns through Shannon Airport in January 2010. Customs officers seized eight rhinoceros horns following the brothers' return from Portugal. They each pleaded guilty to importing four rhinoceros horns.

The judge accepted jurisdiction on the basis that the offence was germane to the breach of the regulations and not the value of the horns which, according to evidence provided by an auctioneer, would have been some three times lower at the time of the seizure.

The court was told that the horns were antique, dating from the 1960s, and not from a freshly killed rhinoceros. They had reportedly been acquired from a Portuguese antiques dealer who had entrusted the brothers with the horns so that they could be mounted on a board before being returned to Portugal. The pair had no previous convictions and had made no effort to conceal the horns.

<http://www.clarepeople.com/2013/03/19/e500-fine-for-e500000-rhino-horn-dealers/>, 19 March 2013

MOZAMBIQUE: It was reported on 16 October 2012, that police had arrested two suspected poachers in Gaza province with 11 kg of rhinoceros horns that they were transporting in a vehicle. The horns had reportedly been taken from rhinoceroses that were killed in Limpopo National Park, South Africa.

On 24 February 2013, police officers at Maputo International Airport arrested a Vietnamese citizen in possession of six rhinoceros horns (17 kg). The suspect was about to board an international flight. The horns had been wrapped in tinfoil and placed in a suitcase with clothing and surrounded by garlic in an attempt to disguise the smell.

In February 2013, police arrested a Mozambican citizen in Mandimba district, in the northern province of Niassa, who was in possession of eight rhinoceros horns (20 kg) and in the process of attempting to sell rhinoceros horn to a Chinese buyer. The Chinese citizen evaded capture.

www.newstrackindia.com/newsdetails/2012/10/16/280-11-kg-of-rhino-horns-seized-in-Mozambique-.html, 16 October 2012; <http://allafrica.com/stories/201302260215.html>, 25 February 2013; <http://allafrica.com/stories/201302210175.html>, 20 February 2013

SOUTH AFRICA: On 9 November 2012, at Kempton Park Magistrates' Court, Chumlong Lemtongthai of Thailand was sentenced to 40 years in gaol for his role in organizing illegal rhinoceros poaching expeditions. The sentence is the longest-ever imposed for poaching in South Africa and follows a year-long investigation.

Chumlong Lemtongthai pleaded guilty to paying people to pose as big game hunters with permits. They were each given USD800 to go to game farms, take a few shots with small calibre rifles and pose next to rhinoceroses killed by someone else.

South African authorities currently issue permits to what it terms "bona fide" hunters for trophy hunting. The Department for Environmental Affairs says "a hunting client may only hunt one White Rhinoceros within a specific calendar year".

On 23 November 2012, at Pretoria Magistrates' Court, Rogers Mukwena of Mpande, southern Zimbabwe, was sentenced to 10 years' imprisonment for rhino poaching. He was arrested in January 2012 in northern Pretoria in possession of three rhinoceros horns. DNA tests later linked them to a poaching incident in which a White Rhinoceros *Ceratotherium simum* cow and calf had been killed.

In 2012, Mukwena was arrested in Masvingo province, Zimbabwe, with six others after being found with a fresh rhinoceros horn but he skipped bail and fled to South Africa.

www.bbc.co.uk/news/world-africa-20267967, 9 November 2012; www.newsday.co.zw/2012/11/27/teacher-jailed-for-poaching/, 27 November 2012

THAILAND: In early January 2013, it was reported that a Vietnamese citizen was arrested at Suvarnabhumi Airport with six rhinoceros horns (10.6 kg). He had come from Mozambique, and was awaiting a flight to Hanoi, Viet Nam.

<http://allafrica.com/stories/201302210175.html>, 20 February, 2012

VIET NAM: In early January 2013, police in Ho Chi Minh City arrested a man who had arrived from Maputo, Mozambique, via Doha, carrying six rhinoceros horns (16.5 kg).

<http://allafrica.com/stories/201302210175.html>, 20 February, 2012

OTHER SEIZURES

CANADA: On 17 October 2012, at Manitoba Provincial Court, Jayson Daeninck and his company, Saltwater Connection, were fined a total of CAD135 822 (USD134 000) for illegally importing from Indonesia live rock which included species of giant clams, seahorses and stony corals, all protected under CITES and Canada's *Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act*.

Environment Canada: www.ec.gc.ca/default.asp?lang=En&n=714D9AAE-1&news=B8BEA2A8-2363-4874-8EEA-51BB34A331F5

NEPAL: On 6 January 2013, the Central Investigation Bureau (CIB) of Nepal Police confiscated over 1000 kg of shahtoosh—wool derived from the Tibetan Antelope *Pantholops hodgsonii* (protected under the *National Parks and Wildlife Conservation Act 1973* and in CITES Appendix I). The seizure is probably the biggest ever in Nepal, both in terms of size and monetary value (see page 3).

www.wfnepal.org/?207229/Biggest-ever-seizure-of-Shahtoosh-in-Nepal, 11 January 2013

USA: On 31 January 2013, Ashu Bhandari, former president and CEO of GEM Manufacturing LLC, a US Virgin Islands-based company, was sentenced in St Thomas, US Virgin Islands, for his role in a scheme to illegally import black coral (CITES II) into the USA; two trading partners have already been gaoled.

On 2 February 2013, Bhandari was fined USD918 950 and sentenced to one month in gaol, to be followed by one month of home confinement and one year of supervised release, during which he would be required to complete 300 hours of community service and be banned from any business venture involving coral or coral products. He was also ordered to pay USD229 687 to the University of the Virgin Islands to be used for community service projects designed for research into and protection of black corals.

http://7thspace.com/headlines/431987/usdoj_former_jewelry_company_executive_sentenced_in_usvi_to_pay_11_million_in_fines_and_community_service_for_illegal_trade_of_protected_black_coral.html, 2 February 2013



LAGOS, NIGERIA:

One of the Largest Retail Centres for Illegal Ivory Surveyed to Date

Esmond Martin and Lucy Vigne

Nigerian craftsmen and traders have been dealing in elephant ivory for centuries. It was not until 1989, however, that the first detailed study of Nigeria's retail ivory market took place (Allaway, 1989). At that time, most tusks were smuggled in from Central Africa and the majority of ivory items for sale were carved in Onitsha and Lagos, mainly by foreigners from neighbouring countries. Lagos was the main centre in Nigeria for the sale of worked ivory. The 1989 survey found 1081 kg of ivory items on display in Lagos, making up 70% by weight of ivory items seen in the country. Ivory pieces were seen for retail sale during the course of that survey at four hotels, at Murtala Mohammed International Airport, and one large souvenir market featuring at least six stalls selling ivory on Lekki Peninsula.

A further study undertaken in 1994 (Dublin *et al.*, 1995), estimated that there were between 500 and 700 kg of ivory items openly for retail sale in Lagos, with over 100 kg of polished elephant tusks recorded at outlets at the country's international airport. The report stated that this trade 'continues without any noticeable regulation'.

A third more detailed survey of the Lagos ivory market was carried out in 1999 (Martin and Stiles, 2000). Much of the ivory seen was claimed by vendors to come from countries such as Central African Republic (CAR), Democratic Republic of Congo (DRC) and Côte d'Ivoire. Stiles also found five workshops on Lagos Island where 33 ivory craftsmen were employed, mostly from Guinea and Mali. Ivory items were still available at the same locations as ten years earlier, except for one less hotel shop. Stiles estimated a weight of 1742 kg of worked ivory for retail sale from a count of 5966 items in 40 outlets. The Lekki souvenir market had 16 outlets with 3681 ivory items in 1999.

A fourth survey in 2002 in Lagos (Courouble *et al.*, 2003) stated that most tusks were still coming into Lagos from Central Africa. Only one ivory workshop was found, with five craftsmen. The best quality carvings for sale were reportedly made by Guineans. There were 5107 ivory items counted (weighing 1910 kg) at the same locations as the 1999 survey, with 77% at the Lekki market and 4% (191 items (110 kg)) at three stalls at the airport.

The most recent survey, undertaken in September 2012, shows that Lagos remains the main centre for the sale of worked ivory in Nigeria. The findings, which are reported below, indicate that more ivory is available today than noted in any previous surveys in Lagos, or, moreover, in any other African location that has been studied hitherto.

LEGISLATION AND ENFORCEMENT

Nigeria acceded to CITES in 1975, one of the first Parties to the Convention. From 1990, commercial imports and exports of both raw and worked ivory were prohibited, but Courouble *et al.* (2003) reported in 2002 that the legal situation concerning ivory in Nigeria was complex, with separate federal and State legislation. Although almost all domestic ivory trade in Lagos was illegal, regulations were rarely enforced and few ivory seizures were made in the country.

Owing to the lack of effective law enforcement, in July 2005, CITES imposed a trade ban on Nigeria (Milliken *et al.*, 2009) prohibiting international trade in all CITES-listed species. In January 2010, the Secretary-General of the CITES Secretariat led a mission to Nigeria. With guidance from the Secretariat, officials had begun to inspect wildlife markets and make seizures of ivory. In February/March 2011, the Secretariat returned to the country and 'conducted inspections of markets and other relevant locations in Kano and Lagos'. While some worked ivory was seen for sale in a market in Lagos, it was reported as being not of a quantity to give grounds for concern (CITES, 2011a,b).

On 9 May 2011, the Federal government introduced new legislation on endangered species, including elephants and elephant products. According to the *National Environmental Protection of Endangered Species in International Trade Regulations 2011*, it is unlawful to import or export any product listed in Appendices I, II or III of CITES, legislation that goes beyond the requirements of CITES. In addition, it is an offence for any person "...to have in his possession or under his control, or to offer or expose for sale or display to the public any specimen of the species listed in Appendices I, II and III of the [CITES] Convention...". Any person found guilty of these regulations is liable to a fine not exceeding N5 000 000 [USD31 646 in September 2012] and imprisonment for a term not exceeding three years or both (Federal Republic of Nigeria, 2011).

Based on the 2011 CITES mission to Nigeria, the CITES Standing Committee rescinded the Nigerian trade ban in August 2011. Data from the Elephant Trade Information System (ETIS) show that the Nigerian Government had reported 19 seizures of ivory weighing just 218 kg between 1989 and September 2012 and yet, over this period, there were 805 seizures totalling 18 217 kg of ivory in other countries that implicate Nigeria as the source, export, re-export, transit or destination country (T. Milliken, TRAFFIC, pers. comm., 25 September 2012).

METHODS

Fieldwork was carried out in Lagos from 7 to 15 September 2012. The authors visited the main souvenir market in Lagos, that on Lekki Peninsula, and made four inspections at retail outlets with ivory. They also visited other markets, hotels, arts and crafts shops and the international airport. Only ivory objects on display for retail sale were counted. Stored or hidden items were not recorded, even if some were seen, in keeping with the methodology used in previous surveys, and thus allowing comparison of the data sets. Types of items for sale were recorded along with the origins of the tusks, where they were carved, and prices. Recently made ivory items carved in the last decade were distinguished from old items carved before the CITES ban by their style and by their whiter, newer appearance. Vendors and some craftsmen at workshops were interviewed, as well as some Chinese businessmen.

RESULTS

Source and prices of elephant tusks in Nigeria: According to a 2006 survey of Yankari Game Reserve, which holds the greatest number of elephants in the country, there were 348 savannah elephants, down from an estimated 600 in 1993 (Omondi *et al.*, 2006; Said *et al.*, 1995). There could also have been a 'possible 105' elephants elsewhere in the country (Blanc *et al.*, 2007). In 2011, 82 elephants were counted in an incomplete survey of Yankari as many were apparently hidden by forest canopy (Bergl *et al.*, 2011). One of the main threats to elephants in Nigeria has been poaching for their tusks. Bergl *et al.* (2011) believe that at least 50 elephants in Yankari were illegally killed between 2006 and early 2011. The most recent estimate of elephant poaching in Yankari is 20 animals a year, according to Andrew Dunn, field biologist in Nigeria (pers. comm., 27 September 2012), or perhaps 30 a year, according to Solomon Adefolu, Conservation Officer, Nigerian Conservation Foundation (pers. comm., 11 September 2012).

The average weight of the tusks from poached elephants in and around Yankari was about four kilogrammes. In 2012, an average pair of tusks in villages surrounding Yankari sold for around N70 000 (USD443), the equivalent of USD55 per kg for a four-kilogramme tusk. In the cities of Bauchi, Gombe and Jos, wholesale prices doubled to USD110 per kg in 2012, (A. Dunn, pers. comm., 27 September 2012), the same price



PHOTOGRAPHS: LUCY VIGNE

IVORY ITEMS ON

as for tusks from neighbouring countries. From these cities, tusks are transported to Kano and Lagos for carving and sale, but the majority are for illegal export.

Most tusks are smuggled into Nigeria from Cameroon, CAR, Congo Brazzaville, DRC and Gabon, according to vendors interviewed in Lagos. In 2009, almost one tonne of ivory destined for Nigeria was seized in Cameroon (Milliken *et al.*, 2012). Tusks are also smuggled in from East Africa: in Kenya, 1.3 t of ivory bound for Nigeria were seized in 2011 and a further 745 kg in June 2012 (Milliken *et al.*, 2012; Momanyi, 2012). Most was re-exported to Asia (Milliken *et al.*, 2012).

Ivory workshops in Lagos: The Sand Grouse market on Lagos Island had three small workshops close to one another; one was active, with two craftsmen from Burkina Faso working cow bone. They said it was illegal to use ivory and no traces of ivory could be seen. They were producing cow-bone bead necklaces priced at N1000 (USD6) and 'ebony'/cow-bone walking sticks for N10 000 (USD63) before bargaining.

Two other small workshops were visited in the Tinubu Square area on Lagos Island. The first had 11 craftsmen who were self-employed: eight from Guinea and three from Nigeria. They claimed they were former ivory craftsmen who had stopped using ivory five years earlier due



SALE IN LAGOS

to the ban on possession and sale. Using electric tools, the artisans were crafting cow bone beads for necklaces and Muslim rosaries for N1500 (USD9), large rings for N500 (USD3) and cigarette holders (price not given). Although there was no sign of ivory in the workshop, one craftsman wore a newly made ivory beaded bracelet that he was seen to remove, presumably so as not to be photographed wearing it. The second workshop was closed but looking through the front iron grill a collection of cow bone figures and two larger ivory busts could be

seen on a shelf. A few hours later the shop was still locked, but the two ivory busts had been removed.

Numbers of retail ivory outlets and ivory items surveyed: There were only two locations where ivory items were seen, the market on Lekki Peninsula and within the grounds of the Eko Hotel and Suites on Victoria Island. Outlets near two other hotels which previously sold ivory had closed, some moving to the Lekki market. Further, shops at the international airport no longer sold ivory products.

The Lekki market offers souvenirs such as tribal art and carvings, as well as paintings and jewellery, with a section for fruit and vegetables and other foodstuffs, including three Chinese food shops. The market dates from the British colonial period. There are rows of single-storey outlets, similar to garages with lockable metal fronts, along a grid of alleyways with over 100 selling souvenirs. Generally, the souvenir shops were open from mid-morning until dusk.

During the survey, 33 retail souvenir outlets had 14 200 ivory items on display (Table 1), ranging in size from polished tusks to earrings; over 99% of the items appeared to be recently made. While there were some 30-cm items—amongst the largest worked piece on display—an estimated 91% measured less than 10 cm, with plastic tubs of pendants sometimes on the counter. Thousands of smaller items such as jewellery, name seals and chopsticks, were stored under the counter. A few of the tribal art outlets had old ivory objects, such as side-blown trumpets (tusks with blowing holes carved into the ivory), wide bangles, and dark ivory items, copies of antique carvings from Benin, where some of the finest ivory in tropical Africa was being carved between the 15th and 19th centuries (St Aubyn, 1987). Most ivory objects were placed in tall glass cabinets in outlets specializing in ivory. Numbers of items counted per outlet ranged from two to 1250, with an average of 430. About two-thirds of these items comprised earrings, pendants and necklaces, the remainder human and animal figurines, chopsticks, cigarette holders, Muslim rosaries and bangles (Table 2).

The second location selling ivory items was the Arts and Crafts Centre in the grounds of the Eko Hotel and Suites. This single-storey building comprising 22 curio stalls, targeted largely at foreign tourists and visitors, was offering for sale 149 ivory items, almost all apparently recently made, with the majority in a glass cabinet at one stall. Over half was jewellery, followed by animal and human figurines and cigarette holders (Table 2).

Location	No. of outlets with ivory	No. of ivory items
Lekki market	33	14 200
Arts and Crafts Centre, Eko Hotel and Suites	3	149
TOTAL	36	14 349

Table 1. Number of retail outlets and ivory items on display for sale in Lagos, Nigeria, September 2012.

LEKKI MARKET		ARTS AND CRAFTS CENTRE	
Item	Percentage	Item	Percentage
Earrings, pair	30	Pendant	30
Pendant	26	Animal figurine	15
Necklace, beaded	9	Earrings, pair	13
Human figurine	9	Cigarette holder	13
Chopsticks, pair	8	Hair fastener	9
Animal figurine	6	Human figurine	7
Cigarette holder	4	Necklace, beaded	5
Rosary (Muslim)	3	Misc.	8
Bangle	2		
Misc.	3		

Table 2. Ivory items seen for retail sale in the Lekki market and the Arts and Crafts Centre, Lagos, September 2012.

Prices and customers for ivory items: Vendors quoted retail prices in Nigerian naira for nearly all items, which varied according to the amount of bargaining, the quantity of items being bought, the object's size, and the amount of time spent crafting the item. The objects were of a standard, mediocre quality and similar in all outlets. Prices for the handful of antiques available were normally higher. Prices could generally be reduced by 10% to 30% by bargaining. The least expensive item was a pair of earrings (USD3) and the most expensive was a six-kilogramme polished tusk (USD1899) (Table 3).

At the Lekki market, the only customers seen buying ivory were Chinese who were there on all four days of the survey, usually shopping in pairs or in groups, sometimes with an interpreter. They were seen buying in bulk, especially bangles, name seals, combs and chopsticks. Vendors told the authors that Muslim Nigerians sometimes purchased ivory walking sticks and rosaries. Although there were a few western visitors in the market, they did not purchase many souvenirs and took no interest in the ivory outlets. During the survey, it was evident that more ivory was being sold than any other souvenirs in the market. Some, clearly new ivory items, were taken from under the counter.

The Eko Hotel and Suites' customers were mostly guests at the hotel. The vendor at the main ivory stall said his customers were Europeans, Americans, Japanese and

Item	Size (cm)	Average price (USD)
JEWELLERY		
Bangle	2	57
Earrings, pair	4	3
Necklace, small, large		27/76
Pendant	4	57
Ring	0.3	16
FIGURINE/FIGURE		
Animal	<5	25
	5–10	190
	10–15	316
	15–20	517
Human	10	316
	15–30	506
	30–40	633
TUSKS		
Polished	1–6 kg	363–2178
Tip	5	380
MISC.		
Chopsticks, pair	20	63
Cigarette holder	10	32
Comb	12	38
Mask	10	201
Name seal		
Personal (round base)	2 x 7	108
Business (square base)	3 x 7	186
Paper knife	15	32
Rosary (Muslim)	medium	28

Table 3. Retail prices for new ivory items seen in the Lekki market, Lagos, Nigeria, September 2012.

NB. Prices are before bargaining
Exchange rate used: free market rate of N158 to USD1.

Lebanese, in that order. It was apparent that the Chinese prefer the much larger Lekki market where there is a big choice of ivory outlets and where prices are considerably lower than at this luxury hotel.

Ivory exports from Lagos: Chinese buyers tend to prefer smaller objects, especially jewellery, name seals and chopsticks, that they can more easily transport to China in their personal luggage. Most succeed, but in March 2012 a Chinese national was arrested at the international airport attempting to smuggle out to China ivory items concealed in a stuffed toy (Oloruntobi, 2012; Megbolu, 2012). According to informants and ETIS seizures data, some of the raw ivory is sent to other carving centres in West Africa while other raw ivory consignments go to Asia. Of African ivory items on sale, the majority had been smuggled in from other African countries and a few carved in Nigeria; most of these items are also exported to Asia, either in personal luggage or in commercial consignments. More than a tonne of ivory coming from Nigeria was seized in Hong Kong in 2010 and over a tonne seized in Thailand in 2011 (Milliken *et al.*, 2012).

Ivory substitutes: Cow bone is used as an ivory substitute, especially for beads, rings, cigarette holders, and walking sticks, the latter made of bone and wood. These were seen at several outlets. Vendors sometimes pretended these items were ivory. At the Lekki market, some hawkers sold bone necklaces for N2500 (USD16) that they claimed were 'pink ivory' (from forest elephants), while at a nearby shop, the same size ivory necklace was N7500 (USD47). There were some items carved from Hippopotamus *Hippopotamus amphibius* tusks, especially figurines. A large Hippopotamus tusk with animals carved along it was offered for the equivalent of USD475 (USD886 for a pair), before bargaining. No other ivory substitute materials were seen.

Vendors' views on the ivory trade: Nearly all the vendors were suspicious and unco-operative in providing information or allowing photographs to be taken and data were collected with much difficulty. Some vendors closed their shops during the survey or covered their ivory items over with cloth or hid them to avoid their being seen or counted. It required four visits to the Lekki market to collect the data to complete the survey. As no ivory was purchased by the authors, the vendors queried the purpose of the 'mission', suspecting it was for a report.

It was clear the ivory trade flourishes in the Lekki market. Despite vendors finding the Chinese the hardest bargainers ('You're killing us', one vendor was heard to exclaim to a Chinese name seal buyer), there was optimism about the trade with the large number of Chinese buyers, and the government doing little to implement regulations. No vendors admitted the trade was illegal, and told the authors that they would write receipts to say whatever the customer wished, to make it easy to take ivory items abroad. Posters warning customers about the illegal trade in endangered animal products were absent at the Lekki market although two were present at the Eko Hotel and Suites' souvenir market. Only one poster was seen at Lagos international airport. No other notices



warning about the illegality of purchasing and exporting ivory were observed. The vendors have reason to be complacent with so little awareness and enforcement.

Trends in the ivory trade in Lagos: Over the last two decades, while tusks continue to move through Nigeria to other destinations, more ivory items are smuggled into the country for sale in Lagos and fewer are now carved in the city. Nearly all outlets selling ivory are now concentrated in the Lekki market. From 2002 to 2012, the number of retail outlets in Lagos increased from 30 to 36, with the total number of items rising from 5107 (an average of 170 per outlet) to 14 349 (an average of 399 per outlet). However, the number of larger items (tusks and items over 20 cm) has fallen compared with 2002. The average weight of an item for sale has thus declined during this period. By examining the percentage of item types and sizes and estimating their weights, the average weight of an item was at least half



Almost all the buyers of ivory carvings in Lagos are Chinese, who show a preference for small items such as ivory tips, name seals, chopsticks and bangles, which are easier to smuggle.

.....
 Photographs by Lucy Vigne

that of the earlier surveys. Thus, the total weight of ivory for sale in Lagos is only slightly higher than in 2002. This is a significant amount when one considers that elephant numbers have declined in West and Central Africa.

Lagos today has one of the largest illegal retail ivory markets studied in Africa and Asia in recent years. One of the principal reasons for this is the growing Chinese population: in 2001 there were 2000 resident Chinese in Nigeria, but by 2007 there were 100 000 (Sautman and Hairong, 2007). More items specifically targeted at the Chinese market are now for sale, including Chinese Buddha carvings that were not seen before, and there are fewer very large items compared with earlier surveys, likely owing to the preference of Chinese buyers for jewellery and utilitarian items which are easier to smuggle to China. These items are about an eighth of the price in Lagos compared with southern China (Martin and Vigne, 2011; Martin and Vigne, 2012; Table 3).

CONCLUSIONS

There has been almost a three-fold increase in ivory items for retail sale in Lagos since 2002 to meet Chinese demand, almost all of which has been recently carved. The total weight of this ivory is estimated to be slightly higher than in 2002, because the average weight of an object has significantly decreased since then. The Nigerian Government has done very little over the years to reduce this illegal trade. Following the CITES Secretariat's investigations of key markets in the country in 2010 and 2011, and their findings that very little of concern had been noted (CITES, 2011a), the Secretariat believed that the ivory trade there was no longer a problem and urged the CITES Standing Committee to lift the 2005 CITES trade ban against Nigeria. This survey confirms that the lifting of the CITES trade ban in 2011 appears to have been premature. The Nigerian Government "took this as a sign that things had improved and that everything was well—which of course it isn't" (A. Dunn, pers. comm., 26 October 2012). This current survey has revealed a flourishing trade in illegal new ivory items in Lagos, perhaps more for sale than in any other city in Africa. The availability of both raw and worked ivory in Nigeria is contributing to the serious impact that such trade is having on the elephant populations of Central and West Africa.

RECOMMENDATIONS

Parties to CITES should consider reinstating the CITES trade ban on Nigeria until the government takes appropriate action to address the country's blatant ivory trade.

The Nigerian Government needs to implement its 2011 wildlife trade law which clearly bans all aspects of the ivory trade. Vendors know it is illegal to sell ivory, and the government needs to inspect retail markets regularly and seize ivory whenever it is found, emulating successful inspections and confiscations in certain other African countries. Surveys should continue to be conducted periodically. The government also needs to improve law

enforcement and increase the frequency of seizures of ivory at the country's airports, ports and land borders.

The Nigerian Government and non-governmental organizations (NGOs), with help from the Chinese Embassy, need to devise a strong awareness campaign in several languages, including Chinese, that clearly informs the public that the carving, display and sale of ivory are illegal, and that transporting ivory in any form in and out of Nigeria is also banned. The general public, as well as ivory dealers, must urgently be made aware that if they break the law they will be prosecuted, with details of the heavy penalties clearly stated. This information must be made available widely, such as in the country's hotels, retail centres, diplomatic and travel advice documents, airline magazines and the media.

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