

VOL. 27 NO. 1

1

TRAFFIC

B U L L E T I N



CROCODILE LIZARDS

**SLOW LORISES USED AS
PHOTO PROPS IN
THAILAND**

**PANGOLIN TRADE
IN INDIA**

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

APRIL 2015

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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MANAGING EDITOR Steven Broad

EDITOR and COMPILER Kim Lochen

SUBSCRIPTIONS and MAILING
Susan Vivian (E-mail: bulletin@traffic.org)

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Javan Slow Loris *Nycticebus javanicus*
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Legally harvested logs, Ecuador (© T. Osborn);

Crocodile Lizards *Shinisaurus crocodilurus*

(© Anna Rauhaus);

Grey Parrots *Psittacus erithacus* seized in Hungary

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Indian Pangolin *Manis crassicaudata*

(© Dulu Borah, Green Guard Nature Organization, Assam)

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TRAFFIC

BULLETIN

VOL. 27 NO. 1

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CONTENTS

news

1

- editorial •
- Kasane Conference, Botswana •
- Wildlife hunting in West Papua •
- FLEGT Project concludes
- First FairWild certificate
- awarded in India •
- FairWild Standard •
- CBD CoP12 outcomes •



features

13

The use of animals as photo props to attract tourists in Thailand: a case study of the slow loris *Nycticebus* spp.

Petra Osterberg and K.A.I. Nekaris

Last chance to see? A review of the threats to and use of the Crocodile Lizard

Mona van Schingen, Ulrich Schepp, Cuong The Pham,
Truong Quang Nguyen and Thomas Ziegler



seizures and prosecutions

27

A selection of seizures and prosecutions that have recently taken place around the world



short communication

33

A note on the illegal trade and use of pangolin body parts in India

Rajesh Kumar Mohapatra, Sudarsan Panda,
Manoj V. Nair, Lakshmi Narayan Acharjyo and
Daniel W.S. Challender



In 1976, TRAFFIC was established to monitor trade in flora and fauna and to make recommendations for conservation action. This specialist role forms the nucleus of our work. Monitoring—of markets, both physical and online—as well as of trade statistics and seizure data, for example, is essential to identifying trends at varying levels and emerging issues, and provides an early warning function. Monitoring also allows us to measure the impact of our work, as well as that of other internal or external interventions. As the number of species threatened by illegal and unsustainable trade grows, this role becomes increasingly essential. Recent examples described here illustrate the importance of monitoring the global wildlife trade.

EDITORIAL

As is the case with many other types of crime, illicit wildlife traders are many steps ahead of those of us monitoring and researching the trade. Populations of many species of animals have been greatly diminished or extirpated by trade before conservationists are even aware of the extent or impact of the overexploitation, or before steps to provide legal protection or other conservation interventions are made. It is key that negative trends detected through trade monitoring are made available to the broader conservation community, enforcement agencies, decision-makers and the public so that actions can be taken to slow, stop and reverse the trend.

Some claim that publishing such information may increase demand for the species in question. This notion is in most cases misguided although there are a few examples where publicity of the rarity of a species has actually increased the value and demand for it. However, this needs to be balanced with the benefits to be gained from drawing attention to the threats and conservation needs of a species so that the obstacles to tackling the trade can be identified and solutions found.

Take the Earless Monitor Lizard *Lanthanotus borneensis*, for example, a little-known reptile endemic to the island of Borneo. In 2014, through monitoring actions, TRAFFIC became aware of increased demand and availability of this species in the black market pet trade. It published a report on this emerging trade, highlighting the fact that unscrupulous traders were illegally collecting the species and smuggling it to Japan and the EU, and called for action to be taken. Despite the species being totally protected in all three countries that share the island of Borneo (Brunei, Indonesia and Malaysia), it is not listed in CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) and importing countries are therefore not obliged to take action against the trade. As a direct result of the report's findings, steps are now being taken to list the species in the CITES Appendices and it is hoped that effective international co-operation to regulate this trade can soon be achieved.

While CITES plays an important role in encouraging and facilitating co-operation in international efforts to regulate illegal wildlife trade, a CITES listing cannot always ensure that trade is sustainable, particularly where enforcement is lacking. It is therefore vital that both

importing and exporting countries are kept abreast of areas of conservation concern so as to aid source countries in their efforts to protect their wildlife, regardless of whether the species is listed in CITES.

Continual monitoring and highlighting of important and emerging issues is paramount not only to identifying and prioritizing matters of concern, but also essential to track and monitor progress, successes and failures. Monitoring the trade in the wildlife market of Mong La, Myanmar, on the border with China, for example, has yielded alarming findings—a market that once typically only carried regional species has now become a hub for trade in illicit African wildlife products, such as ivory, rhinoceros horn and hippopotamus teeth. Reports by TRAFFIC and others on the findings and trends observed in this market over time have been covered extensively in the media, and as a result, Mong La market has become a priority for conservation action.

Regular monitoring of “legal” trade and trade records and volumes has led to the detection of one of the most frequent, high-volume and problematic forms of wildlife trafficking methods used—the trade in wild-caught species falsely declared as captive-bred. Literally millions of animals are currently traded around the world, declared as captive-bred, with little or no requirements to prove these claims. Laundering of wild-caught animals in this manner is not only a threat to the conservation of a multitude of species, but it is also undermining the efforts and credibility of businesses that truly are engaged in legal commercial breeding.

A number of case studies highlighting the large-scale laundering of wild-caught animals into the global market have been published, raising the issue as a major concern, and priority for action. A report by TRAFFIC arising from the monitoring of trade in wildlife declared as captive-bred focused on the previously unknown Short-beaked Echidna *Tachyglossus aculeatus*. This species is difficult to breed in captivity, and the trade in supposedly captive-bred individuals sparked concern amongst zoo communities around the world, who subsequently began reviewing their policies regarding the acquisition of specimens declared as captive-bred, taking major steps to eliminate this form of fraud, including through the development of forensic tools and methodologies.

The issue continues to be addressed and championed by prominent organizations, such as the World Association of Zoos and Aquariums (WAZA), which recently released a statement calling for due diligence among their members globally when obtaining wildlife declared as being captive-bred. Efforts are also under way to add restrictions and policies to regulations that allow for the trade in captive-bred wildlife, calling for proof of parentage to be provided to the importing countries.

The drive to combat unsustainable and sometimes illegal wildlife trade is far from complete, and it is essential that evidence-based findings continue to be disseminated widely and used as a basis for shaping conservation action. Basic monitoring, be it of wildlife markets, online, or of trade statistics, is integral to the global effort to ensure that wildlife trade is not a threat to the conservation of nature.

Chris R. Shepherd, Regional Director—Southeast Asia, TRAFFIC. E-mail: chris.shepherd@traffic.org

SHALEEN ATRE has been appointed Programme Officer, Research and Communications, at the India office, with effect from February 2015.



CAROLYN CAUSTON was appointed TRAFFIC's Development Manager in January 2015, and is based in Cambridge, UK.

JUMAPILI CHENGA, Programme Officer at the Tanzania office since 2008 left TRAFFIC at the end of February 2015.

AMAR NATH CHOUDHARY was appointed Programme Officer (Data Analysis) at the India office with effect from October 2014.

MOHNISH KAPOOR was appointed Senior Programme Officer at the India office with effect from October 2014.

KATALIN KECSE-NAGY has been appointed Acting Regional Director of the Europe office with effect from 1 April 2015, while STEPHANIE VON MEIBOM is on maternity leave.

JOANNE LOO has been appointed to the role of Senior Manager, Office Administration, in the Petaling Jaya office in South-east Asia.

SIZWILE SIBINDI joins TRAFFIC's East/Southern Africa's regional office in Pretoria, South Africa, as the Finance and Administration Officer.

PENNY WALLACE has been appointed Wildlife Crime Initiative Support Officer with effect from February 2015 to assist with co-ordination and delivery of TRAFFIC's work on illegal wildlife trade. Penny is based in Cambridge, UK.

MADOLON WILLEMSEN was appointed Head of TRAFFIC's Viet Nam office, in Hanoi, in January 2015.

XU LING returned to work at TRAFFIC's China office, as Senior Programme Officer, with effect from February 2015. She resumes an earlier period of eight years as part of this team.

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THANK YOU!

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We also wish to thank our partners, WWF and IUCN, and the many other individuals, foundations, government agencies and companies whose support makes TRAFFIC's work possible.

The 181st CITES Party: the European Union

The European Union (EU) becomes the 181st Party to CITES. The EU is a regional economic integration organization (REIO) with 28 Member States, all of which are already a Party to CITES in their own right. The EU becomes the first REIO to accede to the Convention since the coming into effect of the Gaborone amendment to the text of the Convention on 29 November 2013. This amendment permitted REIOs, constituted by sovereign States which have competence in respect of the negotiation, conclusion and implementation of international agreements in matters transferred to them by their Member States and covered by the Convention, to accede (see article on REIOs in the last issue of the *TRAFFIC Bulletin* (26(2))).

The Convention will enter into force for the EU on 8 July 2015.

http://cites.org/eng/eu_181st_party

TRAFFIC IS ON THE MOVE...

In late December 2015, TRAFFIC's headquarters office will be relocating to refurbished premises, renamed the David Attenborough Building, in central Cambridge. TRAFFIC is a part of the Cambridge Conservation Initiative (CCI), a unique collaboration between the University of Cambridge and leading conservation organizations, including BirdLife International, British Trust for Ornithology (BTO), Fauna and Flora International (FFI), IUCN, the International Union for Conservation of Nature, the Royal Society for the Protection of Birds (RSPB), Tropical Biology Association (TBA), and UNEP-World Conservation Monitoring Centre (WCMC), thus forming the world's largest hub of conservation organizations.

Contact details will be announced in the October edition of the *TRAFFIC Bulletin*.

THE KASANE CONFERENCE ON THE ILLEGAL WILDLIFE TRADE: TIME FOR ACTION

Heads of State, ministers and officials from 31 governments met in Botswana, on 25 March 2015 and adopted crucial new measures to help tackle the unprecedented surge in illegal wildlife trade. The Kasane Conference on the Illegal Wildlife Trade was hosted by President Ian Khama of Botswana in the town of Kasane on the edge of the Chobe National Park, and delegates ended the meeting with agreement on the Kasane Statement—an ambitious pledge of fifteen commitments to take action on demand reduction, strengthening the legal framework for tackling money laundering linked to wildlife crime, tougher law enforcement, and engaging communities in protecting their wildlife resources.

The Conference was a follow-up to an earlier high-level conference held in London on 13 February 2014, aimed at injecting a new level of political momentum into efforts to combat the growing global threat posed by illegal wildlife trade to species such as elephants, rhinoceroses and Tigers. That Conference adopted the 25-point London Declaration, with ambitious measures agreed to eradicate the market for illegal wildlife products; strengthen law enforcement efforts and ensure effective legal frameworks and deterrents are in place; and promote sustainable livelihoods through positive engagement with local communities.

President Khama said in his welcoming address that the Kasane Conference provided countries with another opportunity to share experiences in combating wildlife crime. “It also presents a chance to re-dedicate ourselves to eradicate the scourge. The time for talking has long passed, this is the time for real action,” he stressed.

At Kasane, governments reported on their progress in implementing the London Declaration, including increased levels of law enforcement action, improvements in domestic wildlife-related legislation and regional co-operation in curbing poaching. Most governments appear to have taken their commitments last year seriously. Many demonstrated in Kasane how they are turning the commitments in the London Declaration into tangible actions on the ground and strengthening their resolve to see the job through.

However, the situation with illegal wildlife trade remains dire. In a presentation to the Conference, TRAFFIC highlighted our most recent research which clearly indicates levels of illegal ivory trade rising sharply over recent years and continuing largely unchecked. More worryingly, an increasing number of large-scale ivory seizures point to greater involvement of organized crime. Similarly, the situation for rhinoceroses continues to deteriorate, last year being the worst on record with around 1300 animals killed continent-wide. The scale of illegal trade in a wide range of less-celebrated species of animals

and plants—from tortoises and pangolins to abalone and precious woods—is also staggering, with the conservation losses felt across the globe.

What is clear from research and analysis over recent years is that wildlife crime is getting more organized and more sophisticated. To keep up with these developments, an equally sophisticated approach is needed in response, an approach based on an up-to-date theory of change grounded in experience from other fields of crime fighting—a holistic approach to increase the effort criminals have to make to succeed in this business, to increase the indirect risks they face and to reduce the rewards they can reap from wildlife crime.

The Kasane Statement adopted in March hopefully will provide the innovative approaches needed. For example, countries agreed to focus on tackling money laundering and other financial aspects of wildlife crime. This commitment to “follow the money” is a huge, innovative step that provides a mechanism to bring down the trafficking kingpins by hitting them where it hurts—in their pockets. It should also help to stamp out the corruption that so often undermines enforcement actions.

In addition, the Kasane Statement calls for a strengthened engagement with the relevant local community groups and the appropriate retention of benefits from wildlife resources by local people. Participants also agreed to engage further with the private sector, including logistics and transport companies, which are uniquely placed to stem the flow of illicit wildlife products but which often find themselves an inadvertent vector for wildlife trafficking. At the consumer end of the trade chain, extra impetus was injected into understanding the motivations and behaviour of users of illegal wildlife products—learning lessons from past successes and applying strategic approaches to dissuade buyers from participating in the illegal wildlife market.

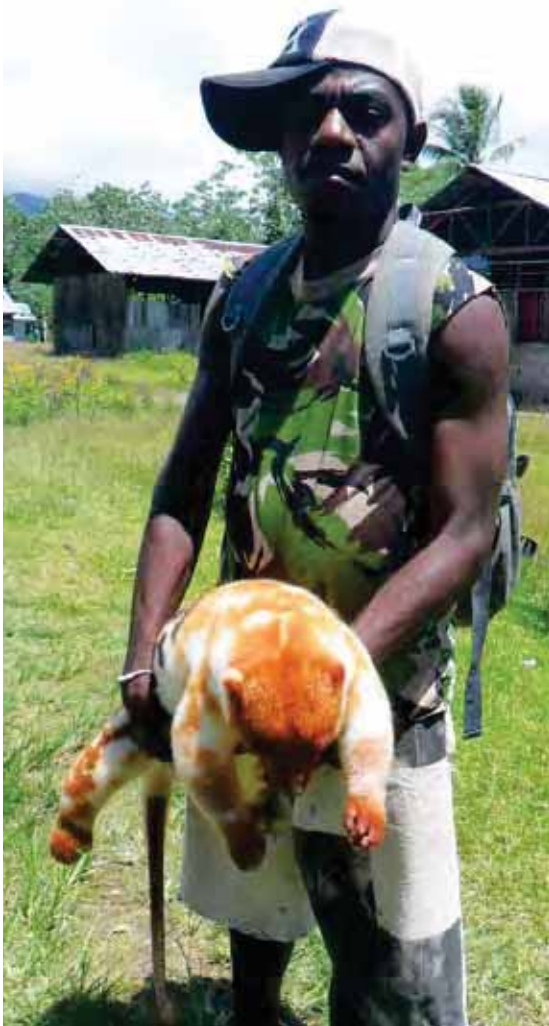
A year on from the London Conference, the tide is slowly turning against wildlife criminals, with important battles being won as remedial efforts increase in quality and quantity. However, the picture overall remains deeply worrying. The actions outlined in the Kasane Statement can provide solutions but governments will need to continue scaling up their efforts and work together to turn these actions into concrete results. Further, the impact will not be seen overnight—the war against illegal wildlife trade will only be won if there is sustained action over a number of long and probably difficult years. But it can be won.

Sabri Zain, Director of Policy, TRAFFIC

E-mail: sabri.zain@traffic.org

Steven Broad, Executive Director, TRAFFIC

E-mail: steven.broad@traffic.org



FREDDY PATTISELANNO

Spotted Cuscus *Spilogale maculatus*, a species native to West Papua and hunted for local consumption.

Middlemen on motorbikes, transporting a deer that they have purchased from the villages connected by roads along the coast of Amberbaken District.



FREDDY PATTISELANNO

Wildlife products are valuable commodities, and wild meat is sometimes considered to be of premium value owing to its high value per unit weight compared with other forest products (Williamson, 2002).

Across the humid tropics therefore, millions of people rely on wildlife hunting for an alternative source of family revenue (Bennett, 2002; Milner-Gulland *et al.*, 2003).

There have been few studies on wildlife hunting in West Papua, Indonesia. What has been understood thus far is that indigenous hunting across West Papua has long been practiced for subsistence purposes, with a strong connection to cultural rites and mostly using traditional hunting techniques (Petocz, 1994; Pattiselanno, 2006; Pattiselanno, 2008). However, despite the importance of subsistence hunting to local communities, and its impact on the forest biodiversity in New Guinea, there has been limited research into the various reasons behind wild animal exploitation, and its importance in the household economy of the people of this area is poorly documented.

COMMERCIALIZATION OF HUNTING IN THE

Between 2011 and 2012, the authors undertook a study on indigenous hunting along the coast of Bird's Head Peninsula with the aim of observing its contribution to local livelihoods. With limited access to resources within the marine protected areas, most households in the study sites along the coast are farming families who rely on hunting for both food and sale to support their livelihoods. It was found that there is a strong relationship between the purpose of hunting and target species hunted along the coast. In common with most parts of the world where wildlife hunting takes place, hunters in West Papua prefer large-bodied hunting prey. These species are the most important source of income where trade has been documented (Fa and Brown, 2009; Robinson and Bennett, 2000), apparently because of the large amount of meat each animal provides. The principal species targeted are deer *Cervus timorensis* and wild pig *Sus barbatus*, introduced species which, in most cases, are the predominant animals on sale in the wild meat markets.

Hunters interviewed indicated that they hunt to meet the demand for wild meat in the nearest towns (Prafi, Manokwari and Sorong). However, the harvested meat may also be transported beyond West Papua. Wholesalers from other parts of Indonesia such as from Makassar off southern Sulawesi and Buton island of central Sulawesi bought wild meat from West Papua and transported it by boat for sale in Sulawesi.

The authors traced the trade across eleven sampled villages. They found that wild meat is sold fresh, though may sometimes be frozen depending on the distance to the market. The price per kilogramme ranged from USD1.5 to USD2.0 for wild pig and USD2.0 to USD2.5 for deer meat (venison). The movement of meat from the villages to Prafi or Manokwari involved transportation along the coast and resulted in a price per kilogramme of meat purchased from middlemen of USD5/kg, or twice the price at its source.

These observations suggest that wild meat sold in urban markets is likely to have travelled some distance from its source after being sold to middlemen and therefore has a higher price (Damania *et al.*, 2005). Although, there is no formal market for wildlife products, a survey by Conservation International Indonesia Program indicates that several bird species and wildlife products such as antler and deer jerky (dried meat) were traded in traditional markets in Manokwari and Jayapura (Suryadi *et al.*, 2004).

From the information obtained from 33 hunters who agreed to record their hunting returns over a period of seven months, some 300 animals were taken from the forests during this period. It was observed that most of these were deer (50%) and wild pig (42%), with native species making up the rest. The authors noted that the native species hunted along the coastal sites of West Papua include Dusky Pademelon *Thylogale brunii*, Grizzled Tree Kangaroo *Dendrolagus inustus*, Spiny Bandicoots *Echymipera kalubu*, Spotted Cuscus *Spilocuscus maculatus*, Northern Cassowary *Casuarius unappendiculatus*,

BIRD'S HEAD PENINSULA, WEST PAPUA

Papuan Hornbill *Rhyticeros plicatus* and Pinon Imperial-pigeon *Ducula pinon*. It was apparent that these species are less frequently killed as they are only consumed by local people. It is also important to note that there are religious taboos surrounding wild meat consumption, especially among the Muslim population.

The findings presented here, and other factors such as improved access between villages, increasing population density and the availability of alternative protein sources, suggest that currently there is a shift from subsistence-based to market-based hunting. If the road development programme currently under way in Papua and West Papua provinces reaches 2700 km, as proposed (Anggraeni and Watopa, 2004), there will be two possible impacts: first, the spread of roads into undisturbed forest, resulting in forest fragmentation and easier access for hunters and traders to hunt (Robinson and Bennett, 2000; Milner-Gulland *et al.*, 2003), and subsequently to sell wild meat; this, in turn, will result in an increase in harvest rates and income opportunities (Bennett, 2002; Milner-Gulland *et al.*, 2003). Secondly, opening up some villages along the coast with roads will allow greater access to the nearest town to sell agricultural products and to look for alternative sources of animal protein. Bennett and Rao (2002) explain that roads allow people to make a dietary switch from wild to domestic forms of protein.

It is therefore also important to undertake research into how road access may have an impact on wildlife trade along the coast of Bird's Head Peninsula, and to determine the impact of such trade on wild populations and whether current levels are likely to be unsustainable.

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References

- Anggraeni, D. and Watopa, Y. (2004). *Kajian singkat Konservasi dan Ekonomi (RACE). Suatu usaha untuk memadukan kepentingan konservasi dan pembangunan ekonomi di Tanah Papua*. Indonesia: Conservation International.
- Bennett, E.L. (2002). Is there a link between wild meat and food security? *Conservation Biology* 16 (3):590–592.
- Bennett, E.L. and Rao, M. (2002). Wild meat consumption in Asian tropical forest countries: Is this a glimpse of the future for Africa? In: Mainka, S.A. and Trivedi, M. (Eds.), *Links between biodiversity conservation, livelihoods and food security: The sustainable use of wild species for meat*. Pp.39–44. Switzerland and Cambridge, UK: IUCN, Gland.
- Damania, R., Milner-Gulland, E.J., and Crookes, D.J. (2005). A bioeconomic analysis of bushmeat hunting. *Proc Biol Sci*, 272:259–266.
- Fa, J.E. and Brown, D. (2009). Impacts of hunting on mammals in African tropical moist forests: a review and synthesis. *Mammal Rev.* 39(4):231–264.
- Milner-Gulland, E.J., Bennett, E., Abernethy, K., Bakarr, M., Bodmer, R., Brashares, J., Cowlshaw, G., Elkan, P., Eves, H., Fa, J., Peres, C., Roberts, C., Robinson, J., Rowcliffe, M. and Wilkie, D. (2003). Wild meat: the bigger picture. *Trends in Ecology and Evolution* 18(7):351–357.
- Pattiselanno, F. (2006). The wildlife hunting in Papua. *Biota XI* (1):59–61.
- Pattiselanno, F. (2008). Man-wildlife interaction: Understanding the concept of conservation ethics in Papua. *Tigerpaper* 35:10–12.
- Petocz, R.G. (1994). *Mamalia Darat Irian Jaya*. Jakarta: WWF Indonesia Program dan PT. Gramedia Pustaka Utama.
- Robinson, J.G. and Bennett, E.L. (Eds) (2000). *Hunting for sustainability in Tropical Forests*. New York: Columbia University Press.
- Suryadi, S., Wijayanto, A., and Wahyudi, M. (2004). *Survey pasar/monitoring perdagangan hidupan liar di Kabupaten Jayapura dan Manokwari*. Conservation International Indonesia dan Seksi Konservasi Sumberdaya Alam Wilayah Manokwari, Jakarta.
- Williamson, D. (2002). Wild meat, food security and forest conservation. In: Mainka, S.A. and Trivedi, M. (Eds.), *Links between biodiversity conservation, livelihoods and food security: the sustainable use of wild species for meat*. Pp.19–22. Switzerland and Cambridge, UK: IUCN, Gland.

Freddy Pattiselanno, Universitas Negeri Papua, Manokwari 98314, West Papua, Indonesia; School of Marine and Tropical Biology, James Cook University, Cairns, Queensland 4878, Australia.
E-mail: freddy.pattiselanno@my.jcu.edu.au
Benja V. Mambai, WWF Papua Program
E-mail: bmambai@wwf.or.id



DIEGO M. GARCÉS / WWF

GROUNDBREAKING TIMBER INITIATIVE TAKES ROOT

In December 2014, the joint collaboration between TRAFFIC, WWF Colombia and IUCN-South America, concluded the three-year project titled “Supporting the implementation of the EU FLEGT Action Plan¹ in South America: Catalysing initiatives to control and verify the origin of timber in trade and support related improvements in forest governance” (hereafter the “FLEGT Project”).

The FLEGT Project, funded by the European Commission, aimed to create an enabling environment and increase capacity in South America for developing initiatives that reduce illegal logging and bring timber trade in line with EU FLEGT objectives, with a particular focus on trade to the EU from Brazil, Colombia, Ecuador and Peru (see *TRAFFIC Bulletin* 25(2)). Along with this overarching goal, the FLEGT Project had the following specific objectives:

- to ensure that key stakeholder groups within four selected countries have a clear understanding of the intent and content of the EU-FLEGT Action Plan, the opportunities it provides, and pathways for its implementation;
- to foster a clear understanding in key European forest stakeholders on the complexity of forest governance in South America; and
- to establish a benchmark against which to measure changes in forest governance, including levels of illegal logging and trade, catalysed by FLEGT and other initiatives, in the target countries.

The FLEGT Project targeted a wide range of actors, in particular, State actors represented by government departments and agencies in the project countries, EU trade associations, timber traders, and competent authorities; and non-State actors including forest dependent peoples’ organizations and civil society organizations concerned with forest governance and trade.

In order to achieve these objectives, several key activities were undertaken. Baseline information was collected relating both to the understanding of all project stakeholders of the elements that make up FLEGT, and to the understanding of the current situation in the four South American countries as to the status of trade and management of timber and timber products. This baseline further provided a starting point from which related changes could be measured during the project period and beyond.

Baseline information was collected through structured research—questionnaires and interviews to assess knowledge on governance-related issues, as well as literature and data analysis to review management and trade. Several outputs were produced including “scoping studies” of national management and trade operations, and timber product trade from the target countries to the EU. These documents provide a basis for the public sector to define improvements to existing management systems and processes; for the private sector to streamline company processes and, in the EU, to have greater clarity on processes and trade dynamics that inform “Due Diligence” requirements; and for indigenous groups to have improved understanding of systems that impact forest governance.

Building on this initial information, activities were developed to identify synergies between FLEGT and other forest-related policies being implemented in the four countries. The identification of current synergies allow targeted efforts to be made where related policies or practices can add value to improve the effectiveness of initiatives rather than duplicate or, worse, conflict. This process was strengthened through a multi-stakeholder meeting of regional experts that identified areas of common ground between FLEGT and related initiatives that would benefit from closer mutual engagement.

Baseline information was also used to establish a suite of indicators that could be used to measure changes in forest governance. Also through a multi-stakeholder process, a framework was developed that used existing models for assessing changes in forest governance, based predominantly on the World Bank PROFOR/FAO model, adapted to regional conditions. Indicators common to all countries, as well as national specific indicators, were further identified by national and regional experts, and initial measurements taken. The results of the work set the basis for a repeatable methodology for measuring changes in forest governance in Brazil, Colombia, Ecuador and Peru. Forest experts in these countries expressed interest in furthering the implementation of a forest governance methodology, and follow-on work in Peru has already been initiated.

¹EU Forest Law Enforcement Governance and Trade Action Plan. See <http://www.euflegt.efi.int/flegt-action-plan/>; ²See <http://gfm.panda.org/resources/tools/?202483/Framework-for-Assessing-Legality-of-Forestry-Operations-Timber-Processing-and-Trade>

Another particular focus was to work with indigenous groups to develop an online e-learning course, aimed particularly at indigenous Amazonian representatives. The course emphasizes the potential of FLEGT to reward improvements in forest governance, increase the competitiveness of timber coming from areas applying FLEGT principles, and to support national management efforts, which should result in benefits of reduced trade in illegally sourced timber. Representatives were trained in the use of the course in order to train members of their own communities about opportunities to improve forest governance at the local level. The e-learning tool was showcased at the project-hosted conference on “Governance, Legality Verification Systems and Competitiveness in the Latin American Forest Sector” held in Quito (see below) and received a very positive reception, with interest and recommendations from many participants to adapt the tool to various forest governance scenarios in non-Amazonian areas of Latin America.

To complement the supply side of the project, work was conducted to support the demand side of the FLEGT Action Plan. This was undertaken in the EU, focusing mainly on Belgium, Germany, the Netherlands and the UK. Work here focused on providing support to the private and public sectors, particularly to support implementation and enforcement efforts related to the EU Timber Regulation “Due Diligence” requirements, focusing on timber trade from South America. This support was provided through the development of briefing documents based on the project outputs from South America in combination with workshops aimed at providing the private sector

“Operators” with tools with which to implement “Due Diligence” when placing timber from South America, and elsewhere, on the EU market. These tools include the use of the TRAFFIC/GFTN (WWF Global Forest & Trade Network) legality frameworks and definitions² which are increasingly being used as reference material by both public and private sector actors for conducting relevant checks on the legal harvesting and trade of timber products.

A preliminary external evaluation of the project has suggested that the project has met the three stated objectives. These objectives were reached through a holistic approach, with activities complementing each other and adding value to the overall project goal—a good example of the whole project being greater than the sum of its parts. The key approach for all these activities was through effective and inclusive communication. Where appropriate, multi-stakeholder dialogues were implemented to allow a range of opinions and thoughts to be expressed and taken into account, particularly those not commonly heard, such as indigenous groups.

This was demonstrated most effectively at the conference on “Governance, Legality Verification Systems and Competitiveness in the Latin American Forest Sector” which engaged 140 regional stakeholders, as well as public and private sector representatives from 10 Latin America countries and from demand side markets such as the EU and the USA. The conference, which aimed at an exchange of experiences and lessons learnt, pulled together the different strands of FLEGT-related activities, resulting in a policy brief that intends to form the basis for future collaboration and action for eliminating the trade in illegal timber and ensuring the sustainable management of forests and their resources. Such was the success of the conference that calls were made by participants for further conferences to be convened biennially to continue the discussions and dialogue established at the Quito Conference, and push forward with the agenda for improved forest governance in Latin America.

TRAFFIC would like to acknowledge the valuable and substantial inputs by implementing partners on the project, WWF Colombia and IUCN-South America. Financial support to the project was provided by the European Commission DG DEVCO, with further support provided by GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit) (Synergies work) and the British Embassy, Quito (Conference proceedings). TRAFFIC would also like to acknowledge conference implementing partners for their financial and technical support: FAO FLEGT Programme, the European Forestry Institute EU FLEGT Facility, IUCN-Central America, World Resources Institute, Ministry of Environment, Ecuador, and the Corporation of Sustainable Forest Management. And finally, acknowledgements are due to all public, private, indigenous and other civil society groups and individuals that participated in the project.



TRAFFIC
Lorena Tapia (left), at the time Minister of Environment for Ecuador, speaking at the opening of the inaugural forestry forum “Governance, Legality Verification Systems, and Competitiveness in the Latin American Forest Sector”, October 2014.



T. OSBORN / TRAFFIC
Logs waiting to be processed at Botrosa hardwood plywood mill, Ecuador.

*Kristina Rodina, Programme Support Officer, TRAFFIC
 E-mail: kristina.rodina@traffic.org
 Thomas Osborn, European Programme Co-ordinator,
 TRAFFIC. E-mail: tom.osborn@traffic.org*



BEN HERON / PUJKA HERBS

EMPOWERING COMMUNITIES,
PROMOTING FAIR TRADE *and*
ENSURING CONSERVATION:

FairWild certification in India

A report on the progress of FairWild certification at two sites in India which has resulted in the first company in the country to be awarded a FairWild certificate.

The operation involved in the collection and processing of the fruit of two species (*Terminalia bellirica* and *T. chebula*), which are ingredients of Triphala—one of the most important Ayurvedic preparations—was recently awarded FairWild certification at two sites in India. The story of this first FairWild certification success in India provides an example of how such a marketing tool can act as a key facilitating mechanism in a project designed to precipitate positive conservation outcomes through the improvement of livelihoods.

Certification has proven to be a valuable means of securing market access and adding value to resources. It also offers potential for encouraging wider community ownership, building capacity, ensuring a more equitable distribution of benefits, and providing an educational tool for developing understandings of the nature, value and proper use of these resources. FairWild certification is more rigorous compared to other certification schemes as it provides specific guidance on sustainability of wild harvesting and trade. The FairWild certification of *T. bellirica* and *T. chebula* has been achieved through a carefully developed programme of training and supply chain development as part of a project initiated by an Indian NGO, the Applied Environmental Resource Foundation (AERF), working with rural communities in two locations in the Western Ghats, a global biodiversity hotspot. It has been designed and implemented in partnership with the Durrell Institute of Conservation and Ecology, in the School of Anthropology and Conservation, at the University of Kent, and Pukka Herbs Ltd., UK, through a project supported by the UK's Darwin Initiative. Additional funding for the project was provided through a joint TRAFFIC-AERF initiative supported by the Keidanren Nature Conservation Fund (KNCF).

AERF identified candidate project sites in 2011 and established good relationships with key members of the local communities, including *Mahadev Koli* tribal people living in the Bhimashankar Wildlife Sanctuary in the North Western Ghats, and, 400 km further south, marginal farmers (farmers cultivating—as owners, tenants or sharecroppers—agricultural land up to one hectare) in the Sangameshwar block of Ratnagiri District. Both groups were lacking sustainable harvesting skills and market access, hence limiting their range of economic opportunities. Through the Darwin Initiative and KNCF funding, AERF has since implemented resource assessments of *T. bellirica* (primarily within sacred groves in the south), and of *T. chebula* (in large wild groves of this species in the north), providing a sound basis for management of the harvest. Funding was also used to develop and purchase equipment for the drying and processing of fruits, thereby enabling



AMIT KOTIYA / TRAFFIC

◀ ▲ Collectors of *Terminalia chebula* (*Haritaki*) fruits, Dhage Wadi village, Bhimashankar Wildlife Sanctuary, North Western Ghats with (above) community members.

considerable value to be added to the front end of the supply chain. However, it was in pursuing FairWild certification that the most important aspects of the project to date have been achieved. Parties engaged in a careful process of consultation and discussion with collectors and buyers of the products, designed local access and benefit-sharing agreements and helped set up the organizations to oversee the implementation of these agreements: e.g. local committees of registered collectors and knowledge holders. Partners further formulated and delivered a training programme for those engaged in collection and processing. Also, a company, Nature Connect, has been set up specifically to co-ordinate the trade and business relations, promote the products, and develop the business plans. The long-term purchase agreement has been secured between Nature Connect and Pukka Herbs Ltd, which includes the provision of the guaranteed payment of a premium price. Nature Connect in turn has entered into a long-term purchase contract with collectors from both sites and carries out business activities on behalf of communities.

The organic certification for *Terminalia* spp. harvesting sites was achieved in September 2014, followed by FairWild certification in February 2015, and the first FairWild-labelled Triphala products are expected to be marketed in the UK in 2015. The project in North Western Ghats and its links to Pukka Herbs resulted in Pukka Herbs winning the prestigious 2degrees *Sustainability Champions Award* in July 2014, allowing the company to communicate more widely the conservation and economic impacts of the project and the FairWild Standard. The project partners are now further extending the work into



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◀ *Terminalia chebula* fruits, known as *Haritaki*, drying in the sun. Dhage Wadi village, Bhimashankar Wildlife Sanctuary, North Western Ghats.

The organic certification for harvesting sites of *Terminalia* spp. was achieved in September 2014, followed by FairWild certification in February 2015; the first FairWild-labelled Triphala products are expected to be marketed in the UK in 2015.

the sustainable harvesting and trade in other medicinal plant species, including *Tinospora cordifolia*, which is used to treat a range of ailments including Type 2 diabetes, high cholesterol, gout, rheumatoid arthritis, lymphoma, allergies and peptic ulcers.

The approach employed on this project, which has used the FairWild certification process to build dialogue and collaboration between stakeholders to create a complete and reasonably robust supply chain, offers considerable promise for the conservation of these tree species, their habitats, and the associated biological diversity. For example, of 33 nests of the Great Hornbill *Buceros bicornis* and Malabar Pied Hornbill *Anthracoceros coronatus* recorded in one of the project site areas, 23 are located in *T. bellirica* hollows. Hornbills are well-known as seed dispersers of rare species such as *Antiaris toxicaria*, *Strychnos nux-vomica*;

further, because the *T. bellirica* fruits are gathered using passive netting methods, the livelihood benefits accruing to the local communities do not conflict with the existence of these birds and also respect the traditional conservation practices that are applied in sacred groves. The felling of these massive trees to provide structural timber and firewood, which has been practised widely in recent times, most certainly does.

Over the coming years, the project will continue to support the

certification process, strengthening resource management and additional requirements for social and economic sustainability so that the sustainable harvesting business becomes economically viable over the longer term.

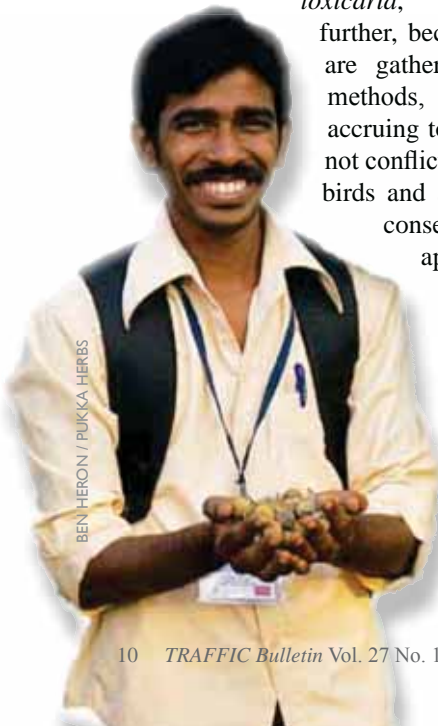
The process described here for the sustainable use of natural resources may offer a model for others to follow. The FairWild Standard will hopefully enable other species to be brought into value chains in a manner that supports peoples who are amongst some of the most vulnerable in the modern world and ensures the sustainability of wild-harvesting. However, it should also be noted that little of what has been achieved to date would have been possible without significant project funding from the KNCf and the Darwin Initiative, and the commitment and contributions by the project partners and the communities themselves.

Ian Bride, Durrell Institute of Conservation and Ecology (DICE), School of Anthropology and Conservation (SAC), University of Kent, UK. E-mail: I.G.Bride@kent.ac.uk

Jayant Sarnaik, Applied Environmental Research Foundation. E-mail: jayantsarnaik@aerfindia.org

Ben Heron, Pukka Herbs Ltd
E-mail: ben.heron@pukkaherbs.com

◀ **Collector of fruits of *Terminalia bellirica* (bibhitaki).** The astringent fruits of this species and of *T. chebula* (above) are the source of some of Ayurveda's most valued ingredients in medicines to treat stomach disorders.



BEN HERON / PUKKA HERBS

Growing the FairWild Standard

In 2013, we shared news from the FairWild certification scheme—stories of wild plant collection companies working hard to put principles of sustainable harvesting, social responsibility and fair trade into practice. This article shares progress with industry adoption of sustainable sourcing practices; developments with the certification framework itself; and further news of initiatives supporting implementation of FairWild principles, including through driving regulatory and policy change.

Sustainable sourcing—industry rising to the challenge

The number of FairWild products on the market has continued to grow. In 2014, UK manufacturer Pukka Herbs rolled out use of certified ingredients across its range of herbal teas, and Neal's Yard Remedies also introduced a new "Refreshing Tea" with FairWild liquorice. Combined with Traditional Medicinals' range of medicinal teas, FairWild ingredients are starting to make quite an impact in this sector. Other recent milestones include the first certification project in South Asia, as reported in this issue (see pages 8–10). At the time of going to press, 12 operations were certified, including the new producers in India and Georgia.

FairWild principles have been introduced through industry meetings in important source and consumption regions for wild-collected ingredients, including workshops in Japan, China, Germany and the UK. Through events and dialogue, FairWild Foundation and partners aim to bring trade chain actors together, to share experience and foster shared commitment to sustainability.

One such session was held in February 2015 at the BioFach organic trade fair in Germany. With a focus on "building sustainable supply", certification scheme members such as the Organic Herb Trading Company (OHTC) shared challenges faced in implementation, as well as advice on how to engage suppliers. The event contrasted with that of the previous year, which explored opportunities to market FairWild and engage consumers with stories of sustainable harvesting.

A number of new tools and platforms are being developed to support these efforts, such as the *Traditional and wild* toolbox developed as an outcome of TRAFFIC's project in Central Europe. The interactive website continues to attract a lot of visitors.

As industry awareness builds, the efforts of companies rising to the challenge are being acknowledged. In July 2014, Pukka Herbs won a second 2degrees *Sustainability Champions* award, thanks to their efforts in supply chain management. Neal's Yard Remedies also picked up an award at the Sustainable Cosmetics Summit in Paris, October 2014, taking second place in the *Sustainability Pioneers* category for progress in supply chain certification, as well as carbon-neutral retailing.

FairWild certification: evolution of the framework

The certification system itself continues to improve. In July 2014, FairWild Foundation published new Trading Rules and revised Labelling Rules, covering:

- Clarification of chain-of-custody requirements
- Fair trading obligations for first buyers of ingredients
- Introduction of a Trader Registration system
- Revision of labelling rules on use of the FairWild® mark

The new Rules build on experience gained since the start of certification operations in 2007 and provide a sound basis for future expansion of the scheme. To help implement FairWild on the ground, guidance manuals have also been published on Social and Fair Trade aspects, and Species-Area Management Planning for Low Risk species.

Frameworks and actors for sound resource management

The FairWild Standard and certification system is proving a valuable framework by which to verify sustainable production practices undertaken by the private sector on a voluntary basis. But the responsibilities of the resource users are only one part of the story. For wild harvest to be sustainable and well managed, an overarching framework for resource management needs to be in place, with the responsibilities of all parties clearly articulated.

The FairWild principles have proved a source of inspiration in establishing working models at different scales, ranging from local, national to international. In Viet Nam, a community-based initiative is providing technical support to harvesters, fostering links with responsible industry partners in Hanoi and beyond, and examining the applicable policy, legal and regulatory framework together with local government agencies. With activities at site level under way since 2011, the project has recently been awarded a further three years of funding through the UK DfID/Defra Darwin Initiative.

At the industry sector level, a project in China is activating industry leaders, sector associations and government agencies to improve the sustainability of the traditional Chinese medicine (TCM) sector, as well as establishing site-level pilots of sustainable harvesting. Sector engagement is also planned in India, building on the successful pilot in North Western Ghats.

At national scale, a UNDP-GEF project introduced FairWild principles to aid the development of Morocco's national resource management plans for medicinal and aromatic plants, and provided direct support to the private sector in sustainable production, value-addition and access to export markets. In an initiative now under way in Kosovo, GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit) is supporting the government in the development of a national strategy for non-wood forest products. The FairWild Standard is being drawn upon in establishing the resource management framework, including regulations and a permit system for resource use.

International agreements also provide key mechanisms for improving the sustainability of trade. Experience in creating the FairWild Standard has also informed development of guidance for conducting CITES Non Detriment Finding procedures for perennial plants. The methodology has now been shared through workshops in Mexico and Viet Nam.

Notwithstanding the considerable pressures that wild plant resources worldwide still face, the initiation of such holistic approaches to improve the sustainability of harvest and trade—involving governments, civil society, industry and communities—bodes well for the plant populations and all those that rely on them.

Bryony Morgan, Medicinal Plants Programme Officer, TRAFFIC, and FairWild Foundation Executive Officer
E-mail: bryony.morgan@traffic.org

CBD: Updates of relevance to wildlife trade from CoP12 in Pyeongchang, South Korea

Two weeks of deliberations by 194 Parties and more than 3000 delegates to the 12th meeting of the Conference of the Parties (CoP12) to the Convention on Biological Diversity (CBD) in Pyeongchang, Republic of Korea (6–17 October 2014), left participants with mixed views on the outcomes. While the call for integration of biodiversity into the new sustainable development goals (SDGs) and multiple technical decisions taken to support the sustainable use of biodiversity were important advances, more financial and technical support is needed to prevent the unregulated and unsustainable exploitation of wild fauna and flora. The following agenda items relevant to work relating to wildlife trade and sustainable use of biodiversity were discussed.

Sustainable Use and Conservation of Plant Biodiversity

The Plant Conservation Report 2014 launched at CoP12 evaluated the progress made by Parties towards achieving the targets of the Global Strategy for Plant Conservation (GSPC). The report assesses the value of wild plants and the available information on their conservation status. A significant number of GSPC targets were found to show slow rates of progress towards delivery, in particular those related to *in situ* conservation and sustainable use. This raised concerns by Parties and conservation organizations and led to the expression of stronger commitments to capacity-building activities on plant conservation, as stipulated in CoP12 Decision XII/15. These will, however, need to be monitored and resourced to ensure implementation, and greater and urgent commitment of Parties to GSPC is needed if the ambitious 2020 Targets are to be met. TRAFFIC contributes to GSPC through supporting the implementation of the FairWild Standard and the uptake of the Timber Legality Framework. Case studies demonstrating practical implementation of the FairWild Standard were presented at CoP12 side events, including work with the traditional Chinese medicine industry in China, the sustainable value-chain of Ayurveda ingredients in India, and community plant resource management work in Viet Nam.

Sustainable Wildlife Management and Bushmeat

TRAFFIC has provided substantial input to this work stream of the Convention since 2008, including through the Collaborative Partnership on Sustainable Wildlife Management (CPW). The CoP12 Decision XII/18 on *Sustainable use of biodiversity: bushmeat and sustainable wildlife management* mandating the CBD Secretariat to work with the CPW to prepare technical guidance on the role of sustainable wildlife management in developing and implementing integrated sustainable wildlife management programmes was a positive move.

The Decision asks to strengthen financial and technical support to developing countries for the establishment and implementation of effective traceability, monitoring and control systems for bushmeat at the national and local levels and to help develop national and local wildlife surveillance systems to strengthen countries' biosecurity associated with bushmeat consumption and trade practices. Furthermore, enhanced co-operation was requested between national focal points of the CBD and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) on sustainable wildlife management, including bushmeat. The Decision encouraged Parties to develop, revise or update their regulatory systems to differentiate between subsistence uses and illegal hunting, and domestic and international trade of specimens of wild species and products, in a mutually supportive manner with CITES and other international obligations to avoid penalizing the countries and people using wildlife resources

for subsistence; to strengthen the capacity of indigenous and local communities to exercise their rights and responsibilities in relation to the sustainable management of wildlife; and to review, and, as appropriate, reform, incentives that might encourage unsustainable consumption of bushmeat. To support these essential steps aimed at mitigating the over-exploitation and illegal wildlife trade that strongly undermine efforts to achieve the Aichi Biodiversity Targets, and to garner further support from key partners, TRAFFIC and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) convened a side-event with targeted contributions from the governments of Viet Nam, Namibia, France and Germany, as well as from the CITES Secretariat and the Central African Forest Commission (COMIFAC) to showcase the need to strengthen capacities to combat poaching and the illegal wildlife trade.

Biodiversity and Health

The State of Knowledge Review on "Connecting Global Priorities: Biodiversity and Human Health", developed by a wide range of experts, and carried out as part of the joint collaborative work between the CBD Secretariat and the World Health Organization (WHO), was launched during the CBD CoP12. This is an important collaboration in times of increased need for attention to zoonotic diseases that are, *inter alia*, transmitted by wild meat consumption, and the recognition of dwindling medicinal resources from biodiversity and its further development was supported by CoP12 Decision XII/21 on *Biodiversity and human health*. This collaboration is complemented by the ongoing update of the WHO/IUCN/WWF/TRAFFIC Guidelines on the Conservation of Medicinal Plants. TRAFFIC has provided technical contributions to the development of the review, on the importance of ensuring wild plants harvested for health and livelihoods are managed sustainably and adequate benefit-sharing mechanisms are put in place. This work was carried out in collaboration with the Biodiversity and Community Health Initiative (BaCH).

Global Biodiversity Outlook Report

The CBD's Strategic Plan, which includes 20 Aichi Biodiversity Targets to be achieved by 2020, was agreed by CBD CoP10 in Nagoya in 2010. It represents the only global agenda tackling biodiversity loss, including the unsustainable and illegal exploitation of wild plants and animals. The fourth edition of the Global Biodiversity Outlook (GBO-4), released in Pyeongchang at CoP12, demonstrated that many countries are far from fulfilling the ambitions of the plan. CoP12 urged Parties to take comprehensive and urgent measures necessary to ensure the full implementation of the Strategic Plan for Biodiversity 2011–2020, including the corresponding National Biodiversity Strategies and Action Plans (NBSAPs). Further issues high on the CoP12 agenda included the coming into force of the Nagoya Protocol on Access and Benefit-Sharing, among others.

For more information on TRAFFIC's work on CBD and on CoP12 outcomes see www.traffic.org/cbd and www.cbd.int/decisions/cop/?m=cop-12, respectively.

TRAFFIC acknowledges WWF Japan, the Polifund measure implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ) and the European Union-China Environmental Governance Programme for their support directed towards specific side events co-organized by TRAFFIC and/or for their general support for TRAFFIC's expert participation during CBD CoP12.

Roland Melisch, Senior Director—Africa & Europe, TRAFFIC
E-mail: roland.melisch@traffic.org;
Anastasiya Timoshyna, Medicinal Plants Programme Leader,
TRAFFIC. E-mail: anastasiya.timoshyna@traffic.org



PETRA OSTERBERG

THE USE OF ANIMALS AS PHOTO PROPS TO ATTRACT TOURISTS IN THAILAND: A Case Study of the Slow Loris *Nycticebus* spp.

Petra Osterberg and K.A.I. Nekaris

Thailand is a popular holiday destination and Phuket is one of the country's tourism hot spots. Some tourism businesses on the island have a history of using animals as props for tourists to pose with for photographic souvenirs. Animals used for such purposes include, in particular, primates, with an increasing use of slow lorises *Nycticebus* spp. In order to quantify this trade, which is illegal, the authors conducted monthly surveys in Patong (the main tourist resort in Phuket) between September 2012 and March 2013 and discovered that between four and 12 lorises per survey were being used as photo props. Monthly tourist reports of wildlife used for tourist entertainment between 2008 and 2013 ($n=1374$) further demonstrate that the trade in lorises is growing, with up to 58% of reports comprising loris sightings towards the end of the study period. Three species, including two potential subspecies and one species non-native to Thailand, were identified in the photo prop trade. From 2012–2013, 67 slow lorises were removed from the streets of Phuket (either confiscated by or surrendered to the authorities, or purchased by tourists). Of 10 animals examined during the survey, six had had their teeth clipped to make them less sharp. Apart from the potential detrimental impact of such trade on slow loris populations in the wild, bringing lorises to the island's tourist areas is potentially contributing to the risks associated with the introduction of invasive species. Penalties for offenders are small and although authorities regularly confiscate animals, they lack basic knowledge of loris care, taxonomy and rehabilitation techniques. Widespread education and public awareness campaigns are urgently needed, as are the establishment of appropriate rehabilitation facilities.

BACKGROUND

The modern consumer culture, with its tendency to collect souvenir photographs to record memories of brief and often superficial encounters with wildlife (Bulbeck, 2004; Curtin, 2009) may well be an important contributing factor to the profitable trade using animals as photo props. Taking photographs using threatened wildlife specimens as a prop is common throughout South-east Asia, China, Dubai, Saudi Arabia, Russia, Eastern Europe and the Caribbean Islands, in particular (Right Tourism, 2013). The equally popular public dissemination of such photographs via social networking sites may lead to the public perception that such species are not threatened (Ross *et al.*, 2011, Schroepfer *et al.*, 2011, Nekaris *et al.*, 2013). In fact the photo prop trade is now being recognized as a growing threat for primate conservation (Caine *et al.*, 2011). Although numerous cases can be found of the threats of photographing primates, either illegally caught or in their natural habitat throughout their range (McGreal, 2011)—which can cause stress to the animals—no published studies have quantified this threat yet. Examples of species that should be investigated for the conservation impacts from such trade include slow lorises *Loris* spp. in India (Kanagavel *et al.*, 2013), the Philippine Tarsier *Carlito syrichta* in the Philippines (Yang-Martinez, 2011), Barbary Macaques *Macaca sylvanus* in Morocco (Maréchal *et al.*, 2011) and White-handed Gibbons *Hylobates lar* in Thailand (Osterberg *et al.*, 2014; Grey, 2012). Indeed Buckley (2012) states that the impact of rare animals used as souvenirs remains one of the least-studied areas of research into sustainable tourism.

Fig. 1 (top): Slow lorises from the photo prop trade, Thailand, displaying three morphological differences. Left to right: *Nycticebus coucang* (completely dark crown and neck); "*N. tenasserimensis*" (light fur with white neck); and *N. bengalensis* (no fur with white crown and neck).

INTRODUCTION

Thailand is one of Asia's most popular foreign holiday destinations, with a concurrent flourishing domestic tourism industry (Cohen, 2009). The country receives more than 10 million international tourists a year, of which more than three million travel to Phuket (Kontogeorgopoulos, 2004; Tourism Authority of Thailand, 2013). Thailand is often marketed in tourism magazines with glossy pictures of exotic wildlife (Cohen, 2009; Curtin, 2009). For many tourists, trekking through dense forests to glimpse wildlife is not an appealing, or practical, option (Cohen, 2009). Instead, hundreds of contrived artificial settings have been established with both domestic and foreign tourists in mind in order to offer close encounters with Thailand's exotic wildlife, often using primates as the star attractions (Agoramoorthy and Hsu, 2005).

In line with the thriving tradition of using animals for tourist entertainment across Asia, Thailand has had a longstanding, flourishing trade in wildlife used as photo props (Cohen, 2009; McGreal, 2011). Animals used for this purpose to obtain money from tourists may range from those being used by licensed businesses promoting photo shoots (Tigers *Panthera tigris* and Asian Elephants *Elephas maximus*), or offering tourists the opportunity to film a short performance (i.e. monkey shows, elephant shows, snake charming), to the animals used by the illegal businesses on the streets. The latter typically use smaller, often baby, animals that tourists may hold and pose with for photographs (birds of prey e.g. Brahminy Kite *Haliastur indus*, iguanas *Iguana* spp., gibbons *Hylobates* spp. and slow lorises *Nycticebus* spp.) or pay to feed (street-begging elephants) (Right Tourism, 2013). It is not uncommon practice for these animals to be chained, drugged or mutilated to avoid injuring customers (Right Tourism, 2013). The heavy workload of the animals, combined with a poor diet, exposure to continual flash photography, and unnatural surroundings can lead to stress (c.f. Orams, 2002; Rehnus *et al.*, 2013) and even death. Parallels occur in the ecotourism industry where the welfare of wild primates can be compromised by heavy tourist interactions including photography (Maréchal *et al.*, 2011).

Recently, the trend for using small, nocturnal slow lorises *Nycticebus* spp. as photo prop animals in Thailand's popular holiday destinations has emerged. Two slow loris species occur in Thailand, the Bengal Slow Loris *Nycticebus bengalensis* and the Greater Slow Loris *N. coucang* (Nekaris and Bearder, 2011). Their distribution in Thailand is little known: there may be some overlap between the two species in the south of Thailand. It is not known which species occurs on Phuket (Pliosungnoen *et al.*, 2010). Despite their transferral from CITES Appendix II to Appendix I in 2007, slow lorises remain openly for sale as pets and for use in traditional medicine throughout South-east Asia (Nekaris *et al.*, 2010); the photo prop trade remains the least quantified of the threats to these animals.

In 2008, the International Primatological Society (IPS) issued a statement opposing the use of non-human primates as performers, photo props or actors (Caine *et al.*, 2011). Here, the authors examine the photo prop trade in slow lorises *Nycticebus* spp. and the problems associated with this trade, presenting a case study from Thailand. They investigate whether the trade increased between 2008 and 2013, the impact of confiscations on reducing the numbers of photo prop animals available for tourists, and the taxonomy of the animals in trade. Recommendations for a conservation strategy are proposed.

METHODS

The authors focused their study on the island of Phuket, principally Patong beach and town, known for its exotic nightlife. Records of illegally kept wildlife covering the period 2008–2013, held by the Gibbon Rehabilitation Project (GRP), were analysed for the presence of slow loris reports. The GRP runs an education centre at the Bang Pae entrance to Khao Phra Thaeu non-hunting area, the last sizeable protected rainforest area left on Phuket. Visited by holidaymakers year-round, the project encourages visitors to the centre to report any wildlife they have seen being used for tourist entertainment.

Many tourists who do not know what a slow loris is use alternative terms to describe them in their reports, including: “small, light brown babies”, “lemurs” or “possums”. Throughout the study period lorises were, with very few exceptions, only reported from the same bar-lined-street in Patong. The authors could therefore use the size and colour of the animals, and the location in which they had been seen to confirm species identity, whenever the reported animals were of vague description. Whenever more than one animal was reported from the same location in Patong, they were also recorded as slow lorises, since few other primates are used as photo props on Phuket at this time and those that may be seen are never used in large numbers.

The authors calculated the total number of lorises handed over, or confiscated, from Patong during the study period. Official reports were referred to in order to estimate the number of animals confiscated by the authorities. Information on lorises that had been confiscated was either communicated directly to the GRP by the Department of National Parks, Wildlife and Plant Conservation (DNP), or obtained from local newspapers. Slow lorises brought in by tourists to the GRP were also included in the total number.

Osterberg conducted surveys of animals used as photo props in Patong from January 2012 to March 2013. Between September 2012 and March 2013, the surveys were conducted on a once- or twice-monthly basis by walking the main tourist streets between two and five times, from mid- to late-afternoon until after nightfall, and recording the number of animals present. Whenever

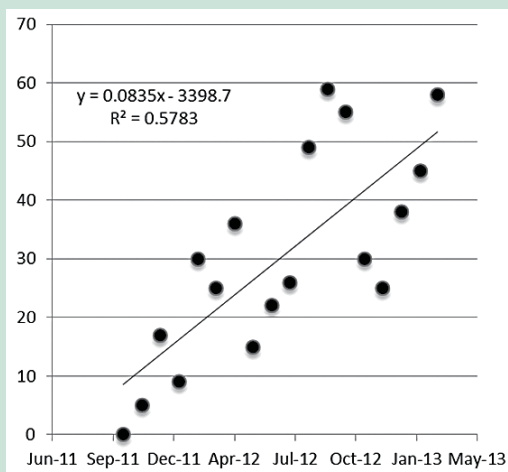


Fig. 2. The regression line shows that reports to the Gibbon Rehabilitation Project of slow lorises used in entertainment (n=135, as a proportion of all illegal wildlife reports, n=468) have substantially increased over time.

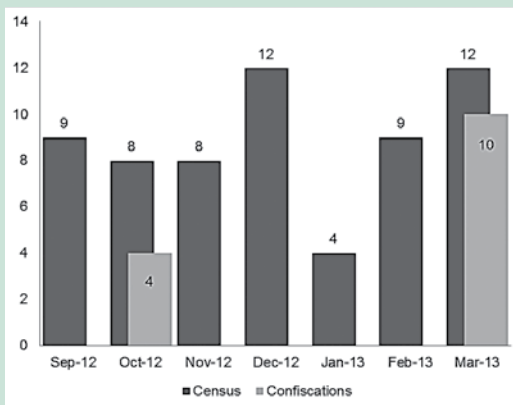


Fig. 3. Slow loris monthly survey results (dark) from Phuket's Patong beach and official confiscation numbers (light) during the same time period.

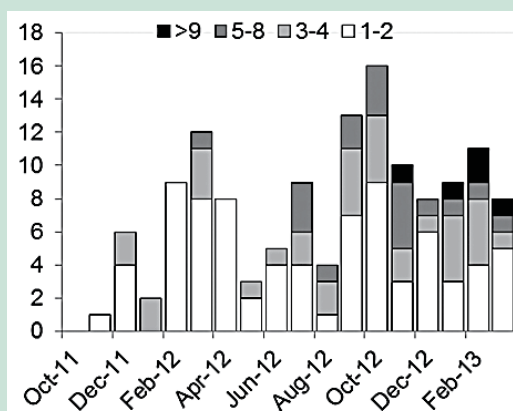


Fig. 4. Each bar represents the number of reports per month of slow lorises used as photo props, with a proportion of reports of 1–2 animals (white), 3–4 animals (light grey), 5–8 animals (dark grey), and >9 animals (black).

possible, photographs were taken. Overall numbers may have been underestimated because the touts recognized the first author and avoided subsequent contact.

The taxonomy of lorises was determined from facial markings and colouration, through the examination of photographs and film-clips, and from newspaper articles and online videos originating from Phuket. The ages of the slow lorises in Patong were likewise estimated from photographs based on body size and the prevalence of longer white-tipped body hair, typical of infant or juvenile animals (Wiens and Zitzmann, 2003).

RESULTS

Examining over a thousand tourist reports (n=1374) to the GRP of animals being used as photo props, the authors found none describing slow lorises prior to October 2011, narrowing down further investigation to the 468 reports of wildlife photo props registered between October 2011 and March 2013. Until October 2012 all reports of slow lorises were from Patong beach. Between October 2012 and January 2013 occasional reports also came from Kata beach, another tourism hot spot south of Patong; 135 reports (29%) concerned slow lorises. After January 2012, the percentage of the monthly reports that concerned slow lorises did not fall below 10%, and in general steadily increased. The highest percentage of slow loris reports (58%) occurred in September 2012 and again in March 2013 (Fig. 2).

Between July 2012 and October 2013, 59 slow lorises were confiscated by authorities and eight were surrendered to the GRP, rendering a total of 67 lorises removed from the streets. Authorities seized the first three slow lorises in Patong on 10 July 2012, seven between 5 and 17 October 2012, and 10 on 28 March 2013. Between the end of March and April 2013, DNP authorities confiscated 34 slow lorises from Bangla Road in Patong. A further five confiscations occurred between September and October 2013 after a photo shoot with the singer Rihanna holding a loris from Patong was posted on social media. Confiscated lorises are sent to DNP wildlife sanctuary in Phang Nga Province. Between March and October 2013, eight slow lorises were brought into the GRP by locals and tourists, all of whom claimed that they had rescued the animals in order to save them. Of the ten confiscated or surrendered slow lorises that GRP staff were able to examine, six (60%) had had their anterior teeth cut down.

Confiscations had no discernible impact on the number of lorises observed during surveys or on loris sightings reported by tourists. Surveys between September 2012 and March 2013 revealed between four and 12 slow lorises, with an average of nine animals (Fig. 3). Indeed, tourists continued to report up to 10 animals towards the end of the study period (Fig. 4).

Of 34 images of different loris individuals from Patong beach (examples in Fig. 1), the majority (94%) were colour variants of *Nycticebus bengalensis*. Only two *N. coucang* specimens were seen. Twenty-one lorises (62%) exhibited juvenile characteristics, with a high prevalence of very young animals (<six months).



Fig. 5. Slow lorises used as photo props in Patong, Phuket (above and below).

The high death rate of slow lorises with clipped teeth suggests that most animals entering Thailand's photo prop trade will likely die and certainly cannot be returned to the wild.



The photographers use instant, flash cameras, which produce a paper image that is immediately sold to the tourist. While previously animal handlers would be suspicious of the presence of people using their own cameras to film them, the prevalence nowadays of small cameras and mobile phones with cameras has made it easier to approach the touts without raising any immediate suspicion. Tourists who are clearly interested in the animals may take photographs with their own cameras provided they pay for the tout's paper image. The price for a photograph with a slow loris ranges from TB100 (Thai Baht) (GBP2.20/USD3.15) to TB500 (GBP10.00/USD15.70).

DISCUSSION

Thailand is recognized as a transit country for illegal trade in various species of endangered wildlife (Nijman and Shepherd, 2011; Stiles, 2009), including lorises and their body parts (Nekaris *et al.*, 2010). Although some local people on Phuket have traditionally kept other primates as pets, slow lorises have not been in demand in this way owing to a long-held belief that these animals possess evil spirits, or are ghosts (P. Samphanthamit pers. comm. to P. Osterberg, May 2012; c.f. Nekaris *et al.*, 2010).

The authors have shown that a trade in lorises as photo props is now established in Phuket's tourism areas. This trend may be a result of the increasing rarity of gibbons in the wild—a popular animal in the photo prop trade—and resulting difficulties in obtaining baby gibbons to supply the markets (Osterberg *et al.*, 2014; Grey, 2012); a reflection of the growing international popularity of the slow loris within the wildlife trade (Nekaris *et al.*, 2013); or the fact that photo touts may find lorises easier than gibbons to handle and conceal when necessary (Navarro-Montes *et al.*, 2009).

Tighter regulation of the international trade in slow loris species (Nekaris and Nijman, 2007) has not had any notable impact in reducing the trade (Nijman, 2010). In Indonesia, the wildlife traders' absence of fear of legal action suggests adequate law enforcement is lacking (Shepherd, 2010) and in Thailand a similar situation has been noted. Throughout the study period, confiscations of lorises used as photo props seemed to have had no noticeable impact on the number of animals used by touts even in the weeks immediately after a raid. This may indicate that the number of lorises kept in reserve by the touts is much higher than the actual number of animals used on a daily basis. The authors are also aware that some foreigners living temporarily, or permanently, on Phuket have been known to buy lorises from touts to keep as pets in their homes, suggesting that the photo prop trade may be part of a larger, emerging, illegal trade in slow lorises (P. Osterberg, pers. obs). Once the loris photo prop trade had become established in Patong—reportedly during the first half of 2012—no notable increase in the number of animals used every day was observed, suggesting that the touts may have been aware of a maximum number of animals that could be used profitably at any one time.

Numbers stemming from tourist accounts reported here are likely to be an underestimate simply because tourists confronted with lorises as photo props are often not sure what animal they are looking at. Over time, however, use of the term “loris” in GRP records has increased, perhaps due to project volunteers now being aware of the trade and able to help people identify the animals via photographs, or related to the increasing notoriety attached to the use of slow lorises as pets in popular culture (Nekaris *et al.*, 2013). A similar lack of species awareness was recognized in Indonesia, where people who bought lorises in markets described them as cuscus (a common name for Australian possums), “cuscus angora” (a pet name used for possums), or pandas (Yayasan IAR, 2011). While the internet community demanded action when the singer Rihanna posed with a loris, resulting in the confiscation of five specimens from Patong, the touts were arrested but later released (Hance, 2013). It is understood by the authors that small fines (e.g. TB500 (GBP10.00/USD15.70)) have been imposed, but even the maximum penalty under the *Wild Animal Preservation and Protection Act* from 1992 for trade in this species—TB40 000 (GBP776/USD1219), or up to four years in gaol—would allow the touts to pay off the fine quickly and return to business. Authorities in loris range countries responsible for confiscation are similarly unaware of how to identify the slow loris, which may result in the introduction of potentially invasive species and welfare concerns for confiscated animals subsequently released (Navarro-Montes *et al.*, 2009). Previously, authors have highlighted the problems of introducing non-native slow loris species outside their range (Schulze and Groves, 2004; Nekaris and Jaffe, 2007).

The most likely candidate for Phuket’s resident wild slow loris is the Greater Slow Loris *Nycticebus coucang* (Meijaard, 2003). The most common slow loris seen in the photo prop trade is the Bengal Slow Loris *N. bengalensis*, which occurs north of Thailand’s Isthmus of Kra (Groves, 2001) and is likely not native to Phuket. Earlier classifications recognized several taxa within this species, and the variability seen within this study concurs with older taxonomies. Specimens displaying two morphological differences were seen frequently. The first were brown, fork-marked animals that resemble “*N. tenasserimensis*”. Now a synonym of *N. bengalensis*, this dark-coloured, smaller bodied variant was originally described as a distinct species. The second type has whiter colouring, with sparse fork marks that fall into the specimen description for the larger-bodied, lighter coloured *N. bengalensis* (Osman Hill, 1953). Any releases of *N. bengalensis* by well-meaning individuals could disturb Phuket’s native loris population and hinder the taxonomic confirmation of Phuket’s “true” lorises (Schulze and Groves, 2004). Furthermore, it is known that the non-native Pygmy Slow Lorises *N. pygmaeus* are also widespread in both Thailand’s photo prop and pet trade (Navarro-Montes *et al.*, 2009). Inappropriate reintroduction of this species has also occurred, as can be seen from photos on social media from a well-known Thai rescue centre. Very little is yet known about Thailand’s slow lorises, so the species conservation impact of increased poaching for the illegal trade and of

the release of alien species can only be speculative at best; no taxonomic studies have been conducted to confirm species and sub-species identity in different parts of the country, no behavioural studies have been carried out in the wild to confirm diet and social habits and no country-wide census—or even presence or absence study in different forests—has been conducted to date. It has been recorded, however, that illegal trade in other parts of the range of slow lorises (e.g. Viet Nam, Cambodia, and Java, Indonesia) is decimating populations, and that the species may already be extinct in some areas (Nekaris and Bearder, 2011). The high death rate of animals with clipped teeth (Moore *et al.*, 2014) suggests that most animals entering Thailand’s photo prop trade will likely die and certainly cannot be returned to the wild.

In addition to taxonomic and ecological problems issuing from inappropriate reintroductions, animal welfare must be considered too. Animals confiscated from the trade can be expected to be in poor condition due to the cutting and/or removal of teeth, inappropriate diets and unsuitable living conditions (c.f. Nekaris and Jaffe, 2007). Although authorities regularly confiscate animals, they lack suitable facilities to accommodate lorises and basic knowledge of care, taxonomy and rehabilitation techniques. At International Animal Rescue Indonesia, 64% of the 180 slow lorises admitted to their care are deemed unsuitable for reintroduction based on their poor health (Moore, 2012). This study suggests a similar proportion (60%) in Thailand. The release of slow lorises directly into the wild without rehabilitation is still commonly practiced in Thailand, and because this is done without any post-release monitoring or supplementary feeding, the survival rates of released animals are unknown (M. Mason pers. comm. to P. Osterberg, January 2012; P. Osterberg, pers. obs.). Existing scientifically run reintroduction programmes for lorises in other countries have encountered numerous problems. In one study of nine reintroduced Pygmy Slow Lorises *N. pygmaeus* in Viet Nam, two disappeared, two were killed by predators and two died of hypothermia (Streicher, 2004). The signal on the tracking devices of the remaining three was lost. In a second Vietnamese study of 10 Pygmy Slow Lorises, three died, four lost the radio collars used to track them, one had to be caught again, and only two were in good condition after just two months (Kenyon *et al.*, 2014). In Java, six out of 11 reintroduced Javan Slow Lorises *N. javanicus* died, one was returned to the centre and, of the four individuals assumed to be surviving in the wild, only one is known to be alive and is still being monitored (Moore, 2012). These data show that reintroduction is no easy task, and that simply returning animals to the wild is rarely the best option.

A number of rescue centres in South-east Asia are dedicated to housing, caring for and rehabilitating captive lorises for eventual reintroduction (Nekaris and Bearder, 2011). The establishment of a species-specific rescue and rehabilitation facility for lorises, in conjunction with an extensive education campaign for tourists to Thailand, seems paramount. It is also recommended that a thorough study be undertaken of the national-level conservation threats to Thailand’s two native loris species. Without widespread education and a shift in attitude by tourists, a decline in the use of slow lorises within the photo prop trade is unlikely.

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REFERENCES

- Agoramoorthy, G., and Hsu, M.J. (2005). Use of nonhuman primates in entertainment in Southeast Asia. *Journal of Applied Animal Welfare Science* 8(2):141–149.
- Buckley, R. (2012). Sustainable tourism: Research and reality. *Annals of Tourism Research* 39(2):528–546.
- Bulbeck, C. (2004). *Facing the Wild: Ecotourism, Conservation and Animal Encounters*. Earthscan.
- Caine, N.G., Visalberghi, E., Schapiro, J., and Leighty, K.A. (2011). Proceedings of the XXIInd Congress of the International Primatological Society, Edinburgh International Conference Centre, Edinburgh, Scotland, August 3–8, 2008. *International Journal of Primatology* 32:1–23.
- Cohen, E. (2009). *The Wild and the Humanized: Animals in Thai Tourism*. *Anatomia: An International Journal of Tourism and Hospitality Research* 20(1):100–118.
- Curtin, S. (2009). Wildlife tourism: the intangible, psychological benefits of human–wildlife encounters. *Current Issues in Tourism* 12(5–6):451–474.
- Grey, S. (2012). Conservation difficulties for *Hylobates lar*: white-handed gibbons and Thailand’s illegal pet trade. *Consortium: a Journal of Cross-disciplinary Inquiry*. Pp.45–59.
- Groves, C.P. (2001). *Primate taxonomy*. Smithsonian Institution Press, Washington.
- Hance, J. (2013). Rihanna poses with endangered primate stolen from the wild. www.news.mongabay.com/2013/0923-hance-rihanna-loris.html. Viewed on 5 February 2014.
- Kanagavel, A., Sinclair, C., Sekar, R., and Raghavan, R. (2013). Moolah, misfortune or spinsterhood? The plight of slender loris *Loris lydekkerianus* in southern India. *Journal of Threatened Taxa* 5(1):3585–3588.
- Kenyon, M., Streicher, U., Loung, H., Tran, T., Tran, M., Vo, B. and Cronin, A., (2014). Survival of reintroduced pygmy slow loris *Nycticebus pygmaeus* in South Vietnam. *Endangered Species Research* 25:185–195.
- Kontogeorgopoulos, N. (2004). Conventional tourism and ecotourism in Phuket, Thailand: conflicting paradigms or symbiotic partners? *Journal of Ecotourism* 3(2):87–108.
- Maréchal, L., Semple, S., Majolo, B., Qarro, M., Heistermann, M., MacLamon, A. (2011). Impacts of tourism on anxiety and physiological stress levels in wild male Barbary macaques. *Biological Conservation* 144(9):2188–2193.
- McGreal, S. (2011). Great things in small packages: IPPL’s Small Grants Program. *IPPL News* 38(3):7–18.
- Meijaard, E. (2003). Mammals of Southeast Asian islands and their Late Pleistocene environments. *Journal of Biogeography* 30(8):1245–1257.
- Moore, R. (2012). Ethics, ecology and evolution of Indonesian slow lorises (*Nycticebus* spp.) rescued from the pet trade. PhD thesis. Oxford Brookes University, Oxford.
- Moore, R., Wihemanto, and Nekaris, K.A.I. (2014). Compassionate conservation, rehabilitation and translocation of Indonesian slow lorises. *Endangered Species Research* 26:93–102.
- Navarro-Montes, A., Nekaris, K.A.I., and Parish, T. (2009). Trade in Asian slow lorises (*Nycticebus*): using education workshops to counter an increase in illegal trade. *Living Forests* 15:19–22.
- Nekaris, K.A.I., and Jaffe, S. (2007). Unexpected diversity of slow lorises (*Nycticebus* spp.) within the Javan pet trade: implications for slow loris taxonomy. *Contributions to Zoology* 76(3):187–196.
- Nekaris, K.A.I., and Nijman, V. (2007). CITES proposal highlights rarity of Asian nocturnal primates (Lorisidae: *Nycticebus*). *Folia Primatologica* 78:211–214.
- Nekaris, K.A.I., Shepherd, C.R., Starr, C.R., and Nijman, V. (2010). Exploring cultural drivers for wildlife trade via an ethnoprimateological approach: a case study of slender and slow lorises (*Loris* and *Nycticebus*) in South and Southeast Asia. *American Journal of Primatology* 2:877–886.
- Nekaris, K.A.I., and Bearder, S.K. (2011). The lorisiform primates of Asia and mainland Africa: diversity shrouded in darkness. In: Campbell, C., Fuentes, A., MacKinnon, K., Bearder, S.K., and Stumpf, R. (Eds). *Primates in Perspective* 2nd Ed. Oxford University Press, Oxford. Pp.34–54.
- Nekaris, K.A.I., Campbell, N., Coggins, T.G., Rode, E.J., and Nijman, V. (2013). Tinkled to death: analysing public perceptions of ‘cute’ videos of threatened species (slow lorises—*Nycticebus* spp.) on Web 2.0 Sites. *PLoS ONE* 8(7): e69215. doi:10.1371/journal.pone.0069215. Viewed on 7 January 2014.
- Nijman, V., and Shepherd, C.R. (2011). The role of Thailand in the international trade in CITES-listed live reptiles and amphibians. *PLoS ONE* 6(3): e17825. doi:10.1371/journal.pone.0017825. Viewed on 5 May 2013.
- Nijman, V. (2010). An overview of international wildlife trade from South East Asia. *Biodiversity Conservation* 19:1101–1114.
- Orams, M.B. (2002). Feeding wildlife as a tourism attraction: a review of issues and impacts. *Tourism Management* 23(3):281–293.
- Osman Hill, W.C. (1953). *Primates. Comparative anatomy and taxonomy*. Vol. I. Strepsirhini. Edinburgh University Press, Edinburgh.
- Osterberg, P., Samphanthamit, P., Maprang, O., Punnadee, S., and Brockelman W.Y. (2014). Population dynamics of a reintroduced population of captive-raised Gibbons (*Hylobates lar*) on Phuket, Thailand. *Primate Conservation* 28 (published electronically prior to print).
- Pliungnoen, M., Gale, G., and Savini, T. (2010). Density and microhabitat use of Bengal slow loris in primary forest and non-native plantation forest. *American Journal of Primatology* 72:1108–1117.
- Rehnus, M., Wehrle, M., and Palme, R. (2013). Mountain hares *Lepus timidus* and tourism: stress events and reactions. *Journal of Applied Ecology* DOI: 10.1111/1365-2664.12174.
- Right Tourism (2013). Photo taking with animals. <http://right-tourism.com/issues/animals-attractions/photo-prop-animals/>. Viewed on 15 November 2013.
- Ross, S.R., Vreeman, V.M., and Lonsdorf, E.V. (2011). Specific image characteristics influence attitudes about chimpanzee conservation and use as pets. *PLoS ONE* 6(7): e22050. doi:10.1371/journal.pone.0022050.
- Schroepfer, K.K., Rosati, A.G., Chartrand, T., and Hare, B. (2011). Use of ‘entertainment’ chimpanzees in commercials distorts public perception regarding their conservation status. *PLoS One* 6(10):e26048. doi:10.1371/journal.pone.0026048.
- Schulze, H., and Groves, C.P. (2004). Asian lorises: taxonomic problems caused by illegal trade. In: Nadler, T., Streicher, U., Ha, Thang Long (Eds). *Conservation of Primates in Vietnam*. Haki Publishing, Hanoi. Pp.33–36.
- Shepherd, C. (2010). Illegal primate trade in Indonesia exemplified by surveys carried out over a decade in North Sumatra. *Endangered Species Research* 11:201–205.
- Stiles, D. (2009). The status of the ivory trade in Thailand and Viet Nam. *TRAFFIC Bulletin* 22(2):83–91.
- Streicher, U. (2004). Aspects of the ecology and conservation of the Pygmy Loris *Nycticebus pygmaeus* in Vietnam. Inaugural-Dissertation. Ludwig-Maximilians Universität, München, Germany.
- Tourism Authority of Thailand (2013). Tourism statistics. www2.tat.or.th/stat/web/static_index.php. Viewed on 12 April 2013.
- Wiens, F., and Zitzmann, A. (2003). Social dependence of infant slow lorises to learn diet. *International Journal of Primatology* 24(5):1007–1021.
- Yang-Martinez, S. (2011). An investigation of tarsier tourism in Bohol, Philippines: assessments of 11 tarsier exhibits, a worry for tarsier welfare and conservation. MSc thesis. Oxford Brookes University, Oxford.
- Yayasan, I.A.R. (2011). The slow loris in Indonesia: The rise in illegal wildlife trade. Proceedings of the seminar on slow loris conservation, December 2010. Bogor, Indonesia.

Petra Osterberg [corresponding author], Nocturnal Primate Research Group, The Gibbon Rehabilitation Project, 104/3 M.3 Paklock, Thalung, 83110, Phuket, Thailand. E-mail: savethegibbon@gmail.com
 K.A.I. Nekaris, Oxford Brookes University, Little Fireface Project, Nocturnal Primate Research Group, Oxford, OX3 0BP, UK.
 E-mail: anekaris@brookes.ac.uk

Last Chance to See? A Review of the Threats to and Use of the Crocodile Lizard

Mona van Schingen, Ulrich Schepp, Cuong The Pham, Truong Quang Nguyen and Thomas Ziegler

The Crocodile Lizard, listed in CITES Appendix II and as Endangered in The IUCN Red List of Threatened Species, is becoming ever more popular among hobbyists. Rising international demand for the species is exceeding available supply of captive-bred specimens, resulting in an increase in illegally sourced wild specimens on offer. Wild populations are at the brink of extinction due to habitat destruction and over-collection for the trade and for local use. It is estimated that fewer than 1000 individuals are presently distributed in small and isolated sites in southern China and northern Viet Nam. In view of the constant decline of diminished populations, any further trade in wild specimens is detrimental to the survival of the species. This study addresses the current status of the threats to and the trade in Crocodile Lizards and highlights the need for immediate measures to protect remaining populations from extermination.

INTRODUCTION

The Crocodile Lizard *Shinisaurus crocodilurus* is the only living representative of the family Shinisauridae. The species was originally described by Ahl (1930) from southern China, where its range is restricted to a few isolated sites due to its high ecological specialization (Huang *et al.*, 2008). The outstanding colour patterns and primaevial appearance, as well as an interesting semi-aquatic lifestyle, have made the species a desired target for the international pet trade from the 1980s onwards, with a strong interest from specialized collectors. Within two decades, harvesting of the species had caused dramatic declines of wild populations in China (CITES, 1990; Huang *et al.*, 2008) before the first Vietnamese subpopulation was discovered in the Yen Tu Nature Reserve (NR), northern Viet Nam by Le and

Ziegler (2003). Initial morphological and molecular comparisons revealed no significant taxonomic separation between the two extant subpopulations (Ziegler *et al.*, 2008). Recent field surveys on the population status and ecology of the species in Viet Nam led to the discovery of two further subpopulations in two adjacent nature reserves, viz. Tay Yen Tu NR and Dong Son-Ky Thuong NR (van Schingen *et al.*, 2014a).

Owing to multiple anthropogenic hazards, populations of the Crocodile Lizard are now facing extinction in the wild (Huang *et al.*, 2008; van Schingen *et al.*, 2014b). Besides habitat degradation, present at almost all known sites (Huang *et al.*, 2008; van Schingen *et al.*, 2014b), over-collection for consumption and the pet trade has been recorded as a severe threat to the species in China, while only little comparable information is available for the recently discovered Vietnamese subpopulations. The declining subpopulations in China were estimated at only 950 individuals in 2004 (Huang *et al.*, 2008); a similar study conducted in 2013 revealed the presence of fewer than 100 individuals in Viet Nam (van Schingen *et al.*, 2014b) (Fig. 1). In response to the international demand for the species (e.g., Nguyen *et al.*, 2004; CITES, 1990; Anon., 2014a), this study provides an analysis of the trade in Crocodile Lizards and a review and updated evaluation of threats as baseline information for improved conservation measures.

DISTRIBUTION AND STATUS

The Crocodile Lizard inhabits tropical evergreen broadleaf lowland forests in southern China (Guangxi Zhuang Autonomous Region, Guangdong Province) and northern Viet Nam (Bac Giang, Quang Ninh provinces) (Huang *et al.*, 2008; Le and Ziegler, 2003). It is particularly adapted to a specific forest ecosystem and individuals tend to rest at night on branches above pool sections of densely vegetated rocky streams (M. van Schingen, pers. obs.; Ning *et al.*, 2006; van Schingen *et al.*, in prep.), where they can be easily collected by poachers. The species can reach maturity after 13 months in captivity, but under natural conditions needs between two and four years (Yoshimi and Uyeda, 2011; Zollweg and Kühne, 2013). In addition, the period

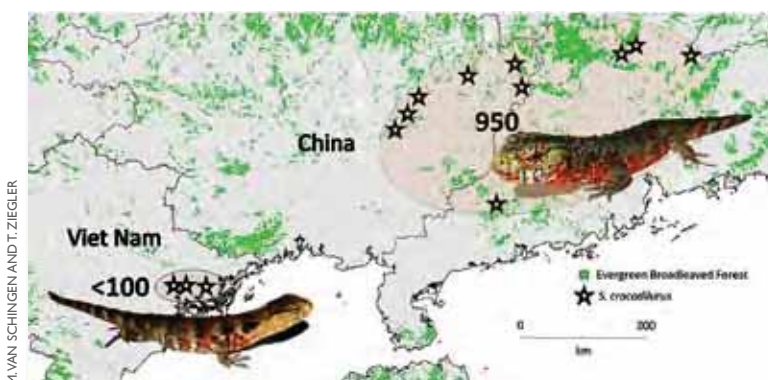


Fig. 1. Estimated wild population size of the Crocodile Lizard *Shinisaurus crocodilurus* in China and Viet Nam. Estimates derived from Huang *et al.* (2008) and van Schingen *et al.* (2014b), respectively. The habitats of *S. crocodilurus* are entirely surrounded by cultivated and agricultural land in Viet Nam; locality records derived from the authors' field surveys and from literature (van Schingen *et al.*, 2014a; Huang *et al.*, 2014).

of pregnancy of lecithotrophic viviparous species, such as the Crocodile Lizard, is about nine to eleven months, which is comparatively long for reptiles (Zollweg and Kühne, 2013; Z. Wu *in litt.*, 17 June 2014). Large areas of habitat have been cleared in the species's range (Huang *et al.*, 2008; Le and Ziegler, 2003) which, in Viet Nam in particular, have been entirely surrounded by cultivated or agricultural land, which makes evasion of the species to other sites impossible. According to a niche model approach by van Schingen *et al.* (2014a), the actual and potential distribution of the species—considering climate and vegetation cover—is severely fragmented. Li *et al.* (2012) projected that all original habitats of the Crocodile Lizard in China will have vanished in 2081–2100 as a result of climate change.

LEGISLATION

The species has been listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) since 1990, which includes species not necessarily yet threatened, but which could become so if trade is not strictly controlled. Recently, the Crocodile Lizard was classified as globally Endangered in *The IUCN Red List of Threatened Species* (Nguyen *et al.*, 2014). Furthermore, it is included as a Category I species in the “Wild animal protection law” in China (Huang *et al.*, 2008), and at the end of 2013 the Ministry of Agriculture and Rural Development (MARD) proposed that the species be listed in the governmental decree of Viet Nam (T.Q. Nguyen, pers. comm.).

METHODS

Evaluation of threats to and use of the species

Field surveys were conducted in Viet Nam between June and July 2013 and May and July 2014, determining the threats to the Crocodile Lizard by direct observations within the species's habitat viz. Yen Tu NR and Dong Son-Ky Thuong NR, Quang Ninh Province and Tay Yen Tu NR, Bac Giang Province. Nearly 80 villagers living in the surroundings of the nature reserves, and authorities of Quang Ninh and Bac Giang provinces, Son Don, Uong Bi and Ky Thuong districts and of the three aforementioned nature reserves were questioned in order to determine the general cognizance, perception and use of the species in Viet Nam. In addition, a literature survey was undertaken to evaluate the threats to and use of the species in China.

Analysis of trade

Trade data were obtained from the UNEP-WCMC CITES trade database (UNEP-WCMC, 1990–2013), which details all records of imports, exports and re-exports of CITES-listed species as reported by Parties. Data were available from 1990 to 2013. The analysis

focused on the purposes “personal” (P), “commercial” (T), and “zoos” (Z), referring to live animals, since in the case of the Crocodile Lizard such trade is the most profitable. Internet platforms, reptile forums and Facebook pages were investigated to get an overview of the availability, demand, prices and evidence of illegal trade in this species. Four reptile fairs (three in Germany and one in Sweden) and 10 German pet shops were visited. Oral interviews were conducted with 26 dealers (20 from Germany, three from Sweden, two from the Czech Republic and one from Spain) on the respective reptile markets, 12 employees of pet shops that were visited, two zoo keepers (USA and Sweden) with experience in keeping Crocodile Lizards and 11 private keepers on their experiences in selling and keeping Crocodile Lizards, as well as to obtain information on origins and prices. A private keeper and two dealers of Crocodile Lizards in Viet Nam were contacted in writing. Data were collected mainly between August and December 2014. Names of interviewees are kept anonymous here for reasons of data privacy rights and internet links are not disclosed to prevent misuse.

THREATS TO THE CROCODILE LIZARD AND ITS USE IN CHINA

Literature survey

According to literature, consumption of Crocodile Lizards was traditionally believed to act as a cure for insomnia due to the long periods the animals spend motionless; they are also exploited for food (Herpin and Zondervan, 2006; Huang *et al.*, 2008; Nguyen *et al.*, 2014; Anon., 2014b). Li and Wang (1999) reported the sale of dried individuals in markets in China. While reports on any current use in traditional medicine were not found, cases of poaching for the pet trade are still being reported (Huang *et al.*, 2014; Kadoorie Farm & Botanic Garden, 2004; Zollweg, 2012). Interviews conducted by Huang *et al.* (2008) with 75 villagers living around the habitats occupied by Crocodile Lizards revealed that the majority (75%) had already hunted the lizard, but only 7.5% of those questioned had hunted the species for food or medicine (Huang *et al.*, 2008). The main motivation was to sell specimens to illegal traders for easy money (RMB10–1000~USD1.61–161.25) (Huang *et al.*, 2008).

The increasing application of electrofishing and use of poison for fishing are assumed to endanger the Crocodile Lizard in its aquatic phase (Huang *et al.*, 2008), and the sale of accidentally caught Crocodile Lizards on Chinese markets has often been recorded (Zollweg, 2011). In addition, the substitution of broadleaf forest for trees that produce more profitable timber contributes to the decrease of aquatic habitats, as do logging, water pollution from mining operations, and dam construction, which all change the natural water regime and degrade the species's habitats (Huang *et al.*, 2008; Huang *et al.*, 2014).

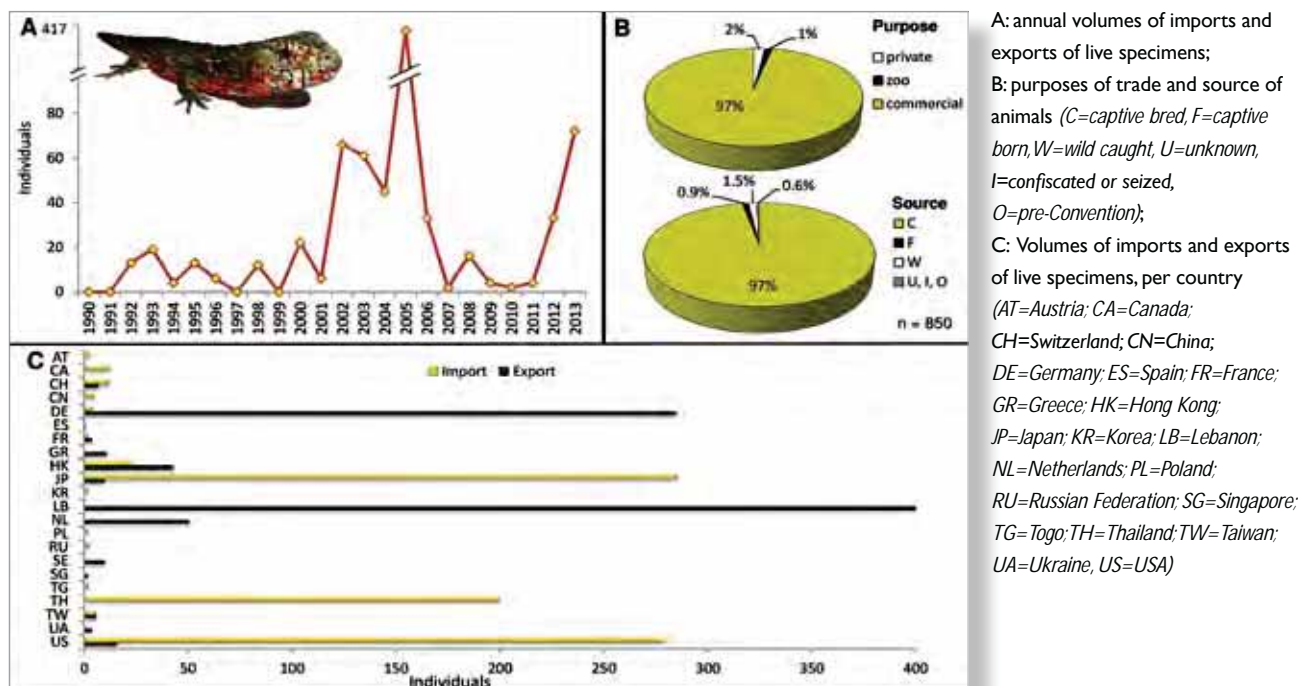


Fig. 2. International trade in Crocodile Lizards *Shinisaurus crocodilurus* from 1990–2013. Source: UNEP-WCMC (1990–2013)

THREATS TO THE CROCODILE LIZARD AND ITS USE IN VIET NAM

Literature survey and results of current survey

Crocodile Lizards soaked in rice wine were observed during the inspection of numerous local shops in Quang Ninh Province, Viet Nam, in 2013 (M. van Schingen, pers. obs.). A picture of a Crocodile Lizard preserved in alcohol was observed on the Facebook page of a Vietnamese pet shop, where the use of the species as a potency remedy was discussed.

Trade in live Crocodile Lizards in Viet Nam was recorded in 2002 at a tourist site (Yen Tu Temples, Quang Ninh Province) by Le and Ziegler (2003). At the time, some Crocodile Lizards were being offered as “baby crocodiles” to tourists for USD10–20 each. In May 2008, T.Q. Nguyen observed three specimens being offered for sale for USD5–6 at the same site. During recent field surveys, the authors discovered that cable cars had been installed to transport tourists to the top of the mountain where one, once remote, habitat of the Crocodile Lizard is situated. Recently employed forest rangers at this site have never seen a Crocodile Lizard, while some older rangers remembered that Crocodile Lizards had been frequently found at this site, as well as in lower regions of the mountains. Present surveys within these now easily accessible streams at the foot of the mountain revealed no presence of Crocodile Lizards. While 10 mature individuals had been recorded in 2013 in a stream at the top of the mountain, none could be found there in 2014.

Interviews with nearly 80 people in the remote villages situated within the species’s habitats revealed a general ignorance about Crocodile Lizards and confusion with other lizards, as well as a lack of interest in this species. Only one farmer recalled cases of collecting Crocodile Lizards from nearby streams. Provincial authorities recognized the species from pictures, but assumed its extirpation from former localities.

According to recent field observations, the dramatic increase of habitat destruction and alteration as well as pollution are severe threats to the species in Viet Nam. Timber logging and slash-and-burn land clearance form a major threat to the species and coal mining activities were observed to cause drastic degradation of core habitats of the Crocodile Lizard. In 2014, local villagers were observed electrofishing in some habitat streams, which had not been the case the year before. At this site the rate of encounters with Crocodile Lizards dropped to three (one individual per stream) in 2014, compared to 11 during the same season in 2013.

TRADE

Literature survey and results of current survey

Based on an interview with a reptile dealer, the first Crocodile Lizards appeared on the international pet market as early as 1982. Since 1985 an alarming rise in demand for Crocodile Lizards in the international pet trade has been recorded; specimens at that time fetched relatively high prices (e.g. DM995–USD595.63



Fig. 3. A distinctive primaeval appearance and striking colour pattern has resulted in an alarming rise in demand for Crocodile Lizards *Shinisaurus crocodilurus* by specialist collectors.

in Germany; CITES, 1990), although a pet shop in the USA was selling specimens for USD25 in 1987 (Hoffmann, 2006). While hundreds of specimens were legally imported from Hong Kong to Europe and the USA because the species had not been protected in the importing countries, the illegal sale of 3300 animals from Guangxi Autonomous Region, China, was reported between 1984 and 1986 (CITES, 1990). After being included in CITES Appendix II in 1990, the international trade in Crocodile Lizards suddenly switched almost entirely to specimens that were purported to be captive bred (~97%, UNEP-WCMC (1990–2013), Fig. 2). From 1990–2013, a mean of 39 ± 87 living individuals were annually recorded in international trade (Fig. 2); out of 850 animals, 97% were traded for “commercial” purposes and only 2% and 1% for “personal” and “zoo” purposes, respectively; the majority was imported by Japan (34%) and the USA (33%), followed by Thailand (23%) (Fig. 2). No exports from or imports to Viet Nam have been officially recorded (Fig. 2). A conspicuously high number (400) of allegedly captive-bred specimens was exported from Kazakhstan via Lebanon to Japan and Thailand in 2005, which makes Lebanon the major importer and re-exporter of Crocodile Lizards (Fig. 2). Kazakhstan has been a Party to CITES since 2000, whilst Lebanon acceded the Convention in 2013. Kazakhstan, as the country of origin, has not declared any imports or exports of Crocodile Lizards in its annual reports. Similar trade patterns involving a Kazakhstan-Lebanon connection have been observed in cases of trade in dendrobatid frogs and several reptile species, particularly from Madagascar (Nijman and Shepherd, 2009; 2011; Todd, 2011).

A case of definite trade with wild-caught individuals was confirmed by a German pet shop owner, who received three of reportedly numerous illegally imported specimens from China in 2003 from a dealer who was known for being involved in the fraudulent trade in reptiles. Furthermore, 104 Crocodile Lizards were seized at the border of Japan between 2007 and 2008 (Kanari and Auliya, 2011), and 19 individuals, collected in Viet Nam by a Vietnamese citizen, were smuggled from Cambodia to Thailand in 2014 (Robin des Bois, 2014).

Currently the trade in Crocodile Lizards has shifted almost entirely to the internet, partly via Facebook, which gives the dealer a reassuring level of security and control over the deal, especially when the legal origin of the specimens is doubtful. During the current research, the first internet offer (from the USA) was recorded in 2006 (USD700) on a reptile forum. There has subsequently been a conspicuous rise in offers and requests for this species, particularly on online reptile forums and in Facebook communities, especially in the USA and Germany. These mainly involve private individuals (81%) mostly offering their captive-bred offspring, but also pet shops and wholesalers (17%). Most of the observed entries (n=106) were from Europe (86%) (Germany 60%, Spain 5%, UK 4%, France 4%, Netherlands 3%, Belgium 2%, Slovakia 2%, Denmark 1%, Switzerland 1%, Russia 1% and Ukraine 1%), followed by the USA (10%) and Asia (Viet Nam 4%), but the origin in some cases was unclear. Crocodile Lizards are currently on offer for relatively high prices (e.g., ca USD1100, pet shop (USA), November 2013; juveniles for EUR490, pet shop (Germany), January 2015) on the internet and for a comparably low price (EUR150–300~USD174–348, BfN, *in litt.*, see also Bethge, 2014) at the reptile fair in Hamm, Germany. In December 2014, three Crocodile Lizards of unknown origin were observed by one of the authors at the reptile fair in Hamm in an unlabelled container, which was quickly concealed in a backpack once detected. Furthermore, even Crocodile Lizards reportedly originating from Viet Nam were observed at this reptile fair in 2014 being offered under the table (M. Zollweg, pers. comm., October 2014). Only since 2013 have Crocodile Lizards from Viet Nam been found being offered for sale on at least four different Vietnamese Facebook pages in Hanoi and Ho Chi Minh City; in 2014, one retailer in the country was offering specimens for export on his Facebook site (Fig. 3). While videos of several dozen captive adult lizards for sale were shown on Youtube.com, another dealer stated that he had almost 100 Crocodile Lizards from north Viet Nam for sale at his “farm”. A hobbyist, keeping three wild-caught Crocodile Lizards from “the mountains of north Viet Nam”, posted that there are many specimens available for sale and that retailers are allegedly highly interested in trading them on an international scale. Demand by hobbyists for Vietnamese specimens due to their more colourful appearance and for a supply of “fresh blood” for breeding has been frequently recorded on internet platforms.

DISCUSSION

Considering the alarming status of the wild Crocodile Lizard population (Huang *et al.*, 2008; van Schingen *et al.*, 2014a; van Schingen *et al.*, 2014b), any collection of wild individuals is detrimental to the species's survival. This study shows that the trade in live animals has a highly detrimental impact on the species. Lack of comprehensive information on collection and use for traditional medicine in range countries means that it is not possible to assess with any certainty whether this is an additional threat, although the authors believe it is less significant than the live animal trade. Prices outside the range States remain lucrative (e.g. USD1100, pet shop (USA), 2013), leading to a growth of interest in selling to the international market. Specimens from Viet Nam have been on offer for export for USD180–350 (Facebook, 2014), while prices achieved in the national market seem to be rather low (USD5–25).

The shift in reported trade from wild-caught specimens to almost exclusively captive-bred specimens (>98%) after the species's listing in CITES Appendix II in 1990 is rather suspicious, since a very high mortality rate in captivity was reported at that time (CITES, 1990) and dealers of the species still state that the loss of a whole litter is commonplace due to the animal's sensitivity to stress, infection and inadequate water quality. Furthermore, dealers have confirmed that they still receive wild-caught specimens from China, mislabelled as "captive bred". Regarding the 400 allegedly captive-bred Crocodile Lizards exported from Kazakhstan to Lebanon in 2005, it is not far-fetched to conclude that such a trade pattern is a fraud to obtain "legal" CITES import permits for the laundering of smuggled animals into the trade. Besides the lack of established breeding facilities for such high quantities of an ecologically specialized species, it is further implausible that the alleged captive breeding group produced 400 hatchlings in 2005 and then suddenly stopped producing any offspring. Likewise, in Viet Nam, the large number of adult animals and the evident lack of proper enclosures—as illustrated in available pictures and videos—indicate that most specimens were wild caught, a fact confirmed in writing by a Vietnamese hobbyist. There is recent evidence for the covert sale of Crocodile Lizards from Viet Nam at the reptile fair in Hamm, Germany, even though reports on legal exports are lacking (M. Zollweg, pers. comm., November 2014). The present research shows that demand for the species exceeds supply, even though a few hobbyists successfully breed the species from time to time. The high interest of new bloodlines and morphs is currently increasing the pressure on wild populations, especially from Viet Nam. The remarkable increase in appearance of the species on relevant websites might also have triggered the increasing trade in Crocodile Lizards in Viet Nam. The aforementioned drop in encounters with adult individuals at some of the published habitat sites might be the

consequence of locality data being misused by poachers. Experience in Viet Nam and China has demonstrated that only the more extensively monitored subpopulations are considered to be relatively secure and stable, indicating a positive effect of monitoring and research activities on wild populations.

CONSERVATION MEASURES

For effective local conservation activities in Viet Nam, the authors' research team (Cologne Zoo, IEBR) initiated a comprehensive public awareness campaign. A brochure emphasizing the uniqueness of the last remaining lowland broadleaf forest ecosystem was created in order to support the conservation management, and to educate and raise awareness at the local authority level (Forest Protection Department (FPD), of Bac Giang Province, 2010). A poster (Fig. 4) was recently produced at the request of the FPD, highlighting the threats to this species within its remaining habitats and pointing out improved conservation measures; some 2000 copies have



Fig. 4. Poster developed for the awareness programme, available in Vietnamese, German and English.

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been distributed among the respective nature reserves, and FPD's of Bac Giang and Quang Ninh provinces, high schools, universities, ranger stations, offices of communes, villages surrounding the nature reserves and the Me Linh Station for Biodiversity (see Ziegler, in press). A follow-up petition letter was sent to several agencies recommending, for example, the improvement of forest ranger work, the upgrade of the protection status of the species's habitat in Yen Tu Mountain area, the control of coal mining activities in the core zones of the nature reserves and the development of sustainable ecological and religious tourism in the region. In addition, the authors participated in local conferences, and held symposia and workshops in Hanoi and Ho Chi Minh City.

In China, agreements with local farmers have already helped to maintain at least core zones for Crocodile Lizards within the Daguishan NR and also a breeding facility for release programmes has been successfully established (Zollweg, 2012). Such a breeding programme was recently also initiated in Viet Nam at the Me Linh Station for Biodiversity, with promising preliminary results (Fig. 5; Ziegler, 2015). After the development of a stable captive population and based on comprehensive knowledge on the ecology and natural history of wild populations (e.g. van Schingen *et al.*, in prep.), a release and monitoring programme is planned to restock wild populations in Viet Nam, in accordance with criteria stipulated by the International Union for Conservation of Nature (IUCN, 2013).

CONCLUSIONS

The poaching of Crocodile Lizards in detrimental quantities has long been reported from China and over the last few years has also been recorded from the recently

discovered and much smaller subpopulations in Viet Nam (Huang *et al.*, 2008, Le and Ziegler, 2003, Nguyen *et al.*, 2014). While wild populations of Crocodile Lizards are decreasing, international demand for the species is increasing and habitat destruction and degradation are expanding. Suitable habitats, especially in Viet Nam, are now restricted to a small area around Yen Tu Mountain and the number of wild Crocodile Lizards there is now very low. Due to its sedentary behaviour and specialization, the species's extirpation in the wild is predictable if forest protection is not drastically improved at these sites and illegal poaching curtailed. Since the trade in this species for hobbyist collection has only recently started in Viet Nam, immediate measures are required to prevent further collection of wild specimens.

RECOMMENDATIONS

Based on the evident harmful illegal trade in wild-caught specimens and to enable a more efficient control and prevention of poaching, a transfer of the species from CITES Appendix II to I is strongly recommended. Such an upgrade—which would be implemented in the EU by listing the species in Annex A of the Reg. EC 338/97—would in particular enable the CITES Management Authorities in the European Union, one of the major markets in the reptile and amphibian trade, to control and monitor the domestic EU trade. According to European law the commercial use of specimens of Appendix I (Annex A of Reg. EC 338/97) species is in general strictly prohibited. In most EU member States, such specimens must be registered with the relevant authorities and are subject to strict measures of certification and marking. This also applies to captive-bred specimens; their commercial use requires an official exemption certified by the respective Management Authority (European



Fig. 5. Juvenile Crocodile Lizards *Shinisaurus crocodilurus* bred at the Me Linh Station for Biodiversity in northern Viet Nam for a restocking programme in the species's original habitats in Viet Nam.

Commission, 2015). The CITES Standing Committee as well as all Parties to CITES should be urged to look very closely into the fraudulent claims of captive breeding (Lyons and Natusch, 2011) and enforcement efforts have to be increased, particularly into the apparent increase in online trade, which is partly taking place in closed systems provided by social media such as Facebook.

Based on the findings within the remaining natural habitats in Viet Nam, an upgrade of the existing reserves, the extension of the protected area network and improved ranger work at the sites where the species occurs is strongly recommended (van Schingen *et al.*, 2014b). Furthermore, in order to identify yet unknown sub-populations, field surveys should be conducted within suitable habitats based on the niche model approach (van Schingen *et al.*, 2014a), e.g. in the border region of China and Viet Nam, although publishing exact locality data should be avoided to prevent the misuse of such information. Due to minor differences in ecology between Crocodile Lizards in China and Viet Nam (van Schingen *et al.*, in prep.), a more comprehensive genetic comparison would clarify the conservation status and importance of single and extant subpopulations (van Schingen *et al.*, 2014b), which is also important for potential future hybridization in captivity. In order to evaluate the impact of the awareness-raising campaign, the recently established monitoring systems should be continued in the long term.

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REFERENCES

- Ahl, E. (1930). Beiträge zur Lurch- und Kriechtierfauna Kwangsi's. Sitzungsberichte der Gesellschaft naturforschender Freunde vom 1. April 1930 (privately published); Berlin: 329–331.
- Anon. (2014a). <http://www.terrartistik.com>. Viewed on 29 December 2014.
- Anon. (2014b). <http://www.torontozoo.com/exploretheZoo/AnimalDetails.asp?pg=575>. Viewed on 12 October 2014.
- Bethge, P. (2014). Reibach für “kruff kruff”. *Der Spiegel* 46(2014):130–131.
- CITES (1990). Seventh meeting of the Conference of the Parties, Lausanne (Switzerland), 9–20 October 1989, Proposal 41. http://cites.org/sites/default/files/eng/cop/07/prop/E07-Prop-41_Shinisaurus.PDF
- European Commission (2015). Commission Regulation (EC) No. 865/2006 and Council Regulation (EC) No 338/97. http://ec.europa.eu/environment/cites/legislation_en.htm. Viewed on 20 February 2015.
- Forest Protection Department of Bac Giang Province (2010). *Tay Yen Tu Nature Reserve: biodiversity conservation value and development potential*. Hanoi: Publishing House for Science and Technology. Available at <http://www.eaza.net/campaigns/Documents/Brochure%20Tay%20Yen%20Tu%20Nature%20Reserve%202010.pdf>
- Herpin, D., and Zondervan, I. (2006). De *Shinisaurus* een geheimzinnige oosterling. *Stichting Sauria, Den Haag Publicious*.
- Hoffmann, E.G. (2006). The Chinese Crocodile Lizard. <http://www.reptilechannel.com/media/lizards/lizard-species/complete-chinese-crocodile-lizard.aspx.pdf>
- Huang, C.M., Yu, H. Wu, Z., Li, Y.B., Wei, F.W. and Gong, M.H. (2008). Population and conservation strategies for the Chinese crocodile lizard (*Shinisaurus crocodilurus*) in China. *Animal Biodiversity and Conservation* 31:63–70.
- Huang, H., Wang, H., Linmiao, L., Wu, Z. and Chen, J. (2014). Genetic diversity and population demography of the Chinese crocodile lizard (*Shinisaurus crocodilurus*) in China. *PLoS One* 9(3): e91570 doi: 10.1371/journal.pone.0091570
- IUCN (2013). Guidelines for Reintroductions and other Conservation Translocations. <https://portals.iucn.org/library/sites/library/files/documents/2013-009.pdf>
- Kadoorie Farm & Botanic Garden (2004). Wild animal trade monitoring at selected markets in Guangzhou and Shenzhen, South China, 2000–2003. *Kadoorie Farm & Botanic Garden Technical Report No. 2, KFBG, Hong Kong SAR*. 36 pp.
- Kanari, K., and Auliya, M. (2011). The reptile pet trade of Japan. TRAFFIC East Asia, Tokyo, Japan. Internal report.
- Lau, M.W.N., Ades, G., Goodyer, N. and Zou, F.-S. (1997). Wildlife trade in southern China including Hong Kong and Macau. Pp.141–155. In: Mackinnon, J., Sung, W., (Eds) *Conserving China's Biodiversity*. Beijing (China): China Council for International Cooperation on Environment and Development.
- Le, Q.K. and Ziegler, T. (2003). First record of the Chinese crocodile lizard from outside of China: Report on a population of *Shinisaurus crocodilurus* Ahl, 1930 from North-eastern Vietnam. *Hamadryad* 27(2):193–199.

- Li, W. and Wang, H. (1999). Wildlife trade in Yunnan Province, China, at the border with Vietnam. *TRAFFIC Bulletin* 18(1):21–30.
- Li, X., Tian, H., Wang, Y., Li, R., Song, Z., Zhang, F., Xu, M. and Li, D. (2012). Vulnerability of 208 endemic or endangered species in China to the effects of climate change. *Regional Environmental Change* 13(4):843–852.
- Lyons, J.A. and Natusch, D.J.D. (2011). Wildlife laundering through breeding farms: illegal harvest, population declines and a means of regulating the trade of green pythons (*Morelia viridis*) from Indonesia. *Biological Conservation* 144:3073–3081.
- Nguyen, T.Q., Hamilton, P. and Ziegler, T. (2014). *Shinisaurus crocodilurus*. *The IUCN Red List of Threatened Species*. Version 2014.2. www.iucnredlist.org. Viewed on 30 October 2014.
- Nijman, V. and Shepherd, C.R. (2009). *Wildlife Trade from ASEAN to the EU: Issues with the Trade in Captive-bred Reptiles from Indonesia*. TRAFFIC Europe report for the European Commission, Brussels, Belgium. 22 pp.
- Nijman, V. and Shepherd, C.R. (2010). The role of Asia in global trade in CITES-listed poison arrow frogs: hopping from Kazakhstan to Lebanon to Thailand and beyond. *Biodiversity and Conservation* Doi: 10.1007/s10531-010-9814-0.
- Nijman, V. and Shepherd, C.R. (2011). The role of Thailand in the international trade in CITES-listed live reptiles and amphibians. *PloS ONE* 6(3): e17855. Doi:10.1371/journal.pone.00117825.
- Ning, J., Huang, C., Yu, H., Dai, D., Wu, Z., and Zhong, Y. (2006). Summer habitat characteristics of the Chinese Crocodile Lizard (*Shinisaurus crocodilurus*) in the Loukeng Nature Reserve, Guangdong. *Zoological Research* 27:419–426.
- Robin des Bois (2014). *On the Trail*. Information and analysis bulletin on animal poaching and smuggling, (4):27.
- Todd, M. (2011). *Trade in Malagasy Reptiles and Amphibians in Thailand*. TRAFFIC Southeast Asia, Petaling Jaya, Selangor, Malaysia. 30 pp.
- UNEP-WCMC (1990–2013). CITES Trade Database (<http://trade.cites.org/>). Viewed on 10 October 2014.
- van Schingen, M., Ihlow, F., Nguyen, T.Q., Ziegler, T., Bonkowski, M., Wu, Z. and Rödder, D. (2014a). Potential distribution and effectiveness of the protected area network for the crocodile lizard, *Shinisaurus crocodilurus* (Reptilia: Squamata: Sauria). *Salamandra* 50(2):71–76.
- van Schingen, M., Pham, C.T., Thi, A.H., Bernardes, M., Hecht, V., Nguyen, T.Q., Bonkowski, M. and Ziegler, T. (2014b). Current status of the Crocodile Lizard *Shinisaurus crocodilurus* Ahl, 1930 in Vietnam with implications for conservation measures. *Revue Suisse de Zoologie* 121(3): 1–15.
- van Schingen, M., Pham, C.T., Thi, H.A., Nguyen, T.Q., Bernardes, M., Bonkowski, M. and Ziegler, T. (in prep.). First ecological assessment of the endangered Crocodile Lizard *Shinisaurus crocodilurus* Ahl, 1930 in Vietnam: Microhabitat characterization and habitat use. *Herpetological Conservation and Biology*.
- Yoshimi, D. and Uyeda, L. (2011). The panda of the lizard world. <http://woodlandparkzblog.blogspot.de/2011/12/panda-of-lizard-world.html>. Viewed on 18 December 2014.
- Ziegler, T. (in press). *In situ* and *ex situ* reptile projects of the Cologne Zoo: implications for research and conservation of South East Asia's herpetodiversity. *International Zoo Yearbook* 49:DOI:10.1111/izy.12084.
- Ziegler, T., Le, Q.K., Vu, T.N., Hendrix, R. and Böhme, W. (2008). A comparative study of crocodile lizards (*Shinisaurus crocodilurus* Ahl, 1930) from Vietnam and China. *Raffles Bulletin Zoology* 56(1):181–187.
- Zollweg, M. (2012). Erfolgreiches Projekt zum Schutz der Krokodilschwanz-Höckerechse in China. *ZGAP Mitteilungen* 28.
- Zollweg, M. and Kühne, H. (2013). Krokodilschwanzzechsen–*Shinisaurus crocodilurus*. *Natur und Tier-Verlag*, Münster, Germany.

Mona van Schingen, Cologne Zoo, Riehler Straße 173, 50735, Cologne, Germany; Department of Terrestrial Ecology, Institute of Zoology, University of Cologne, Zùlpicher Straße 47b, 50674, Köln, Germany.
E-mail: mschinge@smail.uni-koeln.de

Ulrich Schepp, Federal Agency for Nature Conservation, Konstantin Straße 110, 53179 Bonn, Germany.
E-mail: Ulrich.Schepp@BfN.de

Cuong The Pham, Institute of Ecology and Biological Resources, Vietnam Academy of Science and Technology, 18 Hoang Quoc Viet Road, Hanoi, Viet Nam.

Truong Quang Nguyen, Institute of Ecology and Biological Resources, Vietnam Academy of Science and Technology, 18 Hoang Quoc Viet Road, Hanoi, Viet Nam.
E-mail: nqt2@yahoo.com

Thomas Ziegler, Cologne Zoo, Riehler Straße 173, 50735, Cologne, Germany; Institute of Zoology, University of Cologne, Zùlpicher Straße 47b, 50674, Köln, Germany.
E-mail: ziegler@koelnerzoo.de



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

The following section features a selection of seizures and prosecutions reported since October 2014, to date. Sources are cited at the end of each country section. Readers are referred to the TRAFFIC website (www.traffic.org/media-reports/) for regular updates on cases reported from around the world.

BIRDS

BULGARIA: On 22 October 2014, at a court in Burgas, egg collector Jan Frederick Ross, formerly of Manchester, UK, received a suspended six-month gaol sentence and a fine of EUR2550 (USD3200) following a lengthy investigation by police, assisted by the Bulgarian Society for Bird Protection and the RSPB. Ross pleaded guilty to the illegal possession of 16 birds' eggs, including the egg of a Griffon Vulture *Gyps fulvus* (CITES II), a rare breeding bird in Bulgaria (60 pairs), and three taxidermy specimens. He had already been sentenced three times in the UK for egg collecting; following reports that he was continuing his illegal collecting in Bulgaria, a search of his flat revealed photographs and diaries hidden behind artwork which pointed to the potentially illegal collection of over a thousand birds' eggs including a number of rare breeding birds, such as a clutch of eggs from the Egyptian Vulture *Neophron percnopterus* (CITES II) (24 pairs in Bulgaria). No charges could be brought against Ross for the taking of these eggs and their location remains unknown.

RSPB: <http://bit.ly/1CPss7L>, 22 October 2014

CAMEROON: On 27 January 2015, more than 300 Grey Parrots *Psittacus erithacus* (CITES II) were seized from a private home in Yaounde. A further 120 were later seized from the same address. A number of Cameroonians and Ghanaians were arrested.

Radio Environment: <http://bit.ly/1LxIEpt>

HUNGARY: On 7 December 2014, 114 live Grey Parrots *Psittacus erithacus* (CITES II) were seized from the car of a Bulgarian citizen at a crossing point in Kiszombor, on the border with Romania. Most of the birds were fitted with closed plastic foot rings, however circumstances suggest that they had been wild-caught. They have been placed in the rescue centre of Szeged Zoo.

CITES Management Authority, Hungary, 7 December 2014

IRAN: In October 2014, a total of 19 Peregrine Falcons *Falco peregrinus* and five Barbary Falcons *F. peregrinoides* (both CITES I) were seized at the port of Jask, in Hormozgan province. The birds, thought to have been smuggled in from Pakistan, had been destined for export to a neighbouring country. Two specimens had perished and the remainder were released in the plains of Hormozgan. One arrest.

HARTMUT JUNGIUS / WWF-CANON



Houbara Bustards
Chlamydotis undulata

Some 240 Houbara Bustards bound for Saudi Arabia were recently seized by Iranian authorities in the Sea of Oman.

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.

On 23 November 2014, some 240 Houbara Bustards *Chlamydotis undulata* (CITES I) and 140 falcons Falconidae spp. (CITES I/II) leaving Iran for Saudi Arabia were seized by maritime police from a dhow in the Sea of Oman. The Iranian captain of the dhow and a Pakistani national have been gaoled. Many of the birds, which had been caught in Pakistan, had perished and the surviving specimens were released in the wild.

Robin des Bois, *On the Trail No. 7:*
<http://bit.ly/19CJGI0>

SPAIN: On 23 March 2015, it was reported that two Spanish nationals had been fined EUR50 000 and EUR5000, respectively (USD55 500/5500) for the illegal trade in and possession of Peregrine Falcons *Falco peregrinus* (CITES I). The penalties were imposed following a protracted investigation by the Catalonia Rural Ranger Corps investigating the suspected laundering of Peregrine Falcons. The UK National Wildlife Crime Unit was asked to verify the authenticity of UK-issued permits for some of the birds. Although the permits were genuine, fake leg rings had been fitted to the falcons to give the impression they had been captive bred.

Agents also used DNA profiling to prove that the falcons were not related to their alleged parents. Agents seized 18 Peregrine Falcons, which were being held illegally, and are working to re-home the falcons.

UK National Wildlife Crime Unit:
<http://bit.ly/1EMEqTr>, 23 March 2015

CATS

CHINA: On 23 October 2014, at Jinan Intermediate People's Court, Shandong province, a man identified as Zhang was gaoled for six years for smuggling Tiger *Panthera tigris* (CITES I) bones (plus ivory and other wildlife products). He was also fined 50 000 yuan (USD8000). Customs officers at Jinan International Airport discovered the bones in three suitcases in March 2014. Zhang, a resident of Zhejiang province, had arrived from Hong Kong with the items, including a Tiger skull which he reportedly had smuggled from Indonesia.

Shanghai Daily (China): <http://bit.ly/1AKjmJj>, 17 November 2014

INDONESIA: On 12 February 2015, the South Sumatra Military Police, South Sumatra Provincial Natural Resource Conservation Office (BKSDA), and the Wildlife Conservation Society's Wildlife Crimes Unit (WCU) announced the recent arrest of a person who allegedly sold more than 100 stuffed Tigers *Panthera tigris* (CITES I) over a ten-year period. The trafficker is reported to have traded the illegal goods to buyers in southern Sumatra, Kalimantan, Sulawesi, and to a middleman in Jakarta. He subsequently confessed that he purchased Tiger skins and stuffed Tigers in Lampung, Bengkulu, Jambi, and north Sumatra to supply demand in Jakarta and Java. His arrest concluded an investigation that began in 2009 with the arrest of a middleman.

Newswise: <http://bit.ly/1GuDhjk>, 12 February 2015

MALAWI: On 30 January 2015, at Kasungu Magistrates' Court, Ganizani Nkhata was sentenced to four years in gaol after being unable to pay a fine of MK450 000 (USD1000) following his conviction for poaching a Serval Cat *Leptailurus serval* (CITES II) in August 2014. The cat had earlier been rescued and later reintroduced into Kasungu National Park by Lilongwe Wildlife Trust. A GPS tracking collar fitted on the animal for research purposes to monitor its movement in the park and to inform future releases, assisted the authorities in catching the defendant. The signal from the collar led to the roof of the suspect's house in Munye village in Traditional Authority Kawamba.

Nkhata was found guilty on two counts—first for killing the cat, for which he received a fine of MK350 000, and second for malicious damage to GPS equipment (fine of MK100 000).

Lilongwe Wildlife Trust: <http://bit.ly/194Ujtu>, 4 February 2015

RUSSIA: On 6 February 2015, it was reported that a Vietnamese man had been detained on suspicion of involvement in the killing and trading in endangered animals and supplying eating establishments with illegal meat after the authorities raided a restaurant in Moscow and seized big cat skins, heads and around 50 kg of meat. The meat is believed to be from an Amur (Siberian) Tiger *Panthera tigris altaica* and an Amur Leopard *P. pardus orientalis* (both CITES I); fewer than 500 Amur Tigers and only 45 adult Amur Leopards are estimated to remain in the wild. The body parts were sent away for scientific analysis. Officials conducting a subsequent investigation at Sadovod market, Moscow, uncovered what are believed to be the skins of an Amur Tiger and an Amur Leopard.

WWF: <http://bit.ly/1B5KmlG>, 6 February 2015

VIET NAM: On 15 January 2015, police in Bac Kan province seized from a lorry the frozen carcass of a 303 kg Tiger *Panthera tigris* (CITES I) and detained the driver. The animal had been cut into five parts and placed in sacks, wrapped in blankets. Police also seized two sacks containing 53 kg of animal bones, 3 kg of animal bone glue and 3 kg of turtle shells.

Thanhniennews (Viet Nam): <http://bit.ly/1zrx2go>, 16 January 2015

ELEPHANTS

The African Elephant *Loxodonta africana* and Asian Elephant *Elephas maximus* are listed in CITES Appendix I

AUSTRALIA: On 5 April 2015, Customs officers at Perth airport seized 110 kg of elephant tusks. The shipment was believed to be travelling through Perth on its way from Africa, en route to Malaysia. An investigation into an international ivory smuggling ring moving goods through Australia is under way by federal authorities.

The ivory, made up of numerous cut tusk parts of varying sizes, is being stored at a secure Customs detained goods storage and is now the property of the Australian Government.

Bunbury Mail (Australia): <http://bit.ly/1CulcRn>, 9 April 2015

CHINA: On 20 January 2015, Hengshui police in Hebei province arrested 14 suspects in an ivory trading ring. Police acted on information that sculptors who appeared to be doing business legally were actually trading ivory. Officers spent about 10 months infiltrating the gang and collecting evidence and later arrested all core members over the following three months.

The Standard (Hong Kong): <http://bit.ly/1uk9CCO>, 20 January 2015

ERRATUM: In Vol. 26(1):22, it was incorrectly stated that almost 12 t of ivory had been seized in early November 2013 by Customs officers in Xiamen city, China. The report should have stated that officials had infiltrated two groups responsible for smuggling this amount of ivory over a period of years (see: <http://bit.ly/1Gcxkel>). We apologise for this error.

CONGO, DEM. REP. OF: On 30 January 2015, police displayed a large consignment of ivory, seized the previous week and believed to derive from more than 15 forest adult elephants from the country's Salonga National Park. It was reported that most of the ivory had been carved in Kinshasa. The shipment was handed over to the Congolese Institute for the Conservation of Nature (ICCN).

Radio Okapi: <http://bit.ly/1F1VxA6>, 31 January 2015

CONGO, REP. OF: On 28 January 2015, it was reported that authorities had seized 126 kg of ivory in Brazzaville and placed in custody two suspects trying to sell the ivory. A third person evaded arrest. The ivory was estimated to derive from 30 forest elephants, which, it is reported, were probably poached in northern Congo.

WWF: <http://bit.ly/1MRelmw>, 28 January 2015

EGYPT: In late October 2014, Customs officers at Safaga seaport seized 300 kg of raw elephant ivory from a lorry. The shipment mainly originated from East Africa and had been sent to Kuwait where it was taken by truck through Saudi Arabia, passing through Dubai seaport before arriving at Safaga seaport.

In November 2014, Customs officers at Safaga seaport seized 200 kg of raw and worked ivory imported from Saudi Arabia. Some of the raw ivory had been painted with a black stain to resemble coal or wood.

IFAW: <http://bit.ly/1BCfrgP>, 30 January 2015

GABON: On 9 April 2015, it was reported that Jean François Ombenda and Eugene Ndjouhou had each been sentenced at a court in Franceville to six months in gaol and fined one million CFA Francs (USD1000). The pair, arrested in Mounana on 25 February as they were about to finalize a sale of elephant ivory (circa 18 kg), were charged with hunting, possession, transport, selling trophies and illegal possession of a firearm.

Gabon News: <http://bit.ly/1FOdhjs>, 2 March 2015; *Gabon Review (in French):* <http://bit.ly/1JDVE7o>, 10 April 2015

In March 2015, it was reported that a person arrested in possession of 12 elephant tusks had been sentenced to two years in gaol for illegal possession of ivory and corruption attempts.

The Eagle Network, March 2015

HONG KONG SAR: On 10 and 16 February 2015, the Agriculture, Fisheries and Conservation Department (AFCD), with the assistance of quarantine detector dogs, seized a total of 60 kg of worked ivory inside 12 parcels from Nigeria at the Air Mail Centre, Chek Lap Kok, Lantau Island. The investigation continues.

Press release, GovHK (Hong Kong Special Administrative Region Government) <http://bit.ly/1EyK1kM>, 18 February 2015

INDIA: On 16 March 2015, police in Kolkata seized one tusk, nine statuettes and other objects made of ivory from the premises of a Salt Lake resident and arrested two persons. Sources said the accused had put up an advertisement on an online shopping portal to sell the items. Officials of the Wildlife Crime Control Bureau traced the objects to the address, and posed as buyers before making their arrests.

Times of India (India): <http://bit.ly/1bd8Q7D>, 17 March 2015

KENYA: A court that granted bail to the suspected ringleader of an ivory smuggling gang on medical grounds has had the ruling overturned by the Director of Public Prosecutions until the suspect's appeal is heard. The Kenyan national, who featured on an INTERPOL list of the nine most wanted suspects linked to crimes against the environment, was arrested by international police agents in Tanzania in December 2014 after fleeing Kenya and extradited to face charges in Mombasa. He is charged with possession of and dealing in elephant tusks weighing more than two tonnes. The haul was discovered by Kenyan police in June when they raided a car dealership in Mombasa, after which the suspect fled to Tanzania.

Defence lawyers had argued that their client required medical treatment for diabetes that could not be provided while in custody.

Times Live (South Africa): <http://bit.ly/1xBZYNU>, 18 March 2015

SAUDI ARABIA: On 18 October 2014, it was reported that authorities at King Khaled International Airport, Riyadh, had foiled an attempt to smuggle 588 pieces (reportedly 490 kg) of elephant tusks to east Asia. The ivory was concealed in the luggage of a passenger in transit from an undisclosed African country.

Saudi Gazette (Saudi Arabia): <http://bit.ly/110jCun>, 19 October 2014

THAILAND: In early January 2015, a man from Surin was arrested after 51 tusks (135 kg) of African Elephant *Loxodonta africana* were found in his Taklang village home in Tha Tum district.

Bangkok Post (Thailand), <http://bit.ly/1Aispmu>, 2 January 2015

UGANDA: On 25 January 2015, it was reported that wildlife officers at Entebbe International Airport had seized a shipment containing nearly 800 kg of ivory (CITES I) (and over two tonnes of pangolin *Manis* (CITES II) skins), due for export to Amsterdam, Netherlands. The tusks, which appeared to have been recently removed, were cut into several pieces. The boxes were labelled as communications equipment that needed repairs in Amsterdam, and had been cleared for export by Customs officials, who reportedly said that the containers were too heavy to be scanned by X-ray machines. However, wildlife surveillance teams insisted that they be searched. Three people, including a clerk at the airport, a Customs officer and the driver of a lorry that delivered the cargo were arrested.

In November 2014, it was discovered that more than a tonne of seized ivory had disappeared from government strongrooms. Some of the ivory in this shipment is believed to have been part of that stock (see also under Pangolins).

The Rakyat Post (Malaysia): <http://bit.ly/1Gy2yZP>, 26 January 2015; *New Vision (Uganda):* <http://bit.ly/1zwngtU>, 27 January 2015

On 17 March 2015, Customs officials at Kampala airport seized 50 pieces of ivory from a shipment declared as containing 1000 kg of shea butter, bound via cargo plane for Singapore. Closer inspection uncovered the ivory in barrels of the butter. The persons who delivered the consignment are being sought.

The News Hub: <http://bit.ly/1H3MT4k>, 17 March 2015

UNITED ARAB EMIRATES: On 16 March 2015, it was announced that over 200 kg of ivory being transported through Dubai International Airport had been seized. No more details were available as to provenance or proposed destination. The ivory has been handed over to the UAE Ministry of Environment and Water.

The National UAE: <http://bit.ly/1B5TkiW>, 16 March 2015

VIET NAM: On 27 October 2014, Customs officers in the northern city of Hai Phong, Hai An District, confiscated nearly one tonne of elephant tusks stashed in a container of rubber gloves imported from an unknown country/territory, and bound for a third, undisclosed country. According to the shipping documents, the consignment was part of a shipment of two containers of rubber gloves that were being sent to a company in Ha Long City, Quang Ninh province.

Tuoi tre news (Viet Nam): <http://bit.ly/196rDja>, 28 October 2014

On 14 March 2015, Customs officers at Tan Son Nhat International Airport, Ho Chi Minh City, discovered 43.5 kg of elephant tusks hidden in the baggage of two Vietnamese nationals returning to the country from Dubai, United Arab Emirates. Subsequent testing conducted by the Institute of Forensic Science under the Ministry of Public Security showed that the tusks were taken from African Elephants *Loxodonta africana* (CITES I). One of the suspects confessed that the two had been hired to transport the ivory from Dubai to Viet Nam.

Tuoi tre news (Viet Nam): <http://bit.ly/1EjrK3C>, 16 March 2015

ZAMBIA: On 30 March 2015, at Livingstone Magistrates' Court, five people caught in February with 14 raw ivory pieces (210 kg) that they were trying to sell to an undercover operative, were each sentenced to five years in gaol.

Game Rangers International press release: <http://bit.ly/1FQxcAY>, 9 April 2015

MARINE / FRESHWATER

BULGARIA: On 23 January 2015 it was reported that Customs officials at Sofia airport had seized two million baby European Eels *Anguilla anguilla* (CITES II) from eight styrofoam containers declared as food items. Two Chinese nationals travelling from Madrid, Spain, were detained. The eels were taken to a rescue centre at the public aquarium in Varna.

Reuters: <http://bit.ly/11499wh>, 23 January 2015

CHINA: In November 2014, a court in Taizhou city, Zhejiang province, sentenced 13 red coral poachers to between one year and six months to six years in gaol and fined the group nearly one million yuan (USD161 440). The two key figures employed 11 sailors to obtain red coral; their vessel was stopped by coast guards in April 2014 with 7 kg of red coral on board.

Ecns.cn: <http://bit.ly/1C48TfX>, 3 November 2014

COSTA RICA: On 19 November 2014, at San José Airport, two tonnes of shark fins bound for Hong Kong were seized. Some 50 bags contained fins from Hammerhead Sharks *Sphyrna lewini* and Oceanic Whitetip Sharks *Carcharhinus longimanus* (both CITES II).

Robin des Bois, On the Trail No. 7: <http://bit.ly/19CJGiO>

FRANCE: On 5 February 2015, at Roissy Charles-de-Gaulle Airport, Paris, Customs officials seized a shipment of 18 688 dried seahorses *Hippocampus* spp. (CITES II) en route between Madagascar and Hong Kong.

On 15 January, 112 seahorses were found in the luggage of a couple travelling from Shanghai to Spain. They claimed the specimens were to be used to make a broth. The animals were seized and the couple fined an undisclosed amount.

Le Parisien (France): <http://bit.ly/1Cctmv1> (in French), 9 February 2015

INDONESIA: On 27 January 2015, at the District Court in Cirebon, West Java, a trader was sentenced to one year and four months in gaol and fined USD5000 after being arrested with 27 kg of manta ray *Manta* (CITES II) plates. This is the first law enforcement action to have taken place under a new manta ray protection decree approved early in 2014 to protect manta rays and to stop illegal fishing and trading.

On 7 November 2014, some 103 kg of manta ray gills were seized from a suspect's house near Pengambangan Negara fisheries landing area in Bali. This was the largest-ever seizure of manta ray gill plates in the country, which took place as part of a major enforcement initiative against the illegal trade of sharks and rays in Indonesia, which has the largest shark fisheries in the world.

On 10 November 2014, at Surabaya International Airport, East Java province, 226 kg of manta ray gills corresponding to 80 adult manta rays were seized before their onward shipment to Hong Kong.

Currently, two of the suspected illegal traders are on trial separately in Surabaya and Bali; one was arrested in Surabaya last August with 8 kg of manta ray plates while the other was arrested in Bali in September with 103 kg of manta ray plates.

Wildlife Conservation Society: <http://bit.ly/1CAuchb>; *Robin des Bois, On the Trail No. 7:* <http://bit.ly/19CJGiO>; <http://bit.ly/1Cx6B6MD>, 2 February 2015

PHILIPPINES: On 10 October 2014, a businesswoman whose company was allegedly involved in a smuggling attempt of some 41 t of protected marine species detected at the port of Manila in 2011 was arrested and released on bail. The case involved two containers declared to be transporting rubber that were found to be loaded with 21 169 black coral pieces (*Antipatharia* spp., CITES II), 163 Green Turtles *Chelonia mydas* and Hawksbill Turtles *Eretmochelys imbricata* (both CITES I), 7340 shells and conches Cassidae, and 196 kg of sea fans Alcyonacea.

Robin des Bois, On the Trail No. 7: <http://bit.ly/19CJGiO>

On 22 November 2014, in Puerto Princesa, Palawan, nine Chinese fishermen were each fined USD100 000 and in the case of non-compliance sentenced to six months in gaol for smuggling 555 marine turtles (CITES I). Most of those convicted have already spent six months in temporary detention.

Robin des Bois, On the Trail No. 7: <http://bit.ly/19CJGiO>

SOUTH AFRICA: On 3 November 2014, Kraaifontein SAPS confiscated approximately 160 kg of dried abalones *Haliotis* (and 1127 dried shark fins) from a storage warehouse in Uitzicht, Kraaifontein, after an employee contacted police complaining of a strong smell from one of the units. The case is under investigation.

AllAfrica.com: <http://bit.ly/1tPiumZ>, 4 November 2014

On 7 November 2014, in Cape Town, a tip-off led to one of the biggest abalone busts of the year when officials from the Agriculture, Forestry and Fisheries department joined police to raid an illegal processing plant. Two Chinese nationals and a Congolese man were arrested. A total of 14 631 dried abalones and 5850 wet abalones was seized.

IOL news (South Africa): <http://bit.ly/1FFIM2k>, 8 November 2014

On 16 February 2015, police acting on information arrested a man from Gordon's Bay travelling in his car in Somerset West, bound for Cape Town, with 15 bags containing 1958 shucked abalones. The man was detained at Somerset West police station.

IOL news (South Africa): <http://bit.ly/1Lxrd7n>, 17 February 2015

PANGOLINS

All pangolin species are listed in CITES Appendix II

CHINA: On 3 November 2014, a father and son received gaol sentences for smuggling 10 pangolins *Manis*—the father to three years and his son to two years and six months and fined 15 000 Yuan (USD2443). In 2012, the son had transported the pangolins from Guangzhou province to Hengyang, Hunan province, when the specimens were seized.

Robin des Bois, On the Trail No. 7: <http://bit.ly/19CJGi0>

HONG KONG: On 17 March 2015, Hong Kong Customs seized 2000 kg of pangolin *Manis* scales from a container at Kwai Chung Customhouse Cargo Examination Compound.

Customs officers, through risk assessment, selected the shipment, arriving from Nigeria, for inspection and found the scales in 44 bags.

The Government of the Hong Kong Special Administrative Region press release (info.gov.hk): <http://bit.ly/1FIMbR4>, 20 March 2015

MALAYSIA: On 26 March 2015, the Chief Judge of Sabah and Sarawak, Tan Sri Richard Malanjum, called for a review of the law against wildlife crime after imposing the maximum gaol term provided for under the *Wildlife Conservation Enactment 1997* during the appeal hearing of a man previously sentenced for illegal pangolin *Manis* trade. Carlvin Cher Jia Wei of Johor was fined RM10 000 (USD2800) in

November 2014 after 12 pangolins were found in the storage compartment of his vehicle.

During the appeal hearing, the judge said that the current law was too lenient and the defendant's previous sentence "grossly inadequate". He gaoled him for three years and increased the fine to RM25 000 or six months in gaol.

The Star online (Malaysia): bit.ly/1GuT29U, 25 November 2014; *New Sabah Times:* <http://bit.ly/1anrPLt>, 27 March 2015

In December 2014, in the State of Sarawak, 100 kg of scales and other pangolin *Manis* parts found in parcels bound for China were seized by local Customs officials. A court ordered the destruction of the body parts.

Robin des Bois, On the Trail No. 7: <http://bit.ly/19CJGi0>

UGANDA: On 25 January 2015, it was reported that wildlife officers at Entebbe International Airport had seized a shipment containing over two tonnes of pangolin *Manis* (CITES II) skins (and 800 kg of ivory) that had been due to be exported to Amsterdam, Netherlands (see also under Elephants).

The Rakyat Post (Malaysia): <http://bit.ly/1Gy2yZP>, 26 January 2015;

VIET NAM: On 20 December 2014, 59 pangolins *Manis* were seized from a vehicle in Mong Cai, Quang Ninh province, travelling from the south of Ha Long Bay, heading for the border with China.

In February 2015, police in northern Bac Ninh province seized 42 live Sunda Pangolins *Manis javanica* from poachers—who received fines of undisclosed amounts—and delivered the animals to forest rangers for safekeeping; the rangers then sold the animals to local restaurants.

Until recently, it was legal for registered traders or government authorities to auction off some seized pangolins, but a new law introduced in November 2013 outlawed the hunting, trade, and consumption of any of Asia's four pangolin species.

Robin des Bois, On the Trail No. 7: <http://bit.ly/19CJGi0>; *The Guardian (UK):* <http://bit.ly/1EvDlqT>, 20 February 2015

REPTILES / AMPHIBIANS

AUSTRALIA: On 6 February 2015, at Perth International Airport, two Russian nationals and two Czech nationals were arrested after earlier attempts to export 157 native reptiles and amphibians in packages sent from destinations including Carnarvon, Tom Price and Geraldton, all bound for Europe. Many of the animals were concealed in hollowed-out books and in cigarette packets and included skinks, geckos, frogs and pygmy pythons. Also uncovered were 33 dead reptiles that appeared to have been tagged for use as specimens. Two of the men also allegedly had reptiles hidden in their luggage.



CUSTOMS FRANCE

In December 2014, 170 Radiated Tortoises (inset) from Madagascar were seized at Roissy Charles-de-Gaulle Airport, France, from a shipment of sea cucumbers bound for Lao PDR.

During a separate incident in February, 92 reptiles including specially protected species, were seized from post offices in Broome, Derby and NSW, and from a vehicle intercepted in Broome by WVA Police. Three arrests. More than 20 of the reptiles were dead or have since died.

Australian Customs and Border Protection Service: <http://bit.ly/1BCrAT4>, 16 February 2015

BANGLADESH: On 20 November 2014, police in Magura District, Khulna Division searching a bus travelling from Jessore to Dhaka, seized 499 Black Pond Turtles *Geoclemys hamiltonii* (CITES I). One arrest.

Robin des Bois, On the Trail No. 7: <http://bit.ly/19CJGi0>

FRANCE: On 14 December 2014, Customs officers at Roissy Charles-de-Gaulle Airport, Paris, discovered 170 Radiated Tortoises *Astrochelys radiata* (CITES I) concealed in the false bottom of six containers of sea cucumbers. The shipment was en route from Madagascar to Lao PDR. Five tortoises perished; the remaining specimens were to be placed in authorized facilities.

Customs National Intelligence and Investigations Service (France), 18 December 2014

HONG KONG SAR: On 27 February 2015, authorities seized 279 Black Pond Turtles *Geoclemys hamiltonii* (CITES I) from a vessel and arrested the captain and crew members. It was reported that the animals were likely to be destroyed as no facility in Hong Kong was large enough to accommodate the turtles.

inmediahk.net: <http://bit.ly/18LD1Bj> (in Chinese), 8 March 2015

INDIA: On 7 December 2014, in Venkatapuram, Andhra Pradesh, police seized bags containing over 800 Indian Softshell Turtles *Nilssonina gangetica* (CITES I). Caught from the rivers of Andhra Pradesh, they were awaiting delivery to the States of Bihar and Odisha. The turtles were released into Kolleru Lake.

Robin des Bois, On the Trail No. 7: <http://bit.ly/19CJGi0>

INDONESIA: On 22 January 2015, Fish Quarantine and Inspection (BKIPM) officers in Timika and Denpasar foiled an attempt to smuggle 6500 baby Pig-nosed Turtles *Carettochelys insculpta* (CITES II). Some 1226 animals were seized from a suitcase being loaded onto a flight to Denpasar.

Further investigations revealed that two more suspect suitcases were on the same flight which resulted in the seizure of an additional 5284 turtles in Denpasar.

BKIPM: <http://bit.ly/1FFzxl> (in Bahasa Indonesia), 26 January 2015

PHILIPPINES: In December 2014 and January 2015, some 186 endemic Palawan Forest Turtles *Siebenrockiella leytensis* (CITES I) were seized by authorities during five raids in Manila and in Taytay. The species occurs only on the island of Palawan.

TRAFFIC: bit.ly/1zMKcNC, 2 February 2015

SPAIN: On 6 November 2014 it was reported that officials of the Guardia Civil had seized 8300 tanned skins of various species of snake, lizard and crocodile from a warehouse in Manises, Valencia. The skins were to be made into belts, bags and wallets. The trader, a Spanish national, lacked the documentation proving the legal origin of the skins.

Levante El Mercantil Valenciano: <http://bit.ly/1N45XUc>, 6 November 2015

UK: On 25 March 2015, it was reported that Border Force officers at Heathrow Airport had seized 165 Turquoise Dwarf Geckos *Lygodactylus williamsi* (EU Annex B and classified by IUCN as Critically Endangered). The geckos had been imported in February from Tanzania where the species is found in only two locations. They are now being cared for at a secure facility.

According to Grant Miller, head of the Border Force CITES team, "this was a highly significant seizure. This particular species of gecko is incredibly rare and there are strict laws against its capture in Tanzania".

Other animals were seized from the same consignment and included 136 Bearded Pygmy Chameleons *Rieppeleon brevicaudatus*, 66 Yellow-headed Dwarf Geckos *Lygodactylus luteopicturatus*, 112 Peacock Tree Frogs *Leptopelis vermiculatus* and 192 whip scorpions Thelyphonida. The case is under investigation.

UK Border Force: <http://bit.ly/1NlxCyj>, 25 March 2015; in litt., 12 April 2015

VIET NAM: On 19 November 2014, authorities seized a record haul of over 1000 dead marine turtles (mostly Green *Chelonia mydas* and Hawksbill *Eretmochelys imbricata* turtles (CITES I)) during raids on a warehouse in the coastal resort of Nha Trang. All the specimens were being processed into handicrafts, reportedly for illegal export to China. The case is under investigation.

Times of India (India): bit.ly/1zp9wMV, 25 November 2014

RHINOCEROSSES

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

CZECH REPUBLIC: On 7 January 2015, three Vietnamese nationals were charged with the illegal export of rhinoceros horns. The suspects have been in custody since July 2014. A shipment of two horns of White Rhinoceros *Ceratotherium simum* was discovered at Vaclav Havel Airport, Prague, in December 2013 after attempts were being made to export the horns to Viet Nam. The rhinoceros had been killed by a Czech national in South Africa. The three Vietnamese had reportedly acted in collusion with an organized group operating in several States. During home searches the police carried out in two Czech towns and in Prague's Sapa market place, further items and documents were seized.

Prague Monitor (Czech Republic): bit.ly/1zp9wMV, 8 January 2015

MALAYSIA: In January 2015, the convicted leader of a rhinoceros poaching network in Nepal was arrested by the Royal Malaysian Police and deported to Nepal. The suspect had reportedly fled Nepal after authorities requested that INTERPOL issue an international wanted persons alert for him. In 2013, the Nepal police, with the support of the Nepalese Army and the Department of National Parks and Wildlife Conservation, arrested a network of more than a dozen poachers suspected of killing 19 rhinoceroses in Chitwan National Park, including the suspect, who managed to escape. INTERPOL National Central Bureaus in Nepal and Malaysia exchanged information that eventually resulted in the arrest of the suspect.

Environment New Service: bit.ly/1Eyt3OE, 23 February 2015

SOUTH AFRICA: On 1 November 2014, at Johannesburg airport, Customs officials seized 41 kg of rhinoceros horns—34 large pieces—reportedly the largest-ever seizure of

rhinoceros horns in the country. The luggage of two Vietnamese citizens on a brief stopover from Maputo, Mozambique, bound for Hanoi via Doha, was searched after an official on the aeroplane became suspicious of the cargo and reported his concerns to the South African authorities on landing at the airport.

It was reported on 15 December 2014 that security staff and other officials at Maputo international airport were under investigation for their alleged involvement in the case; the luggage of the two suspects had evaded scanning controls usually undertaken on all consignments.

E. Cooper Environmental Consulting: bit.ly/1CAGNLj, 16 December 2014

USA: On 14 January 2015, at Miami District Court, the president and owner of an auction house in Florida pleaded guilty to selling illegal rhinoceros horns (and elephant ivory). He will pay a fine of USD1.5 million and also faces imprisonment.

The suspect pleaded guilty to an illegal wildlife trafficking and smuggling conspiracy in which the auction house sold rhinoceros horns and objects made from rhinoceros horn (as well as elephant ivory and coral) that were smuggled from the USA to China. He was caught as part of Operation Crash—an investigation that has netted numerous criminals in the rhinoceros horn trade in recent years. The defendant and his company sold six Black Rhinoceros *Diceros bicornis* horns; two were sold to a Texas resident involved in smuggling the horns to China. Undercover USFWS agents bought two more, and another undercover agent consigned two horns for auction.

Malay Mail online: bit.ly/1BTx9zT, 15 January 2015

VIET NAM: On 27 October 2014, police and Customs officials at Noi Bai International Airport, Hanoi, arrested a Vietnamese national flying in from Bangkok, Thailand, and seized six kilogrammes of rhinoceros horn from her bag, after they were detected by scanners. The suspect said that a person in Bangkok had paid her to carry the horns.

ThanhNien News (Viet Nam): bit.ly/1wDrOcl, 28 October 2014

TURQUOISE DWARF GECKO FROM TANZANIA, SEIZED IN UK.



UK BORDER FORCE

It was reported on 18 March 2015 that a Vietnamese national had attempted to smuggle through Tan Son Nhat International Airport, Ho Chi Minh City, 1.39 kg of rhinoceros horns which had been cut into small pieces and hidden in lobster heads held in a freezing container.

Thanh Nien News (Viet Nam bit.ly/1MNEUwj, 18 March 2015)

FLORA

HONG KONG SAR: On 26 November 2014, Customs officials detected 92 t of “Honduras rosewood” logs being smuggled in four containers at Kwai Chung Customhouse Cargo Examination Compound. The shipment had been declared to contain “rubber waste”, and had arrived from Guatemala via Mexico. Two people were arrested and released on bail pending further investigation.

Hong Kong Information Services Department (news.gov.hk): http://bit.ly/1xd6kYD, 17 December 2014

INDIA: On 27 November 2014, the Srikalahasthi police and Special Task Force (STF) acting on information seized some 60 (1.5 t) logs of Red Sanders (Sandalwood) *Pterocarpus santalinus* (CITES II) and arrested 84 people near Srikalahasthi who were in the process of transporting the contraband in seven vehicles.

In a separate incident the following day, Forest Department officials recovered Red Sanders dumps at two locations near Rangampet, Tirupati. The logs were found during operations in the Seshachalam forests undertaken by five teams of the Forest Department. A total of 1.8 t of logs was recovered.

The Hindu (India): bit.ly/1ttPxcd, 28 November 2014

On 2 February 2015, Bengaluru Rural police acting on information raided the house of a convicted criminal in Kattigenahalli in Hoskote Taluk and seized some four tonnes of Red Sanders. The suspect was reported to have planned to export the timber to China.

The New Indian Express (India): bit.ly/1z7zjd4, 3 February 2015

MALAYSIA: On 19 November 2014, Sarawak forestry authorities announced the seizure of 22 306 illegally felled logs in Bintulu, one of the largest such seizures recorded in the State. No arrests. Enforcement officers backed by police were dropped by helicopters into an area in Tatau, Bintulu, to carry out raids, the culmination of two weeks surveillance in Bintulu and Miri.

The Malaysian Insider: bit.ly/1F3oRoh, 19 November 2014

OTHER / MULTI SEIZURES

CAMEROON: Two people have been arrested in Djoum—South in possession of the skulls of three Gorillas *Gorilla gorilla* and one Chimpanzee *Pan troglodytes* (both CITES I). One of the suspects was reported to be a high profile trader in apes, belonging to a large illegal network.

Eagle network, January 2015

The body parts of a dead adult Chimpanzee were found in a bag at the gendarmerie in Campo Ma’an, close to the border with Equatorial Guinea. A number of people—believed to be residents of the area—were arrested on 13 March. The case was to be transferred to the tribunal at Kribi. The seized meat (leg and parts of the torso) was burned.

Sonja Metzger, in litt. to R. Melisch, TRAFFIC, 16 March 2015.

MEXICO: On 10 March 2015, it was reported that an investigation by authorities into the purchase and sale of wildlife via the internet had led to a raid on a storage site in Monterrey, Nuevo Leon, where some 40 dead animals were found in a freezer including: a Cotton-top Tamarin *Saguinus oedipus* (CITES I), a Common Squirrel Monkey *Saimiri sciureus* (CITES II), 17 Ball Pythons *Python regius* (II), two Common Kestrels *Falco tinnunculus* (II), three Water Monitors *Varanus salvator* (II), four Burmese Pythons *Python bivittatus* (II) and Red-eyed Leaf Frogs *Agalychnis callidryas* (II). Also recovered were 12 animals that were being kept in poor conditions, including a Sun Parakeet *Aratinga solstitialis* (II), two Blue-and-gold Macaws *Ara ararauna* (II) and two Monk Parakeets *Myiopsitta monachus* (II), as well as Sugar Gliders *Petaurus breviceps*, Eastern Grey Squirrels *Sciurus carolinensis*, Black-tailed Prairie Dogs *Cynomys ludovicianus*, Swamp Crocodiles *Crocodylus moreletti*, a chinchilla *Chinchilla*, and a corn snake *Pantherophis guttatus*. The live animals were taken to La Pastora Zoo Park, where they were to be assessed by veterinarians.

Fox New Latino: http://bit.ly/1FJ67OH, 10 March 2015

SENEGAL: On 31 October 2014, authorities arrested four Nigerians and seized 2600 skins and animal parts, including those of Lions *Panthera leo* (CITES I), Leopards *P. pardus* (I), hyaenas, antelopes and pythons. These dealers were involved in the illegal importation of animals from African countries, for export overseas as well as to supply local sellers.

At the court in Dakar, the four received gaol terms of between one and three months’ imprisonment and fines ranging from 100 000 CFA francs to 1.2 million CFA francs (USD900–9000).

Dakaractu.com: http://bit.ly/1FcwWb, 14 November 2014

THAILAND: Two tourists were arrested at Suvarnabhumi Airport, Bangkok, as they tried to smuggle 144 animals out of the country to Japan in their luggage. These included 110 Pig-nosed turtles *Carettochelys insculpta* (CITES II), groundhogs *Marmota*, snakes and geckos (species not reported). The animals had been purchased at the city’s Chatuchak weekend market.

The Daily Mail (UK): http://dailymail.com/1Ha2yTs, 20 February 2015

UK: On 24 November 2014, at Newport Crown Court, Sun Liu, of Pontypridd, was fined GBP2250 (USD3330) in total (GBP750 for each of three offences), and has to pay GBP1500 costs.

In July 2012, she was stopped by officers as she arrived on a flight from Beijing via Amsterdam. Three boxes held medicines purportedly containing ground rhinoceros horn (CITES I); one had eight portions of a medicine containing bear (I/II) bile and two contained *shenrong weisheng wan* (which includes extracts of Desert Living Cistanche *Cistanche deserticola* (II), *Aquilaria* (II) and Ginseng *Panax ginseng*). Liu was arrested at her home in Pontypridd five months later and charged with three counts of trying to smuggle the items into the UK.

BBC: http://bbc.in/1Ha4M5e, 25 November 2014

On 9 December 2014, at Croydon Crown Court, Peter Prineas of Orpington received a suspended gaol sentence of 10 months after being found guilty of purchasing animal body parts from online auction sites and private sellers. The sentence was suspended for 18 months.

When Scotland Yard’s Wildlife Crime Unit searched his home, they seized the skins of a Cheetah *Acinonyx jubatus* and a Leopard *Panthera pardus*, the skulls of a Drill *Mandrillus leucophaeus* and four Chimpanzees *Pan troglodytes* (all CITES I), a langur *Trachypithecus* (I/II), and other specimens of protected species.

BBC News: http://bbc.in/19Mtv1G, 10 December 2014; Robin des Bois, On the Trail No. 7: http://bit.ly/19CJGi0

USA: On 25 March 2015, antiques dealer Tony Guan from Richmond, British Columbia, Canada, pleaded guilty in New York to smuggling rhinoceros horn, elephant ivory and coral to Canada. He was sentenced to 30 months in gaol.

Bao Antiques bought nine items online from an auction house in Florida. Owner Xiao Ju (Tony) Guan was arrested in New York in March 2014 by US Fish and Wildlife Service agents. He purchased two horns of Black Rhinoceros *Diceros bicornis* (CITES I) from undercover officers and shipped them to Point Roberts, Washington, a short drive from Richmond, falsely labelling the box as containing “handicrafts”. A search of his shop by Canadian police uncovered ivory, coral and other wildlife items purchased in the USA.

The Canadian Press: http://bit.ly/1bBxQWI, 25 March 2015

A note on the illegal trade and use of pangolin body parts in India

Rajesh Kumar Mohapatra, Sudarsan Panda, Manoj V. Nair, Lakshmi Narayan Acharjyo and Daniel W.S. Challender

INTRODUCTION

Of the eight extant species of pangolin (Pholidota: Manidae), the Indian Pangolin *Manis crassicaudata* and Chinese Pangolin *M. pentadactyla* occur in India (Figs. 1, 2 and 6). The Indian Pangolin is widely distributed across the country, occurring in Andhra Pradesh, Bihar, Chhattisgarh, Delhi, Gujarat, Jharkhand, Karnataka, Kerala, Madhya Pradesh, Odisha, Rajasthan, Tamil Nadu, Uttarakhand, Uttar Pradesh and West Bengal. The species also occurs in Bangladesh, Pakistan, Nepal and Sri Lanka (Srinivasulu and Srinivasulu, 2004; Baillie *et al.*, 2014). The Chinese Pangolin is native only to the north and north-eastern States of India, including Arunachal Pradesh, Assam, Meghalaya, Nagaland and Sikkim, and also occurs in Bangladesh, Bhutan, Nepal, Myanmar, China, Lao PDR, Taiwan, Thailand and Viet Nam (Srinivasulu and Srinivasulu, 2004; Challender *et al.*, 2014a). Although the two species are similar morphologically, the scales of the Indian Pangolin are relatively larger than those of the Chinese Pangolin and have 11–13 rows of scales across the back compared to 15–18 rows in the Chinese Pangolin. A terminal scale is also present on the ventral side of the tail of the Indian Pangolin, but absent in the Chinese Pangolin (Pocock, 1924; Heath, 1995; Prater, 2005).

Major threats to pangolins in India include hunting and poaching for local consumptive use (e.g. as a protein source and an ingredient in traditional medicine), and for international trade (Challender *et al.*, 2014a; Challender, 2011; Baillie *et al.*, 2014). Hunting of pangolins has recently been recorded in Arunachal Pradesh, Pariyar Tiger Reserve (Kerala), the Western Ghats and eastern States of India, including Odisha (Mitra, 1998; Mishra *et al.*, 2004; Mohanty, 2011; Mishra *et al.*, 2011; Gubbi and Linkie, 2012).

PROTECTION STATUS

The Chinese Pangolin is listed as Critically Endangered, and the Indian Pangolin as Endangered, on *The IUCN Red List of Threatened Species*. These listings are based on evident (Wu *et al.*, 2004; Wu and Ma, 2007) and suspected,



RAJESH K. MOHAPATRA

Fig. 1. Indian Pangolin *Manis crassicaudata*.

rapidly declining populations (Challender *et al.*, 2014a; Challender, 2011; Baillie *et al.*, 2014). Hunting, poaching and associated trade takes place despite both species being listed on Schedule I of India's *Wildlife (Protection) Act, 1972*, which strictly prohibits these activities. Moreover, since 1975 both the Chinese and Indian pangolins have been included in Appendix II of CITES, the Convention on International Trade in Endangered Species of Wild Fauna and Flora, to which an annotation was added at the 11th meeting of the Conference of the Parties in 2000. This annotation established zero export quotas for wild-caught Asian pangolins traded for commercial purposes and which prohibits trade of this nature (CITES, 2000a). Despite these measures, pangolins in India continue to be exploited for local consumptive uses and are frequently found in illegal trade, both domestically and internationally (e.g. Baillie *et al.*, 2014), but information on the extent of trade is limited and inconsistent. This is partly because these species are widely distributed geographically, making it difficult to quantify hunting and



DULU BORAH, GREEN GUARD NATURE ORGANIZATION, ASSAM, INDIA

Fig. 2. Chinese Pangolin *Manis pentadactyla*.

poaching activities, localities and associated trends, and because illegal trade in pangolins is characteristically clandestine. Notwithstanding these difficulties, the aim of this article is to review available information on recent illegal trade involving pangolins and their derivatives and use of their body parts by traditional medicine practitioners in India.

METHODS

Information for this article was acquired from various sources. It included a review of available literature on the consumption and use of pangolins in India sourced using “Google scholar”, and the collation of data on confiscations involving pangolins and their derivatives in India, which were sourced from national and regional newspapers and online news articles reporting on the trade in pangolins and their derivatives between 2009 and 2014. Although it should be noted that media-reported science data can be erroneous and inaccurate, there is little alternative when seeking to compile data on trades which are clandestine. In addition to Google searches, news articles were also found by means of a Google alert, which regularly searches the internet for designated keywords and sends an email to a designated email address. Although most news accounts reported some information on trade (e.g. the number or weight of pangolin scales confiscated), they failed to report the species involved, but, as explained below, trade likely involved both the Indian and Chinese species.

To estimate the number of pangolins the reported trade represents (Table 1), five adult Indian Pangolins which died in captivity at Nandankanan Zoological Park, Odisha, India (NKZP) between 2009 and 2014, and three formalin-preserved Indian Pangolin young were physically examined to collect information on the number of scales present on this species. These were found to range from 444–519 (474 ± 22 , $n=8$), in 11 rows across the back of each specimen. In November 2014, an Indian Pangolin which died in captivity at NKZP was weighed before disposal, which presented an opportunity to acquire data on the proportion of the animal’s body weight comprising scales. The skin with scales weighed 3.5 kg of the animal’s total weight (10.3 kg), or 34% of its total body weight. The authors used these parameters to estimate the number of pangolins in trade. It is understood that the skin and scales of the Chinese Pangolin make up less (about 25%) of the animal’s total body weight (Heath, 1992; also see Zhou *et al.*, 2012).

ILLEGAL TRADE IN PANGOLINS IN INDIA

The protected status of Asian pangolins in most of their range States, including India, indicates that current trade violates both national regulations, e.g., the *Wildlife (Protection) Act, 1972*, and contravenes CITES where trade is international in nature. Reported seizures involving pangolins occurred in multiple States in India during the six-year period (2009–2014; see Table 1).



Fig. 3. Map showing locations (▲) in India of seizures of pangolin body parts between 2009 and 2014.

They comprised more than 5913 kg of scales and two whole pangolins. Seizures took place in 10 States, with the majority taking place in Manipur (25), followed by Assam (5), Mizoram (5), West Bengal (3), Karnataka (3), Tamil Nadu (2), Uttarakhand (2), Uttar Pradesh (2), Chhattisgarh (1) and Odisha (1) (Fig. 3).

While pangolin meat is typically consumed or sold in local markets, scales are delivered to middlemen from Kolkata, Chennai and from border towns such as Siliguri in west Bengal, Moreh in Chandel district, Manipur, Shillong in Meghalaya and Aizwal in Mizoram (Sharma, 2014; present study), and from where they are typically destined for China via Myanmar and Nepal. Myanmar and Nepalese nationals apprehended with pangolin scales and Indian nationals apprehended with Myanmar currency and pangolin scales supports the evidence of this trade link. As confessed by apprehended smugglers during interrogation in some of the reported seizures, the confiscated body parts appear to have originated from Haryana, Odisha, Nagaland, Meghalaya, Madhya Pradesh, Uttarakhand, and south Indian States including Karnataka and Tamil Nadu. At times, pangolin scales were also seized with Tiger *Panthera tigris* bone, deer antlers, the drug *pseudoephedrine*, and arms and ammunition, indicating that trade in pangolins has strong links with trade in other wildlife and drugs and arms. Those apprehended included both men and women, and the number of suspects arrested in each case varied from one to 11 or more, which suggests an organized criminal aspect to this trade.

Although it is unknown which species of pangolin were in trade during the period covered by this investigation—especially where scales only were confiscated—on the basis that scales from an adult Indian Pangolin weigh

about 3.5 kg, it can be estimated that a minimum of 1690 animals were involved. Although this estimate is based on a very small sample size, studies have shown that scales from other Asian pangolin species typically weigh less (Zhou *et al.*, 2012), and it is known that scales in the Indian species are larger and therefore likely weigh more (Pocock, 1924; Heath, 1995), providing some support for these estimates.

Local trade in the scales and meat of the Indian Pangolin has also been reported from Andhra Pradesh, Kerala, Odisha, Manipur, Mizoram, Tamil Nadu, Tripura and West Bengal (Mitra, 1998; CITES, 2000b; Misra, 2000), while collection of the Chinese Pangolin for meat and scales, and seizures of such items, have been reported in various parts of Manipur, Nagaland and Assam (CITES, 2000b). Finger rings made of pangolin scales have also been found for sale at Alashuni fair in Odisha (Mohanty, 2011) (see Fig. 5).

Pangolins are caught when sighted or are dug out of their burrows using different techniques including smoking the animals out and flushing them out with water; pitfall traps and hunting with dogs are also reported to be used to hunt and trap pangolins (Kumara, 2007; Mohanty, 2011; Gubbi and Linkie, 2012). The animals are then killed by being placed in boiling water or with the use of a club to render them unconscious (Mohanty, 2011). The scales are then typically removed by skinning the dead animal or peeling off the scales (Misra, 2000).

Despite scant data on the population status of pangolins in India, Tikader (1983) reported that populations of both the Indian and Chinese pangolins

had been greatly reduced by hunting. Given that it is difficult to maintain and breed pangolins in captivity (Yang *et al.*, 2007; Mohapatra and Panda, 2014; Heath and Vanderlip, 1988) and that the trade appears to be commercial in nature (see Table 1), it is believed that the current trade must involve wild-caught animals only. The magnitude of this trade in a relatively short time period (six years) suggests it could also potentially be unsustainable (Fig. 4), especially when bearing in mind these data likely reflect only a small proportion of actual trade levels. Although the authors have not accounted for all the biases in seizure data, which would require larger data sets and advanced modelling (e.g., Underwood *et al.* 2013), trade is nevertheless persistent (Fig. 4). Again, not accounting for biases, it could be that decreasing volumes of pangolin scales seized (see Fig. 4) are associated with declining wild populations.

There have also been reports of the involvement of tribal communities such as *Padhis*, *Saperas*, *Bawarias* and *Mongias* in the capture of pangolins (Sharma, 2014). Pangolin scales were reported to be sold for Rs1000/kg in Mizoram in 1996 and increased to Rs12000–13000/kg in different parts of Mizoram in 2013 (Chinlampainga *et al.*, 2013). Despite the apparent decline in the volume of scales seized, trade is nevertheless persistent and can be attributed to high demand from China primarily, where scales are used in traditional medicines, and to increasing prices, which are driving the illegal trade in pangolins from South Asia, as well as from Africa and Southeast Asia (Pantel and Chin, 2009; Challender, 2011; Challender and Hywood, 2012).

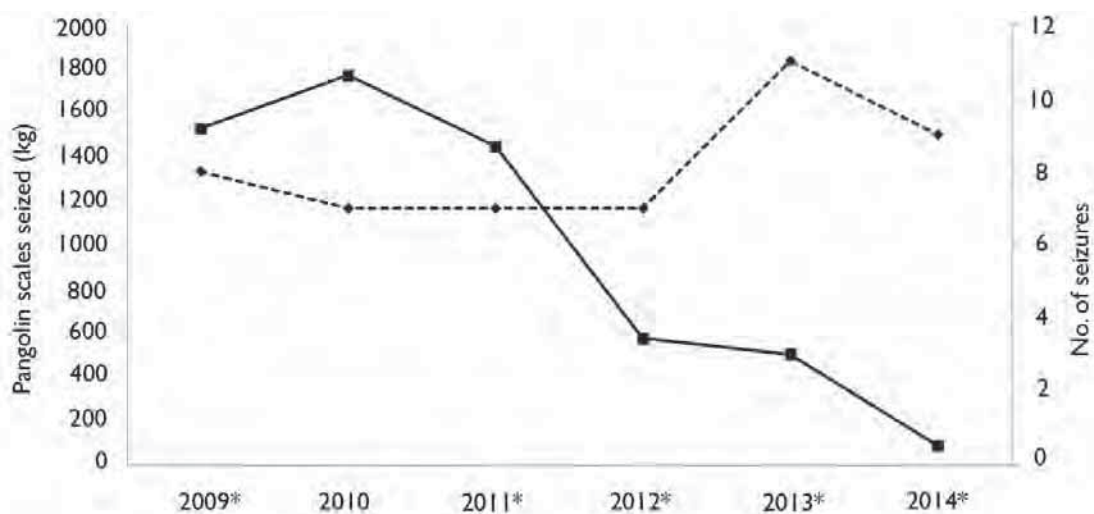


Fig. 4. Reported amount of pangolin scales seized per year (solid line) and the number of seizures per year (dashed line) between 2009 and 2014. An asterisk denotes years where seizures have involved scales but data on weight in some confiscations were not available, or the seizure involved a live pangolin.

Date of seizure	Weight (kg)	Location of seizure (mode of transport)	Notes	Data source(s)
7 January 2009	116	Pallel gate, Imphal, Manipur (in truck)	Destined for Moreh, Manipur	www.e-pao.net** (13.1.2009)
16 February 2009	340	Bongyang check gate, Moreh, Manipur	Seized with deer antlers	TOI* (27.2.2009)
23 February 2009	4.5	Bongyang check gate, Chandel, Manipur	Seized with deer antler, and Tiger paw and bone	TOI* (27.2.2009)
22 June 2009	580	Imphal-Moreh road, Mampur		TRAFFIC (2010)
2 July 2009	2.8	Bongyang check post, Imphal, Manipur (in van)	1 person arrested	www.e-pao.net** (3.7.2009)
3 July 2009	2.3	Bongyang check post, Imphal, Manipur (in jeep)	2 people arrested	www.e-pao.net** (6.7.2009)
14 September 2009	482	Moreh, Imphal, Manipur		TOI* (16.9.2009)
22 November 2009	365 scales#	Lamkhang, Chandel, Manipur	3 people arrested. Seized with drugs/arms/ammunition	TRAFFIC (2010)
16 June 2010	555	Lokopriya Gopinath Bordoloi airport Guwahati airport, Assam	Speed post parcels booked from Dimapur, Nagaland and Berhampur, Odisha; Destined for Myanmar. Seized with Tiger bones	Sharma (2014) www.ndtv.com** (20.6.2010)
17 June 2010	164	Lokopriya Gopinath Bordoloi airport, Guwahati, Assam	Seized with Tiger bones and China via Imphal. Seized along with Tiger bones	The Assam Tribune* (18.6.2010)
19 June 2010	146.8	Railway mail service station, Guwahati, Assam		TOI*(24.7.2010)
31 July 2010	2.5	Kamalapur village, Bellary, Karnataka	Procured locally, 7 people arrested	Deccan Chronicle* (1.8.2010), The Hindu* (2.08.2010)
22 September 2010	250	Pallel, Thoubal, Manipur	Destined for Moreh	www.e-pao.net** (5.11.2013)
19 November 2010	138.6	Netaji Subhas Chandra Bose International Airport, Kolkata, West Bengal.	1 person arrested	DRI (2010)***
26 November 2010	511.65	Netaji Subhas Chandra Bose International Airport, Kolkata, West Bengal	Procured from Chennai, Tamil Nadu, destined for Myanmar via Imphal	DRI (2010)***
3 June 2011	1200	Khudengthabi, Chandel, Imphal, Manipur	3 women arrested	www.e-pao.net** (4.6.2011)
23 June 2011	12	Khudengthabi, Chandel, Imphal, Manipur (in jeep)	3 women arrested	www.e-pao.net** (30.6.2011)
29 June 2011	12	Khudengthabi, Chandel, Manipur	3 women arrested	www.e-pao.net** (30.6.2014)
29 June 2011	1800 scales#	Sita track junction, Chandel, Manipur	1 person arrested	www.e-pao.net** (30.6.2014)
20 August 2011	65	Khudengthabi, Moreh, Imphal, Manipur (in bus)	3 local tribal youths arrested	TOI* (23.8.2011)
21 October 2011	144	Sonabarighat, Silchar, Assam (in bus)	Procured from South Indian States, destined for China via Myanmar	
2 November 2011	14	Khudengthabi, Chandel, Manipur	2 people arrested with Myanmarese currency. Procured from south Indian States, destined for China via Myanmar	TOI* (24.10.2011)
20 January 2012	90	Vairengte Check gate, Mizoram (in truck)	2 people arrested. Procured from south Indian State and destined for China.	www.e-pao.net** (3.11.2011)
? May 2012	12	Chandel district, Imphal, Manipur	Destined for border town of Moreh. Seized with pseudoephedrine drug	The Telegraph (31.1.2013)
7 July 2012	19.8	Central Forest Division, Sekmai, Manipur (in jeep)	2 people arrested, transporting from Dimapur to Imphal	TOI* (5.5.2012)
29 July 2012	1 pangolin#	Gurguria range, Simlipal Biosphere Reserve, Odisha		www.e-pao.net** (13.7.2012)
28 August 2012	5	Thamnapokpi, Thoubal, Manipur		Anon. (2013)
				www.kanglaonline.com** (31.8.2012)

Table 1. Reported seizures of pangolin body parts in India (2009–2014).

? =date not specified, # =weight not specified, * =Daily Newspaper, ** =Online news report, *** =Press note, TOI =Times of India, DRI = Directorate of Revenue Intelligence, West Bengal, India

Date of seizure	Weight (kg)	Location of seizure (mode of transport)	Notes	Data source(s)
4 September 2012	63	Bawgakwn, Aizawl, Mizoram	Seized from house, 1 arrest. Destined for Myanmar	The Telegraph (5.9.2012)
6 September 2012	386	Tuirial airfield village, Mizoram		The Arunachal Times* (7.9.2012)
? February 2013	30	Kansrao forest, Rajaji National Park, Uttarakhand	3 people arrested	The Hindu* (23.2.2013)
20 April 2013	11	Anwarganj railway station, Kanpur, Uttar Pradesh	Procured from Irsa, Baital and Hashangabad area, Madhya Pradesh; destined for north-east India	TOI* (21.4.2013)
17 July 2013	85	Beltola area, Guwahati, Assam	1 person arrested with pseudoephedrine tablets. Destined for China via Myanmar	Business Standard* (18.7.2013) Nithart (2013)
31 July 2013	70	Debidanga, Jalpaiguri, Siliguri, West Bengal (in train)	Procured from Kalka, Haryana and destined for Nepal; 5 Indian/2 Nepalese nationals arrested, natives of Chennai, Nagaland, Manipur, Siliguri and Nepal	The Hindu* (1.8.2013)
31 July 2013	2.5	Thoubal, Imphal, Manipur	Woman and son apprehended	Nithart (2013)
12 August 2013	25	Davangere, Karnataka	Collected locally, destined for China via Myanmar	www.news.chennaionline.com** (13.8.2013); Sharma (2014)
? August 2013	80	Aizawl, Mizoram		TOI* (6.8.2013)
28 August 2013	148	Vairengte, Kolasib district, Mizoram	Procured from Shillong, destined for Myanmar	Sharma (2014)
? September 2013	30	Vengal village, Thiruvallore district, Tamil Nadu	5 people arrested including Myanmar nationals	Sharma (2014)
18 September 2013	23	Khudengthabi, Manipur	7 people apprehended	Nithart (2013)
30 December 2013	1 pangolin#	Goria, Sugguja district, Chhattisgarh	7 people apprehended	Central Chronicle* (30.12.2013)
10 January 2014	2	Dandeli-Anashi Tiger Reserve area, Karnataka	1 person apprehended	www.sahilonline.org** (10.1.2014)
11 March 2014	Pangolin skin# with scales	Tengnoupal along Imphal-Moreh road, Imphal, Manipur (in van)	2 people apprehended	www.e-pao.net** (12.3.2014)
21 March 2014	18.3	Imphal, Manipur	3 women and 1 man apprehended;	www.e-pao.net** (14.3.2014)
17 July 2014	0.4	Serou, Thoubal district, Manipur (in van)	procured from Imphal bound for Moreh	www.e-pao.net** (19.7.2014)
24 October 2014	1.7	Khudengthabi check post, Imphal, Manipur	1 woman apprehended	The Assam Tribune* (28.10.2014)
22 September 2014	43	Nawapur in Ballia district, Uttar Pradesh	1 person arrested	TOI* (27.9.2014)
? November 2014	4	Gopichettipalyam village, Tamil Nadu	Procured from Pachmarhi, Madhya Pradesh	Deccan Chronicle* (20.11.2014)
3 November 2014	10	Saperabasti, Doiwala area, Dehradun, Uttarakhand	1 person arrested	The Pioneer (4.11.2014)
13 November 2014	10.7	Moreh, Manipur	1 person sentenced to 2 months' gaol	www.e-pao.net** (19.11.2014) Sanghati Express* (30.11.2014)

Table 1 (ctd). Reported seizures of pangolin body parts in India (2009–2014).

? =date not specified; # =weight not specified; * =Daily Newspaper; ** =Online news report; *** =Press note, TOI =Times of India, DRI = Directorate of Revenue Intelligence, West Bengal, India

USE OF PANGOLIN BODY PARTS IN INDIA

Despite regulations, pangolin body parts continue to be used in traditional medicines throughout India (Mitra, 1998). For instance, Mahawar and Jaroli (2008) reported 109 animal species with 270 uses in traditional medicine in different parts of India, including pangolins. The meat, bile, scales and claws of pangolins are reportedly used by tribal communities including the *Paudi Bhuyan* tribe of Odisha, *Biate* tribe of Assam, *Katkaris* folk of Maharashtra, *Gond* tribe of Madhya Pradesh, *Mizo* ethnic group of Mizoram, and the *Nyishi* and *Galo* tribes of Arunachal Pradesh (Table 2). Although the use of pangolin body parts in these applications is steeped in tradition, exploitation of pangolins for these purposes is illegal. Unfortunately, as little is known about the population status of pangolins in India, it is not possible to determine whether offtake of pangolins for these purposes is sustainable. However, it does

appear, at least based on this evidence, that if offtake for traditional medicinal applications occurs in parallel with exploitation for national and/or international trade, it could well be unsustainable. Further research into pangolin use, exploitation and trade in India, and in South Asia more broadly, is therefore required urgently to obtain a better understanding of the pervasive threat of exploitation and trade in the region (e.g. Challender *et al.*, 2014b; Mahmood *et al.*, 2012).

To draw attention to the illegal pangolin trade in India, in January 2014 the Wildlife Crime Control Bureau, New Delhi, issued an alert to police, forest, Customs and postal authorities throughout the country to highlight the extent of this trade (Sharma, 2014). On 29 November 2014, one person apprehended with 10.7 kg of pangolin scales on 13 November 2014 at Moreh, Manipur, was sentenced to two months' imprisonment, suggesting that this alert may have started to translate into enforcement action and subsequent prosecutions.

PANGOLINS ARE KILLED BY BEING PLACED IN BOILING WATER OR WITH THE USE OF A CLUB TO RENDER THEM UNCONSCIOUS. THE SCALES ARE TYPICALLY REMOVED BY SKINNING THE DEAD ANIMAL OR PEELING OFF THE SCALES.

Species	Body part	Uses	Practitioner	Source
Indian Pangolin <i>Manis crassicaudata</i>	Scales (in an aqueous paste)	to reduce swelling and inflammation	traditional knowledge holders of south India	Dixit <i>et al.</i> , 2010
	Bile	to treat splenomegaly (enlargement of the spleen)	traditional knowledge holders of Mizoram and Arunachal Pradesh (AP)	Chinlamianga <i>et al.</i> , 2013
	Meat	to relieve muscle stiffness	ditto	ditto
	Scales (made into a ring)	to cure piles	<i>Paudi Bhuyan</i> tribe of Odisha, tribes of Similipal Biosphere Reserve, Odisha, and traditional knowledge holders of Mizoram and AP	Mohapatra <i>et al.</i> , 2013; Mishra <i>et al.</i> , 2011; Chinlamianga <i>et al.</i> , 2013
	Scales (dried and crushed to a powder and taken with water)	to get rid of hook worm	<i>Biate</i> tribe of Assam	Betlu, 2013
	Scales (made into a paste and applied to the armpit)	to get rid of armpit boils	<i>Katkaris</i> folk of Maharashtra	Kulkarni and Deshpande, 2011
	Scales tied across the lumber region	to get rid of back pain	<i>Gond</i> tribe, Madhya Pradesh	Bagde and Jain, 2013
Chinese Pangolin <i>Manis pentadactyla</i>	Skin/scales worn around neck	to prevent pneumonia	<i>Mizo</i> ethnic group of Mizoram	Lalmuanpui <i>et al.</i> , 2013
	Meat	consumed as a delicacy	<i>Nyishi</i> tribe of AP	Solanki <i>et al.</i> , 2005
	Scales	to heal wounds	ditto	ditto
	Skin	for cultural purposes	ditto	ditto
	Nails	for piercing boils (assumed antiseptic property)	<i>Nyishi</i> and <i>Galo</i> tribes of AP	Chakravorty <i>et al.</i> , 2011

Table 2. Use of pangolin body parts for traditional medicinal applications in India.



Fig. 5.
The scales of the Indian Pangolin are used as rings by some local people in Khordha, District of Odisha.

RAJESH K. MOHAPATRA

DISCUSSION AND CONCLUSIONS

Despite legislative protection, illegal exploitation and trade in pangolin body parts continues to occur in India, which is having a seemingly deleterious effect on pangolin populations there (Baillie *et al.*, 2014). In addition to existing regulatory measures therefore, the authors propose that a series of additional measures are needed in order to relieve exploitative pressure on pangolins in India and to ensure the conservation of the species. These include continuing to raise awareness of the extent of the trade and the conservation predicament of pangolins with enforcement agencies—including the Indian Wildlife Department—and other stakeholders such as traditional medicinal users and practitioners, tribal communities and members of the public, in order to generate support for and catalyse conservation action. However, they also include



Fig. 6. Indian Pangolin *Manis crassicaudata*, Nandankanan Wildlife Sanctuary, Odisha, eastern India.

RAJESH K. MOHAPATRA

urgently needed research on pangolin populations in India, on current offtake levels both for consumptive use locally as well as for trade, local and national level demand for pangolin derivatives, and research into the means through which local and tribal communities can become partners and stewards in pangolin conservation in India (for example, through the use of incentives or benefits). At the same time, initiatives are needed to reduce international demand for pangolin derivatives, which is currently being met in part by pangolin body parts from India, and on which conservation action has started (for example, WildAid, 2015). However it is only through a multi-faceted approach which encompasses all these elements that the exploitative threat to pangolins in India can be reduced, and their long-term conservation secured.

REFERENCES

- Anon. (2013). Annual report of Similipal Tiger Reserve (July 2012 to June 2013). Similipal Tiger Reserve, Odisha, India. Pp.1–36.
- Baillie, J., Challender, D., Kaspal, P., Khatiwada, A., Mohapatra, R. and Nash, H. (2014). *Manis crassicaudata*. *The IUCN Red List of Threatened Species*. Version 2014.3. www.iucnredlist.org. Viewed on 7 October 2014.
- Bagde, N. and Jain, S. (2013). An ethnozoological studies[sic] and medicinal values of vertebrate origin in the adjoining areas of Pench National Park of Chhindwara District of Madhya Pradesh, India. *Int. J. of Life Sciences* 1(4):278–283.
- Betlu, S. (2013). Indigenous knowledge of zootherapeutic use among the *Biate* tribe of Dima Hasao District, Assam, North-eastern India. *Journal of Ethnobiology and Ethnomedicine* 9(1):56.
- Chakravorty, J., Meyer-Rochow, V.B. and Ghosh, S. (2011). Vertebrates used for medicinal purposes by members of the *Nyishi* and *Galo* tribes in Arunachal Pradesh (North-East India). *Journal of Ethnobiology and Ethnomedicine* 7(1):1–13.
- Challender, D., Baillie, J., Ades, G., Kaspal, P., Chan, B., Khatiwada, A., Xu, L., Chin, S., KC, R., Nash, H. and Hsieh, H. (2014a). *Manis pentadactyla*. *The IUCN Red List of Threatened Species*. Version 2014.3. www.iucnredlist.org. Viewed on 7 October 2014.
- Challender, D.W.S., Waterman, C., and Baillie, J.E.M. (2014b). *Scaling up pangolin conservation. IUCN SSC Pangolin Specialist Group Conservation Action Plan*. Zoological Society of London, London, UK.
- Challender, D.W.S. (2011). Asian Pangolins: increasing affluence driving hunting pressure. *TRAFFIC Bulletin* 23(3):92–93.
- Challender, D.W.S. and Hywood, L. (2012). African pangolins under increased pressure from poaching and international trade. *TRAFFIC Bulletin* 24(2):13–15.
- Chinlampiang, M., Singh, R.K. and Sukla, A.C. (2013). Ethnozoological diversity of Northeast India: Empirical learning with traditional knowledge holders of Mizoram and Arunachal Pradesh. *Indian Journal of Traditional Knowledge* 12(1):18–30.
- CITES (2000a). Amendments to Appendices I and II of the Convention adopted by the Conference of the Parties at its 11th meeting, Gigiri (Kenya), 10–20 April 2000. CITES, Geneva, Switzerland.

- CITES (2000b). Prop. 11.13. Proposals for Amendments of Appendices I and II. Eleventh meeting of the Conference of the Parties, Gigiri (Kenya), 10–20 April 2000. <http://www.cites.org/eng/cop/11/prop/index.shtml>. Viewed on 14 October 2013.
- Dixit, A.K., Kadavul, K., Rajalakshmi, S. and Shekhawat, M.S. (2010). Ethno-medico-biological studies of south India. *Indian Journal of Traditional Knowledge* 9(1):116–118.
- Gubbi, S. and Linkie, M. (2012). Wildlife hunting patterns, techniques, and profile of hunters in and around Periyar tiger reserve. *Journal of the Bombay Natural History Society* 109(3):165–172.
- Heath, M.E. (1992). *Manis pentadactyla*. *Mammalian Species* 414:1–6. American Society of Mammology.
- Heath, M.E. and Vanderlip, S.L. (1988). Biology, husbandry, and veterinary care of captive Chinese pangolins (*Manis pentadactyla*). *Zoo Biology* 7:293–312.
- Heath, M.E. (1995). *Manis crassicaudata*. *Mammalian species* 513:1–4.
- Kulkarni, C.G. and Deshpande, A. (2011). Folk therapies of *Katkaris* from Maharashtra. *Indian Journal of Traditional Knowledge* 10(3):554–558.
- Kumara, H.N. (2007). A report on impact of local hunting on abundance of large mammals in three protected areas of the Western Ghats, Karnataka. Submitted to Rufford Maurice Laing Foundation, UK. Pp.1–45.
- Lalmuanpuii, J., Rosangkima, G. and Lamin, H. (2013). Ethno-medicinal practices among the *Mizo* ethnic group in Lunglei district, Mizoram. *Science Vision* 13(1):24–34.
- TRAFFIC (2010). Seizures and prosecutions. *TRAFFIC Bulletin* 22(2):129–140.
- Mahmood, T., Hussain, R., Irshad, N., Akrim, F. and Sajid, M. (2012). Illegal mass killing of Indian pangolin (*Manis crassicaudata*) in Potohar Region, Pakistan. *Pakistan J. Zool.* 44(5):1457–1461.
- Mahawar, M.M. and Jaroli, D.P. (2008). Traditional zootherapeutic studies in India: a review. *Journal of Ethnobiology and Ethnomedicine* 4(17):1–17.
- Mishra, C., Datta, A. and Madhusudan, M.D. (2004). *The high altitude wildlife of Western Arunachal Pradesh: a survey report*. CERC Technical Report No. 8. Nature Conservation Foundation, International Snow Leopard Trust, and Wildlife Conservation Society (India Program), Mysore, India.
- Mishra, N., Rout, S.D., and Panda, T. (2011). Ethno-zoological studies and medicinal values of Similipal Biosphere Reserve, Orissa, India. *African Journal of Pharmacy and Pharmacology* 5(1):6–11.
- Misra, M. (2000). Pangolin distribution and trade in East and Northeast India. *TRAFFIC Dispatches* 14:4–5.
- Mitra, S. (1998). On the scales of scaly anteater *Manis crassicaudata*. *J. Bombay Nat. His. Soc.* 95(3):495–498.
- Mohanty, B. (2011). Wildlife poaching in Orissa. PhD (Life Science) thesis, submitted to North Orissa University, Baripada, Odisha. Pp.82–85.
- Mohapatra, P.P., Dash, P.K., Palei, H.S., Behera, S.K. and Acharya, S. (2013). Documentation of indigenous traditional knowledge of *Paudi Bhuyan* in Odisha. (Technical Report-2/2012), Centre for Biodiversity Conservation, Bhubaneswar, Odisha. Pp.1–177.
- Mohapatra, R.K. and Panda, S. (2014). Husbandry, behaviour and conservation breeding of Indian pangolin. *Folia Zoologica* 63(2):73–80.
- Nithart, C. (Ed.) (2013). *On the Trail*. Robin Des Bois. Paris, France. 2:1–78.
- Pantel, S. and Chin, S.Y. (Eds.) (2009). *Proceedings of the Workshop on Trade and Conservation of Pangolins Native to South and Southeast Asia* 30 June–2 July 2008. Singapore Zoo, Singapore, TRAFFIC Southeast Asia, Petaling Jaya, Selangor, Malaysia.
- Pocock, R.I. (1924). The external characteristics of the pangolins (Manidae). *Proceedings of Zoological Society of London*. Pp.707–723.
- Prater, S.H. (2005). *The Book of Indian Animals*. Oxford University Press, New Delhi.
- Sharma, B.K. (2014). Pangolins in trouble. *Sanctuary Asia*. XXXIV (3):38–41.
- Solanki, G.S., Chutia, P. and Singh, O.P. (2005). Ethnozooology of the Nyishi tribe and its impact on biodiversity in Arunachal Pradesh, India. *Rajib Gandhi University Research Journal* 8(1):89–100.
- Srinivasulu, C. and Srinivasulu, B. (2004). Checklist of Scandentia and Pholidota (Mammalia: Scandentia and Pholidota) of South Asia. *Zoo's Print Journal* 19(2):1372–1374.
- Tikader, B.K. (1983). *Threatened Animals of India*. Zoological Survey of India, Calcutta.
- Underwood, F.M., Burn, R., and Milliken, T. (2013). Dissecting the illegal ivory trade: an analysis of ivory seizures data. *PLoS One* 8(10):e76539.
- WildAid (2015) Pangolins. The world's most trafficked mammal. <http://www.wildaid.org/program/pangolins>. Viewed on 3 April 2015.
- Wu, S.B., Lui, N., Zhang, Y., and Ma, G. (2004). Assessment of threatened status of Chinese pangolin (*Manis pentadactyla*). *Chinese Journal of Applied Environmental Biology* 10(4):456–461.
- Wu, S.B. and Ma, G. (2007). The status and conservation of pangolins in China. *TRAFFIC East Asia Newsletter* (4):1–5.
- Yang, C.W., Chen, S., Chang, C.Y., Lin, M.F., Block, E., Lorentsen, R., Chin, J.S.C. and Dierenfeld, E.S. (2007). History and dietary husbandry of pangolins in captivity. *Zoo Biology* 26:223–230.
- Zhou, Z.M., Hong, Z., Zhang, Z.X., Wang, Z.H. and Wang, H.H. (2012). Allometry of scales in Chinese pangolins (*Manis pentadactyla*) and Malayan pangolin (*Manis javanica*) and application of judicial expertise. *Zoological Research* 33(3):271–275.

Rajesh Kumar Mohapatra, Biologist, Nandankanan Zoological Park, Odisha, India; PhD candidate, Utkal University, Odisha, India; Member, IUCN SSC Pangolin Specialist Group. Email: rajesh.wildlife@gmail.com

Sudarsan Panda, Director, Nandankanan Zoological Park, Odisha, India. Email: sudarsanpanda61@gmail.com

Manoj V. Nair, Scientist-E, Wildlife Institute of India, Dehradun, Uttarakhand, India. Email: manojnair74@gmail.com

Lakshmi Narayan Acharjyo, Retired zoo veterinarian of Nandankanan Zoological Park, Odisha, India. Email: lnacharjyo@gmail.com

Daniel W.S. Challender, Programme Officer, Sustainable Use and Trade, IUCN Global Species Programme, Cambridge, UK; Co-Chair, IUCN SSC Pangolin Specialist Group. Email: dan.challender@iucn.org; dan_pangolin@hotmail.co.uk

Entries in bold indicate illustrations

A

Abalone, seizures, 23, 24, 71
Acinonyx jubatus, Iran, 71
Agyrtia violiceps, seizure, 72
Ailuropoda melanoleuca, 11; 37
Alectoris chukar, on sale in Saudi Arabia, 79; *A. melanocephala*, on sale in Saudi Arabia, 79
 Aloufi, Abdulhadi, conservation perspectives of illegal animal trade at markets in Tabuk, Saudi Arabia, 77–80
Alpinia latilabris, sustainable wild collection, 4–7; *A. malaccensis*, sustainable wild collection, 4–7; *A. menghainensis*, sustainable wild collection, 4–7; *A. xanthioides*, sustainable wild collection, 4–7
 Amazon, Ecuador, economic alternatives to wild meat, 8
Amazona aestiva, trade in Saudi Arabia, 77–80; *A. ochrocephala*, trade in Saudi Arabia, 77–80
Ammoperdix heyi, on sale in Saudi Arabia, 79
Amomum villosum, sustainable wild collection, 4–7; *A. xanthioides*, sustainable wild collection, 4–7
Ampelopsis cantoniensis, 7
Anacamptis collina, illegal wild collection and international trade of CITES-listed terrestrial orchid tubers in Iran, 53–58; *A. coriophora*, illegal wild collection and international trade of CITES-listed terrestrial orchid tubers in Iran, 53–58; *A. morio* subsp. *picta*, illegal wild collection and international trade of CITES-listed terrestrial orchid tubers in Iran, 53–58; *A. palustris*, illegal wild collection and international trade of CITES-listed terrestrial orchid tubers in Iran, 53–58; *A. pyramidalis*, illegal wild collection and international trade of CITES-listed terrestrial orchid tubers in Iran, 53–58
 Angola, findings on the flourishing ivory trade in Angola's capital, Luanda, 44–46
Anthracosceros coronatus, 5–6
 Applied Environmental Research Foundation (AERF), project relating to harvesting of medicinal and aromatic plants and implementation of the FairWild Standard, 4–7
Ara ararauna, trade in Saudi Arabia, 77–80
Archilochus alexandri, seizure, 72; *A. colubris*, seizure, 72
Arnica montana, 14
Artemisia argyi, 11
 ASAP (Asian Species Action Partnership), 15–17
 ASEAN (Association of Southeast Asian Nations), 15–17; regional economic integration organizations: their role in implementing CITES, 59–64
Astrocaryum chambira, 8–10
Astrochelys radiata, seizures, 21, 24; *A. yniphora*, Critically Endangered Ploughshare Tortoises: shells branded

to reduce demand, 21; seizures, 21
 Association of Waorani Women of Ecuador (AMWAE), 8–10
Atelerix algirus, trade in Morocco, 67
Atlantoxerus getulus, trade in Morocco, 67
 Austin, Steve, dog trainer for detecting illegal timber, 18, 19
 Australia, seizures and prosecutions, 23, 71, 76; Wildlife Witness phone app, 51

B

Babyrousa cf. *celebensis*, trade in Bali, 31–36
 Bahamas, repatriation of *Cyclura rileyi cristata* specimens, 74
 Bali, trade in wildlife in Bali, Indonesia, for medicinal and decorative purposes, 31–36
 Bangladesh, Second Stocktaking Conference of the Global Tiger Recovery Program (GTRP)
 Bear (see also species name), seizures, 25
 Belarus, regional economic integration organizations: their role in implementing CITES, 59–64
 Belgium, ivory stockpiles destroyed, 3; seizures and prosecutions, 71
 Bendon, John, 42; 74
 Bennett, Darren, prosecution, 25
 Bergin, Daniel, open, unregulated trade in wildlife in Morocco's markets, 65–70
 Bila, Joseph Ephraim, prosecution, 75
 Binga, Nyasha, prosecution, 73
 Bird (see also species name), seizures, 71–72; nests seized, 72
 Bitá, Angla-Alina, prosecution, 25
 Boer, Hugo de, illegal wild collection and international trade of CITES-listed terrestrial orchid tubers in Iran, 53–58
 Borneo, a review of the Sun Bear trade in Malaysia, 37; sale of serow meat, 82
Bos gaurus, in Malaysia, 81; *B. javanicus*, in Malaysia, 81
Boswellia, 14
 Braun, Birgit, detector dogs sniffing out illegal timber, 18–19
 Brazil, illegal operation dismantled, 73
 Bromeliad Society of Australia, 42
Bubalus mindorensis, 17
Buceros bicornis, 5–6
 Burgess, Gayle, Bulletin Board, 42
Burhinus oedicnemus, on sale in Saudi Arabia, 79
 Bucsa, Vitoria-Oliva, prosecution, 25

C

Cambodia, seizures, 22, 72
 Cameroon, seizures, 22, 72, 73
 Canada, seizures and prosecutions, 24, 25
Canis aureus, trade in Morocco, 67; *C. lupus*, trade in Saudi Arabia, 77–80
 Capotosto, Jill, Bulletin Board, 42
Capra nubiana, trade in Saudi Arabia, 77–80
Capricornis spp., 20; *C. sumatraensis*, observations of illegal trade in Sumatran Serows in Malaysia, 81–84
Carcharinus longimanus, CITES listing, 41
Carrelechelys insculpta, seizure and repatriation, 24
Cassia cornuta, trade in Bali, 31–36

Cedrela odorata, detecting illegal timber shipments, 18–19
Cedrelinga catenaeformis, 8–10
Ceratotherium simum, poaching, 74–75
Cervus elaphus, trade in Morocco, 67
 Chad, ivory stockpiles destroyed, 3
Chamaeleo chamaeleon, trade in Morocco, 65–70
 Chand, Sansar, 22
Charonia tritonis, trade in Bali, 31–36
 Chauke, Mandla, prosecution, 75
Chelonia mydas, seizure, 74
 Cheloniidae (see also species name), trade in Morocco, 67
 Chikanda, efforts urged to tackle thriving illegal orchid trade in Tanzania and Zambia for *chikanda* production, 47–50
 China, ivory destroyed, 3; seizures and prosecutions, 22, 24, 25, 71, 72, 73, 76; bear bile trade, 20; bear products exported, 39; greening traditional Chinese medicine industry supply chains, 10–12; online trade in Tiger parts, 26–30; demand for ivory in Angola for export to China, 44–46; trade with ASEAN countries, 62
Chitra indica, seizure, 24
Chlamydotis, on sale in Saudi Arabia, 79
 Chng, Serene, Bulletin Board, 42
Cibotium barometz, 7
 CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora), 1; Iraq joins, 2; MIKE (Monitoring the Illegal Killing of Elephants), 3; detector dogs to identify CITES-listed timber species in illegal trade, 18–19; *Nautilus pompilius*, 34; role of regulating trade in stingrays, 34; regional economic integration organizations: their role in implementing CITES, 59–64; illegal wild collection and international trade of CITES-listed terrestrial orchid tubers in Iran, 52–58
Coelognathus radiata, seizure, 25
 College of African Wildlife Management, 42
Commiphora, 14
 Conference, London Conference on the Illegal Wildlife Trade 2014, 1; Conference on International Trade in Endangered Species of Wild Fauna and Flora (CITES), 1; 34; European Association of Zoos and Aquaria (EAZA), 20; Third Asian Ministerial Conference on Tiger Conservation, 43
Copsychus malabaricus, seizure, 72
Coturnix coturnix, trade in Saudi Arabia, 77–80
Crocodylus mindorensis, 17; *C. niloticus*, trade in Morocco, 65, 67; *C. porosus*, trade in Bali, 33; *C. siamensis*, 17
 Cuba, seizure, 71
Cuniculus paca, 10
Cyclura rileyi cristata, seizure and repatriation, 25, 74
 Czech Republic, Traditional and wild project, 12–14; seizures, 72

D

- Dactylorhiza incarnata*, illegal wild collection and international trade of CITES-listed terrestrial orchid tubers in Iran, 53–58; *D. romana* subsp. *georgica*, illegal wild collection and international trade of CITES-listed terrestrial orchid tubers in Iran, 53–58; *D. umbrosa*, illegal wild collection and international trade of CITES-listed terrestrial orchid tubers in Iran, 53–58
- Dalbergia*, detecting illegal trade, 18–19; *D. latifolia*, detecting illegal trade, 18–19; *D. nigra*, detecting illegal trade, 18–19; *D. spruceana*, detecting illegal trade, 18
- Dang, Vu Hoai Nam, Bulletin Board, 42
- Darwin Initiative, 5
- Dasyopus*, in Morocco, 67,69
- Day, Dennis, prosecution, 24
- Detector dogs, 18–19
- Dicerorhinus bicornis*, seizures, 25; poaching, 74–75; *D. sumatrensis*, 17,81
- Disa*, harvest and trade in Tanzania and Zambia, 47–50
- Doak, Naomi, Bulletin Board, 42
- Dominican Republic, seizures and prosecutions, 24
- Duckworth, J.W., averting the imminent extinction of South-east Asian vertebrate species: Asian Species Action Partnership (ASAP), 15–17
- Dugong dugon*, trade in Bali, 31–36, 32,34;
- Durrell Wildlife Conservation Trust, *Astrochelys yniphora*, 21; Durrell Institute of Conservation and Ecology at the University of Kent (DICE), 5

E

- Ecuador, economic alternatives to wild meat, 8–10
- Editorial, 1, 41
- Eid, Ehab, conservation perspectives of illegal animal trade at markets in Tabuk, Saudi Arabia, 77–80
- Elephant (see also species name and ivory), seizures and prosecutions, 22–23,72–73; poaching, 3
- Elephas maximus*, on sale in Bali, 33
- Emys orbicularis*, trade in Morocco, 67
- Eretmochelys imbricata*, seizure, 74; online trade, 27; trade in Bali, 33; trade in Saudi Arabia, 77–80
- Etandrophragma cylindricum*, detecting illegal timber shipments, 18; *E. utile*, detecting illegal timber shipments, 18
- ETIS (Elephant Trade Information System), 1
- Eurasian Economic Community, regional economic integration organizations: their role in implementing CITES, 59–64
- European Association of Zoos and Aquaria (EAZA), 20
- European Union, regional economic integration organizations: their role in implementing CITES, 59–64
- Eutropis multifaciata*, trade in Bali, 32,33
- EU-TWIX (Trade in Wildlife Information eXchange), 60–61

F

- FairWild Standard, tested in India, 4–7; principles applied in Ecuadorian Amazon, 8–10; in China, 10–12
- Falco cherrug*, on sale in Saudi Arabia, 79; *F. peregrinus*, on sale in Saudi Arabia, 78,79; *F. rusticolus*, on sale in Saudi Arabia, 78,79; France, ivory destroyed, 3; seizures and prosecutions, 25, 72,73,74,76
- Famba, Gift, prosecution, 73
- Felis margarita*, collection and sale in Saudi Arabia, 78,79; *F. silvestris*, trade in Morocco, 67
- Fenech, Branco, penalty reduced, 72
- Fregata*, on sale in Bali, 33

G

- Gabon, ivory destroyed, 3; seizure and prosecution, 22
- Garrulax bicolor*, 20
- Gazella dorcas*, trade in Morocco, 65–70,69
- Genetta genetta*, trade in Morocco, 67
- Geochelone elegans*, seizures, 24; *G. platynota*, shells branded, 21; *G. sulcata*, seizure, 24
- Geoclemys hamiltonii*, seizures, 24,74
- Germany, seizures, 72
- Ghorbani, Abdolbaset, illegal wild collection and international trade of CITES-listed terrestrial orchid tubers in Iran, 53–58
- Global Tiger Recovery Program, (GTRP), 26,43
- Glycyrrhiza uralensis*, 14
- Gordon,Victor, prosecution, 73
- Gorilla gorilla*, illegal trade, 73
- Gravendeel, Barbara, illegal wild collection and international trade of CITES-listed terrestrial orchid tubers in Iran, 53–58
- Grus grus*, on sale in Saudi Arabia, 79
- Gynostemma pentaphyllum*, 7
- Gyps fulvus*, trade in Saudi Arabia, 78,79

H

- Habenaria*, orchid harvest and trade in Tanzania and Zambia, 47–50; *H. occlusa*, 48
- Haliaeetus leucogaster*, on sale in Bali, 33
- Haliotis* (see also abalone), seizures, 23,24, 71
- Hardella thurjii*, seizure, 24
- Harris, James M., 42
- Hawksbill Turtle (see *Eretmochelys imbricata*)
- Helarctos malayanus*, demand for body parts, 20; trade in Bali, 31–36; a review of the Sun Bear trade in Malaysia, 37–40; *H.m. eurypilus*, 37; *H.m. malayanus*, 37
- Hennache, Alain, 42
- Herpestes ichneumon*, 67
- Himantoglossum affine*, illegal wild collection and international trade of CITES-listed terrestrial orchid tubers in Iran, 53–58; *H. comperianum*, illegal wild collection and international trade of CITES-listed terrestrial orchid tubers in Iran, 53–58
- Hippocampus*, seizure, 25
- Hiremath, Umesh, medicinal and aromatic plants: conserving biodiversity and

sustaining livelihoods in India, 4–6

- Homalomena occulata*, 7
- Hong Kong Special Administrative Region, ivory destroyed, 3; seizures and prosecutions, 22,24,25,71,72,73,76
- Hummingbird (see also species name), seizures, 71,72
- Hungary, Traditional and wild project, 12–14
- Husher, Kira, new partnership to help disrupt illegal wildlife trade networks, 51
- Hyaena hyaena*, trade in Morocco, 67
- Hypericum perforatum*, 14
- Hystrix cristata*, trade in Morocco, 67; *H. javanica*, trade in Bali, 33

I

- Iguana iguana*, seizure, 24
- India, Sansar Chand, 22; seizures and prosecutions, 23,24,74,75,76; medicinal and aromatic plants: north-western Ghats project, 4–7; trade in terrestrial orchid tubers from Iran, 52–58
- Indonesia, seizures and prosecutions, 25; trade in wildlife in Bali, Indonesia, for medicinal and decorative purposes, 31–36; *Astrochelys yniphora*, 21
- Indotestudo elongata*, seizure, 25
- Institute, Johann Heinrich von Thünen, timber, 18
- International Trade Union of Genuine Regional Materia Medica (TUGRMM), 11
- Iran, illegal wild collection and international trade of CITES-listed terrestrial orchid tubers in Iran, 52–58; seizure and prosecution, 71
- Iraq, joins CITES, 2
- IUCN, 42
- Ivory, seizures, 1, 22–23,63,72–73; online trade, 27; trade in Bali, 31–36; findings on the flourishing ivory trade in Angola's capital, Luanda, 44–46

J

- John, Elizabeth, critically endangered Ploughshare Tortoises: shells branded to reduce demand, 21
- Juglans regia*, 12–14, 13

K

- Kazakhstan, regional economic integration organizations: their role in implementing CITES, 59–64
- Kecse-Nagy, Katalin, regional economic integration organizations: their role in implementing CITES, 59–64
- Keidanren Nature Conservation Fund (KNCF), funding for medicinal and aromatic plant projects in India and Viet Nam, 4–7
- Kenya, seizures, 22,72–73
- Khaya* spp., detecting illegal timber shipments, 18–19
- Kinixys erosa*, seizure, 24
- Krishnasamy, Kanitha, a review of the Sun Bear trade in Sarawak, Malaysia, 37–40; observations of illegal trade in Sumatran Serows in Malaysia, 81–84

Kyrgyzstan, regional economic integration organizations: their role in implementing CITES, 59–64

L

Lamna nasus, CITES listing, 41
Langa, Antonio Sendes, prosecution, 74
Lemthongthai, Chumlong, gaol sentence reduced, 75
Leptailurus serval, trade in Morocco, 67
Lepus capensis, on sale in Saudi Arabia, 78
Leucopsar rothschildi, on Bali, 31
Li, Chenyang, greening traditional Chinese medicine industry supply chains in China, 10–12
Li, Zhifei, prosecution, 75
Liang, Cheng Jie, prosecution, 73
Ling, Xu, Bulletin Board, 2
Logan, Gregory, prosecution, 25
Lonicera, 11; *L. japonica*, 11
Loxodonta africana africana, ivory in Angola, 45; *L. a. cyclotis*, ivory in Angola, 45
Lutra lutra, trade in Morocco, 67

M

Macaca fascicularis, trade in Bali, 31–36;
M. sylvanus, in Morocco, 65,66,67
Madagascar, *Astrochelys yniphora*, 21
Magnolia officinalis, 11
Malawi, seizure, 73
Malaysia, seizures and prosecutions, 21,22,72,76; bear bile trade, 20; a review of the Sun Bear trade in Sarawak, 37–40; observations of illegal trade in Sumatran Serows in Malaysia, 81–84
Malta, seizures and prosecutions, 72
Manis, seizures, 23,73;
M. gigantea, seizure, 73
Manta, CITES listing, 41
Martin, Esmond, 2,42; findings on the flourishing ivory trade in Angola's capital, Luanda, 44–46
Mathebula, Erick, prosecution, 75
Mathebula, Hlengani Reckson, prosecution, 75
Matricaria chamomilla, 12–14, 13
Mastomys natalensis, trade in Saudi Arabia, 78,79
Medicinal and aromatic plants (MAPs), China, 10–12; India, 4–7; Viet Nam, 4–7
Meibom, Stephanie von, regional economic integration organizations: their role in implementing CITES, 59–64
Melanochelys tricarinata, seizure, 24
Melissa officinalis, 12–14, 13
Melursus ursinus, 37
Milliken, T., 3,72
Milvus migrans, illegal trade, 71
Mloyi, Danisa, prosecution, 24
Monodon monoceros, illegal trade, 25
Morenia petersi, seizure, 24
Morocco, open, unregulated trade in wildlife in Morocco's markets, 65–70;
Mozambique, seizures, 74
Mulliken, Teresa, 42
Muntiacus muntjak, in Malaysia, 81; trade in Bali, 31–36
Mustela nivalis, trade in Morocco, 67
Mutanha, Frank, prosecution, 73

Mwatha, Cleo Mashini, Bulletin Board, 42
Myanmar, *Capricornis* spp., 20

N

Naja spp., trade in Bali, 33
Nanger dama, trade in Morocco, 67,68
Nautilus pompilius, trade in Bali, 31–36, 34
Nekaris, K.A.I., trade in wildlife in Bali, Indonesia, for medicinal and decorative purposes, 31–36
Neotrygon kuhlii, trade in Bali, 33
Nepal, seizure, 71
Ngandjui, Germain, Bulletin Board, 42
Ngeh, Paulinus, Bulletin Board, 2
Nguyen Thi Mai, medicinal and aromatic plants project, Viet Nam, 6–7
Nguyen, Trinh Tuyet, Bulletin Board, 42
Nijman, Vincent, trade in wildlife in Bali, Indonesia, for medicinal and decorative purposes, 31–36; open, unregulated trade in wildlife in Morocco's markets, 65–70
Nilssonia gangetica, seizure, 24
Nkuna, Ndombama Salvatore, prosecution, 75
Nomascus concolor, 17; *N. leucogenys*, 17;
N. nasutus, 17
Núñez-Miño, José, Bulletin Board, 2
Nycticebus coucang, seizure, 25;
N. cf. javanicus, trade in Bali, 31–36,32
Nymphaea thermarum, specimen stolen, 23

O

O'Brien, Daniel, prosecution, 25
Odobenus rosmarus, trade in Bali, 31
Oenocarpus batua, 8
Ophrys scolopax, illegal wild collection and international trade of CITES-listed terrestrial orchid tubers in Iran, 53–58; *O. sphogodes*, illegal wild collection and international trade of CITES-listed terrestrial orchid tubers in Iran, 53–58; *O. s.* subsp. *mammosa*, illegal wild collection and international trade of CITES-listed terrestrial orchid tubers in Iran, 53–58
Orchid (see also species name), harvest and trade in Tanzania and Zambia, 47–50; illegal wild collection and international trade of CITES-listed terrestrial orchid tubers in Iran, 53–58
Orchis adenocheila, illegal wild collection and international trade of CITES-listed terrestrial orchid tubers in Iran, 53–58; *O. mascula*, illegal wild collection and international trade of CITES-listed terrestrial orchid tubers in Iran, 53–58; *O. punctulata*, illegal wild collection and international trade of CITES-listed terrestrial orchid tubers in Iran, 53–58; *O. simia*, illegal wild collection and international trade of CITES-listed terrestrial orchid tubers in Iran, 53–58
Ortiz von Halle, Bernardo, chocolate, chambira and chuncho—economic alternatives to wild meat, 8–10
Ostroff, Mark, prosecution, 24

P

Pacific Shark Heritage Programme, editorial, 41
Pakistan, trade in terrestrial orchid tubers from Iran, 52–58; seizures, 74
Palmer, Barbara, 42
Panax quinquefolius, seizure, 75–76
Pandion haliaetus, on sale in Saudi Arabia, 79
Pangasianodon gigas, 17
Pangolin (see also *Manis*), seizures and prosecutions, 23,24,73,
Panthera leo, seizure, 22; trade in Morocco, 67, 68; *P. pardus*, demand in Angola, 45; in Malaysia, 81; trade in Morocco, 65–70; *P. tigris*, Tigers: exploring the threat from illegal online trade, 26–30; in Malaysia, 81; seizures (and poaching), 22,71,76; trade in body parts in Bali, 32,33; Second Stocktaking Conference of The Global Tiger Recovery Program, 43; *P. tigris altaica*, seizure, 71; *Pt. tigris*, seizures, 22
Pan troglodytes, Lebanon, 77
Paradoxurus hermaphroditus, on sale in Bali, 33
Pasha, Khalid, Bulletin Board, 2
Passer domesticus, on sale in Saudi Arabia, 79
Pastinachus sephen, trade in Bali, 33
Pavo muticus, trade in Bali, 31–36
Penang Butterfly Farm, 42
Philippines, ivory destroyed, 3; seizures, 74
Piaractus brachypomus, 9
Platanthera chlorantha, illegal wild collection and international trade of CITES-listed terrestrial orchid tubers in Iran, 53–58
Podocnemis expansa, illegal trade, 73;
P. unifilis, illegal trade, 73
Poland, Traditional and wild project, 12–14
Pongo abelii, 16,17
Prionailurus bengalensis, on sale in Bali, 33
Pristis, trade in Bali, 31–36
Procapra capensis, trade in Saudi Arabia, 78,79
Pseudoryx nghetinhensis, 15–17
Psittacula krameri, 79
Psittacus erithacus, on sale in Saudi Arabia, 78,79
Pterocarpus santalinus, seizures, 23,75
Pukka Herbs Ltd, 5
Puyol, Ana, chocolate, chambira and chuncho—economic alternatives to wild meat, 8–10
Pycnonotus leucotis, on sale in Saudi Arabia, 79
Python sebae, trade in Morocco, 65,67

R

Rao, Madhu, averting the imminent extinction of South-east Asian vertebrate species: Asian Species Action Partnership (ASAP), 15–17
Ratsimbazafy, Cynthia, Bulletin Board, 2
Ray (Stingray, see also species name), CITES listings, 41; trade in Bali, 31–36
Red Dog Film, 2,42
REIOs (regional economic integration organizations): their role in implementing CITES, 59–64
Ringuet, Stéphane, Bulletin Board, 42
Romania, seizures, 76

- Rhea americana*, on sale in Saudi Arabia, 78,79
- Rhinoceros (see also species name), 1; poaching in South Africa, 1,3; *Dicerorhinus sumatrensis*, 17; *Rhinoceros sondaicus*, 17; 81; *R. unicornis*, poached, 74; seizures and prosecutions, 25,74–75; e-commerce, 27; China ban on rhinoceros horn trade, 29
- Rhodonessa caryophyllacea*, 16
- Roberts, Rachel, averting the imminent extinction of South-east Asian vertebrate species: Asian Species Action Partnership (ASAP), 15–17
- Rodina, Kristina, going wild in Central Europe, 12–14
- Royal Zoological Society of Scotland, 42
- Rufford Foundation, The, 2,42
- Rusa timorensis*, trade in Bali, 31–36; *R. unicolor*, in Malaysia, 81
- Russia, seizures, 25; regional economic integration organizations: their role in implementing CITES, 59–64
- S**
- Sabanayagam, Nisha Devi, Bulletin Board, 2
- Salep*, illegal wild collection and international trade of CITES-listed terrestrial orchid tubers in Iran, 52–58
- Sambucus nigra*, 14
- Sant, Glenn, editorial, 41
- Sarnaik, Jayant, medicinal and aromatic plants: conserving biodiversity and sustaining livelihoods in the North-Western Ghats, India, 4–6
- Satyrium*, orchid harvest and trade in Tanzania and Zambia, 47–50
- Saudi Arabia, conservation perspectives of illegal animal trade at markets in Tabuk, 77–80
- Schisandra sphenanthera*, 11
- Seizures and prosecutions, 1,22–25,71–76
- Selasphorus sasin*, seizure, 72
- Shark (see also species name), TRAFFIC and WWF initiative, *Sharks: Restoring the Balance*, 41; CITES listings, 41; trade in Bali, 31–36, 35
- Shepherd, Chris R., averting the imminent extinction of South-east Asian vertebrate species: Asian Species Action Partnership (ASAP), 15–17; TRAFFIC and EAZA: great potential for collaboration, 20; Endangered Ploughshare Tortoises: shells branded to reduce demand, 21; a review of the Sun Bear trade in Sarawak, Malaysia, 37–40; observations of illegal trade in Sumatran Serows in Malaysia, 81–84
- Shi, Jianbin, Bulletin Board, 42
- Simango, Musa, prosecution, 25
- Singapore, seizures and prosecutions, 25; Singapore Zoo, *Astrochelys yniphora*, 21
- Slovenia, Traditional and wild project, 12–14
- Smith, Zane, 42
- South Africa, seizures, 23,24,25,71,73–75; rhinoceros poaching, 3
- Sphyrna*, trade in Bali, 33; *Sphyrna lewinii*, CITES listing, 41; *S. mokarran*, CITES listing, 41; *S. zygaena*, CITES listing
- Spilopelia senegalensis*, 78,79
- Sri Lanka, seizures, 23,72
- Stefanovic, Zora Dajic, 13
- Stemona tuberosa*, 7
- Steniella satyrioides*, illegal wild collection and international trade of CITES-listed terrestrial orchid tubers in Iran, 53–58;
- Stoner, Sarah, Tigers: exploring the threat from illegal online trade, 26–30
- Streptopelia decaocto*, on sale in Saudi Arabia, 79
- Strombus gigas*, seizure, 24
- Sus scrofa*, in Malaysia, 81, in Bali, 31,33; in Morocco, 67; *S. verrucosus*, 31
- Swietenia macrophylla*, detecting illegal timber shipments, 18–19
- T**
- Tachyglossus aculeatus*, illegal export from Indonesia, 20
- Taiwan Council of Agriculture, 2,42
- Tajikistan, regional economic integration organizations: their role in implementing CITES, 59–64
- Tansom, Panjit, Bulletin Board, 2
- Tanzania, elephant numbers drop, 3; express intention to destroy ivory stockpiles, 3; seizures and prosecutions, 23; elephant poaching, 3; efforts urged to tackle thriving illegal orchid trade for *chikanda* production, 47–50
- Taronga Conservation Society, Wildlife Witness phone app, 51
- Terminalia bellirica*, FairWild Standard tested in India, 4–6; *T. chebula*, FairWild Standard tested in India, 4–6
- Testudo graeca*, trade in Morocco, 65–70; trade in Saudi Arabia, 77–80; seizures, 74; *T. hermanni*, seizure, 24
- Thailand, seizures, 21,22,24,25,73,75; *Capricornis* spp., 20
- Thomas, Richard, 42
- Tiau Kiu Hwa, Bulletin Board, 42
- Tiger (see also species name), Exploring the threat from illegal online trade, 26–30; China ban on Tiger bone trade, 29,30; Second Stocktaking Conference of The Global Tiger Recovery Program, 43
- Timber, detection of illegal timber with use of detector dogs, 18–19
- Timoshyna, Anastasiya, greening traditional Chinese medicine industry supply chains in China, 10–12
- Togo, seizure, 23
- Toko, Ayako, Bulletin Board, 42
- Trachypitecus delacouri*, 17; *T. poliocephalus*, 17
- Traditional and wild, project in central Europe, 12–14
- TRAFFIC, and EAZA, great potential for collaboration, 20
- Triceros hoehnelii*, seizure, 24; *T. jacksonii*, seizure, 24
- Turkey, trade in terrestrial orchid tubers for *salep*, 53–58
- Turtle Conservancy, *Astrochelys yniphora*, 21
- U**
- Uganda, seized ivory ordered to be released, 23
- UK, seizures and prosecutions, 25,74; *Nymphaea thermarum* specimen stolen, 23
- Uromastyx acanthinura*, trade in Morocco, 65–70; *U. aegyptia*, trade in Saudi Arabia, 77–80
- Ursidae, seizures, 76; *U. arctos*, 37; *U. thibetanus*, 37; seizures, 76
- Urtica dioica*, 14
- USA, ivory destroyed, 3; seizures and prosecutions, 25,72,73,75
- V**
- Vaccinium myrtillus*, 14
- Varanus griseus*, trade in Morocco, 67; *V. salvator*, seizure, 25
- Viet Nam, Prime Minister Nguyen Tan Dung commits to halting illegal ivory trade, 3; seizures and prosecutions, 23,24,25,73; medicinal and aromatic plants, Bac Kan province, 4–7
- Vigne, Lucy, findings on the flourishing ivory trade in Angola's capital, Luanda, 44–46
- Vulpes vulpes*, trade in Morocco, 67,68
- W**
- Wakao, Keiko (Kay), Bulletin Board, 42
- Wang, Jeffrey, prosecution, 25
- Wao chocolate, 8–10, 9
- Waorani, conservation incentives and economic alternatives for communities in the Ecuadorian Amazon, 8–10
- Wecome Pharmaceutical Ltd, 10–12
- Weiss, Howard, 42
- Wildlife Reserves Singapore, *Astrochelys yniphora*, 21
- Wilkinson, Roger, 42
- World Federation of Chinese Medicine Societies (WFCMS), 10–12
- World Pheasant Association, 42
- WWF, 42; WWF-Germany, detector dogs and analysis of stable isotopes in timber samples, 18–19
- X**
- Xiphias gladius*, trade in Bali, 31–36
- Y**
- Yasuni, 8–10
- Z**
- Zain, Sabri, editorial, 1; 42; regional economic integration organizations: their role in implementing CITES, 59–64
- Zambia, efforts urged to tackle thriving illegal orchid trade for *chikanda* production, 47–50; prosecutions, 73
- Zarre, Shahin, illegal wild collection and international trade of CITES-listed terrestrial orchid tubers in Iran, 53–58
- Zavagli, Monica, Bulletin Board, 2
- Zavala, Manuel, 9
- Zhou, Fei, Bulletin Board, 42
- Zimbabwe, seizures and prosecutions, 24,73
- Zoo, Cleveland Metroparks, 2; 42; Chester, 2,42

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For further information contact:

The Executive Director
TRAFFIC International
219a Huntingdon Road
Cambridge CB3 0DL
UK

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