VOL. 24 NO. 1

TRAFFIC

BULLETIN

HARVESTING CHINESE CATERPILLAR FUNGUS AND SCHISANDRA PLANTS

TRADE IN SUGAR GLIDERS

CHIMPANZEES ON SALE IN GUINEA-BISSAU

APRIL 2012

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

TRAFFIC

the wildlife trade monitoring network

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

MARTIN HARVEY / WWF-CANON

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

TRAFFIC TRAFFIC

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

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

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

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

MARTIN HARVEY / WWF-CANON

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

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

ADAM OSWELL / WWF-CANON

ROGER LEGUEN / WWF-CANON

The *TRAFFIC Bulletin* is a publication of TRAFFIC, the wildlife trade monitoring network, which works to ensure that trade in wild plants and animals is not a threat to the conservation of nature. TRAFFIC is a joint programme 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.

The *TRAFFIC Bulletin* is available free of charge. Quotation of information appearing in the news sections is welcomed without permission, but citation must be given. Reproduction of all other material appearing in the *TRAFFIC Bulletin* requires written permission from the publisher.

MANAGING EDITOR *Steven Broad*

EDITOR AND COMPILER *Kim Lochen*

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

Published by TRAFFIC International,
219a Huntingdon Road, Cambridge, Cambs.,
CB3 0DL, UK.

ISSN 0267-4297
UK Registered Charity No. 1076722

Cover illustration: Harvesters of *Ophiocordyceps sinensis* at 4000 msl, Dolpa, Nepal.
(© Uttam Babu Shrestha)

This page, from top:
Sugar Glider (© Arnold T. Schwartzenglider / FLICKR.com creative commons);
Ophiocordyceps sinensis (© Uttam Babu Shrestha);
A trained Alsatian dog recovering elephant tusks in India (© TRAFFIC);
Chimpanzee (© David Lawson / WWF-UK)

Funding for the printing and distribution of this issue of the *TRAFFIC Bulletin* is generously provided by The Rufford Foundation.

Printed by Portland Print,
Kettering, Northants NN16 8UN, UK.

TRAFFIC
BULLETIN

VOL. 24 NO. 1 APRIL 2012

CONTENTS

EDITORIAL

Illegal killing, trade and use has been, and remains today, one of the main causes of the drastic and apparently continuing decline in the numbers in the wild of many of the world's most charismatic endangered species. Despite increased law enforcement efforts, the South African Government recently announced that the country lost 448 rhinos to poaching in 2011—almost four times the number killed in 2009. Moreover, 2011 was the worst year of large-scale ivory seizures since systematic monitoring began. More than 13 large-scale ivory seizures, amounting to 23.7 tonnes, were recorded that year—the first year ever to record tonnage in double digits and more than double the tonnage compared to 2010. The situation is no better with Tigers, with parts of at least 1069 Tigers having been seized in the species' range countries over the past decade—indicative of more than 100 wild Tigers killed in total each year.

There is little doubt that more effective direct action to identify and apprehend poachers and illegal traders is critical to stem this tide of over-exploitation. However, without a complementary effort to address effectively the persistent market demand that drives this trade, enforcement action alone may be futile. The harsh economic reality is that criminals are raking in huge profits from this activity, at relatively little risk, because parts and products of dead elephants, rhinoceroses and Tigers have a high market value—the desire for these products is persistently high, the supply is dwindling by the day and the ability of consumers to pay high prices for these products is increasing.

There have been in the past many efforts to dissuade demand for these products, primarily by generating greater awareness of the importance of the conservation of these species or highlighting the highly illegal nature of consuming products derived from these species. Unfortunately, when examining the continuing evidence of illegal killing and illegal trade, the overall performance of these efforts must be called into question. Even when there have been successes, such as the shift by formal traditional Asian medicine practitioners away from use of rhinoceros and Tiger parts in prescribed medicines, traders have simply adapted their marketing to popularize endangered species products in other market sectors, including gift giving and unproven quick-fix health tonics for the wealthy.

If demand for these products is to be significantly reduced, there needs to be a paradigm shift in the design, planning and execution of these demand reduction strategies. Greater effort should be applied to understanding the underlying factors influencing the behaviour of these consumers, how we might influence this behaviour and what concrete steps can be made to prompt such behaviour change.

Initiatives aimed to reduce demand for endangered species frequently jump immediately to message development and campaign ideas without exploring more deeply the attitudes and behaviours that they hope to change and, most importantly, the fundamental human interests and motivations behind those attitudes and behaviours. Addressing the primary drivers of human behaviour must be at the heart of demand reduction efforts. The initial focus should not be on the specific users themselves but the attributes that shape their behaviours—from ignorance of and apathy about conservation concerns, to basic desire for rarity, prestige and risk-taking that spark the attraction for endangered wildlife goods.

Academic exploration of behavioural drivers of consumer choice is a complex and evolving field, focused more on the desire to discover what makes people buy goods on offer, rather than on what it takes to convince them not to buy goods that cause environmental or social harm. Nevertheless, there is a great deal to be learned from this work by those designing demand reduction interventions in the context of wildlife conservation. For some of the species under most pressure from over-exploitation, the potential for success of immediate protection efforts and long-term conservation strategies can only be greatly strengthened by investment in well-designed and effective means to engage consumer behaviour.

Demand reduction work needs to get out of the conservation 'ghetto' and involve different partners, agencies, research institutions and other actors who will be needed to fill knowledge gaps in the conservation world. This should include participants from a wide range of professional and institutional backgrounds—behavioural science and economics, social research, marketing, and advertising. A collaboration of this rich mix of expertise and experience is essential to success.

Steven Broad, Executive Director
TRAFFIC International

NAOMI DOAK has been appointed Co-ordinator of the Greater Mekong Programme Office.

SUSANNE HONNEF who supported TRAFFIC's Global Medicinal Plant Programme for many years as its leader, and who returned after a six-month sabbatical as Liaison Officer to the German market, left TRAFFIC in December 2011.

bulletin board

DAVID NEWTON has been appointed TRAFFIC's Regional Director, East/Southern Africa, a job he has been performing on an interim basis for the past year following **TOM MILLIKEN**'s move to the global programme leadership role for TRAFFIC's work on the elephant and rhinoceros trade.

SAMIR SINHA, who joined TRAFFIC in December 2006 to re-establish the TRAFFIC office in India, left his position as Head of that office in November 2011 to return to the Indian Forest Service. **KHALID PASHA** has taken on the responsibility for leading TRAFFIC's team in India as an interim measure.

PAULINE VERHEIJ has left her position as TRAFFIC's Tiger Trade Programme Manager, part of the core team of WWF's Tigers Alive Initiative, which she occupied since late 2009.

traffic websites

www.traffic.org *(English)*
www.wwf.ru/traffic *(Russian)*
www.wow.org.tw *(Chinese)*
www.trafficj.org *(Japanese)*

The TRAFFIC Bulletin is available on www.traffic.org

Follow us on:

www.facebook.com/trafficnetwork www.youtube.com/trafficnetwork @TRAFFIC_WLTrade

XIE YAN / WILDLIFE CONSERVATION SOCIETY

Spring 2010, Sichuan Giant Panda Sanctuary, World Heritage Site.

TRAFFIC is sorry to announce the sad loss of our long-time collaborator Dr Sue Mainka, Head, Science and Knowledge Management in the Policy, Programme and Capacity Development Group at IUCN, following a five-month battle with cancer.

Sue's association with TRAFFIC stretched back to the early-1990s, when she worked on Giant Panda conservation in China for WWF and TRAFFIC's programme in East Asia. Later, as a consultant in the late 1990s, she led TRAFFIC's first reviews of national efforts to fulfil promises made in CITES resolutions on trade in rhinoceroses and Tigers. Over her subsequent 15 years with IUCN, Sue remained an extremely strong collaborator and a staunch supporter of TRAFFIC's work in the various roles she held. She served for many years on TRAFFIC's governing body, the TRAFFIC Committee and, more recently, was one of the trustees of TRAFFIC's UK charity.

Sue's bravery and determination in fighting her illness was inspirational. She will be sadly missed by all who were lucky enough to know her.

Steven Broad, Executive Director, TRAFFIC

In January 2012, between 250 and 300 African Elephants *Loxodonta africana* were shot by poachers in Bouba N'djida National Park, in the north of Cameroon (Onohiolo, 2012). The killings, which took place over a period of three weeks, have sparked global alarm at the unprecedented scale of the poaching and the implications for the remaining elephants in the park: with the population of elephants in Bouba N'djida estimated to be 400 prior to this event (Blanc *et al*., 2007), their numbers in the park have been reduced by two-thirds.

ELEPHANT KILLINGS IN BOUBA N'DJIDA NATIONAL PARK, CAMEROON

Sudanese-Chadian gangs, armed with automatic weapons, are reported to have entered the park between 5 and 24 January 2012, and shot male, female and juvenile elephants (Onohiolo, 2012). The authorities in the country are now faced with a situation that highlights the inequality of power between these heavily armed and highly organized gangs and the Cameroonian eco-guards who have a limited capacity to respond. Compounding the problem is the phenomenon of cross-border poaching and the need to manage areas that are the responsibility of authorities in Cameroon and in neighbouring Chad, Central African Republic, Republic of Congo, Equatorial Guinea, Gabon and Nigeria.

It has been alleged by Onohiolo (2012) that officials of the prefectural administration, justice and senior military officers in Cameroon—the very people responsible for tackling poaching—have been complicit in the illegal trade in timber and wildlife products. On 29 February 2012, the Minister Delegate for the Presidency in charge of Defence and the Minister of Forestry and Wildlife travelled to Garoua in north-east Cameroon in an attempt to find a solution to the border poaching that has become such a serious threat to biodiversity in the country (Bawildi, 2012). The poaching of elephants in Bouba N'djida National Park has raised urgent questions about the effectiveness of management at the borders of protected areas. It is therefore imperative that a political, institutional and security framework is established which is favourable to the protection of elephant populations—specifically in the cross-border areas. Regional and international co-operation between Cameroon, Chad and Sudan are essential requirements for the implementation of a concerted strategy of deterrence and effective action against cross-border poaching.

WWF / BOUBA N'DJIDA SAFARI LODGE

In a ruling unprecedented in the history of poaching cases in south-east Cameroon, 17 poachers were fined a total of FCFA77 169 060 (USD160 000) and received gaol terms of up to 30 months (Anon., 2012). Four of the poachers who were caught with 14 ivory tusks near Boumba-Bek and Nki National Parks on 24 March have each been gaoled for 18 months and fined FCFA3 million (USD6220) and ordered to pay damages of FCFA30 million (USD62 200). This comes just months after the same court sentenced four traffickers of 44 ivory tusks to a 30-day gaol term (Anon., 2012).

In response to the growing threat of poaching and trafficking of wildlife in Central Africa, between 3 and 5 April 2012, in Libreville, Gabon, the Central African Sub-Regional Workshop on Wildlife Trafficking and Dismantling Transnational Illicit Network brought together Central African and Asian governments, specialised UN agencies and international organizations such as CITES, INTERPOL, and the Kenya Wildlife Service, in an effort to find a way forward to increasing national, regional and international co-operation to combat wildlife crimes in the Congo Basin region. At the same time, the Government of Gabon is moving to destroy its entire ivory stockpile in a gesture of its commitment to tackle the illegal trade in wildlife.

Efforts are also being made by COMIFAC (Central African Forest Commission) and its partners to adopt the sub-regional Action Plan of COMIFAC countries so as to strengthen the application of national legislation relating to wildlife management (see also pages 12–13); implementation of this Action Plan is of paramount importance if there is to be any hope of addressing this critical situation.

Denis Mahonghol, Forest and Trade Officer, TRAFFIC Central Africa; Germain Ngandjui, Senior Programme Officer, TRAFFIC Central Africa; Stéphane Ringuet, Regional Director, TRAFFIC Central Africa

References

Anon. (2012). www.africanews.com/site/Cameroon_17_wildlife_traffickers_sentenced/list_messages/41495, 11 April 2012.

Bawildi, E. (2012). Parc National de Bouba N'djida, les éléphants menacés d'extinction. Le Septentrion infos (Ed.). March 2012.

Blanc, J.J., Barnes, R.F.W., Craig, G.C., Dublin, H.T., Thouless, C.R., Douglas-Hamilton, I., Hart, J.A. (2007*). African Elephant Status Report 2007: An Update from the African Elephant Database*.

Onohiolo, S. (2012). Carnage des éléphants, l'Union Européenne fait pression sur le Cameroun. Le Messager No. 3539 du 23 février 2012.

Zero poaching of rhinoceroses hailed in Nepal . . .

In 2011, for the first time in 20 years, not a single rhinoceros is known to have been killed in Nepal during the course of a year—a landmark achievement that can be attributed to collaboration of effort between the Government of Nepal and conservation partners, local communities and, most importantly, the security forces in that country. More than 250 poachers and traders, some 20% listed as high profile wildlife criminals for whom arrest warrants have been pending for 10 years or more, have been arrested over the past 18 months.

Among the factors contributing to this success is the establishment of a number of institutions, including the National Tiger Conservation Committee, Nepal (NTCCN), chaired by the Prime Minister of Nepal; the Wildlife Crime Control Coordination Committee (WCCCC), chaired by the Minister of Forests and Soil Conservation, and the Wildlife Crime Control Bureau (WCCB) which includes representation of all the enforcement agencies involved in policing wildlife crime. Wildlife Crime Pillar, established under the Central Investigation Bureau of Nepal Police, has also played an important role. WWF-Nepal has been able to raise the issue of wildlife crime at the highest political level which has contributed to these developments. Additionally, in order to combat poaching more effectively, strict protection measures in the country's national parks have been taken that include 24 hours patrolling, the strengthening of existing security posts and the establishment of new security posts in strategic locations.

Today, controlling wildlife crime in Nepal remains a priority of the enforcement agencies and their dedication to this cause has clearly proved to be highly effective. Provided these efforts continue and the human as well as institutional capacity of the enforcement agencies is strengthened, and there is effective co-ordination among and between the various law enforcement agencies, wildlife poaching can continue to be more effectively controlled.

In order to celebrate this special achievement, on 7 January 2012 the Government of Nepal, WWF and various conservation organizations marked the occasion with a programme—Zero Poaching Year—at Chitwan National Park to acknowledge the unrelenting efforts of the key institutions who helped bring about this success.

Diwaker Chapagain, Co-ordinator,
Wildlife Trade Monitoring, WWF-Nepal

JEFF FOOTT /WWF-CANON

Great Indian Rhinoceros *Rhinoceros unicornis*

. . . as numbers poached in SouthAfrica continue to climb

Despite increased anti-poaching efforts by authorities in South Africa, the toll of rhinoceroses poached during 2012 to date (30 April) has reached 199. Kruger National Park (KNP) continues to bear the brunt of these losses, with the number of rhinoceroses poached in the park at 119. The problem has become a matter in which all law enforcement agencies are involved and, reflecting this co-ordinated approach, a total of 122 arrests have been made of which 104 were poachers, 10 receivers/couriers and two couriers/buyers. According to a statement by the country's Minister of Water and Environmental Affairs, Edna Molewa, on 4 April 2012, the Government would continue to look at new initiatives that can assist in the fight against rhino poaching. She announced that the first group of 75 of the 150 new rangers to be deployed in KNP were undergoing a six-week intensive paramilitary training course. Discussions for the establishment of a buffer zone between KNP and the private reserves/farms in Mozambique—similar to the one in place on the north-eastern boundary of KNP—are under way with the authorities in Mozambique.

The South African population of the White Rhinoceros *Ceratotherium simum* is listed in CITES Appendix II for the exclusive purpose of allowing international trade in live animals to appropriate and acceptable destinations and hunting trophies. The Vietnamese Ministry of Agriculture and Rural Development has been asked if it could conduct inspections and verify that the White Rhinoceros trophies exported from South Africa to Viet Nam are still in the possession of the hunters. This follows an investigation by the National Wildlife Crime Reaction Unit (NWCRU).

"We are consulting at the diplomatic level and the outcome of this process will allow us to refuse all applications for White Rhinoceros hunting by foreign hunters whose state of usual residence is Viet Nam", Molewa said.

An inventory of the rhino horn stockpiles in the possession of conservation agencies in South Africa has been completed and private landowners have been urged to comply with the law and register their rhino horn stockpiles with their respective provincial conservation authorities.

South African Government Department of Environmental Affairs: www.environment.gov.za/, 4/30 April 2012

Over-stepping the Quota? *The Trade in Sugar Gliders in West Papua, Indonesia*

Jessica A. Lyons and Daniel J.D. Natusch

SUGAR GLIDER ARNOLD T. SCHWARTZENGLIDER / FLICKR.COM CREATIVE COMMONS

Sugar Gliders *Petaurus breviceps* are small marsupial possums found throughout eastern and northern Australia, Papua New Guinea and the Indonesian provinces of Maluku, Papua and West Papua (Lindenmayer, 2002). They are commonly encountered in the pet trade in Malaysia, Thailand and the USA (Lindenmayer, 2002; Whiteman, 2008; C.R. Shepherd, *in litt.*, September 2011). In Indonesia, it appears that all wild-caught Sugar Gliders are sent to breeding farms in Jakarta, from where they may be exported under the guise of being captive-bred. The species is classified as of Least Concern in the *IUCN Red List of Threatened Species* and is not listed in the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). However, the species may soon be protected in Malaysia. In April 2012, it was announced by that country's Wildlife and National Parks Department (Perhilitan) that it was taking steps to make it a legal requirement for owners to apply for permits to own or breed this species in view of the large number of Sugar Gliders imported into Malaysia (Anon., 2012).

While a substantial amount of research has been conducted on the ecology and biology of Sugar Gliders (Henry and Suckling, 1984; Suckling, 1984; Quin, 1995), trade in this species has never been examined.

The authors undertook surveys of the premises of wildlife traders in the Indonesian province of West Papua between September 2010 and January 2011 and recorded 2136 Sugar Gliders collected from the wild for the pet trade. Indonesia is currently the only range State that exports Sugar Gliders for the pet trade. Although they are not a protected species, an annual quota is allocated by the Indonesian Directorate General of Forest Protection and Nature Conservation (PHKA) for the legal capture and export of a limited number of wild Sugar Gliders: the harvest quota for the years 2010 and 2011 was 225 individuals per year. This quota is reportedly regularly exceeded, however. For example, a wildlife trader based in Sorong (West Papua province) explained that a recent shipment of 500 Sugar Gliders had all died in transit to Jakarta. Villagers collect Sugar Gliders at night from forested areas surrounding the city of Sorong and supply wildlife traders in the city. The traders claimed that collection was easy because Sugar Gliders den together (Suckling, 1984), so that large numbers can be captured by hand in a short time. This claim was confirmed during two visits to the premises of a wildlife trader where approximately 1000 wild-caught Sugar Gliders were observed, each having a sale price of USD4.70 (IDR40 000).

These observations suggest that the quota system, which is designed to be used as a management tool to ensure that the harvest rate for a species is not detrimental to wild populations (CITES, 2011), is failing. Further, it appears that monitoring and enforcement of annual harvest and export quotas is ineffective, resulting in potentially unsustainable harvest levels for Sugar Gliders in Indonesia. If harvest and export quotas cannot be efficiently enforced, as is currently the case (Nijman and Shepherd, 2009; Schoppe, 2009), Indonesian authorities should seriously consider halting these practices.

It is stated by PHKA in its annual Sugar Glider quota documentation that, "breeding is easy and they have been successfully bred, so most needs are met from captivity". Lindenmayer (2002), however, reports that the needs of the species in captivity are often poorly understood. The results presented herein, together with anecdotal information from exporters based in Jakarta, suggest ▶

DANIEL J.D. NATUSCH

SUGAR GLIDERS are reported to be easily collected because they den together, which allows large numbers to be captured by hand in a short space of time.

a large, fraudulent trade and weak monitoring of both wild harvesting and of breeding farm activities by Indonesian conservation authorities (Nijman and Shepherd, 2009; Lyons and Natusch, 2011). The very low prices paid for wild-caught animals mean that profits for exporters can be much higher than if similar quantities were bred in captivity.

It is not known how many Sugar Gliders are harvested annually from the wild in Indonesia, however the authors' observations, and the claims of traders, suggest that more than 10 000 individuals may be removed from their natural habitat each year. It is therefore important that more research is conducted to determine the impact of trade on wild populations, in order to establish whether the current level of trade is sustainable. The role of breeding farms in this trade must also be thoroughly investigated at the earliest opportunity.

Acknowledgements

The authors would like to thank D. Natusch and Chris R. Shepherd for their comments on an earlier draft.

References

Anon. (2012). *New Straits Times*: www.nst.com.my/nation/general/licences-for-sugar-gliders-soon-1.73735#ixzz1s9EOreuP, 14 April.

CITES (2011). *Guidelines for Management of Nationally Established Export Quotas*. www.cites.org/eng/res/14/14-07R15.shtml. Viewed September 2011.

Henry, S.R. and Suckling, G.C. (1984). A review of the ecology of the Sugar Glider. In: Smith A., Hume, A. (Eds), *Possums and Gliders*. Surrey Beatty and Sons, Chipping Norton, New South Wales. Pp.355–358.

Lindenmayer, D. (2002). *Gliders of Australia: A Natural History*. Sydney, University of New South Wales Press. P.128.

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.

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.

Quin, D.G. (1995). Population ecology of the Squirrel Glider (*Petaurus norfolcensis*) and the Sugar Glider (*Petaurus breviceps*) (Marsupialia: Petauridae) at Limeburners Creek, on the central north coast of New South Wales. *Wildlife Research* 22:471–505.

Schoppe, S. (2009). *Status, Trade Dynamics and Management of the Southeast Asian Box Turtle in Indonesia*. TRAFFIC Southeast Asia, Petaling Jaya, Selangor, Malaysia.

Suckling, G.C. (1984). Population ecology of the Sugar Glider, *Petaurus breviceps*, in a system of fragmented habitats. *Australian Wildlife Research* 11:49–75.

Wightman, C. (2008). *Sugar Gliders: Complete Pet Owner's Manual*. Barron's Educational Series, New York, USA.

Jessica A. Lyons *and* ***Daniel J.D. Natusch****,*
School of Biological, Earth and Environmental Sciences, University of New South Wales, Sydney, 2052 NSW, Australia.
Corresponding author: J.A. Lyons (jess.lyons87@gmail.com)

FISHERMAN HOLDING A DORSAL FIN CUT FROM A SCALLOPED HAMMERHEAD SHARK *SPHYRNA LEWINI*, CAUGHT ON LONGLINE, COCOS ISLAND, COSTA RICA, PACIFIC OCEAN.

NATURPL.COM / JEFF ROTMAN / WWF

Shark killings reported in Colombian waters

It is reported that up to 2000 hammerhead sharks *Sphyrna*, Silky Sharks *Carcharhinus falciformis*, and Galapagos Sharks *C. galapagensis* have been killed for their fins in Malpelo wildlife sanctuary in Colombia's waters during one incident in late 2011.

Sandra Bessudo, the Colombian president's top adviser on environmental issues, said a team of divers who were studying sharks in the region reported the mass killing in the waters surrounding the rock island of Malpelo, some 500 km from the mainland. She had received a report from one of the divers that 10 fishing trawlers flying the Costa Rican flag were seen entering the zone illegally. She said that the divers saw large numbers of animals without their fins and had found no live sharks. One of the divers provided a video showing the finless bodies of dead sharks on the ocean floor.

Calculating an average of 200 sharks per boat, "our estimates are that as many as 2000 sharks may have been killed", Bessudo said.

The sanctuary, a UNESCO World Heritage Site, covers 8570 km^2 of marine environment that provides a habitat for threatened marine species. The high concentration of sharks in Malpelo and the remoteness of the sanctuary reportedly draws illegal fishing boats from nearby nations. The sharks are caught, their fins removed and the animals thrown back into the water. Colombia's navy sporadically patrols the waters and maintains a small outpost on the 1.2 km^2 island, which is 36 hours from the nearest port. At the time of the reported shark finnings, however, no navy ships were nearby.

Once the report of the finnings was made public, the navy dispatched a ship to the area and reported the seizure of an Ecuadorian fishing boat with an illegal catch of 300 kg, including sharks and other species (see also page 30). At the same time, Colombia's foreign ministry took up the issue with the Costa Rican Government, which vowed to co-operate to help stop the practice by ships registered under its flag.

In a communiqué, the Costa Rican foreign ministry is reported to have said it "energetically condemns" the reported finning and said it would prosecute if Costa Rican flagged ships were involved.

During 2012, to date, 13 fishing ships have been captured in Colombian waters in the Pacific, nine of them from Ecuador.

www.guardian.co.uk/environment/2011/oct/19/shark-massacre-colombia, 19 October 2011; TRAFFIC South America

Progress in the Conservation of the Tokay Gecko in the Philippines

The Philippine Gekkonid lizard fauna consists of 48 species (SUAKCREM, unpublished). Of these, 81%, or 39 species, are endemic to the country (A. Diesmos, pers. comm., 11 July 2011). In particular, the genus *Gekko* comprises 13 species, 11 of which are found nowhere else. The Tokay Gecko *Gekko gecko*, one of the two non-endemic species, is the largest (snout-vent length up to 15.5 cm and weight up to 200 g) of the *Gekko* species and is widely distributed in the Philippines, having been reported from major Philippine islands and other islands as small as five ha in areas covered with forest (Brown and Alcala, 1978; A. Bucol, pers. comm., 7 December 2011).

Tokay Geckos appear to be useful in controlling rodent populations in human habitations as anecdotal reports indicate that they prey on household pests such as newly born rats and mice (L. Averia, pers. comm., 20 June 2010) and cockroaches (A. Bucol, pers. comm., 7 January 2012). The Philippines has been identified as an important source of the animals in the global Tokay Gecko trade (Caillabet, 2011). Trade in this species, for use in medicines for the treatment of human ailments and for the pet trade (Caillabet, 2011), is illegal in the Philippines, since the capture of Tokay Geckos for trade purposes is prohibited by law (*Republic Act 9147* or *Wildlife Resources Conservation and Protection Act*) and carries heavy fines. This paper briefly describes the efforts of conservation and investigating authorities in the Philippines to conserve the Tokay Gecko and includes records of illegally caught animals confiscated between 8 April 2009 and 31 January 2012.

Sporadic reports on the Tokay Gecko trade from various regions of the Philippines were received by the Protected Areas and Wildlife Bureau (PAWB) of the Department of Environment and Natural Resources (DENR) as early as 2009. However, the market demand for large geckos, with lengths of 15.5 cm and weights of 150–200 g boomed in May 2011 according to media reports and enforcement records. In June 2011, foreigners were reported to be buying large animals for 100 000 Philippine Pesos (PHP) (USD2326) apiece in Lingayen, Pangasinan (A. Bucol, pers. comm., 20 June 2011) and in Dumaguete, Negros Oriental (G. Lopez, pers. comm, 17 December 2011). In July of the same year, Filipino traders in Davao City were illegally buying specimens weighing 200 g for PHP45 000 (USD1023) and selling them to Indonesian and Korean buyers, but as of mid-December 2011, trade appears to have stopped. This can probably be attributed to the government's campaign against the gecko trade and the difficulty in obtaining large-sized animals (G. Gumanao, pers. comm. 16 December 2011).

The Philippines Government, through PAWB, responded to the illegal Tokay Gecko trade by enlisting the help of the Philippine National Bureau of Investigation (NBI) to conduct field surveillance in various parts of the country. PAWB has also posted advisories on its website and at its regional offices warning against collecting, keeping, transporting and trading of geckos for wider dissemination in the 14 regions of the Philippines and to remind regional officers of PAWB to implement the law on gekko conservation. Joint DENR-NBI-police surveillance teams were organized in several regions of the Philippines. Thus far, six legal cases have been filed in the courts of justice for violations of *R.A. 9147*. It is important to get convictions in these cases to discourage, if not prevent, further illegal activities involving not only the Tokay Gecko but possibly other species of endemic geckos and other wildlife species as well.

More than 1250 representatives from local government units and other government offices and non-government organizations have been designated Wildlife Enforcement Officers in order to conduct information drives and enforce the law. As of January 2012, a total of 1980 animals identified by various trade names that refer to the species *Gekko gecko*, and occasionally to a smaller species *Hemidactylus* sp. (for example, "Tokay Gecko", "Gecko", "House Gecko", and "Leopard Gecko") (PAWB, unpublished), have been confiscated by the authorities mostly from airports, markets, and seaports in various parts of the Philippines. These include Pasay City, Zamboanga City, Puerto Princesa City, Cagayan de Oro City, Mactan (Cebu), Lipa City, Sto.Tomas (Nueva Ecija), Calbiga (Samar), Quezon City and General Santos City. The highest number of geckos seized in an enforcement operation was 1667 specimens during a raid on a private compound on 29 November 2011 in General Santos City. There is no doubt that the reported number of confiscations (1895) represents only a part of the total number of animals actually caught and exported abroad between 2009 and early 2012. Most of the animals were alive at the time of the confiscations but the majority eventually died after a few days in captivity due to severe dehydration and stress, among other causes. The surviving healthy animals were immediately released into the wild, while the physically unfit individuals were kept at the PAWB or regional wildlife rescue centres for rehabilitation and future release.

References

Brown, W.C. and Alcala, A.C. (1978). *Philippine Lizards of the Family* Gekkonidae. Silliman University Natural Science Monograph Series, No, 1. Dumaguete City, Silliman University Press.

Caillabet, O.S. (2011). Malaysia at centre of Tokay Gecko trade boom. *TRAFFIC Bulletin* 23(3):83–84.

Das, I. (2010). *A Field Guide to the Reptiles of South-east Asia.* New Holland Publishers (UK) Ltd.

PAWB (Protected Areas and Wildlife Bureau), (unpublished). DENR report on gecko confiscations.

SUAKCREM (Silliman University–Angelo King, Center for Research and Environmental Management) (unpublished). Silliman University List of Philippine Gekkonid Lizards.

***Theresa Mundita S. Lim**, Director, Protected Areas and Wildlife Bureau, Department of Environment and Natural Resources, Quezon City, Philippines;*
***A.C. Alcala**, Emeritus Professor of Biology, Silliman University, Dumaguete City, Philippines; E-mail: suakcrem@yahoo.com*
***Abner Bucol**, SUAKCREM, Dumaguete City, Philippines.*

Reducing demand for endangered wildlife: *getting the message right*

In late 2011, TRAFFIC convened a meeting that aimed to develop innovative ways to reduce illegal and unsustainable consumer demand for endangered species, focusing particularly on China and Viet Nam, both considered to be hotspots for illegal wildlife consumption.

A *'Creative experts' meeting on demand reduction messaging for consumption of Tigers and other endangered wildlife species*', held in Hong Kong on 22 and 23 November 2011, was attended by over 20 experts from diverse backgrounds. Some had experience of communicating and campaigning on wildlife trade issues, while others brought complementary knowledge and skills from academic research on behavioural change processes, social/environmental cause delivery and commercial marketing, especially in Asia. Participants included representatives from the World Bank, Bloom Association; Ogilvy and Mather; Tribal DDB; the Global Tiger Forum; Wilkes University; The Guardian; Social Science Research Council Vietnam (SSRC); the Biodiversity Conservation Agency of the Ministry of Environment, Viet Nam; Environmental Investigation Agency (EIA); International Fund for Animal Welfare (IFAW); Education for Nature Vietnam (ENV); TRAFFIC; and WWF. The meeting was facilitated by Frits Hesselink of HECT Consultancy and international advisor of the IUCN Commission for Education and Communication.

Outcomes of the meeting

The first day of the meeting was spent developing a common understanding of the dynamics and drivers of the trade in and consumption of wildlife, and examining lessons from other fields on how consumer behaviour can be changed. Target audiences for demand reduction programmes include both the older generation of wealthy people in Asia—in particular the business elite—who harbour among them those who are involved in the consumption and gifting of endangered wildlife such as Tigers, which they consider to be status symbols, and the younger generation, who are most likely to include those who can form a social movement to push for change and influence the older generation. A session on this topic provided valuable new insights into the motivations of these audiences.

The participants subsequently looked at lessons learned from other fields, for example from behavioural economics, which demonstrate that human behaviour is much less based on rational motivations than humans like to think. Some examples of how consumer choices can be shaped and manipulated were showcased. One example was the hugely successful helmet-wearing campaign in Viet Nam, which resulted in 100% compliance when it became mandatory in 2007 in that country for motor-cyclists to wear helmets. Such cases provided some important lessons to bear in mind when developing and implementing behavioural change campaigns.

The second part of the meeting was spent working on marketing briefings for strategic approaches to changing the behaviour of four groups which the experts agreed were the key target audiences: the business elite, government, youth, and the general public. For each of these groups, the experts examined current behaviour and attitudes as well as desired behaviour and attitudes, and formulated how to measure behavioural change over time through indicators and timelines.

The meeting generated a wealth of new and exciting insights. It was felt by all participants to be a crucial step towards the development of effective demand reduction strategies that will shift consumer awareness and significantly reduce illegal wildlife consumption in Asia.

Next steps towards changing consumer behaviour

The report of the meeting[1] was distributed to the participants and all interested stakeholders in March 2012 and the outcomes of the meeting were used to develop the strategic guidance for demand reduction. These guidelines will feed into the global support programme for demand reduction of the Global Tiger Recovery Programme.

The outputs of the meeting will hopefully aid and inspire governments, non-governmental organizations (NGOs) and international non-governmental organizations (INGOs) to address consumer demand for parts and products of Tigers as well as other threatened species such as rhinoceroses, elephants, pangolins, sharks and turtles, through new and innovative messaging and delivery mechanisms. However, more in-depth research of the key consumer audiences is needed before demand reduction campaigns can be designed and implemented. The development of effective messaging and the choice of delivery mechanisms must be based on true understanding of these consumer audiences: who and where they are and what drives them to be involved in the consumption of endangered wildlife. Significant funding is needed for the consumer research that is required and the design and implementation of demand reduction campaigns. Ideally a consortium of interested parties (governments, INGOs and NGOs) would be formed to co-ordinate demand-reduction activities, share experience and expertise and ensure optimal use of limited funds. This consortium would need to draw from knowledge of the behavioural sciences on how to effect behavioural change in consumer audiences and expertise on marketing and advertising.

TRAFFIC remains dedicated to facilitate this process and to support efforts by the Tiger range countries to deliver on their commitments to reduce consumer demand for Tigers and other endangered wildlife.

Links: *[1]Report of the creative experts' meeting and background paper: http://www.traffic.org/home/2011/11/25/creative-experts-devise-multi-layered-strategies-to-curtail.html;*
SSRC report on the Vietnam Helmet Campaign: http://www.ssrc.org/workspace/images/crm/new_publication_3/%7B5dbb6a15-2e6f-df11-9d32-001cc477ec84%7D.pdf

Pauline Verheij*, Tiger Trade Programme Manager, TRAFFIC*

MEDICINAL TRADE IN MOLES IN LAO PDR

Of the seven species of moles in South-east Asia, only one, Kloss's Mole *Euroscaptor klossi*, occurs in Lao PDR (IUCN, 2011). One species in the genus *Scaptonyx*—the Long-tailed Mole *S. fuscicauda*—may occur in Lao PDR, however this has not been confirmed (Chiozza, 2008).

Kloss's Mole is found in mountainous regions throughout much of Lao PDR, however very little is known of its status. Threats to this species are not known, however if it is dependent on forest habitats, forest clearance for agriculture, plantations, logging and human settlement are likely to be issues of concern (Lunde, 2008).

During recent surveys of wildlife trade in Lao PDR carried out in August 2011, moles—presumably Kloss's Moles—were observed for sale in Vientiane, the nation's capital city. Tribal Hmong people selling a variety of plant and animal parts for use in traditional medicines, stationed in front of the main post office, stated that these animals are hunted in hilly areas in Vientiane province. They are caught with traps by people planting hill rice. According to one woman in Vientiane who was seen offering two dried moles for sale, traders bring about 100 per year to sell to the street vendors. The woman said she sold the dried moles mostly to local and Thai customers for use in traditional medicines. The animals are boiled in water and the steam inhaled, which is said to treat unspecific ailments, such as sore throats and stomach aches. She claimed to sell between two and three animals per week, for 100 000 Kip (USD12.40).

Consumption for food and use in traditional medicines are threats of unknown degrees in other parts of Asia to other mole species. The Himalayan Mole *Euroscaptor micrura*, for example, is hunted for trade for local consumption in northeastern India (IUCN, 2011). In *Chinese materia medica; animal drugs*, moles are said to be easy to catch, taken from their burrows and fire-dried (Read, 1982). Mole flesh, said to be cooling and saline, may be used to remove chills, to treat scabies and all kinds of anal fistulas, its fat may be applied to sores and the faeces is powdered and applied with lard to snake bites (Read, 1982).

Moles are not protected in Lao PDR, and as such, hunting and trade is unregulated. It is not known what impact this hunting and trade has on moles in Lao PDR, and therefore research is needed.

Acknowledgements

The authors thank Claire Beastall, Lorraine Scotson and Richard Thomas for comments on an earlier draft. Lorraine is also thanked for assistance in Vientiane.

References

Chiozza, F. (2008). *Scaptonyx fusicaudus*. In: IUCN 2011. *IUCN Red List of Threatened Species.* Version 2011.2. www.iucnredlist.org. Viewed on 19 November 2011.

Corbet, G.B. and Hill, J.E. (1992). *The Mammals of the Indomalayan Region: a Systematic Review*. Natural History Museum, London, UK.

IUCN (2011). *IUCN Red List of Threatened Species.* Version 2011.2. www.iucnredlist.org. Viewed on 19 November 2011.

Lunde, D. (2008). *Euroscaptor klossi*. In: IUCN 2011. *IUCN Red List of Threatened Species*. Version 2011.2. www.iucnredlist.org. Viewed on 19 November 2011.

Read, B.E. (1982). *Chinese Materia Medica; Animal Drugs*. Southern Materials Center Inc., Taipei, Republic of China.

***Chris R. Shepherd**, Deputy Regional Director, TRAFFIC Southeast Asia; E-mail: chris.shepherd@traffic.org;*
***Vincent Nijman**, Oxford Wildlife Trade Research Group, Oxford Brookes University, UK; E-mail: vnijman@brookes.ac.uk*

CHRIS R. SHEPHERD / TRAFFIC

CLAIRE BEASTALL / TRAFFIC

DRIED MOLES OBSERVED FOR SALE IN VIENTIANE, LAO PDR, 2011.

The animals are boiled in water and the steam inhaled, which is said to treat ailments such as sore throats and stomach aches.

Forest Law Enforcement Governance and Trade (FLEGT) South America Project

Concerns regarding illegal logging, deforestation and associated loss of biodiversity, forest goods and services are common throughout much of tropical South America. The European Union (EU) Forest Law Enforcement Governance and Trade (FLEGT) Action Plan provides a significant opportunity through demand side trade interventions to address these concerns and associated development impacts. Although there is a growing and promising political momentum for the advancement of FLEGT-related initiatives in South America, progress has been relatively slow to date largely because the potential of the Action Plan has yet to be fully realised by some of the key stakeholders.

In order to show how EU FLEGT can assist in achieving local, national and regional forestry and development targets, in December 2011 TRAFFIC International signed a contract with the European Commission to implement the project *Supporting the implementation of the EU FLEGT Action Plan in South America: catalyzing initiatives to control and verify the origin of timber in trade and support related improvements in forest governance*. This three-year project will be implemented in four countries in South America, namely Brazil, Peru, Colombia and Ecuador, together with corresponding activities in the European Union. Partners on this project include WWF Colombia and IUCN Sur.

The main objective of the Action Plan is to assist in initiatives that are being developed to reduce illegal logging and to bring timber trade in line with EU FLEGT objectives, with a particular focus on trade to the EU from Brazil, Colombia, Ecuador and Peru. Within this broad objective are three specific aims:

- To facilitate EU-FLEGT in national policy frameworks. This will involve working with key stakeholder groups in Brazil, Colombia, Ecuador and Peru to explore the opportunities provided by the EU-FLEGT Action Plan, and pathways for its implementation, including via the development of Voluntary Partnership Agreements (VPAs); and sufficient knowledge to assess how Action Plan implementation could relate to implementation of other government-led initiatives related to forest governance, e.g. the US *Lacey Act*, and the United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation (REDD) and Free-Trade Agreement (FTA) negotiations.
- An increased timber supply that conforms to EU-FLEGT requirements. This includes providing information on the efforts of the European Commission, the competent authorities of EU member States, and timber traders in relation to producer country activities and procedures linked to implementing FLEGT in South America.
- Benchmarking Forest Governance. This aims to establish as a reference point baseline information (indicators) against which to measure changes in forest governance in the target countries (including levels of illegal logging and trade) that are catalyzed by FLEGT and related initiatives.

In order to achieve these objectives, a series of activities will be developed and implemented. Such activities will include research (such as on timber trade flows and forest governance indicators), training (such as through workshops focusing on FLEGT compliance) and consultative meetings (such as in relation to policy development and with indigenous groups). Underpinning these activities will be a comprehensive communications strategy designed to provide advanced options for training and information dissemination.

Tom Osborn, TRAFFIC Europe Regional Co-ordinator

Lorry transporting logs from the Amazon over the Andean mountain range to processing plants in Quito, Ecuador, or along the Pacific coast, where they are made into plywood.

ULRICH MALESSA / TRAFFIC

Update from the ASEAN Wildlife Forensics Network Focus on Tigers:

DNA as an enforcement tool

Tigers are classified as a critically endangered species with extremely low numbers now living in the wild. Their demise has been a consequence of habitat destruction, predator removal from agricultural areas and illegal poaching for the wildlife trade. The illegal trade in Tigers principally involves the use of Tiger meat for food, skins for ornamentation and body parts for use in tonics and traditional medicine, despite any scientific evidence demonstrating actual medicinal benefits.

One suggested method of alleviating the pressure on wild Tigers is to "farm" Tigers specifically for use in the medicinal trade. However it is unlikely that such farms could fulfil demand while maintaining Tiger welfare, and could also be seen as a means of encouraging demand and therefore further jeopardizing the conservation of the remaining wild Tigers. There are a high number of supposed Tiger breeding operations, or small 'zoos' across South-east Asia that claim to be breeding Tigers for conservation purposes.

Breeding Tigers for conservation purposes should be applauded but requires an understanding of both large feline husbandry and of the genetic diversity of captive Tigers. Knowledge of Tiger subspecies and pedigree is important to ensure that offspring help maintain a healthy population suitable for reintroduction at a later date. Even modern zoos with accountable conservation objectives have difficulties ensuring that Tiger breeding programmes achieve this, and more are turning to DNA analysis to examine their captive Tiger stock and provide breeding recommendations.

Unregulated captive Tiger breeding centres are unlikely to be providing any conservation benefit. However captive breeding centres can often be used to launder illegally-caught wild Tigers by claiming them as offspring from their captive Tiger stock. Previous studies have provided examples of Tigers from captive breeding centres entering the illegal wildlife trade. As well as using DNA analysis to assist with conservation-orientated breeding, DNA can also be used as an enforcement forensic tool to identify every Tiger in a captive breeding centre and also verify parentage claims, therefore DNA can ensure that captive breeding centres are not supplying the illegal wildlife trade for Tiger parts.

TRACE Wildlife Forensics Network (WFN) has been working with wildlife forensic scientists from Malaysia, Thailand and Indonesia under a UK-funded Darwin Initiative project. One of the project aims is to develop validated DNA tests for use in prosecuting Tiger-related crimes, making it possible to identify different subspecies and test parentage claims in Tigers. These tests are now being used across the ASEAN (Association of Southeast Asian Nations) region.

In April 2012, the Department of National Parks, Thailand, confiscated two young Tigers from a local zoo due to inconsistencies as to their claimed origin identified by DNA testing carried out by the DNP's Wildlife Forensic DNA Laboratory. The Wildlife Forensics Laboratory is a relatively new facility and was only able to carry out this level of testing as it was part of a larger collaborative network of wildlife forensic scientists from across the ASEAN region and the UK, who provided support and cross-validation of their results. TRACE WFN, along with the ASEAN Wildlife Enforcement Network (ASEAN-WEN) Programme Co-ordination Unit (PCU), provided technical and logistical support to the Wildlife Forensics Laboratory to enable this testing to be carried out. The Wildlife Forensics Laboratory team have demonstrated themselves to be an effective unit to assist with enforcement action relating to wildlife crimes in Thailand and are now working on many wildlife prosecutions. The Wildlife Forensics Laboratory and its staff are also taking a leading role in the forthcoming Wildlife Forensics Seminar and Training course in Thailand in July 2012, organized by TRACE WFN.

Viet Nam has taken the very progressive step of having all captive Tigers sampled for DNA testing. Hair samples were taken from all captive Tigers by enforcement officers, at the request of the Viet Nam CITES Management Authority and the samples provided to the Institute of Ecology and Biological Resources (IEBR) laboratory. The samples were then transferred from Viet Nam to the UK with the consent of CITES authorities to undergo DNA testing to identify subspecies pedigree and identify individuals using DNA. Dr Rob Ogden, Programme Director for TRACE WFN who co-ordinated the analysis, said "Viet Nam is one of the first countries in South-east Asia actively to use DNA techniques to monitor their captive Tiger populations and should be applauded for this". It is hoped that the results will be used to ensure that no captive Tigers end up in the illegal wildlife trade and allow a more conservation-orientated breeding programme to be initiated. ►

► *continued from page 11*

The Vietnamese NGO, Education for Nature Viet Nam (ENV), has also been supporting the enforcement authorities in Viet Nam and has co-ordinated the DNA testing of seized Tiger samples in Viet Nam. Although the DNA testing is currently carried out in the UK by TRACE WFN, there are plans under way to develop at least one wildlife forensic laboratory in Viet Nam and TRACE WFN staff have been working with laboratory staff from IEBR and the CITES Management Authority with the aim of developing further capacity there in the following years.

Another key focus for the TRACE WFN team is to develop DNA profiling systems for Tigers with the aspiration of creating a database of all wild and captive Tigers in South-east Asia. Advances in genomic studies have allowed TRACE WFN to develop new genetic markers suitable for individually identifying every Tiger. The new approaches to DNA screening can only be successful if the financial costs of testing are minimized but Dr Ross McEwing, Technical Director for TRACE WFN said "Affordable DNA technologies are now available to monitor Tigers and such data can not only help conserve the species but be used as a key forensic tool for prosecuting individuals engaged in illegal Tiger operations". The Malaysian and Thai governments have already indicated that DNA tagging of all their Tigers is a priority for the coming years.

For further information contact:
***Dr Rob Ogden**, TRACE WFN Programme Director*
rob.ogden@tracenetwork.org

MARTIN HARVEY / WWF-CANON

VIET NAM HAS TAKEN THE PROGRESSIVE STEP OF REGISTERING DNA SAMPLES FROM ALL ITS CAPTIVE TIGERS, THUS HELPING TO ENSURE THAT NO CAPTIVE TIGERS END UP IN ILLEGAL TRADE.

Poaching and illegal trade in wildlife species are some of the main threats to the biodiversity of Central African forest landscapes. In order to address the serious problems caused by these activities and by inadequate law enforcement, implementation of national wildlife legislation in Central African countries,

PLAN AGREED TO STRENGTHEN WILD

including that which governs the implementation of CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora), needs to be strengthened. To this end, the Executive Secretariat of the Central African Forest Commission COMIFAC[1], with the support of TRAFFIC and WWF, has proposed a strategic framework for a COMIFAC Wildlife Trade Enforcement Action Plan 2012–2017 to enhance existing agreements. While these agreements cover detailed proposed actions for flora, only broad objectives are in place for fauna; the proposed Action Plan proposes a comprehensive framework to strengthen enforcement of laws governing fauna.

Six-year Action Plan agreed by Central African countries

A first draft of this Action Plan was officially discussed at the 6th Session of COMIFAC's Ministerial Council, which took place from 8 to 11 November 2010, in Kinshasa. The Ministers gave a mandate to the COMIFAC Secretariat to finalize this Action Plan in a participatory manner. After an initial consultation of all governments of COMIFAC, his Excellency Raymond Mbitikon, Executive Secretary of COMIFAC, convened representatives from the COMIFAC member countries—Burundi, Cameroon, Central African Republic, Chad, Congo, Democratic Republic of Congo, Equatorial Guinea and Gabon—at a workshop on 10 and

[1]COMIFAC is the principal political and technical forum for guidance, co-ordination, harmonization and decision-making in the conservation and sustainable management of forest and savannah ecosystems in Central Africa. Created in 1999 by the Yaoundé Declaration, COMIFAC is composed of the forestry ministers of its 10 member countries and has an Executive Secretariat based in Yaoundé, Cameroon. COMIFAC is recognized as the primary co-ordinator for partner activities of the Congo Basin Forest Partnership (CBFP), a type II voluntary partnership whose primary aim is to enhance natural resource management and improve the standard of living in the Congo Basin. The COMIFAC Convergence Plan, last revised in 2005 and to be reviewed in 2012, has one vision of sustainable and joint management by Central African States of their forest resources for the wellbeing of their people, the preservation of biodiversity and the protection of the global environment. The Convergence Plan thus defines communal intervention strategies for governments and development partners concerning the conservation and sustainable management of forest and savannah ecosystems in the region.

11 November 2011 (Douala, Cameroon) to discuss, finalize and validate a regional Action Plan 2012–2017 to strengthen the implementation of national wildlife laws in COMIFAC member countries. Unfortunately, representatives of Rwanda and Sao Tomé and Principé were unable to attend the meeting.

LIFE LAW ENFORCEMENT IN CENTRAL AFRICA

Also participating were a number of partner organizations that would be assisting in the implementation of the Action Plan, including CITES, FTNS (Tri-National Sangha Foundation), LAGA (Last Great Ape Organization), MIKE (Monitoring the Illegal Killing of Elephants), CBFP (Congo Basin Forest Partnership), RAPAC (Central Africa Protected Areas Network) and WCS (Wildlife Conservation Society). Technical support for the meeting was provided by TRAFFIC and WWF; the meeting was supported financially by the US Fish and Wildlife Service (USFWS) and WWF.

Review and discussion of this Action Plan led to constructive and technical debates mainly focused on the sharing of experience and expertise in relation to national wildlife law implementation and enforcement in Central Africa, but also on the framework of the Action Plan; this covered the vision of the Action Plan, its goal, objectives, and the overall indicators for the monitoring and evaluation of its implementation, and on the indicators, means of verification, action points, implementers and timeframe for each objective. Participants expressed their interest for this Action Plan to form the basis of a wildlife enforcement network in Central Africa, similar to networks operational or in development in Central America, Europe, South and South-east Asia. TRAFFIC's experience in supporting the establishment of enforcement networks helped inform discussions, as did WWF's insights into the functioning of the cross-border anti-poaching collaboration between Cameroon, Central African Republic and Congo (the Tri-National Sangha Foundation (FTNS)).

After two days debating, delegates from the eight COMIFAC member countries agreed on a six-year Action Plan (2012–2017) to strengthen enforcement of national wildlife laws in the region by ensuring better co-operation and intelligence-sharing between enforcement officers within and between COMIFAC's countries, and helping to tackle large-scale poaching and illegal wildlife trade in Central Africa. Specifically, this Action Plan consists of four components looking at co-operation and collaboration among relevant wildlife law enforcement and prosecution authorities at the national level and between countries: 1) investigations at key border and transit points, domestic markets and transboundary areas; 2) effective deterrents to wildlife poaching and trade, and prosecutions; 3) regular follow-up, publication and dissemination of results of controls and prosecutions; and 4) awareness of illegal wildlife trade issues.

Of particular relevance, this new plan identifies several innovative approaches addressing the excessive and illegal commercial wildlife trade taking place in the region. Most importantly, the plan aims to identify and act against the pervasive corruption currently impeding the judiciary process in most COMIFAC member countries. It also aspires to measure the success of wildlife prosecutions and widely distribute the results for public scrutiny. COMIFAC has invited civil society, international donors, diplomatic missions and non-governmental organizations to monitor the new system, which will bring an unprecedented level of transparency and support to the process.

The COMIFAC Action Plan recommends the establishment of a National Co-ordination Unit (NCU) hosted by the ministry in charge of fauna in each COMIFAC country which may address the follow up to prosecutions and the application of penalties, as well as the gathering of prosecutions data, and the monitoring of national Action Plans to fight illegal wildlife trade. The Action Plan also recommends the establishment of a Sub Regional Unit (Sub Working Group on Wildlife and Protected Areas) which will be in charge of the implementation of actions at the sub-regional level such as training, harmonization of penalties, communication, and co-ordination of collective actions to deter illegal hunting and trade in wild fauna.

A roadmap for the Action Plan's implementation was agreed, including submission of the Action Plan for formal endorsement at the next meeting of the Council of Ministers of COMIFAC countries. In addition, proposed key recommendations to COMIFAC's Executive Secretariat include the broad dissemination of the finalized and validated Action Plan to participants and governments, submission of the Action Plan to the next Council of Ministers for adoption, and the monitoring and evaluation of its implementation. The Action Plan also stresses the importance of financial and technical support and assistance from the international community in helping the COMIFAC member countries to build resources, expertise and capacity to address illegal exploitation and trade in wild fauna. Finally, the participants highlighted the need for the Council of Ministers of COMIFAC to include the Action Plan among documents for consideration by the COMIFAC's Heads of States Summit.

In conclusion, this workshop was a key step in the participatory process of COMIFAC leading to the development and the expected future adoption of a technical instrument to strengthen the implementation of national wildlife laws within COMIFAC, and supporting the implementation of a Convergence Plan, which includes establishment of harmonized policies relating to forests, taxation and biodiversity conservation.

***Stéphane Ringuet**, TRAFFIC Central Africa Regional Director; **Germain Ngandjui**, Senior Programme Officer, TRAFFIC Central Africa*

Poachers kill over 150 Vicuñas in Peru

In February 2012, 159 Vicuñas *Vicugna vicugna* were killed in remote locations in the province of Lucanas, Ayacucho, Peru, after poachers took advantage of heavy rains and inadequate security in the area. The animals were killed for their highly valuable wool and their carcasses left on the plains.

The poachers were seen by villagers of Andamarca, Chaupi and Mayobamba. On 23 February, the president of the Lucanas community, Cesar Rojas, said that the killings had started at the beginning of the month, and had intensified over the previous 10 days. He warned that the criminals had long-range weapons which they had used to threaten these three communities and neighbouring villages, and that they were still at large.

It is reported that the criminals had taken advantage of the recent suspension by Ayacucho's regional government of the Pro Vicuña programme which monitored Vicuña populations in the area. During 2010 and 2011, following repeated requests for funds over the years from the communities involved in breeding Vicuña for their wool, the regional government had allocated one million soles a year (USD375 000) which had allowed for the development of an efficient monitoring programme.

Lucanas province is reported to hold the largest breeding population of this species in the country. Some 24 000 Vicuñas are sheared, an occupation involving some 322 families.

http://www.peruthisweek.com/news-1632-Peru-poachers-kill-150-vicu%C3%B1as-in-Ayacucho/, 24 February 2012; http://elcomercio.pe/peru/1378703/noticia-cazadores-furtivos-matan-159-vicunas-ayacucho_1, 24 February 2012

TRAFFIC

Reviving the tradition of sustainable collection of wild plants in Central Europe

Knowledge relating to collection of wild plants is passed down from generation to generation, but in the 20th century, owing to urbanization and changes in land ownership and lifestyle, this traditional knowledge is being lost. A project which aims to prevent the disappearance of this historical knowledge and help improve the livelihoods of vulnerable groups in rural parts of Central Europe was launched on 1 May 2011 and will run until April 2014. *Traditional and wild*: *promoting traditional collection and use of wild plants to reduce social and economic disparities in Central Europe*, involves collaboration between TRAFFIC Europe Central Eastern Project Office/WWF Hungary, and eight organizations from Hungary, Czech Republic, Slovenia and Poland, with the specific aims of applying historical knowledge relating to the collection of wild plants and to foster sustainable harvest and trade in support of groups including the elderly, women and ethnic minorities. The partnership, including academic institutions, local authorities, chamber of commerce, and NGOs, will bring together a wide array of expertise to implement the project goals successfully.

Within the project, TRAFFIC and WWF Hungary provide the leadership for ensuring the traditions of harvesting of wild plants are ecologically, socially, and economically sustainable. To achieve this, the FairWild Standard will be implemented in several pilot locations (see map), including the buffer zone of Kiskunsag National Park in Hungary and areas around villages in the South Moravian Region of the Czech Republic. It is ▶

KEY TO MAP OF THE PROJECT IMPLEMENTATION:
A: Corvinus University of Budapest (Hungary); **A:** WWF Hungary/TRAFFIC (Hungary); **B:** Village Local Authority Kunadacs (Hungary); **C:** South-Transdanubian Regional Resource Centre Nonprofit (Hungary); **D:** Association for Development and Promotion of Podkarpackie Voivodeship "PRO CARPATHIA"(Poland); **E:** Development Agency Kozjansko (Slovenia); **F:** Institution Foundation BIT Planota (Slovenia); **G:** Mendel University in Brno (Czech Republic); **G:** Regional Agrarian Chamber of the South Moravian Region Brno (Czech Republic)

anticipated that FairWild certification for a number of traditionally wild-collected products (e.g. Common Nettle *Urtica dioica*, Black Elder *Sambucus nigra*, Common Juniper *Juniperus communis*) will be achieved by producer groups as a result of the project.

The FairWild Standard assesses the harvest and trade of wild plants against various ecological, social and economic requirements. Use of this Standard helps support efforts to ensure plants are managed, harvested and traded in a way that maintains populations in the wild and benefits rural producers. The current FairWild Standard (version 2.0) was developed through a combination of an original FairWild Standard with the International Standard for Sustainable Wild Collection (ISSC-MAP), which was pilot-tested globally, including in south-east Europe.

During the first year of implementation, TRAFFIC and WWF Hungary, together with partners, finalized a set of sustainability principles for wild collection and cultivation, based on the FairWild Standard, and started to collect case studies from the Central European region to illustrate use of these principles in practice. Partners are in the process of developing training modules on sustainable wild plant collection and organic small-scale cultivation of plants for the target groups that include the Roma population, unemployed people, the elderly, and women in four participating countries of Central Europe.

By the end of the project it is expected that a toolbox and manual on sustainable collection of plants, cultivation and processing techniques will be developed, and the first steps are being taken towards achieving this goal. Partners identified a preliminary list of priority wild plant species that may have a potential for FairWild certification.

At the BioFach trade fair in February 2012, potential buyers for FairWild certified products from the Central European region demonstrated great interest in the project. To ensure the sustainability of wild harvesting, partners will conduct resource assessments for selected species and develop management plans, based on the available guidance from the FairWild Foundation, and with the support of TRAFFIC.

With the aim of increasing the employment opportunities in the region and income-generation, the project includes a comprehensive socio-economic analysis of the target population in the participating countries, as well as marketing and capacity-building strategies. An ethnobotanic study to support the preservation and dissemination of knowledge about the traditionally collected plants and their use forms part of the project.

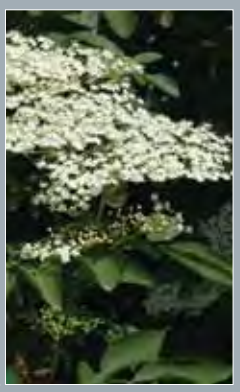
For more information about the project, which is implemented through the Central Europe Programme of the European Union and co-financed by the European Regional Development Fund (ERDF), please visit www.traditionalandwild.eu (available in all national project languages).

***Kristina Rodina**, Medicinal Plants Officer, TRAFFIC Europe (kristina.rodina@wwf.hu); and*
***Anastasiya Timoshyna**, Global Medicinal Plant Programme Lead, TRAFFIC International (anastasiya.timoshyna@wwf.hu)*

CSILLA HERENDY

JUNIPER *JUNIPERUS COMMUNIS*

USED IN THE TREATMENT OF URINARY TRACT AND BLADDER INFECTIONS. THE OIL IS GIVEN AS A DIURETIC, TO RELIEVE INDIGESTION AND FOR DISEASES OF THE KIDNEY AND BLADDER. JUNIPER BERRY TEA IS TAKEN FOR SORE THROATS, COLDS, TUBERCULOSIS AND DIFFICULTY IN URINATION.



JENŐ BERNATH, CORVINUS UNIVERSITY, HUNGARY.

ELDER *SAMBUCUS NIGRA*

TAKEN FOR RELIEF OF THE SYMPTOMS OF COLDS, INFLUENZA AND FEVERS. THE FLOWERS ARE USED FOR THE ONSET OF UPPER RESPIRATORY INFECTIONS AND FOR TONSILITIS, SINUSITIS, LARYNGITIS AND FLU SYMPTOMS; THE BERRIES ARE MADE INTO A CORDIAL SYRUP.

JENŐ BERNATH, CORVINUS UNIVERSITY, HUNGARY.

COMMON NETTLE *URTICA DIOICA*

CONTAINS ANTIHISTAMINE AND IS USED FOR TREATING REACTIONS ASSOCIATED WITH THE RESPIRATORY SYSTEM. A SLOW-ACTING NUTRITIVE HERB THAT GENTLY CLEANSES THE BODY AND STIMULATES THE LYMPHATIC SYSTEM. THE LEAVES ARE USED IN THE TREATMENT OF GOUT, ARTHRITIS, BURSITIS, RHEUMATISM AND TENDONITIS.

The project *Traditional and wild: promoting traditional collection and use of wild plants to reduce social and economic disparities in Central Europe* is implemented through the CENTRAL EUROPE Programme co-financed by the European Regional Development Fund (ERDF).

TOWARDS SUSTAINABLE LIVELIHOODS FROM WILD MEDICINAL RESOURCES:

Economic aspects of harvesting and trading the Chinese Caterpillar Fungus Ophiocordyceps sinensis *and Southern Schisandra* Schisandra sphenanthera *in China's Upper Yangtze Ecoregion*

Jinlin Guo, Xueyan Liu and Kahoru Kanari

This study focuses on the economic value at various stages along the trade chains of two species harvested from the wild in China for medicinal use. The Chinese Caterpillar Fungus Ophiocordyceps sinensis[1] *is of high economic value and intensively sought after. A boom in retail prices for this medicinal over the last two decades has prompted an unprecedented increase in the pressure of collection of this species. As a consequence, there is global concern about the impact of collection of* O. sinensis *and the conservation of its grassland habitat, both in relation to the protection of the environment and for the livelihoods of those that heavily depend on its natural resources (Cannon, 2011; Winkler, 2010; Zhang* et al., *2009). The plant Southern Schisandra* Schisandra sphenanthera*, by contrast, is of low economic value, but is possibly a model example of how additional income could be generated through sustainable and quality-focused harvesting practices. In order to provide incentives for harvesters to exercise caution in their harvesting practices, a system has been devised through the EU-China Biodiversity Programme to increase the revenue derived from harvesting. The two examples showcased here, while presenting very different stories, demonstrate that the economic value chain for each species is a key driver in efforts to strengthen sustainable management of these species. This paper examines the importance of the sustainable management and trade of* O. sinensis *and* S. sphenanthera *to the economy and livelihoods of local communities in the Upper Yangtze River Region of China.*

Background

East Asia is a region of great importance for both the production and consumption of medicinal and aromatic plants (MAPs). China is one of the largest producers of medicinal plants globally (as well as an exporter, importer and consumer)—its medicinal plant exports grew approximately 10% between 2000 and 2006 (Liu, 2007). Meanwhile, consumer demand for medicinal plant resources has increased: for example the year-on-year increase in production of traditional medicinal products in Japan, a major importer and consumer of MAPs (Lange, 2006) amounted to 4–5% from 2005 to 2007, and 83% of Japan's crude drugs supply originated from China during fiscal year 2009 (Kanari, 2010). Such an increase in demand for medicinal products in consuming countries combined with a corresponding rise in exports from China, has raised concerns over pressure on wild plant populations and ecosystems and has implications for local livelihoods.

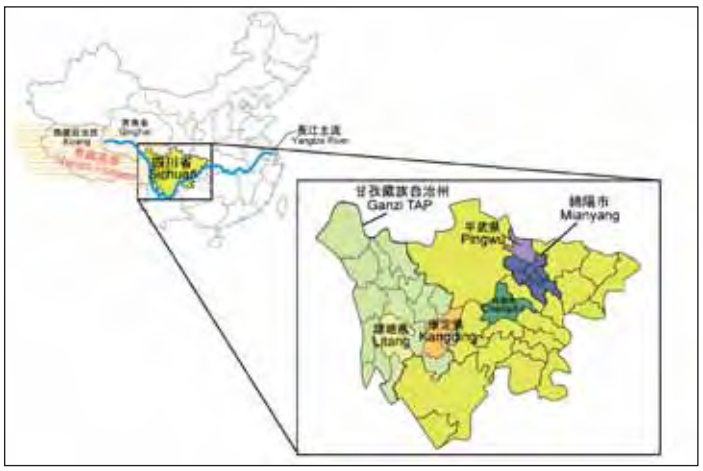


Fig. 1. Map showing research sites in Sichuan province. The Upper Yangtze Ecoregion, where *Ophiocordyceps sinensis* and *Schisandra sphenanthera* are distributed and harvested, includes Sichuan province.
Map designed by Ryoko Nishino, TRAFFIC East Asia-Japan, 2011

This paper reports case studies from the Upper Yangtze River region in China, which is exceptionally rich in wild plant diversity, and is a traditional harvesting area for local people, including indigenous groups. This region comprises one of a number of range States and harvesting sites of two selected case study species—*Ophiocordyceps sinensis* and *Schisandra sphenanthera*.

Ophiocordyceps sinensis is endemic to the Tibetan Plateau and the Himalayas (Winkler, 2010). While the species is inextricably linked to the MAP trade in East Asia, it is not a plant but a flask fungus (one that produces its spores in tiny, generally spherical, chambers), which infects and kills the larvae of the ghost moth *Thitarode*[2] spp. and goes on to produce a small fruiting body in early spring. Its common name, which refers to the whole larva and fungus, is "Winter Worm, Summer Grass" (Dong Chong Xia Cao in Chinese) (Kendrick, 1992; Aryal *et al.*, 2004; Winkler, 2005). It is the whole larva and fungus that is

[1] *Ophiocordyceps sinensis* is the accepted nomenclature for this species, although it is often referred to in the scientific literature as *Cordyceps sinensis*;
[2] Referred to in the Chinese literature as *Hepialus* spp.

UTTAM BABU SHRESTHA

***Ophiocordyceps sinensis* growing in its natural habitat, Dolpa, Nepal.**

PHOTOGRAPH: UTTAM BABU SHRESTHA

Harvesters of *Ophiocordyceps sinensis* at an elevation of 4000 m in Dolpa, Nepal.

harvested and used for medicinal purposes. While the use of this species was first mentioned in Tibetan literature in the 15th century (Boesi and Cardi, 2009), it is only in the past 20 years that demand for this species has increased exponentially both through its perceived medicinal properties and as a luxury product and status symbol for wealthy Chinese consumers. It is used to treat many ailments ranging from lung disease to sexual impotence. In traditional Chinese medicine (TCM), it is applied to keep the lungs fit, strengthen the kidneys and bone marrow, reduce phlegm, and stop haemorrhages (Ying *et al.*, 1987; Liu and Bau, 1980). The species (or the complex of the larvae and fungi) is generally considered to be rare and endangered (Namgyel, 2008; Negi *et al.,* 2006), even though some argue that not enough scientific evaluation has been undertaken to be certain of its status (Namgyel, 2008; Winkler, 2010).

THERE IS GLOBAL CONCERN ABOUT THE SUSTAINABLE COLLECTION OF OPHIOCORDYCEPS SINENSIS *AND FOR THE CONSERVATION OF THE SPECIES'S GRASSLAND HABITAT, BOTH IN RELATION TO THE PROTECTION OF THE ENVIRONMENT AND FOR THE LIVELIHOODS OF THOSE THAT HEAVILY DEPEND ON THE NATURAL RESOURCES OF THIS HABITAT*

Schisandra sphenanthera is a shrub-like plant, widely distributed in the southern region of the Yellow River basin, especially in the Upper Yangtze Ecoregion (a habitat identified by WWF as an area in special need of protection). The fruits of *Schisandra chinensis* (a species distributed in northern China) and *S. sphenanthera* are used in traditional Chinese medicine to nourish *qi* in order to generate fluid, and to invigorate and treat lassitude (Chinese Pharmacopoeia, 2005). While *S. chinensis* is the preferred species in TCM, the fruit of *S. sphenanthera* has equivalent medicinal properties, as described in the TCM pharmacopoeia. Many compound preparations in TCM contain Fructus Schisandra (fruit of *Schisandra* spp.) as a main component.

Schisandra and *Ophiocordyceps* are of value for indigenous and local people as medicines, for their traditional use and increasingly as a source of income from national and international trade. Harvesters of both species are local people who live in the species' distribution area. Once the harvesting season is over, the harvesters depend for their livelihoods on farming of vegetables or medicinal plants such as Rhubarb *Rheum palmatum*, Gastrodia *Gastrodia elata*, and Angelica *Angelica sinensis* (for *Schisandra* harvesters) or herding livestock such as Yak *Bos grunniens* (for *Ophiocordyceps* harvesters). The concerns relating to the wild status of the two species arise for different reasons: collection of *O. sinensis* is considered to be harmful for grassland habitats principally owing to the growing numbers of people involved in collection and the impact of their movement on the environment (Shrestha, *in litt.,* 4 April 2012). Moreover, some studies of harvesters in the Himalayas reveal that the abundance of the caterpillar fungus is dwindling, with the average harvest per collector dropping by around half between 2006 and 2010 (Shrestha, 2012). The concern for *S. sphenanthera* relates more to the need to prioritize the sustainable harvesting methods of the species. The sustainability of the harvest of *S. sphenanthera* is rather overlooked partly because of the lower economic value of the species, and harmful collection methods have been observed for this plant.

Methods

The economic features of these two species were studied through field surveys (see Fig. 1) and desktop research, the latter to gather basic information on taxonomy, for example, and on management regimes in place for these species.

In July and August 2010, a market survey involving individuals dealing in *Ophiocordyceps sinensis* was conducted in two locations in Chengdu, the capital city of Sichuan province: this included two shops in the centre of the city, and 10 shops at He Hua Chi market, the largest TCM market in south-west China. In addition, two teams conducted field surveys on the livelihood status and economic/social impacts of *O. sinensis* trade with individuals who collect or sell *O. sinensis* in the counties of Litang (n=17 persons) and Kangding (n=99 persons), both situated in Ganzi Tibet Autonomous Prefecture (TAP), and the main producing region for *O. sinensis* in Sichuan province. Questionnaires were developed and used in interviews to assess current trade and socio-economic patterns.

Information for *Schisandra sphenanthera* was provided through field work for the project 'Sustainable Management of Traditional Medicinal Plants in High-biodiversity Landscapes of the Upper Yangtze Ecoregion', implemented in China by WWF, TRAFFIC and IUCN, which focused on implementing the principles of ecological and social sustainability (including adapting the FairWild Standard[3] for harvesting) in the region (see Cunningham and Brinckmann, 2010).

Legislation

In China, the *People's Republic of China Wild Plant Conservation Regulations (1 January 1997)* and *The National Protection List for Wild Plants (1 September 1999)* relating to *Ophiocordyceps* are implemented at the national level. *Ophiocordyceps* is listed in Appendix II of the latter law. The regulations define the harvest activities. A licence from the local government authority is required to harvest species listed in Appendix II. All harvesting and market activities are required by law to be monitored. *The Management Rule for* Ophiocordyceps

[3]*The FairWild Standard is an international standard for wild plants in use and in trade, that provides a framework for implementing a sustainable and fair management and trading system for wild-collected natural ingredients and products thereof (www.fairwild.org).*

Trade in Tibet Autonomous Region came into effect on 1 October 1999 and governs management of the species in Qinghai and Sichuan provinces. It focuses on the supply chain, from harvesting, which requires a licence, to trade and market, which require a business licence, tax, quality control, packing, etc.). By law, the land in China belongs to the country; only nomads have the right to access and use the natural resources of the land—including *Ophiocordyceps*—but they need to apply to the local government authority for a harvest licence. There are relevant regional laws such as *Qinghai* Ophiocordyceps *Collection Management Regulations (1 January 2005)*, *Tibet* Ophiocordyceps *Collection Management Regulations (1 April 2006)* and *Ganzi Tibetan Autonomous Prefecture* Ophiocordyceps *Collection Management Regulations (1 March 2008).* These decreed that a small tool was to be used to collect *Ophiocordyceps*, and the hole refilled with soil in order to reduce destruction of the grassland.

Schisandra sphenanthera is not protected by law and the collection and trade of this species is not regulated.

The case of *Ophiocordyceps sinensis*

Over the past two decades, an extensive trade network has been developed to bring valuable *Ophiocordyceps sinensis* from high grassland and alpine tundra habitats to luxury shops in large cities such as Beijing, Hong Kong and Guangzhou, as well as centres in South-east Asia where TCM outlets proliferate. This boom in demand has driven up the retail price of *O. sinensis.* According to prices revealed during interviews for the study, *O. sinensis* in retail markets in China can fetch from CNY100 000 to more than CNY360 000 (USD14 881 to USD53 700)/kg[4] for good quality product, much higher than the price of gold per kilogramme which, in October 2010 was USD35 274/kg (Mitsubishi Materials Corporation, 2011).

The harvesters of *Ophiocordyceps sinensis* are local people who live in the species' distribution area. Harvesting is carried out during the spring months during which time the harvesters are also engaged in herding livestock. Results from questionnaires and interviews in primary source areas (Litang and Kangding counties) and the provincial–level market area (Chengdu) (see Figs 1 and 2) show that *O. sinensis* is moved from collection sites to "middle-class businessmen", or to wealthy local dealers based in local villages or towns who either sell to travelling agents from large TCM companies or travel directly to cities to sell to commercial outlets. Several local shops in Kangding town were also found to be selling small amounts of *O. sinensis,* predominantly to Chinese tourists.

The price mark-up by middle-class businessmen, who typically purchase less than one kilogramme from collectors, is 50%; for wealthy businessmen, who generally purchase in bulk and at greatly reduced cost,

Fig. 2. Geographic range of *Ophiocordyceps sinensis*.
Source: Winkler, 2010

the mark-up can range from between 60% and 200% (Fig. 3). While several hundred kilogrammes are sold in Kangding, the majority of *Ophiocordyceps sinensis* moves directly from Litang to be sold in major cities. Interviews with local traders and harvesters revealed that communities in both Kangding and Litang engage in their own particular systems of taxation in relation to the collection and trade in *O. sinensis*. Some value-added processing, such as cleaning or grading, is carried out step-by-step.

The *Ophiocordyceps sinensis* industry accounts for an important part of the source region's economy, though exact figures remain unclear. Winkler (2010) estimates that the annual global production of *O. sinensis* is between 83.2 t and 182.5 t, recognizing that this estimate is subject to significant uncertainty and margin of error. In China, production is estimated to be in the range of between 80 and 100 t per year (Guo *et al.,* in prep.). However, government data suggest that approximately 100 t of *O. sinensis* originated from Ganzi Tibet Autonomous Prefecture (TAP) in 2009 alone and that total revenue from the resource would reach CNY1.7 billion (USD245 million) (Ganzi AAHB, 2009). When compared to data from interviews carried out for this study in relation to

JINLIN GUO

UTTAM BABU SHRESTHA

A harvester uprooting *Ophiocordyceps sinensis*, Dolpa, Nepal; close-up of digging tool (inset).

[4]*The exchange rate used is USD1 = CNY6.72. (July 2010)*

TRAFFIC / XUEYAN LIU

A sack of *Ophiocordyceps sinensis*, ready for purchase.

1994, which indicate that a maximum of 20 t came from Ganzi during that year, this implies that a five-fold increase in supply of *O. sinensis* appears to have taken place from Ganzi TAP over a 15-year period. The figure from the government report is significantly higher than previous estimates (e.g. Winkler, 2010) and from Guo's estimate—which is based on years of experience in field research—that the volume harvested in Ganzi TAP ranges from between 20 t and 30 t per year. This large discrepancy, if correct, suggests that further work needs to be undertaken to provide a clearer quantification of the dynamics of *O. sinensis* harvest and trade.

The CNY7 billion revenue estimated by the government to derive from collection of *Ophiocordyceps sinensis* is equivalent to 22% of the Tibet Autonomous Prefecture's GDP of CNY7.9 billion (USD1.17 billion). Sustainable management and use of *O. sinensis* is directly related to the livelihoods of the local and indigenous harvesters, positioned as they are at the start of the trade chain and for whom the resource provides 50%–100% of total income in Kangding and Litang, as revealed during the survey under discussion.

The high prices for good quality *Ophiocordyceps sinensis* have fuelled a steady increase in seasonal harvesting pressure. Information from local harvesters estimates that every year between 3000 and 10 000 harvesters visit Aja and Akja, two areas in Litang county known for their high quality *O. sinensis*. Inevitably, this influx of people has a negative effect on the fragile alpine tundra. Although the actual impact of intensive harvesting on the population of *O. sinensis* is not yet apparent (Winkler, 2009), conservation activities have commenced in response to the increase in harvesting pressure. A small collection levy is gathered from harvesters by nomads in the area for attempts at restoring the local environment. The village chief, on behalf of farmers, collects this levy and employs members of the local community to manage the land that has been degraded by the harvesters' movements by planting grass and other plants to restore the local grassland vegetation each year. The local government also levies a tax in relation to the trade and processing of *O. sinensis* which, it states, is reinvested in conservation projects.

The impact of this large-scale trade runs far deeper than economics and environment alone—new customs are being created and previous traditions have been adapted to take account of the presence of this valuable commodity. The overall social context for the *Ophiocordyceps sinensis* trade revealed by the present survey was significantly influenced by the trade itself: schools and monasteries were found to close during the collection season, nomads charge a collection fee on their lands, and female harvesters who marry people from outside their village are required to pay a yearly fee to their mothers' communities for the right to collect *O. sinensis* in those communities.

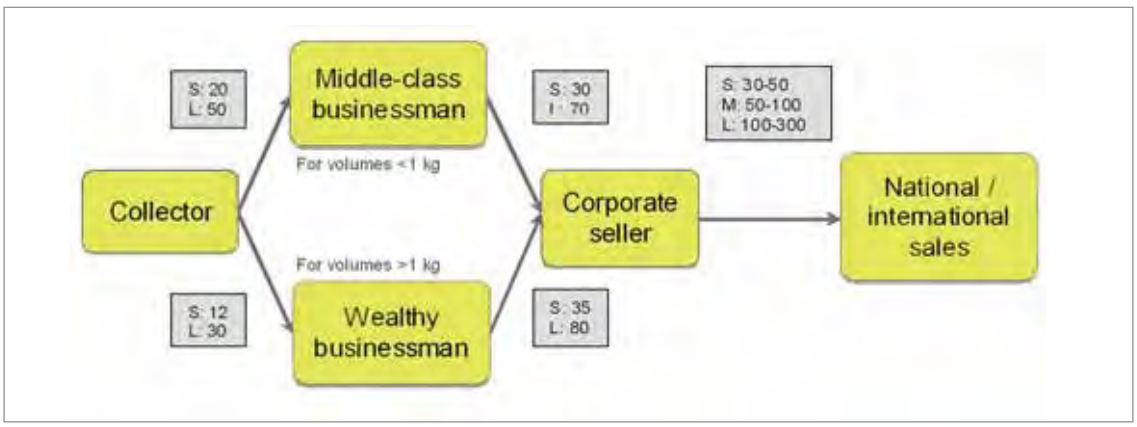


Fig. 3. Simplified trade chain for *Ophiocordyceps sinensis* in Litang County, Ganzi Tibet Autonomous Prefecture (2010 data).
S=small pieces; M=medium pieces; and L=large pieces. Size differentiation for medium pieces only occurs at the corporate seller level (in cities). Piece size is generally an average decided on the number of pieces/kg where small is approximately 4000 pieces/kg; medium is 2000–4000 pieces/kg; and large is 1000–2000 pieces/kg. Numbers indicate purchase/sale price in CNY per piece. The exchange rate used is USD1=CNY6.72 (July 2010).

The case of *Schisandra sphenanthera*

The fruits of *Schisandra chinensis* and *S. sphenanthera* are traditional export commodities in China and large volumes are exported to Japan, Republic of Korea and Singapore, for example, where there is growing demand. Re-exports from Hong Kong are also increasing and new *Schisandra* products from both species are continuously being developed. In 2007, the total export volume from China for *S. chinensis* and *S. sphenanthera* combined exceeded 1000 t, which was a record high (Ding and Ding, 2007).

The harvesters of *Schisandra* are local people who live in the species' distribution area. They collect the *Schisandra* fruit, and sometimes other medicinal herbs, during the autumn months; the rest of the year they undertake other work such as farming of vegetables or medicinal plants. According to surveys conducted for a study co-ordinated by WWF for the EU-China Biodiversity Programme (ECBP) in 2009 (Guo, unpublished a), Sichuan province is expected to produce 20 000 t annually of *S. sphenanthera*, with dried fruits weighing a total of 3000–4000 t and worth CNY45–70 million (USD7.5–10.4 million) at the current market price, comprising about 20% of income for a local village (Guo, unpublished a). Surveys for the ECBP found that farmers in the county of Pingwu earned CNY500–800 (USD75–120)/year/person by collecting medicinal herbs: this amount accounts for over 10% of their annual income and is therefore of significance to farmers in terms of improving their quality of life. According to a previous study (Guo, unpublished b), *S. sphenanthera* contributed a smaller amount of annual income to farmers than previously: less than five per cent in 2008 and 2009. Even this income source would be at risk if the harvesters continue to use unsustainable harvesting methods such as cutting down the branches to collect fruits, a method that has been employed recently by collectors. If the collectors were to harvest only 80% of the fruits without removing all the branches—a method that is taught in the ECBP training programme—such sustainable harvesting of *S. sphenanthera* could potentially contribute a significant increase to the collectors' overall standard of living.

TRAFFIC / XUEYAN LIU

***Schisandra sphenanthera* on sale at Chengdu He Hua Chi TCM market.**

According to Guo (unpublished a), four to six transactions usually occur along the trade chain. The purchase price in the collection area was recorded as CNY2–3 (USD0.29–0.45)/kg and the retail price for the Chinese consumer was CNY12–15 (USD1.79–2.24)/kg (Guo, unpublished a). Fig. 4 provides a simplified trade chain for *S. sphenanthera*.

Collection of *Schisandra sphenanthera* fruits was not consistent at the site surveyed, with harvesting conducted in response to periodic market demand rather than through continuous sale, which leads to high price fluctuations. Generally, collectors of *S. sphenanthera* have traditionally sold their product mainly to middlemen, with low returns.

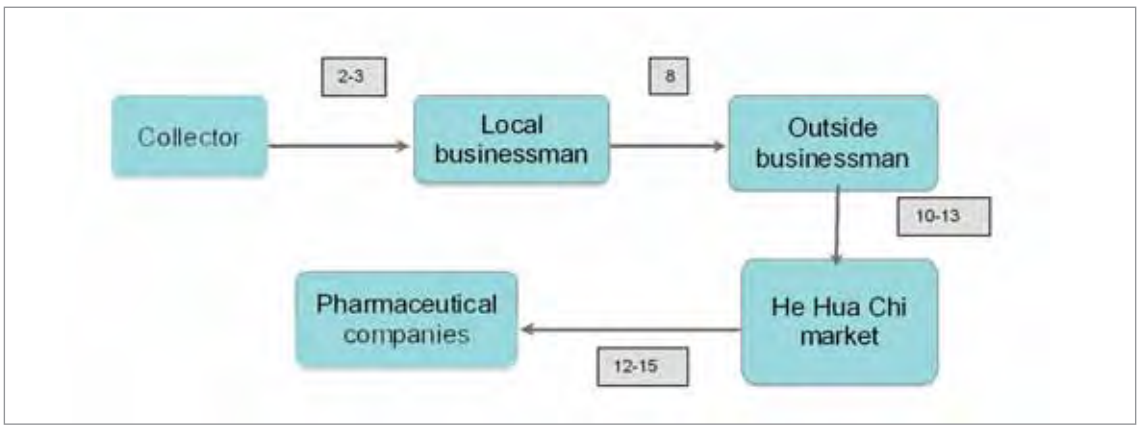


Fig. 4. Simplified trade chain for *Schisandra sphenanthera* in Pingwu County and Chengdu, Sichuan.
Source: Guo unpublished a.

Note: Numbers indicate purchase/sale price in CNY per kilogramme. He Hua Chi market is in Chengdu. Data from 2009.

Being at the beginning of the trade chain, farmers may try to enhance their income by increasing collection volumes, which may have implications for the sustainability of the resource and the long-term supply, and hence benefit-flows.

While *Schisandra sphenanthera* is abundant in Pingwu county, both the amount of *S. sphenanthera* currently harvested and the prices are low. As a result, local people are unable to receive high returns from its collection. Through the implementation of sustainable collection, the quality of the product would be improved since the harvesters would only collect the fruit when it is ripe, and leave a quantity of good quality fruit for reproduction. One of the most important aspects in supporting methods of sustainable collection is the raising of economic returns by reducing the number of steps in the trade chain, accompanied by the improvement in quality of the product, and an exploration of more market avenues. If this multi-track approach is pursued successfully, the likelihood of local people receiving more benefit from sustainable wild medicinal plant collection will increase.

IF ONLY 80% OF SCHISANDRA SPHENANTHERA *FRUITS ARE HARVESTED, AND SOME BRANCHES WITH GOOD QUALITY BERRIES ARE LEFT BEHIND FOR REPRODUCTION, THIS PLANT COULD CONTRIBUTE A SIGNIFICANT INCREASE TO THE HARVESTERS' STANDARD OF LIVING.*

Before 2009, harvesting methods for many wild medicinal plant species, including *Schisandra sphenanthera*, were destructive and were considered a major threat to the forest ecosystem and wildlife habitat at the study site. During the implementation of sustainability standards for *S. sphenanthera*, carried out during the EU-China Biodiversy Programme (ECBP) project (Cunningham and Brinckmann 2010), local collectors have been encouraged to replace old collection methods (for example, collection of fruit in a way that breaks branches and damages the plant) with careful, selective collection which leaves some fruit for seeds for reproduction. With the gradual implementation of a new collection method, the harvesting of *Schisandra* becomes more effective and less detrimental to the plant and, by extension, to species preservation. In addition, there is a focus on connectivity between the sustainable harvest of *S. sphenanthera* fruit and direct buying relationships from the international market.

In 2009, 500 kg of high-quality *Schisandra sphenanthera* fruits were successfully exported to the USA through market connections developed by the ECBP-funded project. Income earned directly by the farmers amounted to CNY8500 in total, which is several times higher than the previous year's income (CNY1000–1500). An agreement for 2010 resulted in an order for 10 t of high-quality *S. sphenanthera* fruits, which was expected to bring approximately CNY200 000 worth of income directly to farmers. Although the order had not been fulfilled by the 2010 harvest, the project is still on course to increase the sustainable yield of quality fruit. According to the data collected by one of the authors (Guo), in 2010 the price of *S. sphenanthera* in He Hua Chi TCM market was CNY18 per kg and the export price supported by ECBP was CNY26–28 per kg. In 2011, the price in the same market dropped to CNY16 per kg, but the ECBP export kept its price. This shows that a higher revenue was paid for producers with a sustainable harvesting effort. Collection of *S. sphenanthera* fruit has become an increasingly important source of income for local farmers and, when harvest volumes are adequate, is estimated to have increased harvesters' income by CNY300/person/year in the project site of Sichuan.

Summary and Recommended Action Points

The study described herein highlights the economic value chain in relation to two medicinal species that are very different to each other in their monetary worth and conservation needs. There are a few or more steps between the harvesters and the end consumers and prices increase with every step in the trade. *Ophiocordyceps sinensis* is of high economic value and collection effort has increased dramatically. There is concern that the impact on the environment from collection activities is harmful to the grasslands; furthermore, the life cycle of the species is unknown and no sustainable harvesting practices have been reported to date (Shrestha, *in litt.,* 4 April 2012). Measures for sustainable collection must therefore be strengthened as a high proportion of active *Ophiocordyceps sinensis* collectors depend on the collection of this species for between 50% and 100% of their total income. *Schisandra sphenanthera* fetches much lower prices, but there is an opportunity to change the low revenue harvesting model (of a potentially unsustainable harvesting method producing low quality fruit and low prices) to a high revenue model (of a sustainable harvesting method producing higher quality fruit and higher prices). This model of trade in sustainably harvested *Schisandra* could increase income and instil a greater sense of resource ownership for the harvester.

If successful, this effort for *Schisandra* could create a good practice for other medicinal species, in order to improve the current system of wild resource harvesting. An important difference between the two species is the higher price the buyer is willing to pay for sustainably harvested, good quality specimens—as is observed with *Schisandra*—and the high prices that *Ophiocordyceps sinensis* already commands, irrespective of whether or not it has been harvested sustainably. While the long-term survival of medicinal species is of the utmost importance if livelihoods and traditional knowledge are to be preserved, the economic value chain surrounding the species is an important driver for their conservation. A better understanding of the value chain for each species is key to finding incentives for promoting sustainable harvesting and strengthening a conservation strategy.

WHAT HAPPENS NEXT?

During the course of the study, the research undertaken and data collected from interviews with local stakeholders as well as analysis of trade flows, for example, have provided fresh insights. Reflecting these, some recommendations are made below in relation to the sustainable harvest and use of wild medicinal resources.

JAMES COMPTON / TRAFFIC

TCM PLANTS, INCLUDING WILD-COLLECTED SPECIMENS, ON SALE IN CHINA.

- **Raising awareness and training:** awareness-raising among all stakeholders along any important medicinal plant value chain is a key component of successfully establishing a long-term, sustainable harvesting and trade mechanism. Once sustainable collection methods and techniques, and mechanisms for controlling product quality and value-addition have been developed, training of local collectors will also be vital in maintaining sustainable management of the resource.
- **Scientific survey for a resource management plan:** sustainable collection systems first rely on comprehensive identification of resources at species level, especially for harvested populations. A reliable resource survey/assessment must cover relevant populations of target species, which is the baseline reference for any further monitoring. It includes information on the population status, distribution, age/size classes and abundance. In addition, surveys should be conducted to assess the surrounding socio-economic situation and to understand the economic significance of the target species in local communities. A resource management plan should be developed on the basis of those scientific surveys.
- **Communication and transparency along the trade chain:** the study revealed that the lack of continuous and transparent market and value chain information remains a big hurdle to collectors becoming more independent of intermediate traders. To support appropriate decision-making on the sustainable management of the species, transparency of trade conditions for all stakeholders along the trade chain should be improved, and not simply as a reaction to current market demand.
- **Local empowerment:** to improve the status of the collectors, particularly those from indigenous and local communities, and to increase their participation in the trade process, the development of organized groups or collector associations is recommended to facilitate dialogue in relation to sustainable management of the species, unless such practices run counter to local traditions or there have been negative experiences with such associations.
- **Development of policies and regulatory frameworks:** national or local regulatory frameworks or policies (including access and benefit-sharing provisions), if sensibly developed and reliably implemented, can help to protect resources by defining clear ownership and resource access rights. Official guidance should also be provided for the development of management plans.
- **Streamlining the complexity of trade:** wherever possible and useful, measures should be taken to reduce intermediate trade links without compromising any value-addition processing at these stages, and promote traceable TCM products in the market. This not only brings higher revenues directly to the collectors, but could also increase their incentives to protect the resource. It may make it easier to establish optimum sustainable yield levels and implement potential restrictions on collection limits.
- **Adopting sustainability standards and tools:** to ensure sustainable harvest and equitable benefit-sharing from the species, local associations, national and international bodies can consider adopting standards, such as the FairWild Standard, which includes ecological, social, fair-trade and economic criteria for supporting sustainability of harvesting and trade in wild plants.

STOP PRESS: ***As this issue of the* TRAFFIC Bulletin *went to press, it became known that the Kangmei Institute of Community Development and Marketing of China that assists villagers in the middle and upper reaches of the Yangtze River in China to establish farmer co-operatives and resource management plans, as well as trade in* Schisandra sphenanthera*, supported by the United Nations Development Programme (UNDP), through the project implemented by a collaboration between WWF, IUCN and TRAFFIC as part of the EU-China Biodiversity Programme (ECBP), received a prestigious Equator Prize award in March 2012. This is an outstanding recognition of the successful outcomes of the project and its contribution both to livelihoods and the conservation of biodiversity. It is the second time the success of the project has been publicly acknowledged; in October 2011, the project received an "Outstanding Contribution Award" from the Chinese State Ministry of Environmental Protection, ECBP, the Ministry of Commerce and UNDP.***

Acknowledgements

The authors gratefully acknowledge the input of Shae A. Frydenlund; Professor Yuecheng Li of Sichuan province Institute for Drug Control; Xianfu Liu, pharmacist for the Ganzi Institute of Drug Control; and the students of Dr J. Guo: Dr Lu Chen, Haiyan Ma, Dr Yan Ren and Xiaodan Ren for their valuable support during the drafting of the report. Thanks to Wolfgang Kathe and Daniel Winkler for comments and advice. Thanks also to Anastasiya Timoshyna, Roland Melisch, Susanne Honnef, Thomas Osborn, Shen Wei, Ryoko Nishino, Tsugumi Saito, Akiko Ishihara, Jianbin Shi, Professor Hongfa Xu, James Compton and Julie Gray, all from TRAFFIC, for their review and advice during the course of the work. TRAFFIC gratefully acknowledges Keidanren Nature Conservation Fund for their kind financial support which allowed this study to be conducted, building upon several years of work under the project "Sustainable Management of Traditional Medicinal Plants in High Biodiversity Landscapes of the Upper Yangtze Ecoregion", implemented by WWF, TRAFFIC and IUCN, as part of the EU-China Biodiversity Programme (ECBP). Gratitude is also expressed to stakeholders of the ECBP-funded project including personnel from the WWF Chengdu office, Wanglang national nature reserve, Daping village and all the people who participated in the survey. Danna Leaman, Chair of the IUCN/SSC Medicinal Plant Specialist Group, kindly reviewed a draft of this manuscript. Uttam Babu Shrestha of the University of Massachusetts, USA, provided helpful information relating to the harvesting and trade of *Ophiocordyceps sinensis* and kindly permitted reproduction of his photographs.

References

Aryal, A., Dutta, I.C., Dhungel, S.K. and Pyakurel, A. (2004). Parasitic fungal on moth's larvae: Yarsagumba (*Cordyceps sinensis*), ecology and local economic contribution in Nepal. *Biodiversity Research and Training Forum.*

Boesi, A., Cardi, F. (2009). *Cordyceps sinensis* medicinal fungus: traditional use among Tibetan people, harvesting techniques, and modern uses. *Herbalgram* 83:52–61.

Cannon, P.F. (2011) The caterpillar fungus, a flagship species for conservation of fungi. *Fungal Conservation* Issue 1: Summer 2011 35–39.

Chinese Pharmacopoeia (2005). *The Pharmacopoeia of People's Republic of China.*

Cunningham, A.B. and Brinckmann, J.A (2010). "Cinderella" *Schisandra*: A project linking conservation and local livelihoods in the Upper Yangtze Ecoregion of China. *HerbalGram* 85:28–39.

Ding, L. and Ding, X. (2007). *Schisandra* price rise again. *Medicine Economic News*, 22 March.

Ganzi AAHB (2009). The Annual Report of the Ganzi Agriculture and Animal Husbandry Bureau.

Guo, J., Yan, R., Chen, L. (in prep.). The study on distribution of *Cordyceps* Resources in China. *Planta medica*.

Guo, J. (unpublished a). Providing guidance on baseline investigation of Nan Wuweizi resource and current collection style in 10 villages around Daping. Research for WWF, December 2009.

Guo, J. (unpublished b). Resource investigation on medicinal plants in Yetang area, Pingwu county and social and economic survey in Daping village, Pingwu county. For a WWF technical report by Wanglang Nature Reserve and Dr Guo Jinlin. Research from August 2008 to January 2009.

Kanari, K. (2010). Japan's trade in medicinal plants. *The State of Wildlife Trade in Japan*. Pp. 24–29. TRAFFIC East Asia–Japan, Tokyo, Japan.

Kendrick, B. (1992). *The Fifth Kingdom*. Focus Publishing, Newburyport, Ma, USA. Pp. 1–406.

Lange, D. (2006). International trade in medicinal and aromatic plants: actors, volumes and commodities. In: Bogers, R.J., Craker, L.E. and Lange, D. (Eds). *Medicinal and Aromatic Plants*. Springer, Dordrecht. Wageningen UR Frontis Series no. 17.

Liu, B. and Bau, Y.S. (1980). A new genus and a new species of Clathraceae. *Mycotaxon* 10:293–295.

Liu, X. (2007). Promoting Sustainable use of Chinese traditional plant medicines: *The State of Wildlife Trade in China: Information on the Trade in Wild Animals and Plants in China 2007*. Pp.8–11. TRAFFIC East Asia China programme, Beijing, China.

Mitsubishi Materials Corporation (2011). *Data Park of Gold Prices* (www.mmc.co.jp/gold/market/g_data/index.html) Viewed on 31 August 2011.

Namgyel, P. (2008). Conservation and income generation opportunities from high-value species: *Cordyceps* policy in Bhutan and its implications for the Himalayan Region. *Biodiversity Conservation in the Kangchenjunga Landscape*. International Centre for Integrated Mountain Development. June 2008, Kathmandu, Nepal. Pp.117–122.

Negi, C.S., Koranga, P.R. and Ghinga, H.S. (2006). Yartsa Gumba (*Cordyceps sinensis*): A call for its sustainable exploitation. *International Journal of Sustainable Development and World Ecology.* 13:165–172. Taylor & Francis.

Shrestha, U.B. (2012). Correspondence. *Nature.* 482:35. Macmillan Publishers Limited.

Winkler, D. (2005). *Cordyceps sinensis* (Berk.) Sacc: Economy, ecology & ethnomycology of Yartsa Gunbu, a medicinal fungus endemic to the Tibetan Plateau. *International Journal of Medicinal Mushrooms* 7(3):481–482.

Winkler, D. (2009). Caterpillar fungus (*Ophiocordyceps sinensis*) production and sustainability on the Tibetan Plateau and in the Himalayas. *Asian Medicine* 5:291–316.

Winkler, D. (2010). Caterpillar fungus (*Ophiocordyceps sinensis*) production and sustainability on the Tibetan Plateau and in the Himalayas. Paper prepared for 2010 International Conference on *Ophiocordyceps sinensis*, Xining, Qinghai, 8–10 June 2010. Updated version [11 June 2010] previously published in *Chinese Journal of Grassland* 32 Supplement, Pp.96–108, June 2010.

Ying, J.Z., Mao, X.L., Ma, Q.M., Zong, Y.C. and Wen, H.A. (1987). Icons of medicinal fungi from China. *Science Press,* Beijing, Pp.1–575.

Zhang, Y., Xu, L., Xhang, S., Liu, X., An, Z., Wang, M. and Guo, Y. (2009). Genetic diversity of *Ophiocordyceps sinensis*, a medicinal fungus endemic to the Tibetan Plateau: implications for its evaluation and conservation. *BMC Evolutionary Biology* 9:290. Available at: www.biomedcentral.com/content/pdf/1471-2148-9-290.pdf. Viewed on 3 March 2012.

***Jinlin Guo**, Associate Professor, College of Pharmacy, Chengdu University of Traditional Chinese Medicine, China;*
***Xueyan Liu**, Senior Forest Programme Officer, IUCN China Liaison Office;*
***Kahoru Kanari**, Senior Programme Officer, TRAFFIC East Asia-Japan.*

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

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

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.

ABALONE

AUSTRALIA: On 8 December 2011, two people were arrested north of Eden, New South Wales, after police found 265 shucked Blacklip Abalones *Haliotis rubra* in their car; the molluscs, car and diving gear were seized. The previous day, fisheries officers and police seized some 429 live abalones, a vehicle and diving equipment south of Bodalla.

The recreational bag and transporting limit for abalone in New South Wales is two per person.

On 28 January 2012, NSW fisheries officers arrested a man at Batemans Bay who was in possession of 161 Blacklip Abalones. The suspect hid up a tree in an attempt to evade capture.

In February 2012, at Burwood Local Court, a Sydney man pleaded guilty to charges of trafficking 473 abalones *Haliotis* (and possessing over 500 cockles). He was sentenced to 12 months' imprisonment and fined AUD70 000 (USD74 000). He was granted bail and is banned from fishing.

According to NSW Department of Industries Director of Fisheries Compliance, Glenn Tritton, the penalty was one of the highest for a fisheries offence in the State's history. The penalties followed the introduction of tough laws introduced in April 2012 designed to protect abalone.

On 19 February 2012, officers of the Department of Primary Industries arrested two men who were diving offshore at Mordialloc, Victoria, and shucking abalone underwater. In their possession were 490 abalones—almost 50 times the legal limit in the State of five per person per day.

In early March 2012, at Elizabeth Magistrates' Court, two ringleaders of an abalone poaching gang were given suspended gaol terms and fines following a two-year undercover operation by police and officers from Primary Industries and Resources, in South Australia. Ringleader Van Tai Huynh, of Virginia, pleaded guilty to five counts of illegally trafficking in a commercial quantity of abalone and was given a suspended 16-months' gaol term and fined AUD10 000 (USD10 500). Huynh oversaw the illegal sale of 480 kg of ablones poached from waters on the State's west coast. Thanh Minh Tran, of Parafield Gardens, was given a 12-month suspended gaol term and fined AUD5000 for helping undercover officers to buy three shipments of poached abalone in August and September 2010. Two others were fined and sentenced to community service, while the remaining three alleged members of the racket remain before the court.

In March 2012, during a four-day undercover operation along South Coast, NSW, the Department of Primary Industries fisheries officers apprehended eight men and seized 460 abalones and six sets of dive gear in the Ulladulla area. The suspects were to appear in court at a later date.

In March 2012, at a court in Hobart, Tasmania, Flora Ou of Bridgewater was convicted of unlawfully trading in 420 kg of abalone. She became the focus of a lengthy covert police investigation and on at least two occasions had illegally purchased abalone from an undercover officer. She was fined more than AUD340 000 (USD352 000). A six-month gaol sentence was suspended for two years.

www.abc.net.au/news/2012-02-24/trio-jailed-for-trafficking-abalone/3850568, 24 February 2012; www.edenmagnet.com.au/news/local/news/general/haycock-abalone-bust/2394194.aspx, 15 December 2011; Illawarra Mercury, 19 December 2011/2 February 2012; www.theage.com.au/environment/pair-charged-over-huge-abalone-haul-20120220-1tj5j.html; 20 February 2012; www.adelaidenow.com.au/big-fines-for-abalone-thieves/story-e6frea6u-1226295912072, 10 March 2012; http://news.ninemsn.com.au/national/8437514/abalone-trafficker-jailed-for-12-months, 19 March 2012; www.naroomanewsonline.com.au/news/local/news/general/abalone-thieves-busted-in-ulladulla-crackdown/2497381.aspx; www.abc.net.au/news/2012-03-29/abalone-ring-paid-for-gambling-addication/3921146?section=tas

CANADA: On 27 January 2012, at Duncan Provincial Court, Michael McGuire pleaded guilty to fishing for abalone illegally and to obstructing a fisheries officer during the course of his duties. He was sentenced to eight months in gaol for failure to pay a fine of CAD35 000 (USD35 072) arising from a previous conviction in 2005 for abalone poaching in contravention of the *Fisheries Act*.

www.fis.com/fis/worldnews/worldnews.asp?l=e&country=0&special=&monthyear=&day=&id=50496&ndb=1&df=0, 7 March 2012

SOUTH AFRICA: On 26 December 2011, a man from Hout Bay was arrested after 1603 abalones were found in his vehicle.

On 9 February 2012, members of the Mitchell's Plain tactical response unit seized 5127 abalones after searching a vehicle in Khayelitsha, Cape Town. A Zimbabwean man was arrested.

On 21 February 2012, Western Cape police seized 40 bags containing 6562 abalones from a vehicle; one person was arrested.

www.thenewage.co.za/39156-1008-53-Man_behind_bars_for_abalone_haul, 30 December 2011; www.iol.co.za/news/crime-courts/abalone-worth-r5m-seized-1.1231037; www.sapsjournalonline.gov.za/dynamic/journal_dynamic.aspx?pageid=414&jid=28736, 22 February 2012

BIG CATS

Tiger *Panthera tigris* and Leopard *Panthera pardus* are listed in CITES Appendix I.

INDIA: It has been reported that 356 Leopards were killed during 2011, of which more than half the deaths were attributed to poaching. During the first two months of 2012, the number of Leopard skins confiscated from various parts of Uttarakhand State reached 25 according to Anil Baluni, Deputy Chairman of Forest and Environment Advisory Committee, Uttarakhand. He added that Leopards were being killed not just for their skins but also for their bones; at least two dozen tribesmen of the Bawaria gang had been apprehended, he said. Although Baluni maintains the situation is more alarming than before, he stated that the high number of seizures is also an indication of efficient work by officers.

Examples of seizures during 2012 to date include the uncovering of a network of Tiger and Leopard poachers spanning four States and the arrest of 11 members of three gangs. Skins of eight Leopards and Tigers and five kilogrammes of bones were seized. The

suspects claimed to have killed between eight and ten Tigers in less than six months—about 40% of poaching incidents involving big cat deaths during the period.

One suspect and four accomplices were arrested in Bijnore, Uttar Pradesh, and the skins of four Leopards and one Tiger were seized. The animals had reportedly been killed with the use of iron traps in Corbett National Park and Rajaji National Park in Uttarakhand. In order to protect Tigers in the park—which has the highest Tiger density in India—a special Tiger protection force is in place.

On 22 February 2012, in Uttarakhand, five Leopard *Panthera pardus* (CITES I) skins were seized from poachers.

www.mid-day.com/news/2012/feb/280212-356-leopard-deaths-in-India-in-365-days.htm; www.hindustantimes.com/India-news/NewDelhi/National-network-of-tiger-poachers-busted/Article1-809187.aspx, 9 February 2012; http://zeenews.india.com/news/tamil-nadu/five-held-leopard-skin-tiger-s-skull-seized_752110.html, 12 January 2012; www.deccanherald.com/content/229678/leopards-poachers-mercy-natural-habitat.html, 23 February 2012

MALAYSIA: On 15 February 2012, at Alor Setar Sessions Court, a local man was charged under the *Wildlife Conservation Act 2010* with possession of skins of eight Tigers *Panthera tigris* (CITES I) and 22 Tiger bone pieces (as well as six African Elephant *Loxodonta africana* (I) tusks and one antelope horn). He was released on bail and a trial date is pending. The items were found after officers from Malaysia's Wildlife and National Parks Department, Perhilitan, raided a house following a tip-off on 10 February.

"TRAFFIC warmly congratulates the wildlife department on this important seizure," said Kanitha Krishnasamy, Senior Programme Officer with TRAFFIC Southeast Asia. "However, it is vital that thorough investigations are undertaken of all seized items to determine their origin, who was behind the trafficking, and where the buyers are, so that they can be brought to book."

www.traffic.org/home/2012/2/10/tiger-skins-elephant-ivory-and-bones-seized-in-malaysia.html

THAILAND: In early January 2012, at Bangkok's main post office, Customs officials acting on information seized four boxes, each containing one Tiger skin, bones and a skull. The parts, en route to Mae Sai in northern Thailand, were thought to have come from Indonesia, destined for China, reportedly for interior design purposes.

On 9 January 2012, police confiscated the carcass of a Tiger (150 kg) from a Hanoi restaurant which the owner was boiling to make a paste, reportedly used in traditional medicine as a pain killer. The owner had been sentenced in 2007 to 18 months in gaol for possessing carcasses of two wild Tigers.

On 19 February 2012, two poachers received sentences that were among the most severe ever imposed in Thailand for wildlife poaching: a Thai Hmong was sentenced to five years in gaol while a Vietnamese citizen will serve four.

These sentences are the result of an investigation that began in July 2011 after park rangers patrolling the Western Forest Complex encountered a group of poachers. The poachers fled, but left behind a mobile phone containing their images, posing with a dead Tiger and holding rifles, as well as evidence of their involvement in the ivory trade. They also left behind animal body parts and insecticides that are sometimes used to poison Tigers.

The dead Tiger was identified from the photo by its stripe pattern—a visual "thumbprint" unique to each Tiger—and was shown to be one of the animals being tracked with camera traps by researchers at the Wildlife Conservation Society (WCS). Their database of Tiger images not only helps researchers understand the ecological needs of Tigers, but also gives law enforcement an important resource in successfully prosecuting illegal hunters.

www.skynews.com.au/world/article.aspx?id=704449&vId=, 6 January 2012; http://asiancorrespondent.com/73455/vietnam-police-seize-tiger-carcass-from-restaurant-2/, 10 January 2012; http://news.mongabay.com/2011/0714-wcs_tiger_poaching_camera.html, 14 July 2011; www.wcs.org/news-and-features-main/cellphone-poachers-jail-time.aspx, 7 March 2012;

IVORY

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

CHINA: On 27 October 2011, Gongbei Customs, in Zhuhai city, Guangdong province, seized 16 elephant tusks (60 kg) concealed in a car travelling from Macao.

On 28 December 2011, police in Jinghong, Yunnan province, seized 93 suspected ivory items after a raid on 293 shops in the city, as part of a crackdown on illegal ivory trading.

Jinghong, bordering Myanmar to its south, is situated in the rugged Xishuangbanna region, which is home to about 250 Asian Elephants *Elephas maximus* (CITES I). The elephants are reportedly frequently seen crossing borders into neighbouring countries. China and Lao PDR recently signed an agreement to build a second cross-border nature reserve—which stretches across 55 000 hectares of rainforests in the two countries—in order to provide better protection for the elephants.

On 6 March 2012, at the Intermediate People's Court in Hangzhou, Zhejiang province, a man stood trial after more than 10 kg of ivory was found in his luggage at Hangzhou Xiaoshan International Airport following his return from a trip to Angola in July 2011. He fled after officials checked his luggage, but later surrendered to police. The man argued in court that he purchased the ivory as a gift for his friends rather than for resale and stated that he believed the most serious punishment would be a large fine. A verdict has not been announced.

www.jisi.gov.cn/News/szsm/gd/201111/20111121111504_6171.html [in Chinese]; http://english.cri.cn/6909/2012/01/05/2561s674853.htm, 5 January 2012; www.shanghaidaily.com/article/?id=496074&type=National, 8 March 2012

REPUBLIC OF CONGO: On 10 August 2011, a landmark ruling was passed by the Brazzaville High Court when it sentenced a Chinese national to four years' imprisonment. The man was arrested as he boarded a flight en route to Beijing with five elephant tusks, 80 ivory chopsticks, hankos (name seals), three ivory carvings and many small ivory items. Enforcement officials discovered the pieces wrapped in "metal sheets" inside his hand luggage. The arrest was carried out by the Ministry of Sustainable Development, Forest Economy and the Environment, with support from the Gendarmerie and technical assistance from PALF (Project for the Application of Law for Fauna), a wildlife law enforcement project pushing for the arrest and prosecution of wildlife criminals in Congo.

www.nikela.org/elephant/chinese-wildlife-trafficker-gets-slammed?

INDIA: On 9 February 2012 it was reported that two Asian Elephant *Elephas maximus* (CITES I) tusks (32 kg) had been detected in Dalma Wildlife Sanctuary in Jharkhand by an Alsatian dog trained under a TRAFFIC/WWF programme to trace wildlife products. The tusks were from an elephant that had died two days earlier; when forest officials inspected the carcass they found the tusks had been removed. The sniffer dog, which is currently deployed at nearby Betla Tiger Reserve, led forest guards to the spot where the tusks had been concealed.

The dog is one of seven trained under the TRAFFIC India/WWF-India's sniffer dog training programme, initiated in 2008 and the first of its kind in India to use dogs for detecting illegal wildlife products. Some 14 handlers and seven dogs have been successfully trained to detect wildlife articles such as Tiger bone, Tiger skin, Leopard bone, Leopard skin and bear bile. The dogs and trainers are currently placed with the Forest Departments of Haryana, Maharashtra, Madhya Pradesh and Jharkhand.

According to M.K.S. Pasha, of TRAFFIC India, "Using sniffer dogs for crime detection and prevention is one technique TRAFFIC has experience of running in several countries. We are happy it is making a difference in India too and hope more States will come forward to adopt this as a tool in the fight against wildlife crime".

http://dailypioneer.com/nation/41263-tracey-sniffs-out-32-kg-ivory-in-dalma.html; www.traffic.org/home/2012/2/9/sniffer-dog-tracey-helps-recover-32-kg-of-ivory. html

KENYA: On 26 November 2011, authorities in Nairobi seized from a depot a container holding ivory disguised as soapstone carvings. The shipment, destined for Hong Kong, comprised 25 elephant tusks and 61 tusk pieces. The source of the shipment was unknown.

On 3 December 2011, the Kenya Wildlife Service (KWS) seized 465 ivory tusks that had arrived in Mombasa Port from Nairobi on 28 November, again declared as soapstone. Before it was impounded, KWS had tracked the consignment for three weeks. The source of the tusks could not be immediately established but the shipment was reportedly bound for Cambodia.

http://af.reuters.com/article/topNews/idAFJOE7AP00420111126?feedType=RSS&feedName=topNews, 26 November 2011; www.africareview.com/News/+17m+ivory+haul+ seize+at+Kenyan+port/-/979180/1283626/-/om6000/-/,

MALAYSIA: On 6 January 2012, Customs officials in West Port, Port Klang complex, seized 492 kg of ivory exported from Cape Town, South Africa. This was the third ivory seizure at the port in six months.

The tusks, hidden in a container holding tyres and flooring material, had been falsely declared as polyester and nylon strand matting. Shipping documents listed a Malaysian company as the importer and Port Klang as the final destination, an unusual development since all previous large ivory seizures in Malaysian ports have been in transit.

www.traffic.org/home/2012/1/9/malaysia-seizes-half-a-tonne-of-ivory.html?utm_source=twitterfeed&utm_medium=twitter, 9 January 2012

SOUTH AFRICA: On 29 February 2012, at Cape Town International Airport, officials from the Border Control Unit detected a consignment of ivory that had arrived in four boxes from O.R. Tambo International Airport, Johannesburg. The shipment was allowed by Revenue Service officers to continue its journey to a city business premises, closely monitored by enforcement officials, which in turn led to the discovery of a larger number of ivory products. One man was arrested. The confiscated items remained unquantified but were substantial and included whole tusks and several bags of cut ivory as well as ivory necklaces and bangles. A machine to cut ivory was also found. A Chinese national was arrested.

Cape Times, 1 March 2012: www.iol.co.za/capetimes/tusks-and-ivory-seized-at-airport-1.1246355

UGANDA: On 14 February 2012, officials seized nearly 162 kg of ivory and other animal parts and products including bones, teeth and animal skins that were being smuggled into and out of the country. In 2010, wildlife authorities started a sensitization campaign that they say has led to increased awareness among Customs agents of what is contraband and stated that the latest seizure is a sign of progress.

Iol news: www.iol.co.za/dailynews/news/uganda-seizes-ivory-animal-parts-1.1234396, 14 February 2012

UK: On 10 October 2011, at Basildon Crown Court, Francis Benyure was sentenced to 10 months' imprisonment, suspended for 18 months, after posting more than 3000 listings for elephant ivory and elephant hair bracelets on an online auction website. He was also fined GBP500 (USD780) and ordered to carry out 150 hours community service and to obey a 9pm-6am curfew for four months.

www.london24.com/news/illegal_elephant_ivory_trade_run_from_romford_home_1_1089942, 13 October 2011

VIET NAM: On 22 October 2011, Customs officials announced that they had seized more than a tonne of ivory, believed to be from elephant tusks, being smuggled through the country's border with China. Around 221 tusk portions had been concealed on a boat that was intercepted on the northern frontier with China. Three people, including two Chinese nationals, were arrested and taken into custody.

On 2 November 2011, authorities at Hai Phong port seized 300 kg of ivory from a shipment declared as cloth rags, imported from an undisclosed country by an import-export trading company located in Mong Cai, Quang Ninh. The shipment was sealed at Hai Phong Customs Department for further investigation.

www.focus-fen.net/index.php?id=n262570, Focus Information Agency, 24 October 2011; Translated from http://vtv.vn/Article/Get/Hai-Phong-Bat-giu-300kg-nga-voi-nhap-lau-9acf5bf785.html

ZAMBIA: It was reported on 29 December 2011 that, at Ndola Magistrates' Court, John Kalume, a Congolese business executive, had been sentenced to five years' imprisonment with hard labour for the illegal possession of 169 elephant tusks. Kalume, who was charged with possession of prescribed trophies contrary to section 91 and 133(1)(a) of the *Wildlife Act 1988*, was arrested on 2 September 2011 in Ndola as he tried to transport the tusks to the Democratic Republic of Congo in a vehicle bearing a diplomatic number plate. Ownership of the vehicle had not been established. Two co-accused were acquitted.

Times of Zambia, 29 December 2011: http://allafrica.com/stories/201112290492.html

PANGOLINS

All pangolins *Manis* spp. are listed in CITES Appendix II.

CHINA: On 28 February 2012, police in Fujian province seized 39 frozen pangolins, six live pangolins (and 11 live monitor lizards) from a coach travelling to Fuzhou city, Fujian province, from Shantou city, Guangdong province. The case was referred to the local forest police for further investigation. The live pangolins were released and the monitor lizards were sent to Zhangzhou Zoo.

In early March 2012, Fangchenggang police, Guangxi province, seized 59 live pangolins. The animals were transferred to Fangchenggang forest police who were to investigate the case.

www.cwca.org.cn/Article/ShowArticle.asp?ArticleID=25459; www.cwca.org.cn/Article/ShowArticle.asp?ArticleID=25511

INDIA: On 2 November 2011, troops of the 31 Assam Rifles of 26 Sector under HQ IGAR (S) launched an operation in Khudengthabi, Chandel district, and apprehended two individuals in possession of 14 kg of pangolin scales; the suspects and seized items were handed over to the Wildlife Department.

www.e-pao.net/GP.asp?src=22.041111.nov11,3 November 2011

THAILAND: On 25 December 2011, Army rangers seized 74 live pangolins being prepared for shipment in Nong Khai, a province bordering Lao PDR. Members of a suspected syndicate of wildlife smugglers evaded capture. The seized pangolins were to be sent to a wildlife breeding centre in Chaiyaphum.

On 13 January 2012 it was reported that a man had been arrested in Prachuap Khiri Khan in possession of 180 pangolins in his vehicle. He confessed to being hired to deliver the animals from Surat Thani to Bangkok.

On 30 January 2012, two Malaysians were arrested for smuggling 45 pangolins (over 100 kg) while passing through the inbound immigration border checkpoint in Sadao district. The animals were contained in net bags under a seat in the suspects' vehicle. The pair confessed that they had brought the specimens from Malaysia in order to deliver them to customers in Thailand's Sadao district.

On 21 February 2012, 111 pangolins were seized in a crackdown on a wildlife smuggling syndicate; two suspects were arrested in Trang province; a further two evaded capture. Police also seized a customer list book, scales and a vehicle. Most customers were dealers in Satun and Songkhla provinces aiming to export and trade the specimens to a neighbouring country.

www.pattayamail.com/news/thai-authorities-seize-endangered-species-anteaters-in-nong-khai-8972; www.mcot.net/cfcustom/cache_page/317881.html, 13 January 2012; www.mcot.net/cfcustom/cache_page/324 812.html; www.mcot.net/cfcustom/cache_page/333612.html, 21 February 2012

MALAYSIA: In January 2012, Aivon Vencer of the Philippines was gaoled for three years after pleading guilty to smuggling pangolin meat. He had been arrested on 7 December 2011, in Batu Sapi waters, near Kampung Bahagia, after the Customs marine special team pursued his vessel which was found to contain the frozen meat (4988 kg) of an estimated 1068 pangolins. This is reported to be the largest seizure of pangolin meat by Sabah Customs.

On 1 March 2012, at Kuala Lumpur International Airport, Customs Department officers seized 50 pangolins from a shipment intended for Vientiane, Lao PDR. The consignment, labelled as containing live crabs, had arrived from Penang. The pangolins were to be handed over to the Wildlife Department for further action.

http://thestar.com.my/news/story.asp?file=/2012/1/6/nation/20120106180628&sec=nation, 6 January 2012; www.newsabahtimes.com.my/nstweb/fullstory/54594; www.nst.com.my/local/general/50-pangolins-en-route-to-laos-seized-1.54317#ixzz1nxPfFRWj

VIET NAM: On 11 December 2011, environmental crime investigation police confiscated 106 pangolins (400 kg) from a car in Duc Long Commune in Duc Tho District, Ha Tinh province.

Two days later, police found 56 live pangolins inside a vehicle. The driver confessed that he had been hired to transport the animals from Ha Tinh to Hanoi, for sale.

On 30 December 2011, guards at the Cau Treo border with Lao PDR seized live pangolins (350 kg) from a vehicle. The lorry driver initially failed to stop his vehicle and was eventually forced to stop in Son Tay Town but he evaded capture. The seized specimens were handed over to the provincial Forestry Protection Department.

www.tuoitrenews.vn/cmlink/tuoitrenews/society/2-tons-of-wild-animals-seized-in-ha-tinh-1.56196; www.tuoitrenews.vn/cmlink/tuoitrenews/society/350-kg-of-trafficked-pangolin-seized-in-ha-tinh-1.56815#

REPTILES/AMPHIBIANS

BANGLADESH: On 15 February 2012, 16 gecko smugglers were gaoled for up to two years after they were arrested by the Rapid Action Battalion (RAB) in Dhaka the previous day. They were tried and sentenced on the spot by a magistrate. [The animals are understood to be Tokay Geckos *Gekko gecko*]. In August 2011, a man was fined BDT1000 (USD12.00) after attempting to sell two Tokay Geckos in Dighinala Upazila, Khagrachhari district.

It is reported that Bangladesh has emerged as a key source of Tokay Geckos for other Asian nations. Experts have said a lack of law enforcement has turned that country into a key wildlife trafficking corridor in the region, with its porous land border and ports being used for the smuggling.

www.haveeru.com.mv/south_asia/40284, 15 February 2012; www.thedailystar.net/newDesign/news-details.php?nid=198271

COSTA RICA: On 30 November 2011, Limón fisherman Javier Fallas lost his home, was fined USD79 286 and sentenced to one year in gaol, reduced to three years' probation, for illegally harvesting eggs of Green Turtles *Chelonia mydas* (CITES I and protected in Costa Rica). He was found in possession of over 10 000 eggs at his home for the purposes of selling.

www.fijatevos.com/latest-articles/the-nation/1225-fisherman-fined-for-turtle-egg-harvest.html, 6 January 2012

INDONESIA: On 1 March 2012, the Natural Resources Conservation Agency (BKSDA) in Merauke released into the wild 1967 confiscated Fly River Turtles *Carettochelys insculpta* (CITES II and totally protected in Indonesia). The turtles were from two seizures that took place at Mopah Airport, Merauke, in Papua province. The first, on 25 January, involved some 1500 live specimens found in two suitcases en route to Jakarta. On 8 February, 690 juvenile Fly River Turtles were detected in a suitcase. In total, 2185 turtles were seized, 218 of which died in quarantine. The cases are under investigation.

"The deaths in quarantine are indicative of the high mortality levels incurred in illegal wildlife trade," said Chris R. Shepherd, Deputy Regional Director of TRAFFIC Southeast Asia. "Often far fewer, if any, animals survive to be returned to the wild."

This species is reportedly being smuggled out of Indonesia by the thousands. Sources allege that shipments such as this are common, with dealers in Jakarta buying the turtles from hunters/agents in Papua, and selling them on to contacts abroad. Many are destined for the pet markets of East Asia, to places such as Hong Kong where demand for this species is reportedly rising; they are also possibly consumed as meat in some countries.

It was reported on 12 March 2012 that 19 Indian Star Tortoises *Geochelone elegans* (CITES II) seized at Jakarta's Soekarno Hatta airport in November 2011 had been returned to India, their country of origin, the first time that Indian Star Tortoises seized in Indonesia have been repatriated. Some 47 specimens and various snakes had been found in the possession of an Indonesian woman returning to the country from Bangkok. Twenty-eight specimens had already died or subsequently perished.

"Although the number of tortoises represents a tiny fraction of those being trafficked, their repatriation is symbolic of the growing commitment, dedication and co-operation between enforcement officers within Asia to tackle rising wildlife crime in the region," said Chris R. Shepherd, Deputy Regional Director of TRAFFIC Southeast Asia.

The care and return of the tortoises was co-ordinated in Indonesia by Customs, Quarantine and the Directorate General of Forest Protection and Nature Conservation. The reptiles have been sent to Arignar Anna Zoological Park (AAZP), Chennai, from where it is anticipated they will be released into the wild.

www.traffic.org/home/2012/3/2/almost-1500-turtles-crammed-like-sardines-into-suitcases.html; www.traffic.org/home/2012/3/13/indian-star-tortoises-sent-home.html

MALAYSIA: On 12 October 2011, the Marine Operations Force (MOF) thwarted an attempt to smuggle 5000 turtle eggs into Sabah after detaining a boat in waters off Kampung Forest. The boat's skipper evaded capture. Possession or sale of turtle eggs in Sabah is an offence under the State's *Wildlife Conservation Enactment 1997*. The eggs were surrendered to the Sabah Wildlife Department.

On 22 December 2011, over 600 Indian Star Tortoises *Geochelone elegans* (CITES II) were repatriated to India. These included specimens seized after the bags in which they were travelling remained unclaimed at Kuala Lumpur International Airport in August, as well as 100 Indian Star Tortoises seized a month later by the country's Wildlife and National Parks Department, Perhilitan, in Malacca. The owner was given a "very stern warning".

On 22 February 2012, Anson Wong Keng Liang was released from gaol after the Court of Appeal in Putrajaya allowed his appeal to have his gaol sentence for illegally exporting Boa Constrictors *Boa constrictor* (CITES I/II) reduced. The Court held that the 17 months and 15 days served since his sentencing on 7 September 2010 would serve the interests of justice. It allowed Wong's appeal to set aside a High Court's decision in enhancing his gaol term from six months, imposed by the Magistrate's Court on him, to five years' gaol. The panel also affirmed the High Court's decision in setting aside the RM190 000 (USD62 000) fine imposed on Wong as it was beyond the ceiling of RM10 000 which the Sessions Court could legally impose.

Wong was in Kuala Lumpur International Airport en route from Penang to Jakarta when the snakes were found in his suitcase. The High Court imposed the five-year gaol term on Wong after allowing the prosecution's appeal for a heavier sentence, but set aside the RM190 000 fine.

New Straits Times (Malaysia), 13 October 2011: www.nst.com.my/nst/articles/MOFseizes5_000turtleeggs/Article/#ixzz1ahDkIPlu; TRAFFIC Southeast Asia; www.nst.com.my/local/general/rescued-indian-star-tortoises-sent-home-1.24246#ixzz1hjxhGVMz, 27 December 2011; http://thestar.com.my/news/story.asp?file=/2012/2/22/nation/20120222193558&sec=nation

PHILIPPINES: On 12 October 2011, three men were arrested at a police checkpoint in Quiapo, Manila, after the van in which they were travelling was found to contain 11 geckos that allegedly were to be sold to a buyer in Quezon City. The lizards, reportedly from Cavite, were to be handed over to the Department of Environment and Natural Resources.

www.abs-cbnnews.com/nation/metro-manila/10/12/11/3-tuko-traders-nabbed-quiapo

RHINOCEROS

All rhinoceroses Rhinoceroditae are listed in CITES Appendix I.

The following cases highlight the growing number of rhinoceros horn thefts from museums and other establishments throughout Europe over the past 12 months. The UK's National Wildlife Crime Unit has warned all British zoos with rhinoceroses of the threat of thefts. As a consequence, Colchester Zoo has strengthened its security. Some museums have replaced their rhinoceros horn stock with fake specimens to deter robbers. Examples of cases are recorded below:

AUSTRIA: On 8 November 2011 it was reported that a rhinoceros horn had been snatched from an auction house in Vienna by two men; a second horn was dropped. The stolen horn (5.68 kg) was part of a collection on show before a sale at the city's Dorotheum auctioneers and was from a rhinoceros shot in Sudan in the 1930s.

Days later, a rhinoceros horn was stolen from a taxidermist shop in Margareten, Vienna, by two men who showed interest in the horn that the taxidermist had purchased at an auction at the Dorotheum the previous day. They grabbed the horn when the shop owner was on the 'phone.

A 'rhinoceros' head stolen from a pub in Weisskirchen, Styria, was a fake. Four Polish nationals were arrested in connection with the incident the following day when they tried to break into Schloss Rastenberg at Gmünd in Waldviertel. Police found the wooden rhinoceros horn stolen in Styria in their car.

http://viennatimes.at/news/Panorama/2011-11-08/27707/Rhino_horn_stolen_from_Dorotheum_auction_house, Austrian Times, 9 November 2011; http://bikyamasr.com/61421/rhino-thieves-arrested-in-austria/

GERMANY: On 12 March 2012 it was reported that police in Munich had arrested one woman and two men after a routine check of their vehicle indicated that it had been stolen in the UK. The trio was thought to be part of a group that has been operating in the UK, Sweden, France and the Czech Republic, responsible for stealing rhinoceros horns, including the theft of horns from a museum in Offenburg on 18 February. On that occasion, a couple distracted museum staff while two men climbed onto a display case, took the head from where it was hanging on the wall and knocked its horns off with a sledgehammer. They then fled with the horns concealed in their coats.

www.thelocal.de/society/20120312-41279.html, 12 March 2012; www.google.com/hostednews/afp/article/ALeqM5g18bUyW5xU-kTa0niUp_g4GZdjiw?docId=CNG.3191dc24cc5938d2422343290ecaad45.7c1

UK: On 20 February 2012, four men were prevented from stealing the mounted head of a rhinoceros from Norwich Castle Museum after forcing open the display case in which it was held. After snatching the head, they were foiled in their attempt to leave by two staff members who recovered the specimen; the men ran off. The museum said it would replace the horn with a replica, so that it would no longer be a target for thieves.

www.bbc.co.uk/news/uk-england-norfolk-17112582, 21 February 2012

OTHER RHINOCEROS CASES:

SOUTH AFRICA: On 14 December 2011, at Germiston Magistrates' Court, Hsu Hsien Lung was sentenced to six years' imprisonment following his arrest in May in possession of almost 10 kg of rhinoceros horn.

On 10 January 2012, the dehorned carcasses of eight adult rhinoceroses were discovered in Kruger National Park; a further three were found two days later following an aerial search. The animals had been shot. Two suspected poachers were arrested.

On 12 January 2012, in North West province, enforcement officials arrested five suspected rhinoceros poachers following a year-long investigation. One suspect evaded capture and remains at large. The group was allegedly on route to carry out a poaching attack.

On 31 January 2012, at Phalaborwa Regional Court, Mozambican nationals Aselmo Baloyi, Jawaki Nkuna and Ismael Baloy were each sentenced to 25 years' imprisonment after being found guilty of poaching rhinoceroses in Kruger National Park in July 2010, as well as of possessing weapons and ammunition. They were caught with two freshly removed rhinoceros horns, an axe and other weapons.

"This is an indication that, as a country, we are taking more stringent measures in the fight against rhino poaching," said SANParks CEO David Mabunda.

On 2 March 2012, a former police officer alleged to be one of the most wanted masterminds in the rhinoceros poaching underworld was arrested in Hazyview, Mpumalanga. Four horns, found behind a seat in his vehicle, were suspected to be from two rhinoceroses killed in Kruger National Park the previous week. Four park staff, including two game guides, were arrested in connection with that incident. The suspect was taken into custody.

On 3/4 March 2012, two farmers from KwaZulu-Natal, and a game ranger were arrested after a poaching attempt at Mkhuze Falls private game reserve.

On 12 March 2012, at Makhado Magistrates' Court, Jaques Els, a Limpopo game farmer, was sentenced to eight years' imprisonment for his involvement in rhinoceros poaching and fined R1 million (USD132 000). Els was granted bail pending his intention to lodge an appeal and will appear in court again on 2 June.

www.eyewitnessnews.co.za/Story.aspx?Id=79288; www.news24.com/SouthAfrica/News/3-more-rhino-carcasses-found-20120112; www.eyewitnessnews.co.za/Story.aspx?Id=80677; www.news24.com/SouthAfrica/News/2-poachers-shot-dead-in-Kruger-Park-20120112; www.iol.co.za/news/crime-courts/trio-sentenced-for-rhino-poaching-1.1224523; www.iol.co.za/news/crime-courts/syndicate-broken-in-midnight-blitz-1.1234815?showComments=true, 15 February 2012; www.witness.co.za/index.php?showcontent&global[_id]=77616; www.iol.co.za/news/crime-courts/farmers-ranger-ex-cop-in-poaching-net-1.1249815; http://www.iol.co.za/news/crime-courts/farmer-sentenced-for-rhino-poaching-1.1255909?showComments=true

ZIMBABWE: On 14 March 2012 it was reported that Munhuhaashati Bungumupeye of Bikita had been sentenced to 14 years' imprisonment for tracking a rhinoceros's spoor in the Chipangayi Intensive Rhino Protection Zone with the intention of poaching. On 5 March, Bungumupeye and an accomplice tracked down a rhinoceros to a watering hole before being spotted by rangers. Bungumupeye was arrested; his accomplice escaped. Bungumupeye was found in possession of a rifle fitted with a silencer and three rounds of live ammunition. His sentence comprised three years' imprisonment for unlawful possession of a gun and 11 years for unlawful possession of ammunition and for hunting an endangered species.

www.newsday.co.zw/article/2012-03-14-14-years-for-rhino-poaching/, 14 March 2012

TIMBER

CHINA: In March 2012, Customs officials at Beijing Capital Airport arrested a passenger in possession of undeclared Red Sandalwood *Pterocarpus santalinus* (CITES II) *(*23.5 kg). This was the first case involving a seizure of this species at the airport.

www.customs.gov.cn/publish/portal0/tab39267/info361015.htm [in Chinese]

INDIA: On 28 October 2011, the Directorate of Revenue Intelligence (DRI) seized 17 t of Red Sandalwood *Pterocarpus santalinus* (CITES II) from a container at Vallarpadam International Container Trans-shipment Terminal (ICTT), thus foiling a bid to export the timber to Hong Kong, via Dubai. The wood had reportedly been brought from Andhra Pradesh by road.

The DRI are reported to have identified the kingpins of a sandalwood smuggling racket who are stationed in Dubai and said to have been shipping the timber to Hong Kong and China after receiving it in Dubai from India. The DRI has learned that the scheme involves operations in Kerala, Andhra Pradesh, Tamil Nadu, Dubai, Hong Kong and China and it has sought the assistance of INTERPOL to return the suspects to India.

On 16 February 2012, it was reported that Customs officials at Nhava Sheva port, Maharashtra, near Mumbai, recalled a shipment of 40 000 kg of Red Sandalwood *Pterocarpus santalinus* (CITES II), declared as paperboard and shipped to Dubai. A tip-off led officials to act before the timber had reached its destination. A duplicate Central Excise department seal had been used to avoid scrutiny by Customs officials.

An official is reported to have said that the smugglers bring Red Sandalwood from the border of Andhra Pradesh and Karnataka to the outskirts of Mumbai where it is kept illegally in warehouses.

"The syndicate members then bring containers which contain legitimate goods stuffed in factories in the presence of Excise officials," the official said, adding that the legitimate goods are replaced with Red Sandalwood by opening the Central Excise seal. "They then put on a duplicate seal," the official said.

http://dailypioneer.com/nation/17231-red-sandlewood-racket-kingpins-based-in-dubai.html; www.hindustantimes.com/India-news/Mumbai/Customs-seize-40-000kg-of-red-sanders/Article1-812129.aspx

GUATEMALA: Between November and December 2011, authorities seized three shipping containers, each holding 58.28 m^3 of rosewood *Dalbergia* (CITES I/II) which were due to leave from the port of Santo Tomas de Castilla. A further 3.5 m^3 of illegally logged wood was seized in national parks across the country.

http://insightcrime.org/insight-latest-news/item/2242-seizures-point-to-timber-trafficking-ring-in-guatemala

MALAYSIA: On 13 February 2012, at Butterworth Sessions Court, Nguyen Van Tien of Viet Nam, was sentenced to six years in gaol and fined RM200 000 (USD65 000), after pleading guilty to felling agarwood *Aquilaria* trees. Two others remain at large. The trees were taken from the Bukit Panchor Forest Reserve in Nibong Tebal.

www.thestar.my/news/story.asp?file=/2012/2/13/nation/20120213114854&sec=nation

OTHER SEIZURES/PROSECUTIONS

CANADA: On 9 December 2011, Jason Daeninck of Winnipeg was found guilty of 18 charges under the *Wild Animal and Plant Protection and Regulation of International and Interprovincial Trade Act* in relation to the smuggling into the city from Indonesia of protected coral, sea horses and Giant Clams *Tridacna gigas* (CITES II). A court hearing is pending.

Daeninck was arrested in 2007 after Customs officials intercepted a shipment of 9000 kg of Stony Coral Scleratinia (CITES II) in British Columbia. Investigators linked the shipment to Daeninck and executed a search warrant at his home and business. They learned that he had been involved in other illegal shipments of CITES-listed sea horses and Giant Clams. However, none of those items were recovered and officials believe they were brought into Canada and subsequently sold on the black market.

www.thestarphoenix.com/Coral+wildlife+smuggling+fine+could+reach+million/5840193/story.html#ixzz1g9H2M0B5, 10 December 2011

CHINA: On 21 November 2011, Customs officials at Huanggang port seized 104 python *Python* spp. (CITES II), gallbladders, eight Lion *Panthera pardus* (I) teeth, one Gorilla *Gorilla gorilla* (I) claw, one pangolin *Manis* (II) and two frogs following x-ray examination of a passenger's luggage.

On 14 December 2011, Hunchun Anti-smuggling Sub-bureau confiscated 117 bear paws in Hunchun, Jilin province, at the border with the Russian Far East. On 5 January 2012, the National Wildlife Detection Center identified 103 of the specimens as belonging to Asiatic Black Bears *Ursus thibetanus* (CITES I) and 14 to Brown Bears *Ursus arctos* (I/II) (total weight 125.82 kg).

On 30 March 2012, during a routine check at Jimunai Port bordering Kazakhstan, Altay Customs officials seized 876 horns of Saiga Antelope *Saiga tatarica* (CITES II) (163 kg) that were concealed in the luggage compartment of an international coach (see also under Kazakhstan).

http://shenzhen.customs.gov.cn/publish/portal109/tab31107/info327499.htm [in Chinese]; http://finance.huanqiu.com/data/2012-01/2329935.html; http://health.gmw.cn/2012-04/03/content_3899842.htm [in Chinese]

COLOMBIA: On 2 February 2012, a fishing boat flying a Costa Rican flag was apprehended by the navy while fishing in Malpelo Island Sanctuary, a UNESCO World Heritage Site and an area where fishing is prohibited. Some 1406 kg of sharks and other fish were seized. The boat was taken to the port of Buenaventura to be made available to the authorities.

www.armada.mil.co/index.php?idcategoria=775768, 2 February 2012

HONG KONG SPECIAL ADMINISTRATIVE REGION: On 14 November 2011, Customs officials discovered 33 rhinoceros horns (86 kg) that had been hidden in a container arriving by ship from Cape Town and marked as carrying scrap plastic; 758 ivory chopsticks and 127 ivory bracelets were also seized.

www.jisi.gov.cn/News/szsm/hongkong/201111/20111117151825_6142.html [in Chinese]

HUNGARY: On 5 November 2011, authorities intercepted a Romanian refrigerated lorry near Szeged, close to the border with Romania, and found concealed inside some 10 000 dead birds wrapped in plastic bags. The majority of specimens were Eurasian Skylarks *Alauda arvensis*, but also included Bluethroats *Luscinia svecica*, Goldfinches *Carduelis carduelis*, Fieldfares *Turdus pilaris*, Mistle Thrushes *Turdus viscivorus*, Reed Buntings *Emberiza schoeniclus* and White Wagtails *Motacilla alba*. The driver was arrested and has already been prosecuted under a fast-track procedure and now faces 10-months' imprisonment.

www.traffic.org/home/2011/11/9/hungarian-police-seize-thousands-of-dead-songbirds.html

KAZAKHSTAN: On 19 March 2012, police at checkpoint "Ily" stopped a vehicle being driven by a resident of the Eastern-Kazakh province and seized 4704 horns of Saiga Antelope *Saiga tatarica* (CITES II), 10 608 skins of Muskrat *Ondatra zibethicus*, and roots of *Fritillaria pallidiflora*. The driver claimed that the items were to be transported to China. The materials were handed over to the police department of Almaty province.

On 20 March, police at the checkpoint "Kurmangazy", in Atyrau province (Western Kazakhstan), seized 178 Saiga Antelope horns from a car and arrested the driver (see also under China).

Zakon.kz citing the press service of the Ministry of Agriculture

PHILIPPINES: Scales from some 100 pangolins *Manis* (CITES II) contained in four boxes were seized by the Philippines National Police (PNP) Aviation Security Group at Puerto Princesa airport, Palawan, as well as shells from circa 40 Green Turtles *Chelonia mydas* and Hawksbill Turtles *Eretmochelys imbricata* (both CITES I).

www.abs-cbnnews.com/nation/regions/01/03/12/anteater-scales-turtle-shells-seized-palawan, 3 January 2012

SPAIN: The Civil Guard has thwarted the operations of an organization that illegally exported around 5000 kg of baby eels a year; some 1500 kg of eels have been seized.

Operation Succulent, conducted by the Environmental Procedure Central Unit (UCOMA) from the Nature Protection Service (Seprona) of the Civil Guard, resulted in the arrest of 14 people who are reported to have purchased the eels in Asturias and Galicia (although many of them were actually captured in Portugal). The goods were declared as mullet, a fish that has no legal protection.

The investigation began in October 2011, when UCOMA noted a possible smuggling of the species, which as fry has a high economic value. A few weeks previously, a company allegedly involved in the illegal shipping had been set up in the municipality of Salceda de Caselas. The accused have reportedly been involved in eel farming and marketing for years.

The procedure was assisted by Bulgarian authorities, as it was found that the baby eels were packed in Galicia and transported by air to Sofia. After an alleged sale to a local company, the eels were to be sent to their final destination in the Philippines.

Charges against four other Romanian and Belgian people are expected.

Export of the European Eel *Anguilla anguilla* (CITES II) to countries outside the EU is banned.

www.fis.com/fis/worldnews/worldnews.asp?monthyear=&day=26&id=50962&l=e&special=&ndb=1%20target=

SRI LANKA: On 14 February 2012, naval personnel uncovered 11 050 conch shells buried in the Palliwasalthurai area, Kalpitiya. It is suspected that they were hidden pending transfer to India by sea.

www.navy.lk/index.php?id=3327

SWITZERLAND: In October 2011, Customs officials at Zurich Airport found 261 Mexican Redknee Tarantulas *Brachypelma smithi* (CITES II) inside six boxes, each specimen packed in a plastic bag; 10 were dead. The shipment had arrived from the Dominican Republic, bound for a Swiss dealer whose home was later searched and where a further 665 tarantulas were found.

All the spiders were taken into care at the Federal Veterinary Office.

www.dailymail.co.uk/news/article-2051210/The-real-Spider man-Customs-halt-smuggler-airport-261-Mexican-tarantulas-luggage.html#ixzz1bILx117E, 20 October 2011

TAIWAN: On 13 December 2011, police at TaiYuan International Airport seized around 20 000 live eel fry (5 kg) destined for Hong Kong; the eels had been packed into bags with a cooling function. Taiwan bans the export of eel fry, glass eels and young eels between November and March.

http://iservice.libertytimes.com.tw/liveNews/news.php?no=579467&type=%E7%A4%BE%E6%9C%83

USA: On 26 October 2011, a US Virgin Islands company based in St Thomas was fined USD1.8 million for knowingly trading in black coral (CITES II) that had been falsely labelled. Forfeiture of jewellery and other items amounted to a total loss to the company of USD4.47 million making this the highest penalty for the illegal trade in coral, the largest non-seafood wildlife trafficking financial penalty and the fourth largest for any US case involving the illegal trade of wildlife.

GEM Manufacturing LLC pleaded guilty to seven counts of violations of both the *Endangered Species Act* and the *Lacey Act*. The fine will be apportioned between the Lacey Act Reward Fund and the National Oceanic and Atmospheric Administration (NOAA) Asset Forfeiture Fund, accounts established by Congress to assist US Fish and Wildlife Service (FWS) and NOAA in the enforcement of federal conservation laws. GEM was sentenced to pay an additional USD500 000 in community service payments for projects to study and protect black coral and ordered to forfeit dozens of jewellery items, sculptures and raw black coral. The company was also sentenced to three and a half years of probation and a 10-point compliance plan and was banned from doing business with a former coral supplier.

On 14 December 2011, Chee Chaw of Queens was sentenced at a Brooklyn court to one year in gaol and fined USD4000 for smuggling Asian Bonytongue *Scleropages formosus* (CITES I) into the country. The suitcase carrying the fish was misplaced during a transfer from Hong Kong, and its contents discovered after the bag arrived on a later flight. Nine of the 16 fish, packed in water-filled plastic bags, had died. Four more fish from a previous smuggling mission were recovered from Chaw's flat. It was revealed that he had smuggled fish on at least three occasions since 2004.

US Department of Justice: www.justice.gov/opa/pr/2011/October/11-enrd-1410.html; www.nydailynews.com/news/crime/queens-man-smuggled-rare-fish-suitcase-slapped-year-jail-article-1.991626#ixzz1gZVPp6CY, 14 December 2011

VIET NAM: On 13 December 2011, police in Ho Chi Minh City arrested two locals after they were caught buying a Tiger skeleton (9.4 kg) from another person. Subsequent searches at properties in Districts 12 and Cu Chi turned up large amounts of wildlife bones and processed animals. Tests by Vietnam Science and Technology confirmed that the items included the skeletons of six Lions *Panthera leo* and one bear, two Tigers *P. tigris* soaked in wine, a Tiger head, a rhinoceros horn, four pairs of elephant tusks, three elephant tails (all CITES I), and five kilogrammes of monkey bones.

www.vnnnews.net/endangered-wildlife-dealers-arrested-in-southern-vietnam

DAVID LAWSON /WWF-UK

The Trade and Ethnobiological Use of Chimpanzee Body Parts in Guinea-Bissau: *Implications for Conservation*

Rui Miguel Moutinho Sá, Maria Ferreira da Silva, Fernando Miguel Sousa and Tânia Minhós

Introduction

Guinea-Bissau represents the western-most limit of the endangered West African Chimpanzee *Pan troglodytes verus* (Sousa *et al.,* 2005). During the 1980s, Chimpanzees were erroneously considered to be extinct in the country due to a total absence of information owing largely to political and civil unrest (Lee *et al.,* 1988). In 1994, a preliminary survey was conducted and the presence of Chimpanzees was reconfirmed (Gippoliti and Dell' Omo, 1995; 1996). More recently, research has been carried out in co-operation with national and local authorities, establishing a system for the systematic monitoring and management of this great ape (Casanova and Sousa, 2007). Within the country, Chimpanzees are distributed across the south of the Corubal River. Their presence is confirmed in two protected areas—Cantanhez National Park (CNP) and Cufada Lagoons Natural Park (CLNP) in the southwestern region—and in the eastern region of Boé (Casanova and Sousa 2007; Brugière *et al.*, 2009).

Due to high levels of exploitation, loss of habitat and habitat quality as a result of human activities, this subspecies is estimated to have experienced a significant population reduction in the past 20 to 30 years (IUCN, 2011). However, no recent data are available to allow for an estimation of rates of decline (IUCN, 2011). The most recent figures available, from 1996 (Gippoliti *et al.*, 2003), estimate that the number of Chimpanzees in Guinea-Bissau ranges from between 600 and 1000 individuals. It is estimated that Chimpanzee density in the southern area of CNP is of 2.34 nest builders/km^2 in a total area of 17.225 km^2, corresponding to 40 individuals (Sousa *et al.,* 2011), while in the neighbouring area east of Gadamael, just outside the CNP area, this value decreases to 0.89 nest builders/km^2 in a total area of 36.513 km^2, which corresponds to 33 individuals (Sousa, 2009). However, the exact number of individuals and communities for the whole CNP and the rest of the country remains unclear; with the aid of a molecular census, however, it will be possible to infer its effective population size (Sá *et al.,* 2009).

Anthropogenic disturbances such as habitat loss and fragmentation (e.g. logging activities and shifting land occupation for the purposes of agriculture and food production, e.g. cashew nuts), the hunting of infant animals for the pet trade, and casual deaths from crop raiding allied to extrinsic factors such as disease, are the main threats, not only to Chimpanzees but to all non-human primates in Guinea-Bissau (Gippoliti *et al.,* 2003; Casanova and Sousa, 2007; Brugière *et al.,* 2009). The species is classified by IUCN as Endangered, and listed in CITES Appendix I, and is also protected in Guinea-Bissau. Even though most primate species in Guinea-Bissau are traded for meat consumption, there is no evidence that this is the case for Chimpanzees (Minhos *et al.,* in prep.).

This paper reports on the use and trade of Chimpanzee body parts in Guinea-Bissau for traditional practices (e.g. for nutritional, medicinal or ritual purposes, or "animistic myths"). Informal interviews were conducted and observations made with a view to providing insight into how these human traditions and myths might pose an additional threat.

Methods

Seven visits, of approximately four hours each, were made to Bandim market, the largest market in Bissau, the capital, during two weeks in September 2008 and a similar period in June 2010. Some 10–15 men were found to be offering wild animal body parts for sale (e.g. skin, bones, teeth, horns and scales). Where possible, morphological identification of the specimens viewed was made and photographs taken.

An ethnoprimatological approach (i.e. the study of human and non-human primate interactions) aims to understand the incorporation of non-human primates into folklore, myths, the hunting of non-human primates for food, keeping non-human primates as pets, indigenous knowledge of non-human primate behaviour, among others (Wolfe and Fuentes, 2007; Fuentes and Hockings, 2010). In this study, the authors were interested in understanding and placing into context the social inclusion of Chimpanzee body parts for human traditional practices using informal interviews and ethnographic observations, although not enough data were collected to provide an in-depth analysis for such an approach.

Most of the vendors encountered were male. Five urban vendors in Bandim market and 17 rural informants in villages in the CNP and the Boé region were informally interviewed following an unstructured script, in order to document the geographical origin and use of Chimpanzee body parts, prices and the scale of the trade, i.e. whether at a national, regional, or transnational level. Direct observations of the trade were conducted in the market

R.M. SÁ, M. FERREIRA DA SILVA, F.M. SOUSA AND T. MINHÓS

1. Leopard *Panthera pardus* (1a complete). CITES Appendix I/IUCN Near Threatened;
2. Chimpanzee *Pan troglodytes verus*. CITES Appendix I/IUCN Endangered;
3. Nile Crocodile *Crocodylus niloticus*. CITES Appendix I/II/IUCN Lower Risk/Least Concern.
4. Guinea Baboon *Papio papio*. CITES Appendix II/IUCN Near Threatened.
5. Possibly Lion *Panthera leo*. CITES I/IUCN Vulnerable.
6. Possibly African Civet *Civettictis civetta*. CITES Appendix III/IUCN Least Concern.
7. Antelope horns (species not identified).

Fig. 1. All animal-derived products for human traditional purposes in Bandim market, Bissau, Guinea-Bissau.

and field notes were taken. Informants were assured that the purpose of the work was not to condemn or report their practices to the local authorities. Every observation heard and/or seen was recorded and notes/interviews organized into social demographic categories (e.g. urban traders, local villagers, gender, ethnic group). Only information relevant to the research topic was assigned to these categories (Rubin and Rubin, 1995).

Only pieces of animal skins were seen for sale during the surveys (which could have derived from one or more specimens). As the vendors were reluctant to answer questions related to the animal numbers involved in the trade, it was not possible to estimate the number of skins being offered for sale for each species recorded. This paper therefore focuses on the morphological identification of the species and not to the number of skins traded.

Results and Discussion

Traded species

During visits to Bandim market, morphologically identified dried Chimpanzee skins were found being sold for traditional medicinal purposes. Additionally, dried skins from Temminck's Red Colobus monkeys *Procolobus badius temminckii*, Guinea Baboons *Papio papio* and Olive Baboons *Papio anubis* were also found. The authors also detected trade in dried skins of several non-primate species such as Leopard *Panthera pardus*, Nile Crocodile *Crocodylus niloticus*, African Civet *Civettictis civetta*, elephant *Loxodonta* sp., hare *Lepus* sp., African Buffalo *Syncerus caffer*, Spotted Hyaena *Crocuta crocuta* and several species of antelopes, snakes and lizards, as well as skins alleged to be of Wild Dog *Lycaon pictus* and Lion *Panthera leo* (Fig. 1). Other animal body parts observed included bones, Crested Porcupine *Hystrix cristata* spines, teeth, antelope horns, pangolin *Manis* sp. scales, mollusc shells, fish bones and feathers. Morphologically specific identification was not possible in most cases due to the similarity of those body parts to other species, as well as to their condition. A few sellers mentioned that some of the bones being offered for sale were from primates.

All the species mentioned above are reported as occurring in Guinea Bissau except for Olive Baboons, whose western limit of distribution is reported to be in Mali and the Republic of Guinea (IUCN, 2011). The Olive Baboon skin seen was morphologically quite different to the Guinea baboon skins found at the market. While Guinea Baboon skins present red/brownish coloration, the Olive Baboon skin had a green hue, typical of what has been described for the subspecies (Groves, 2001).

Costs, origin and scale

Interviews with urban traders revealed that the cost of a piece of Chimpanzee skin was relatively high, ranging from XOF1500 (CFA Francs) to XOF90 000 (USD2.9 to USD173.96, based on an exchange rate in 2008 of XOF460.77 to USD1). The average monthly wage in 2008 was XOF40 000 (approximately USD88.00) (UNDP, 2010).

All urban vendors reported that the Chimpanzee and other animal body parts (apart from the elephant hide seen) originated from the "southern part", and frequently mentioned the regions of Cantanhez and Gabú specifically. Vendors considered the "southern part" every location south of Bissau. The authors were told that the elephant hide had come from Senegal. According to Blanc *et al.,* 2007, at least one, and at most 10 elephants remain in Senegal. Most vendors said that consumers were of both sexes, different ethnic groups and social status.

It was apparent to the authors that witchdoctors are not the only people to buy animal-derived products for traditional medicine or protection fetishes. For example, according to statements from three vendors:

"All sort of people buy. Men and women, poor or rich… Fulas, Pepel, Balanta, even Europeans. Every kind. Not only djamba kuss [witchdoctors] to please the irans [magical and religious entities]."

According to Robillard, *in litt.* to TRAFFIC, July 2011, it is common practice in Africa for people who are unwell to buy their own products based on a list provided by the traditional doctor. See also Marshall (1998).

Two of the vendors also mentioned that individuals from neighbouring countries such as Senegal, Guinea or Gambia are involved in the trade within the country: *"Other foreigners also buy and sell their own plants, shells or skins"*.

Symbolic and medicinal use

Most male informants in rural CNP and Boé villages associated the use of Chimpanzee-derived products with the needs of women, as revealed by one elder Fula respondent in Béli, Boé:

"Dári [chimpanzee] is mezinho [traditional medicine] of women."

Three Balanta women in CNP confirmed that Chimpanzee skin is used to: *"prepare a cleansing mixture against hideousness when they are pregnant or their children are still babies in the event they see a lonely chimpanzee cross their way"*. Likewise, another woman said that *"the leaves of the nest where a menstruating female chimpanzee sleeps can be applied to heal mental problems"*.

One informant admitted that he uses a stitched amulet made of chimpanzee body parts to help provide awareness to protect him and his friends while in the bush (Rui Sá, pers. obs., 2008).

Guinea-Bissau in the context of previous studies

One possible explanation for the lack of information on magic practices and traditional medicines using animal body parts in Guinea-Bissau is the difficulty in collecting information on such an undisclosed subject, as well as both a lack of interest and in-depth study of such practices. As a result, the authors' observations are opportunistic. However, the use of animals' body parts for medicinal purposes could seriously threaten the biodiversity of Guinea-Bissau and, in particular, constitutes an additional and significant threat to Chimpanzee populations already menaced by habitat loss and fragmentation, the pet trade and crop-raiding conflicts. Therefore, this phenomenon deserves to be thoroughly investigated (Cá, 2008).

Although not previously reported for Guinea-Bissau, the use of non-human primate body parts in traditional medicine is not unusual elsewhere in the world (Alves *et al.,* 2010; Leypey and Fomine, 2010). In a recent review, Alves *et al.* (2010) reported the use of 101 species of primates in folk/magic-religious practices, most frequently in Africa, Latin America and Asia. Although Cercopithecidae species are the most affected, Chimpanzees are also referred to as a remedy for diseases and for use in folk medicine (Alves *et al.,* 2010). In Nigeria, Mali, Sierra Leone, Congo and Guinea, Chimpanzee body parts are used to cure male impotency, epilepsy, bone fractures and infertility in women (Dedeke and Aboyami, 2006). In Cameroon, the Bakweri people believe that by using the liquid derived from boiled Chimpanzee bones, the bones of children or babies will become stronger (Leypey and Fomine, 2010). Additionally, in the forested areas, people use Chimpanzee body parts in birth and circumcision rituals (Mallart Guimera, 1981). The Yoruba people of south-western Nigeria believe in the magical properties of Chimpanzee body parts in appeasing witches and fortune tellers (Dedeke and Aboyami, 2006). However, it is not easy for people to obtain these remedies or to gain access to these animals. In Central Africa, the consumption of Chimpanzee meat is taboo for young men, pregnant women and children (Robillard, *in litt.* to TRAFFIC, July 2011).

The presence in Bandim market of the skin of an Olive Baboon suggests a foreign origin for some of the animal body parts being offered for sale. While the distribution area for this species (*Papio anubis*) includes neighbouring Guinea and Mali, it does not occur in Guinea-Bissau (Soewu, 2008). The Guinea Baboon *Papio papio* is the only baboon species reported and observed in the country (IUCN, 2011). There are striking differences in morphology between both baboon species (namely coat coloration (Groves, 2001)), which enables a distinction to be made based on their skins. Furthermore, in Colobane and Boucotte markets in Senegal (in Dakar and Ziguinchor, respectively), several species of reptiles and mammals, including primate species (data not shown) were found in trade for use in traditional medicinal practices and/or magic ceremonies (Fernando Sousa, pers. obs., 2008). According to information provided by the sellers, those animal body parts were brought from Niger, Nigeria, Ivory Coast and Mali. Chimpanzee skins were also found in these Senegalese markets (Fernando Sousa, pers. obs., 2008). The respondents pinpointed Cassamance (on the border between Senegal and Guinea-Bissau) as the putative origin of Chimpanzee skins at Boucotte market, and Guinea-Bissau and the Republic of Guinea as the possible origin of the Chimpanzee skins being sold at Colobane market. The possibility that the Chimpanzee skins found in Bandim market could also be from the Republic of Guinea cannot be excluded since sellers mentioned the "south" as the origin but not specifically the south of Guinea-Bissau.

Implications for conservation

The suggested transnational interest for Guinea-Bissau Chimpanzee skins may constitute an even bigger threat for the conservation of this population. Since Chimpanzee populations are declining in West African countries (IUCN, 2010), foreign hunters could be attracted to Guinea-Bissau and the hunting of Chimpanzees could therefore increase in the near future. Biodiversity management authorities in Guinea-Bissau (*IBAP* and *Direcção Geral de Florestas e Fauna*) have introduced new laws to regulate the trade in wild meat (e.g. recently, the hunting of primates throughout the country was prohibited (Anon., 2011). However, the lack of resources and lack of awareness of management authorities and politicians is hindering law enforcement in the country. At the international level, conservation agencies should re-examine their strategies to mitigate this trade, and, at the national level, specific programmes should be designed and applied to empower all actors involved (e.g.

park rangers, Customs officers, the military, police, etc.), complemented at the same time by provision of environmental education for the local communities.

Further work by the authors will include the molecular determination of the origin of the skins observed in the markets and of the species involved. This will assist in evaluating the scale of the trade. Finally, an ethnographic study specifically centred on the use of non-human primate body parts by traditional medicine using more in-depth techniques, such as participant observation or long-term observation, will allow the authors to draw up possible differences in the use of distinct animal parts and determine how such practices are disseminated.

Acknowledgements

The authors are enormously thankful to the Institute of Biodiversity and Protected Areas (IBAP) in Guinea-Bissau for facilitating their research in Guinea-Bissau, and for providing logistical support. Particular thanks go to Milza Nanqui whose assistance facilitated the gathering of information at the market in Bissau and to all the informants for agreeing to and trusting the authors to talk about sensitive issues. The authors are also very grateful to M.W. Bruford, C. Sousa and C. Casanova for their helpful discussion and comments that improved the quality of the manuscript. The authors would also like to thank David Greer, WWF's African Great Apes Programme Co-ordinator; Marine Robillard, expert in environmental anthropology, consultant for AnthropoLinks and research associate at the National Museum of Natural History of Paris; and an anonymous reviewer, for their helpful comments on an early draft.

References

Alves, R.R., Souto, W.M., and Barboza, R.R. (2010). Primates in traditional folk medicine: a world overview. *Mammal Review.* 40(2):155–180.

Anon. (2011). Decreto-Lei 5/2011 de 22 Fevereiro. Boletim Oficial da República da Guiné-Bissau, 8:1–13.

Blanc, J.J., Barnes, R.F.W., Craig, G.C., Dublin, H.T., Thouless, C.R., Douglas-Hamilton, I., and Hart, J.A. (2007). *African Elephant Status Report 2007: an Update from the African Elephant Database. Occasional Paper Series of the Species Survival Commission, No. 33*. IUCN/SSC African Elephant Specialist Group. IUCN, Gland, Switzerland. vi + 276 pp.

Brugière, D., Badjinca, I., Silva, C., and Serra, A. (2009). Distribution of chimpanzees and interactions with humans in Guinea-Bissau and Western Guinea, West Africa. *Folia Primatologica* 80:353–358.

Cá, Augusto. (2008). Estudos sobre a caça e mercado de primatas em Tombali, Sul da Guiné-Bissau. *MSc thesis*. Universidade Federal de Minas Gerais, Brazil.

Casanova, C., and Sousa, C. (2007). *Action Plan for the Conservation of Chimpanzees, Red Western Colobus and King Colobus in Guinea-Bissau Republic*. IBAP, Guiné-Bissau.

CITES (2011). http://www.cites.org/. Viewed on 30 September.

Dedeke, G.A., and Aboyami, F. (2006). Ethnozoological trade and practices among the Ijebu people of southwestern Nigeria and the impact on some mammalian species. *Indilinga* 5(2):175–187.

Fuentes, A., and Hockings, K. (2010). The ethnoprimatological approach in primatology. *American Journal of Primatology* 72:841–847.

Gippoliti, S., and Dell'Omo, G. (1995). Status and conservation of the chimpanzee *Pan troglodytes verus* in Guinea-Bissau. *African Primates* 1:3–5.

Gippoliti, S., and Dell'Omo, G. (1996). Primates of the Cantanhez Forest and the Cacine Basin, Guinea-Bissau. *Oryx* 30:74–80.

Gippoliti, S., Embalo, D., and Sousa, C. (2003). Guinea-Bissau. In: *West African Chimpanzees: Status Survey and Conservation Action Plan.* Kormos, R., Boesch, C., Bakarr, M., and Butynski, T. (Eds), IUCN, Gland, Switzerland. Pp.55–61.

Groves, C., (2001). *Primate Taxonomy*. Smithsonian Institution Press, Washington, DC.

IUCN (2010). *IUCN Red List of Threatened Species*. Version 2010.4. www.iucnredlist.org. Viewed on 21 April 2011.

Lee, P.C., Thornback, J. and Bennett, E.L. (1988). *Threatened Primates of Africa*. Gland, Switzerland.

Leypey F., and Fomine M. (2010). Edible Wild Animals as Source of Medication in Cameroon. *Petits Propos Culinaires*. 90:99–117.

Mallart Guimera, L. (1981). *Ni dos ni ventre. Religion, magie et sorcellerie Evuzok*. Paris: Société d'ethnographie.

Marshall, N.T. (1998). *Searching for a Cure: Conservation of Medicinal Wildlife Resources in East and southern Africa*. TRAFFIC International. 112 pp + xiv.

Minhos, T., Sá, R., Ferreira da Silva, M., Wallace, E., Barata, A., Carmo, M. and Bruford, M.W. (in prep.). Characterization of the urban primate bushmeat trade in Guinea Bissau using molecular tools for species identification.

Rubin, H.J. and Rubin, I.S. (1995). *Qualitative Interview: The Art of Hearing Data*. Thousand Oaks: Sage Publications.

Sá, R., Sousa, C., and Bruford, M.W. (2009) (Abstract). Conservation genetics and phylogeography of the chimpanzees in Guinea-Bissau. *Folia Primatologica* 80(2):172.

Sousa, F.M. (2009). *Pan troglodytes verus* densities and the use of natural resources in Gadamael area, Guinea-Bissau. MSc thesis. Lisbon University, Lisbon, Portugal.

Sousa, J., Barata, A.V., Sousa, C., Casanova, C., and Vicente, L. (2011). Chimpanzee oil-palm use in southern Cantanhez National Park, Guinea-Bissau. *American Journal of Primatology* 73:1–13.

Sousa, C., Gippoliti, S., and Akhlas, M. (2005). Republic of Guinea-Bissau. In: *World Atlas of Great Apes and their Conservation*, Caldecott, J., Miles, L. (Eds). University of California Press, London. Pp.362–365.

Soewu, D.A. (2008). Wild animals in ethnozoological practices among the Yorubas of southwestern Nigeria and the implications for biodiversity conservation. *African Journal of Agricultural Research*. 3(6):421–427.

Wolfe, L.D., and Fuentes, A. (2007). Ethnoprimatology. In: *Primates in Perspective*, Campbell, C.J., Fuentes, A., Mackinnon, K.C., Panger, M., and Bearder, S.K. (Eds). Oxford University Press, Oxford, Pp.691–705.

UNDP (United Nations Development Programme) (2010). *Human Development Report 2010*. UNDP, New York.

Rui Miguel Moutinho Sá[1,2,3,6]***, Maria Ferreira da Silva***[2,5,6]***, Fernando Miguel Sousa***[4] *and* ***Tânia Minhós***[2,4,6]

[1]Departamento de Antropologia, Faculdade de Ciências Sociais e Humanas, Universidade Nova de Lisboa, Portugal. Email: ruimoutinhosa@gmail.com; [2]School of Biosciences, Cardiff University, UK; [3]CRIA-Centre for Research in Anthropology, Portugal; [4]Centre for Environmental Biology, University of Lisbon, Portugal; [5]CIBIO-University of Porto, Portugal. [6]These authors contributed equally to the preparation of this paper.

The Role of Lao PDR in the Ivory Trade

Vincent Nijman and Chris R. Shepherd

Introduction

There is limited information on the ivory trade in Lao PDR but the presence of Asian Elephant *Elephas maximus* populations and a geographic position—situated between the world's largest ivory traders Thailand and China—as well as the presence of ivory for sale in the country, may suggest an emerging role for the country in the international ivory trade. Six towns known for their involvement in wildlife trade were surveyed in order to quantify the levels of open trade in ivory. In three of these towns, ivory was observed for sale, with the vast majority in Vientiane. Here, 2391 pieces of ivory, including bangles, earrings, name seals and raw tusks, were openly offered for sale in 22 outlets. Information from vendors indicated that the ivory originated from Lao PDR and not from neighbouring countries (Thailand, Viet Nam) or Africa, but forensic analysis would be necessary to determine the origin of the ivory more precisely. Prices were advertised in US dollars or Chinese Yuan Renminbi, clearly suggesting an international clientele, a fact confirmed by most vendors. However, recent seizures data also suggest that Lao PDR may also be playing a transit country role for African ivory.

Background

The Lao People's Democratic Republic is one of the smaller South-east Asian countries. Landlocked, Lao PDR borders Myanmar and China to the north, Viet Nam to the east, Cambodia to the south and Thailand to the west. The historical distribution and population numbers of Asian Elephants in the country remain unclear, but it appears the species was once broadly distributed (Santiapillai and Jackson, 1990; Duckworth *et al*., 1999). At present, Asian Elephants are widely but very patchily distributed in Lao PDR, with two viable populations probably remaining (Choudhury *et al.,* 2008)).

Despite a previous abundance of elephants in the country, Lao PDR does not appear to have been a major centre for ivory carving or ivory trade. It has instead suffered a loss of elephants due to illegal poaching to meet demand for ivory from neighbouring Thailand (Martin, 1992; Anon., 1993). Poaching of elephants has been reported from various places in Lao PDR, including two separate incidences in Sayaboury province, along the border with Thailand, in 2008, where a total of five elephants were found dead with bullets to the head and feet. Two of these elephants were wild and three were privately owned animals. All five were male and had had their tusks removed (Anon., 2008). Although most ivory taken from illegally killed elephants in the early 1990s was smuggled to Thailand, there was some small-scale trade noted in Lao PDR (Martin, 1992; Anon., 1993; Nash, 1997). Srikosamatara *et al*. (1992), surveying the capital Vientiane and the Thai-Lao PDR border in 1990–1991, found little evidence of trade in ivory, other than one specialized shop owner in Vientiane who sold mainly to Thai customers. In the early 1990s, Martin (1992) found approximately eight shops in Vientiane and 12 in the former capital Luang Prabang selling small quantities of ivory, mostly to foreigners, especially from Thailand. In January 2001, Martin and Stiles (2002) surveyed Vientiane and Luang Prabang for ivory. A total of 1424 ivory items were found for sale in 63 outlets, the vast majority of these in Vientiane (1346 items in 53 outlets). Most pieces were small and with few carvers active, they concluded that the demand for ivory in or from Lao PDR was limited. The small scale of the internal trade is probably explained by the fact that ivory does not feature prominently in traditional Laotian arts and crafts.

IVORY FOR SALE AT A HIGH-END HOTEL IN VIENTIANE, LAO PDR, IN 2011.

PHOTOGRAPH: C.R. SHEPHERD / TRAFFIC

More recent studies have suggested an increase in the processing and sale of ivory within Lao PDR. In November 2002, Shepherd (unpublished data) surveyed 159 jewellery and souvenir shops in Vientiane, four of which were found to have ivory for sale, and 137 shops in the Morning Market (Talat Sao), where five more outlets had ivory for sale (Table 1). The jewellery shops in the city sold small amounts of ivory, including eight carved tusks or 'bridges' (USD200/each in one shop). Three other pieces (two bracelets and one pipe) were said to have been carved in China. One shop in the Lao Plaza Hotel offered two carved tusks for sale. Vendors in the Morning Market had the greatest number of ivory items for sale (93 pieces) including uncarved tusks (USD1900/pair) and bridges (USD700/pair). According to a vendor selling a pair of the uncarved tusks which had originated from an elephant that had died in Lao PDR, the shop used to sell more ivory but it had become increasingly difficult to obtain stock. This dealer also reported that when more ivory was available, carvers from Viet Nam would come to Vientiane to do the carving. The majority of buyers were said to come from Thailand but also included diplomats and embassy staff from Thailand and the USA.

Type	2002 number	2002 shops	2011 number	2011 shops
CARVED IVORY				
pendant	78	2	521	12
earrings (pair)	2	1	513	5
bracelet/bangle	7	3	335	14
bead necklace			176	10
ring			102	7
figurine			79	9
broach			69	6
chopsticks (pair)			20	4
cigarette holder			11	2
name seal			10	2
hair piece			6	1
knife handle	1	1		
pipe	1	1		
carved tusk/bridge	12	4	4	2
RAW IVORY				
tusk piece			5	1
tusk tip	3	2	5	2
raw/uncarved tusk	2	1	2	2

Table 1. Ivory for sale in Vientiane, Lao PDR, in November 2002 and August 2011 illustrating the increase in the sale of carved ivory over time.

Year	Shops	Characterization	Reference
1990	8	Shops selling ivory, largely to foreigners	Martin, 1992
1990	1	Single shop specializing in carvings, ivory originating from Laos and carved in Viet Nam; Thai clientele	Srikosamatara *et al*., 1992
1991	1	As above	Srikosamatara *et al*., 1992
1999	0	No ivory recorded	Nooren and Claridge, 2001
2001	53	Most shops displaying small quantities; ivory originating from Lao PDR carved in Lao PDR by Vietnamese carvers; Chinese and Japanese clientele	Martin and Stiles, 2002
2002	9	As above, but clientele mostly Thai	C.R. Shepherd, unpublished
2011	22	Most shops displaying small quantities, shops in luxury hotels displaying large quantities; ivory originating from Lao PDR carved in Lao PDR and Viet Nam; Chinese clientele	present study

Table 2. Summary of ivory trade in Vientiane, Lao PDR, based on observations and subsequent discussions with vendors; shops indicate number of shops or outlets that offered ivory for sale.

Country	City	Year	Outlets	Pieces	Reference
Lao PDR	Vientiane	2011	22	2 391	present study
China	Guangzhou	2011	80	6 437	Martin and Vigne, 2011
Viet Nam	Ho Chi Minh City	2008	49	1 776	Stiles, 2008
Thailand	Bangkok	2008	57	11 270	Stiles, 2009
	Phayuha Kiri	2008	8	4 310	Stiles, 2009
	Chang Mai	2008	19	2 877	Stiles, 2009
Myanmar	Tachilek	2006	23	4 519	Shepherd and Nijman, 2008
	Yangon	2006	40	1 904	Shepherd and Nijman, 2008
	Mandalay	2006	17	1 821	Shepherd and Nijman, 2008
Cambodia	Phnom Penh	2001	54	1 683	Martin and Stiles, 2002

Table 3. Overview of the results of the most recent surveys of major ivory markets in Lao PDR and neighbouring countries.

Stiles (2008), in a report on the ivory trade in Viet Nam, found that most of the new ivory originated in Lao PDR. Thailand, while illegally importing most of its ivory from African countries, also imports, or used to import, ivory from Lao PDR (Nash, 1997; Stiles, 2009). Furthermore, at an international exhibition of traditional crafts in Bangkok in 2006, the Lao exhibition displayed carved ivory as examples of Laotian craftsmanship (Stiles, 2009). These observations suggest some level of ivory carving and trade in and from Lao PDR, but there is limited contemporary quantitative data available to assess the true scale or trends over time.

At present, several of Lao PDR's neighbours, especially China and Thailand, are recognized as having major ivory carving industries and are the largest end-use markets in the global illegal ivory trade (Milliken *et al.,* 2009). Furthermore, surveys conducted in towns in Lao PDR's neighbouring countries close to its borders (e.g. Mae Sei and Chiang Khong, Thailand; Tachilek, Myanmar; Ha Long City, Viet Nam; Kunming, China), suggest frequent, albeit illegal, transfer of ivory between nations (Shepherd and Nijman, 2008; Stiles, 2008, 2009; Nijman and Shepherd, unpublished data). With this information at hand, the authors conducted a survey of the ivory trade in Lao PDR to provide data on current levels of trade, the origin of the ivory being used and recommendations to curb the illicit commerce.

Regulation of ivory trade in Lao PDR

Asian Elephants are "totally protected" in Lao PDR and no trade in them, or their parts, is permitted (Nash, 1997). Internationally, Asian Elephants have been listed in Appendix I of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) since 1975, which prohibits international commercial trade of live specimens, their parts or derivatives. This includes the trade in raw ivory, and all products made out of ivory. Lao PDR only became a Party to CITES in 2004, long after all of its neighbouring countries had joined the Convention. Despite being Parties to CITES, national laws governing domestic trade vary across countries. All domestic trade in ivory is illegal in Viet Nam and Cambodia (Martin and Stiles, 2002), while domestic trade in ivory from captive Asian Elephants is legal in Thailand, presenting a major regulatory loophole through which vast quantities of African Elephant ivory are laundered with relative impunity (Stiles, 2009). Domestic ivory trade is illegal or semi-legal in Myanmar (due to gaps in the current legislation) (Shepherd and Nijman, 2008) and domestic trade in registered (African Elephant *Loxodonta africana*) ivory, when properly labelled, and sold through a government-authorized retail outlet, is legal in China (Martin and Vigne, 2011). Hence, while there is legal and sometimes strictly regulated trade in ivory in neighbouring countries, all ivory trade in Lao PDR in forbidden and no commercial export of ivory from Lao PDR is permitted.

Methods

In August 2011, the following towns were visited: Huay Xai and Donsao Island (both across the Mekong River from Thailand), Boten (on the border with China), Luang Nam Tha, Muang Sing, and Vientiane. Locations surveyed included sites where ivory was thought or known to be crafted or sold, based on previous studies or guidebooks and websites reviewed.

Ivory was found for sale in market souvenir stalls, antique shops, souvenir shops, jewellery and gem shops and luxury hotel shops. Whenever possible, items were inspected physically to verify that they were carved from elephant ivory (as opposed to mammoth ivory, or animal bone, for example). Vendors of ivory appeared to be aware that trade in ivory was illegal, and during the survey many would not allow photographs to be taken, even though their goods were openly displayed. However, photographs were taken when and where possible.

To complement the ground-level snapshot of trade activity, data were also compiled on ivory seizures for the period 2000 to 2011 from the Elephant Trade Information System (ETIS), the monitoring system to track illegal trade in ivory that TRAFFIC has developed and manages on behalf of the CITES Parties, and from the TRAFFIC Southeast Asia database (which contains, amongst other sources, verified media reports of seizures); from the UNEP-WCMC CITES Trade Database (2000–2009), and through correspondence with conservationists working in Lao PDR.

Results

Volumes in trade

A total of 2493 ivory items in 24 outlets was recorded, all of which was openly on display. No ivory was observed in Donsao Island, Muang Sing or Luang Nam Tha. In Huay Xai, one shop selling general wildlife products was displaying 10 ivory bracelets and 80 small carved ivory pieces for sale. Boten, recently developed by a Chinese business consortium as a gambling paradise, was largely deserted during this survey with all but one casino and a few shops and restaurants closed. One shop was found to be selling wildlife products, including 12 pieces of ivory. One gem or jewellery shop, closed during the survey, displayed signs of an African Elephant with large tusks suggesting ivory was once for sale (or is still for sale when the shop is open).

The ivory trade in Vientiane was unregulated and 22 outlets were found to offer ivory for sale (Table 1). In the Morning Market, traditionally a centre for ivory trade, six shops displayed ivory, totalling 142 pieces. The largest amount of ivory was observed in two luxury hotels. The Lao Plaza Hotel displayed 290 pieces in its four shops, and in the central lobby of the Don Chan Palace Hotel, two cabinets displayed a total of 1843 pieces.

Prices, origins and destinations

Prices were advertised or quoted in US dollars or Chinese Yuan Renminbi, and not in Lao Kip. Prices of carved ivory items in Lao PDR, or at least those observed in the luxury hotels, are high particularly when compared to price data from Viet Nam (Stiles, 2008), Thailand (Stiles, 2009) or China (Martin and Vigne, 2011). Prices for three bangles, from two different shops, differing only slightly in thickness, as indicated on price stickers were USD1200, USD1400 and USD1340. Similar-sized bangles in Viet Nam were reportedly on sale for USD350–400 (Ho Chi Minh City) and USD203–525 (Ha Noi), and in Thailand for USD214–257, and in China from USD430–1150.

When queried, the traders indicated that most of the ivory originated from Lao PDR, with some traders referring to the large number of elephants that occur in the south of the country. The authors' suggestions that at least some of the ivory surely must have originated from Thailand or even Africa were by and large denied. In one shop in Vientiane it was pointed out that one intricately carved bangle represented Laotian ivory but that the carving had been done in Viet Nam. Another shopkeeper indicated that the ivory she had on display had been carved in her own factory in Luang Prabang.

The large numbers of ivory Buddha amulets (in addition to ones made of bone or resin) were probably for both domestic and international markets. A fair number of the figurines and carved tusks had *Kwan Yin* (the Buddhist goddess of compassion) and *Maitreya* (Happy or Laughing Buddha) as subjects, suggesting that vendors were targeting Chinese customers. The authors observed 10 name seals (hanko) for sale which are exclusively produced for East Asian markets, including China.

Seizures

No reports of ivory seizures or confiscations in Lao PDR were found. In fact, Lao PDR has never reported a single ivory seizure to ETIS (cf. CITES, 2010; T. Milliken, *in litt.,* 11 August 2011). The WCMC CITES Trade Database lists three cases of illegal importation of ivory from Lao PDR into the USA. In 2001 one ivory piece was confiscated, and in 2006 there were two confiscations, of two ivory carvings and one ivory carving, respectively.

International media have reported on two recent ivory seizures that were apparently destined for Lao PDR. The first occurred in July 2009 when 16 elephant tusks, weighing almost 300 kg, were confiscated at Jomo Kenyatta International Airport in Kenya, allegedly originating from Mozambique and being shipped to Lao PDR. The second case involved the seizure of 239 tusks weighing over 2000 kg in February 2010 at Bangkok international airport, in transit, from Dubai to Lao PDR. ETIS data detail a third case involving 435 kg of African Elephant ivory seized in December 2010 at Bangkok international airport, in transit to Vientiane, Lao PDR; this shipment had originated from Nampula, Mozambique, and had transited Johannesburg, South Africa, and Hong Kong as air freight before being seized by Thai Customs in Bangkok (T. Milliken, *in litt.,* 24 January 2012).

Discussion

Trade in Vientiane—an upmarket shift

Martin and Stiles (2002) reported a decrease in trade in ivory in Vientiane between 1990 and 2001, with fewer active carvers and items for sale. Most of the trade was centred in Vientiane's Morning Market where, in 2001, they found some 1300 items for sale in 46 outlets. In sharp contrast, Nooren and Claridge (2001), who surveyed 23 stalls or shops in central Vientiane and 56 in the Morning Market in May 1999, report not a single piece of ivory among the more than 1000 wildlife products for sale (although they did record other elephant products such as teeth, skin, bone). In 2002, Shepherd (unpublished data) surveyed 159 shops in Vientiane and found 106 items for sale in a total of nine shops. During the present survey, the amount of ivory for sale at the Morning Market was not remarkable (142 items in nine shops) but unlike previous surveys, large quantities of

LAO PDR IS PLAYING A MORE PROMINENT ROLE IN THE INTERNATIONAL IVORY TRADE THAN WAS PREVIOUSLY THOUGHT, ESPECIALLY AS A CONDUIT FOR LARGE SHIPMENTS TO CHINA

C.R. SHEPHERD / TRAFFIC

ivory pieces were found for sale in several luxury hotels. No ivory was seen for sale at Vientiane's international airport. Martin and Stiles (2002) noted that most of the international tourists visiting Vientiane were low budget backpackers who were not prime ivory buyers. This situation has clearly changed with Vientiane increasingly catering to a high-end tourist market. See Table 2 for an overview.

During this survey there were indications that international buyers were the target of the ivory market in Lao PDR, and this was especially true in Vientiane. The type of ivory carvings for sale, such as name seals and chopsticks, suggest an East Asian clientele, most notably Chinese and Japanese buyers. Prices here were higher than in neighbouring countries and were displayed or quoted in foreign rather than Lao PDR currency, again suggesting an international clientele.

Finally, the seizure of ivory from Africa en route to Lao PDR, which was confiscated in Kenya and Thailand, points to an emerging role for Lao PDR in the international ivory market. Assuming dealers were truthful when stating that ivory for sale in Lao PDR originated from local elephants, this suggests that Lao PDR may be acting as a gateway for African ivory to enter East Asian markets, particularly China, rather than serve as a point of sale for African ivory.

Analysis of the ETIS data has repeatedly identified the Chinese ivory market as the leading driver of illicit trade in ivory and has hypothesized that a series of exceptionally large ivory seizures, representing more than 9.3 t of ivory made at the port of Haiphong, Viet Nam, in 2009 and 2010, were actually destined for the more lucrative Chinese market (Blanc *et al.,* 2011). In fact, the subsequent April 2011 seizure by Chinese authorities of 707 ivory tusks, weighing 2234 kg, coming from Viet Nam into neighbouring Guangxi province, provided confirmation of a terrestrial 'back door' trade route into China. Guangxi province borders Guangdong province, of which Guangzhou is the capital and where the largest number of China's ivory carvers are located. With both Chinese and Vietnamese authorities increasingly interdicting such ivory through targeted law enforcement actions, it is very possible that Lao PDR is now being used as an alternative terrestrial route into China's Yunnan province (T. Milliken, *in litt.,* 11 August 2011). Further support for this comes from a recent seizure in the Chinese city of Jinghong, north of Muang Sing, and just 10 km from the Sino-Lao border, where in December 2011 93 ivory products were seized (Anon., 2012).

Regional comparison

Table 3 shows the magnitude of the trade in major ivory markets in Lao PDR and neighbouring countries. With over 10 000 ivory products recorded in each survey (Stiles, 2008), Bangkok clearly stands out as the largest ivory market in the region. The second largest ivory market is Guangzhou in China. Levels of trade in Vientiane are less than in Phayuha Kiri, Thailand, and Tachilek, Myanmar (just across the border with Mae Sai, Thailand), but are similar to ivory trade levels found in Chang Mai, Thailand, the country's second largest city. In comparison, the open ivory trade in Viet Nam and Cambodia appears to be relatively small, but the most recent survey data for Cambodia date back more than a decade and may not reflect the current situation.

As indicated in the ETIS analysis (Milliken *et al.,* 2009), there is little evidence of law enforcement action against illicit ivory trade in Lao PDR. Very little, if any, ivory has been confiscated in Lao PDR and none has been reported to ETIS. Instances of ivory seized en route to Lao PDR are only beginning to emerge, but trade volumes are substantial: four seizures made elsewhere in the world between 2009 and 2011 which implicate Lao PDR as the country of destination amounted to a total of 4123 kg of ivory (T. Milliken, *in litt.,* 24 January 2012). This survey strongly suggests that Lao PDR is now playing a more prominent role in the international ivory trade than was previously thought, especially as a conduit for large shipments to China.

Recommendations to curb the trade

The CITES authorities in Lao PDR are urged to take the necessary steps to stop the sale of ivory in Vientiane and elsewhere in the country, and to liaise with their Thai and Chinese counterparts to curb the international trade in ivory. Based on the findings of this study, the following recommendations are made:

- Regular monitoring of the markets in Vientiane (Morning Market, jewellery/gem shops, luxury hotels) should be carried out by Lao PDR's law enforcement agencies to identify and apprehend illegal traders. It is anticipated that focusing on some of the largest traders that openly sell ivory (especially those selling products in major hotels) would lead to a substantial decrease in trade activity in the capital city.

- Offenders should be apprehended and prosecuted to the fullest extent of the law in order to serve as a deterrent to others. All ivory seen for sale in retail outlets should be confiscated by the government and destroyed to avoid subsequent 'recycling' or leakage of confiscated contraband into trade channels.

- Recognizing that international co-operation is essential to curb illegal cross-border trade, and to mitigate Lao PDR's role as an increasingly important transit country in the illicit Africa-to-Asia ivory trade chain, CITES officials, Customs and police authorities should be encouraged to work closely with enforcement officers in neighbouring Thailand, Viet Nam and China.

- In order to understand the source of ivory in Lao PDR's domestic ivory market more fully, it may be worthwhile to test various ivory samples to establish

their origin. With the recent work by Ahlering *et al*. (2011), who genotyped populations of Laotian elephants and that of Vidya *et al*. (2005, 2007) who genotyped other populations of Asian Elephants, the option to construct a relevant Asian Elephant microsatellite map now exists, allowing the origin of Laotian elephant ivory to be traced. Such a map could be constructed and results co-ordinated by the newly established ASEAN Wildlife Forensics Network, under the support of the ASEAN Wildlife Enforcement Network.

- Monitoring of the ivory trade in Lao PDR should continue in order to measure trends in the trade as well as to gauge the success and impact of any future law enforcement efforts.

Acknowledgements

The authors thank Adam Oswell, Lorraine Scotson, Camille Coudrat, and Tom Milliken for providing information for this report. Tom Milliken, Lorraine Scotson, Jennifer Mailley, Elizabeth John, and William Schaedla are also thanked for providing useful comments on the manuscript.

References

Ahlering, M.A., Hedges, S., Johnson, A., Tyson, M., Schuttler, S.G., and Eggert, L.S. (2011). Genetic diversity, social structure, and conservation value of the elephants of the Nakai Plateau, Lao PDR, based on non-invasive sampling. *Conservation Genetics* 12:413–422.

Anon. (1993). Wildlife trade between the southern Lao PDR provinces of Champasek, Sekong and Attapeu, and Thailand, Cambodia and Viet Nam. Unpublished report. TRAFFIC Southeast Asia, Petaling Jaya, Malaysia.

Anon. (2008). ElefantAsia. http://www.elefantasia.org/spip.php?article97. 10 September.

Anon. (2012). http://en.kunming.cn/index/content/2012-01/06/content_2801957.htm.

Blanc, J., Hedges, S., Milliken, T., Skinner, D. (2011). Status of elephant populations, levels of illegal killing and the trade in ivory: a report to the Standing Committee of CITES, SC61 Doc. 44.2 Annex 1. 61st meeting of the CITES Standing Committee, Geneva, Switzerland. 22 pp.

CITES (2010). CoP15 Doc 53. Monitoring of illegal trade in ivory and other elephant products. http://www.cites.org/common/cop/15/inf/E15i-53.pdf.

Choudhury, A., Lahiri Choudhury, D.K., Desai, A., Duckworth, J.W., Easa, P.S., Johnsingh, A.J.T., Fernando, P., Hedges, S., Gunawardena, M., Kurt, F., Karanth, U., Lister, A., Menon, V., Riddle, H., Rübel, A., and Wikramanayake, E. (2008). *Elephas maximus*. In: IUCN 2011. *IUCN Red List of Threatened Species*. www.iucnredlist.org. Downloaded on 15 August 2011.

Duckworth, J.W., Salter, R.E. and Khounboline, K. (Compilers) (1999). Wildlife in Lao PDR: 1999 status report. Vientiane: IUCN-The World Conservation Union/Wildlife Conservation Society/Centre for Protected Areas and Watershed Management. Vientiane, Lao PDR.

Martin, E.B. and Vigne, L. (2011). *The Ivory Dynasty: A report on the soaring demand for elephant and mammoth ivory in southern China*. Elephant Family, The Aspinall Foundation and Columbus Zoo and Aquarium, London.

Martin, E.B. (1992). The trade and uses of wildlife products in Lao PDR. *TRAFFIC Bulletin* 13:23–28.

Martin, E. and Stiles, D. (2002). *The ivory markets of South and South East Asia*. Save the Elephants, London.

Milliken, T., Burn., R.W., and Sangalakula, L., (2009). The Elephant Trade Information System (ETIS) and the Illicit Trade in Ivory: a Report to the 15th meeting of the Conference of the Parties. Doc. CoP15 44.1 Annex, CITES Secretariat, Geneva, Switzerland. 40 pp.

Nash, S.V. (Ed.) (1997). *Fin, Feather, Scale, Skin: Observations on the Wildlife Trade in Lao PDR and Vietnam*. TRAFFIC Southeast Asia, Petaling Jaya, Malaysia.

Nash, S.V. (1997). *Still in Business: The Ivory Trade in Asia, Seven Years After the CITES Ban*. TRAFFIC International, Cambridge UK.

Nooren, H. and Claridge, G. (2001). *Wildlife Trade in Lao PDR: the End of the Game*. NC-IUCN, Amsterdam, Netherlands.

Santiapillai, C. and Jackson, P. (1990). *The Asian Elephant: an Action Plan for its Conservation*. IUCN, Gland, Switzerland.

Shepherd, C.R. and Nijman, V. (2008). *Elephant and Ivory Trade in Myanmar*. TRAFFIC Southeast Asia, Petaling Jaya, Malaysia.

Srikosamatara, S., Siripholdej, B. and Suteethorn, V. (1992). Wildlife trade in Lao PDR and between Lao PDR and Thailand. *Natural History Bulletin of the Siam Society* 40:1–47.

Stiles, D. (2008). *An Assessment of the Illegal Ivory Trade in Viet Nam*. TRAFFIC Southeast Asia, Petaling Jaya, Malaysia.

Stiles, D. (2009). *The Elephant and Ivory Trade in Thailand*. TRAFFIC Southeast Asia, Petaling Jaya, Malaysia.

Vidya, T.N.C., Fernando, P., Melnick, D.J., and Sukumar, R. (2005). Population genetic structure and conservation of Asian elephants (*Elephas maximus*) across India. *Animal Conservation* 8:377–388.

Vidya, T.N.C., Varma, S., Dang, N.X., Thanh, T.V., and Sukumar, R. (2007). Minimum population size, genetic diversity, and social structure of the Asian Elephant in Cat Tien National Park and its adjoining areas, Vietnam, based on molecular genetic analyzes. *Conservation Genetics* 8:1471–1478.

***Vincent Nijman**, Oxford Wildlife Trade Research Group, Oxford Brookes University, UK.*
E-mail: vnijman@brookes.ac.uk

***Chris R. Shepherd**, TRAFFIC Southeast Asia, Petaling Jaya, Malaysia*
E-mail: chris.shepherd@traffic.org

INDEX VOL. 23

Entries in bold indicate illustrations

T

U

V

W

X

Y

Z

Papers about wildlife trade issues are invited for consideration by TRAFFIC International, the publisher of the *TRAFFIC Bulletin*, provided the material is unpublished and not under consideration for publication elsewhere. Contributions can be in the form of feature articles (which should not usually exceed 7000 words, excluding tables and references), Short Communications (up to 3000 words), and news items (up to 2000 words).

Referees and the Editor judge each submitted manuscript on data originality, accuracy and clarity. A minimum of two reviewers are selected by TRAFFIC International for feature articles and Short Communications, with suggestions from authors welcome. The author will be notified of acceptance, rejection or need for revision of the paper following the review process, which takes up to eight weeks. If accepted, the author will be responsible for incorporating the reviewers' comments, as appropriate. The author should correct the proofs and return them to the Editor within an agreed time-frame (usually 10 days). The paper will then be edited and returned to the author for comment/further changes if necessary, and the author's approval. Acceptance of a paper for publication in the *TRAFFIC Bulletin* will normally be confirmed when any outstanding points have been clarified with the Editor. Copyright of material published in the *TRAFFIC Bulletin* will be vested in TRAFFIC International.

Editing at TRAFFIC International: The editing process will include: reading the report, checking for sense and style and making adjustments accordingly, as necessary; standardizing spelling, punctuation, checking for provision of sources; communicating with the author over any substantive changes; standardizing layout; scanning and placing illustrations, etc.

The editing period at TRAFFIC International usually takes a minimum of two weeks, depending on the length of the article and the extent of editing required. After this period, correspondence between the editor and the author will aim to see the text finalized to the mutual satisfaction of both parties and to allow for any outstanding errors to be eliminated before the report is finalized.

Guide to Authors: Manuscripts should be written in the English language and submitted to the Editor via electronic mail (in Word, Rich Text format). Submissions in other languages may be considered for translation but an English summary must be prepared. All submissions must provide an approximate word count and the spelling should be thoroughly checked, using a computerized spell-checker if possible.

A feature article in the *TRAFFIC Bulletin* will normally comprise the following structure, where possible:

Abstract. 200 words, or fewer, in italics. This should express briefly the purpose, results and implications of the study. Note that an Abstract is not necessary for Short Communications.

Introduction. This section should help familiarize the reader with the subject and explain the rationale for the study and the reasons for choosing any aspects highlighted in the report.

Background. This may be included, particularly on a subject with which readers may not be familiar, and will briefly cover geography and social environment of the area covered.

Methods. The means by which data for the study were gathered, number of researchers, the duration of research, and study areas, must be clearly stated.

Distribution and Status. Information relating to a description of the species under discussion.

Legislation. A concise account of legislation/trade controls which may affect trade involving the subject under discussion should be included.

Results. The results can consist of further sections of text which should be broken up, with subheadings, as appropriate. If research has been weak and flawed, point this out, rather than try to hide the fact. By flagging the main points emerging from the research throughout the article, it will be much easier to draw together a discussion and conclusions section.

Discussion and Conclusions. These sections, which may be combined, should constitute an analysis of what the results actually show, what may be inferred from them (if relevant), and what may be concluded on the subject in question, including any limitations. No new results should be introduced in these sections.

Recommendations. These should be linked to the discussion/conclusions in the report. Try to make these as specific as possible, stating who should take action, where possible.

Acknowledgements. These should include acknowledgement of funders of research and production, as well as of reviewers and contributors.

References. See also below.

Specific Style Requirements:

Text: Text should be in 10pt Times New Roman and reported in the third person. After a full-stop, there should be two spaces.

Paragraphs: Each paragraph must be indented five spaces using the tabulator (not space bar), and no spaces should appear between paragraphs, except before a new section heading.

Species names: Common or vernacular names of species should at first mention be accompanied by their full scientific name. If referring to a distinct species, use initial capital letters, for example, African Elephant *Loxodonta africana*. If discussing more than one species under a generic name, then no capital letter is used, for example, rhinoceroses (as opposed to Black Rhinoceros). The common name only is used in subsequent references to the species name, except in cases where there may be several common names in use or when there is no common name; in such cases the scientific name only will be referred to.

References in text: Reference all material that is not based on the observation of the author(s). Published literature is cited in the text by author, and year of publication (Mabberley, 1997); three or more authors are represented by the first author's surname (Chen *et al.,* 1996). Personal communications should be cited in the text as: initial, surname and month/year (J. Smith pers. comm. to M. Brown, January 1999); correspondence cited as: initial, surname, *in litt.,* month/year (T. Holt, *in litt.* to M. Kray, May 1998).

Numbers: Numbers from one to nine, and all numbers at the beginning of a sentence should be spelled out in full; numbers of 10 and more should be written as figures.

Units of measure/currency: All measurements should be in metric units. Currencies should at first mention have a US dollar exchange rate, though original currencies should be quoted rather than converted values.

Tables/figures: Submit only essential tables and figures; these should not exceed 10 in number and preferably should be no more than five, or fewer. They must be referred to (in Arabic numerals) and interpreted in the text. Do not present the same data in a table and a figure. The caption should appear beneath the table/figure, and should indicate when the data were collected. All tables should be tabulated (do not use space bar), with no cells/boxes or horizontal/vertical rules. Rules will be incorporated at the desktop publishing stage. Where appropriate, both common and scientific names should be included in the table.

Illustrations: High quality colour slides/prints should be submitted by e-mail for selection by the Editor, in consultation with the author. Captions and name of photographer should be indicated. Maps should be of a quality for direct reproduction and to proportions appropriate for reproduction to a width of one column (80 mm) or one page (170 mm), and a maximum height of 130 mm. It is the author's responsibility to obtain copyright clearance for reproduction of illustrative material supplied and to ensure adequate acknowledgement.

Reprints: Following publication of the article, up to five reprints are provided free of charge. Additional copies can be obtained, stocks allowing, but postage costs will be charged for.

Please direct any queries to: traffic@traffic.org

PLEASE COMPLETE THE FOLLOWING FORM IF YOU ARE SUBSCRIBING TO THE *TRAFFIC BULLETIN* FOR THE FIRST TIME, YOUR DETAILS HAVE CHANGED, OR IF YOU PREFER TO RECEIVE THE *TRAFFIC BULLETIN* BY ELECTRONIC MAIL ONLY.

Title (Dr/Mr/Mrs/Ms/Other) _____ Reference No. _____
(Please refer to envelope label)

Organization _____
(Please spell out acronyms in full)

Name _____ Position _____

Address _____

_____

Post/Zip code _____ Country _____

Website _____ E-mail _____

Tel. Number _____ Fax Number _____

[ ] Please type "X" if your contact details have changed.
[ ] Please type "X" if you wish to receive a copy of the *TRAFFIC Bulletin* in electronic format.
[ ] Please type "X" if you wish to receive a hard copy of the *TRAFFIC Bulletin*.
[ ] Please type "X" if you wish to CANCEL your subscription to the *TRAFFIC Bulletin.*

Nature of business (type "X" in square brackets):

[ ] education (school, college, university)
[ ] research (university, institute, laboratory)
[ ] conservation organization
[ ] library
[ ] museum
[ ] enforcement agency
[ ] government authority
[ ] non-governmental organization
[ ] international government organization
[ ] CITES Management Authority
[ ] CITES Scientific Authority
[ ] CITES Enforcement Authority
[ ] IUCN Species Specialist Group
[ ] media/communications
[ ] zoo, park, nature reserve, marine park, aquarium, botanic garden
[ ] commercial
[ ] individual
[ ] other *Please specify* _____

Please specify area of interest (type "X" in square brackets):

[ ] mammals
[ ] primates
[ ] invertebrates
[ ] big cats
[ ] birds
[ ] reptiles and amphibians
[ ] fish and fisheries
[ ] plants
[ ] forestry
[ ] medicinal (fauna and flora)
[ ] other *Please specify* _____

****

I WOULD LIKE TO CONTRIBUTE TOWARDS THE PRODUCTION OF THE *TRAFFIC BULLETIN* OR OTHER IMPORTANT ACTIVITIES OF TRAFFIC.

I enclose a cheque/international money order for _____ made payable to TRAFFIC International.
A donation can also be made online at www.traffic.org.

GIFT AID DECLARATION

Please type "X" in box below if you wish TRAFFIC to reclaim the tax on your gift (if you are a UK taxpayer).

[ ] I would like TRAFFIC to reclaim the tax on this donation, and any further donations I make from the date of this declaration until I notify you otherwise.

Signature: _____ Date: _____

DATA PROTECTION: Personal data is gathered in accordance with the UK Data Protection Act 1998. *Any information you have given us will be used only to provide the service you have requested and will not be disclosed to organizations or people outside the TRAFFIC network.*

TRAFFIC NETWORK

TRAFFIC International
219a Huntingdon Road, Cambridge, CB3 0DL, UK.
Tel: (44) 1223 277427; Fax: (44) 1223 277237; E-mail: traffic@traffic.org

TRAFFIC Central Africa
Regional Office c/o IUCN, Regional Office for Central Africa, PO Box 5506,
Yaoundé, Cameroon.
Tel: (237) 2221 6496; Fax: (237) 2221 6497; E-mail: tcaf@traffic.org

TRAFFIC East/Southern Africa
Regional Office c/o Endangered Wildlife Trust, Private Bag x11, Modderfontein, 1645,
Gauteng, South Africa.
Tel: (27) 11 372 3600; Fax: (27) 11 608 4682. E-mail: trafficza@ewt.org.za

Tanzania Office c/o WWF Programme Office, PO Box 106060, Dar es Salaam, Tanzania.
Tel/Fax: (255) 22 2701676; E-mail: traffictz@bol.co.tz

Zimbabwe Office c/o WWF Southern Africa Regional Programme Office
PO Box CY 1409, Causeway, Harare, Zimbabwe.
Tel: (263) 4 252533/252534; Fax: (263) 4 703902; E-mail: traffic@wwfsarpo.org

TRAFFIC North America
Regional Office c/o WWF-US, 1250 24th Street, NW, Washington, DC 20037, USA.
Tel: (1) 202 293 4800; Fax: (1) 202 775 8287; E-mail: tna@wwfus.org

Canada Office c/o WWF-Canada, Suite 1588, 409 Granville Street, Vancouver, BC, V6C 1T2, Canada.
Tel: (1) 604 678 5152; Fax: (1) 604 678 5155; E-mail: traffic@wwfcanada.org

Mexico Office c/o WWF-Mexico Programme Office,
Ave. México 51, Col. Hipódromo Condesa, C.P. 06100 México, D.F., Mexico.
Tel: (52) 55 5286 5631; Fax: (52) 55 5286 5637; E-mail: areuter@wwfmex.org

TRAFFIC South America
Regional Office Quiteño Libre E15-12 y la Cumbre, Sector Bellavista, Quito, Ecuador.
Tel/Fax: (593) 2 226 1075; E-mail: bernardo.ortiz@traffic.org

TRAFFIC East Asia
Regional Office c/o Metro Business Centre, 16/F, Double Building, 22 Stanley Street,
Central, Hong Kong.
Tel: (852) 2 111 0241; E-mail: trafficea@biznetvigator.com

China Office c/o WWF-China Programme Office, Room 2616, Wen Hua Gong, (Laodong Renmin
Wenhuagong Dongmen), Beijing Working People's Culture Palace, Beijing 100006,
People's Republic of China.
Tel: (86) 10 6522 7100 (3213); Fax: (86) 10 6522 7300; E-mail: teachina@wwfchina.org

Taipei Office PO Box 7-476, Taipei 106, Taiwan.
Tel: (886) 2 2362 9787; Fax: (886) 2 2362 9799; E-mail: treatai@ms1.hinet.net

Japan Office 6th Floor, Nihonseimei Akabanebashi Bldg, 3-1-14, Shiba, Minato-ku, 105-0014,
Tokyo, Japan. Tel: (81) 3 3769 1716; Fax: (81) 3 3769 1304; E-mail: traffic@trafficj.org

TRAFFIC India
Regional Office c/o WWF-India, 172-B Lodi Estate, New Delhi-110 003, India.
Tel: (91) 11 41504786; Fax: (91) 11 43516200; E-mail: trafficind@wwfindia.net

TRAFFIC Southeast Asia
Regional Office Unit 3-2, 1st Floor, Jalan SS23/11, Taman SEA, 47400 Petaling Jaya,
Selangor, Malaysia. Tel: (603) 7880 3940; Fax: (603) 7882 0171; E-mail: tsea@traffic.org

Greater Mekong Programme Office Room 201, Building 2A, Van Phuc Diplomatic Compound,
298 Kim Ma Street, Ba Dinh District, Ha Noi, Viet Nam.
Tel: (84) 4 3726 5023; Fax: (84) 4 3726 4665; E-mail: tsea.gmp@traffic.org

TRAFFIC Europe
Regional Office c/o TRAFFIC International, 219a Huntingdon Road, Cambridge CB3 0DL, UK.
Tel: (44) 1223 277427; Fax: (44) 1223 277237; E-mail: traffic@traffic.org

Belgium Office Bd Emile Jacqmain 90, B-1000 Brussels, Belgium.
Tel: (32) 2 343 8258; Fax: (32) 2 343 2565; E-mail: traffic@traffic.org

Central Eastern Europe Project Office c/o WWF-Hungary, 1141 Budapest, Álmos vezér útja 69/A,
Budapest, Hungary. Tel: (36) 1 214 5554 (Ext 132); Fax: (36) 1 212 9353; E-mail: traffic@wwf.hu

France Office c/o WWF-France, 1 Carrefour de Longchamp, 75016 Paris, France.
Tel: (33) 1 55 25 84 84; Fax: (33) 1 55 25 84 74; E-mail: sringuet@wwf.fr

Germany Office c/o WWF-Germany, Reinhardtstrasse 14, D-10117 Berlin, Germany.
Tel: (49) 30 311 777 239; Fax: (49) 30 311 777 639; E-mail: volker.homes@wwf.de

Italy Office c/o WWF-Italy, Via Po 25/c, 00198 Rome, Italy.
Tel: (39) 06 84497357; Fax (39) 06 84497356; E-mail: traffic.italy@wwf.it

Russia Office c/o WWF-Russia Programme Office, Nikoloyamskaya str. 19, Building 3,
109240 Moscow, Russia; Tel: (007) 4957270939; Fax: (7) 4957270938; E-mail: avaisman@wwf.ru

Sweden Office c/o WWF-Sweden, Ulriksdals Slott, S-17081 Solna, Sweden.
Tel: (46) 8 624 7400; Fax: (46) 8 85 1329; E-mail: mats.forslund@wwf.se

TRAFFIC, the wildlife trade monitoring network, works to ensure
that trade in wild plants and animals is not a threat to the conservation of nature.
It has offices covering most parts of the world and works in close
co-operation with the Secretariat of the Convention on International
Trade in Endangered Species of Wild Fauna and Flora (CITES).

For further information contact:
The Executive Director
TRAFFIC International
219a Huntingdon Road
Cambridge CB3 0DL
UK

Telephone: (44) (0) 1223 277427
Fax: (44) (0) 1223 277237
Email: traffic@traffic.org
Website: www.traffic.org

TRAFFIC
the wildlife trade monitoring network

A strategic alliance of

WWF

IUCN

The Rufford Foundation
www.rufford.org