VOL. 26 NO. 2

# TRAFFIC BULLETIN

## IRAN'S TRADE IN ORCHID TUBERS

## CITES AND REGIONAL ECONOMIC INTEGRATION

## WILDLIFE MARKETS IN MOROCCO

OCTOBER 2014

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.**

ANTON VORAUER / WWF-CANON

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

TRAFFIC

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

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

TRAFFIC is a strategic alliance 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 headquarters in Cambridge, UK.

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

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

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

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

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

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**MANAGING EDITOR** Steven Broad

**EDITOR** and **COMPILER** Kim Lochen

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



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# TRAFFIC BULLETIN

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# EDITORIAL

There has been long-standing global concern for shark and ray populations under pressure from consumer demand for their fins, meat, skin and liver oil. Historically, fisheries involving these species have taken place in the absence of even basic management. In 2014, the International Union for Conservation of Nature (IUCN) Shark Specialist Group produced a report assessing the conservation status of over 1000 shark and ray species, the main findings of which are that: 1) there is a severe lack of data on sharks and rays, with no information for nearly half of all the species assessed; 2) almost a quarter of all sharks and rays are threatened with extinction; and 3) overfishing and habitat loss are the biggest threats to these species. The study demonstrates that management of fisheries and trade is urgently needed to avoid extinctions and to promote population recovery.

There is growing acceptance at the international level that management of shark and ray fisheries is critical if further overexploitation of these resources is to be curtailed. Broad, but non-binding commitments have been made by States to resolve the issue, however, many governments lack the resources, expertise, and political will necessary to conserve effectively the vast majority of shark and rays. As a result, many of these species have continued to decline.

However, recent years and months have seen a growing commitment by States to start managing their shark and ray resources responsibly and to put in place a package of measures that will help to ensure that products are traceable, sustainable and legal.

One of the most groundbreaking developments in this regard took place in September 2014, when five species of sharks and two manta ray species received protection under CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) following the decision by Parties in March 2013 to include these species in CITES Appendix II. Formal measures to regulate international trade have now come into effect for Scalloped Hammerhead Shark *Sphyrna lewini*, Great Hammerhead Shark *S. mokarran*, Smooth Hammerhead Shark *S. zygaena*, Oceanic Whitetip Shark *Carcharinus longimanus*, Porbeagle Shark *Lamna nasus* and manta rays *Manta* spp. The challenge is to ensure effective implementation of these listings. All the sharks except Porbeagle Shark are caught for their fins, which are exported to East Asia, especially Hong Kong, where they are the key ingredient in shark-fin soup—an expensive, but popular delicacy. The Porbeagle Shark is mainly caught for consumption of its meat within the European Union, while the gill plates of manta rays are highly valued as a health tonic in southern China.

As a result of these listings, commercial trade in these species must now be strictly regulated and specimens only taken from national and international waters and exported when the fishing/exporting country certifies that they were legally sourced and that the overall level of exports does not threaten the survival of the species. There are technical issues to resolve, such as species product identification and determining when harvest is from sustainable sources, among others, but the growing engagement across the world by States, regional organizations, the non-governmental sector and industry to improve capacity on managing fisheries is encouraging. Governments are starting to take responsibility by introducing and improving shark management, including support for CITES-listings, and in some cases, banning shark catch. Certain shipping and airline companies have introduced restrictions on the carriage of shark products, some retail outlets are limiting or have banned the sale of shark fin products, and shark-fin soup, often a popular dish at wedding banquets in East Asia, has been removed from the menu of certain hotel chains. Sections of the fishing industry are also joining the push for sustainable, legal and traceable products.

Recently, TRAFFIC and WWF spearheaded a new initiative *Sharks: Restoring the Balance*, which is focused on the protection and sustainable use of sharks and rays. This initiative seeks to build a future where these species can thrive around our coasts and in the high seas, contributing to the ecosystem and to a healthy culture and economy. This joint strategy is focused on reducing demand, improving management and generating broader support for the conservation and responsible use of sharks and rays. As part of this work, the Pacific Shark Heritage Programme aims to work with governments throughout the Pacific region to assist them in managing their shark and ray populations sustainably, while safeguarding the cultural heritage of the Pacific Island nations.

The past 20 years has seen increasing recognition of the need to manage sharks and rays. Provision can now be made for trade-related management controls such as CITES to be put in place for a range of vulnerable species. Furthermore, broader responsibility is being taken by stakeholders to establish the provenance of the products they are carrying and selling. Such increasing awareness and concrete action represents a valuable start on the road to sustainability. However, without greater political will from some major fishing nations that have a long history of blocking action to manage shark and ray fisheries at sustainable levels, all the good work by other governments will be undermined and depletion of these resources will continue. It is crucial, therefore, that commitment is enshrined in binding measures by governments and regional organizations responsible for managing fisheries. Greater partnership and collaboration is needed between industry, government and non-governmental organizations to ensure that products are from sustainable and legal sources.

The greatest challenge, however, lies with us, the consumers. There cannot be any long-term solution unless there is responsible consumption. We must take greater care in the choices we make and recognize that each of us has the power to influence consumer demand. It is imperative that we therefore become more discerning in our choices and educate ourselves about what we eat, and challenge suppliers, carriers and other stakeholders, exhorting them to reject marine species that have been caught illegally or from unsustainable sources. The future of the world's oceans depends on it.

***Glenn Sant**, Fisheries Trade Programme Leader, TRAFFIC*
*E-mail: glenn.sant@traffic.org*

GAYLE BURGESS, formerly TRAFFIC's Development and Evaluation Officer, has been appointed Consumer Behavioural Change Co-ordinator, bringing her extensive background experience on behavioural change issues to bear on TRAFFIC's market-related activities, particularly work on demand reduction for flagship species in trade. Gayle is based at the TRAFFIC office in Hong Kong.

## bulletin board

JILL CAPOTOSTO is the new Princeton In Asia Fellow based with the Greater Mekong office, where she has taken up the role of Communications Officer.

NAOMI DOAK, Co-ordinator of the office in Greater Mekong, leaves TRAFFIC in October 2014. Naomi joined TRAFFIC in South-east Asia in February 2012, and among other things, has led in the development of TRAFFIC's work on consumer behaviour change leading to demand reduction of rhinoceros horn consumption in Viet Nam.

GERMAIN NGANDJUI left his position as Senior Programme Officer at TRAFFIC's Central Africa office, based in Yaoundé, Cameroon, at the end of June 2014, after a period of more than six years with TRAFFIC. He has taken up the post at WWF in Cameroon of Programme Manager (Jengi TNS-TriNational de la Sangha).

CLÈO MASHINI MWATHA joins the TRAFFIC team in Central Africa in October 2014 to work as Senior Progamme Officer on law enforcement support in the Democratic Republic of Congo. He will be based in Kinshasa.

SERENE CHNG was appointed Progamme Officer in January 2014 and is involved in TRAFFIC's work examining the use of wild animals as pets and in the fashion industry. She is based in the Malaysia office.

NYUYEN TUYET TRINH, Senior Programme Officer, and DANG VU HOAI NAM Programme Officer, have joined the team working on consumer behaviour change leading to demand reduction, effective June and July 2014, respectively; both are based in the Viet Nam office.

TIAU KIU HWA was appointed Data Entry and Research Officer with effect from September 2014, based in the Malaysia office.

STÉPHANE RINGUET, after a period of transition handing over his former position as Regional Director—Central Africa to his successor, has taken up the post of Wildlife Trade Officer at WWF France.

ZHOU FEI was appointed Head of the TRAFFIC office in China with effect from September 2014. He takes over from SHI JIANBIN whose dedication, insights and strategic leadership allowed TRAFFIC's team and portfolio in China to expand impressively over recent years. Jianbin remains a consultant to TRAFFIC.

KEIKO (KAY) WAKAO was appointed Head of the TRAFFIC office in Japan with effect from September 2014. She takes over from AYAKO TOKO whose strategic focus and attention to detail has strengthened and reinvigorated TRAFFIC's work in Japan over the past three years. Ayako remains a consultant to TRAFFIC.

## traffic websites

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- *Sabri Zain*

# RANGE COUNTRIES TAKE STOCK OF THEIR GOAL TO DOUBLE WILD TIGER POPULATIONS

NATUREPL.COM / EDWIN GIESBERS / WWF-CANON

Global efforts to double the population of Tigers in the wild by 2022 were reviewed when over 140 Tiger experts from more than 20 countries gathered in Dhaka, Bangladesh, for the Second Stocktaking Conference of The Global Tiger Recovery Program (GTRP). The meeting, which took place from 14–16 September 2014, ended with Tiger range countries agreeing to a set of "Recommendations on Advancing Implementation of the Global Tiger Recovery Program". These recommendations will form the basis for the GTRP Implementation Plan 2015–2016, which will be presented for endorsement at the Third Asian Ministerial Conference on Tiger Conservation taking place early next year.

The GTRP is a collaboration between the 13 countries that still have wild Tigers and which have set a goal of doubling wild Tigers by the next Year of the Tiger in 2022—the Tx2 goal. It was endorsed by the ground-breaking high-level "Tiger Summit" held in St Petersburg, Russia, in November 2010, when leaders of these governments met and declared their collective political will to take all necessary actions to prevent the extinction of wild Tigers. Nearly four years on, Tiger range governments agreed in Dhaka that while progress had been made, critical areas of concern remain and need to be addressed if they are to achieve their ambitious goal.

The Dhaka Recommendations agreed by the range countries set ten priorities for the next two years—crucially, the midway point towards the 2022 goal. It identified a host of urgent next steps needed such as increasing investment and providing frontline wildlife protection staff with adequate arms and training; completing national Tiger monitoring and assessment of all Tiger habitats by 2016; restoring areas with low Tiger densities; and enhancing capacity to deal with human-Tiger conflict.

Dhaka delegates also agreed on the need for practical measures to enhance enforcement through trans-border collaboration and intelligence-sharing, focusing on hotspots in the illegal Tiger trade. Analysis by TRAFFIC of Tiger parts seizures has previously highlighted how hotspots in the illegal trade chain can be identified, and TRAFFIC offered to help countries wishing to undertake similar studies. TRAFFIC's analysis found that a minimum of 1590 Tigers had been seized in Tiger range countries between January 2000 and April 2014, an average of two per week.

With TRAFFIC's analysis showing that illegal trade in Tiger parts and derivatives remains persistent and continues to drive poaching, a new sense of urgency was attached by Tiger range countries to efforts aimed at reducing demand for Tiger products. The Dhaka Recommendations urged that targeted and well-researched and designed programmes be conducted to reduce illicit demand for Tiger parts and for Tiger prey species. Dhaka delegates also agreed on the need for urgent assistance to be provided to the development of a Global Support Programme to reduce the demand for Tiger products. The Programme will be based on a Tiger demand reduction strategy that TRAFFIC had presented at the First Stocktaking Conference of the GTRP two years ago in New Delhi.

With the wild Tiger population estimated to be as few as 3200, the international community is still a long way off from the Tx2 goal. However, it is hoped that the actions taken at Dhaka will help Tiger range countries move on at a faster and more determined pace, and will help ensure that the next Year of the Tiger will indeed be a cause for celebration rather than despair.

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*Sabri Zain, Director of Policy, TRAFFIC*

# FINDINGS ON THE FLOURISHING IVORY TRADE IN ANGOLA'S CAPITAL, LUANDA

LUCY VIGNE

**SCENES FROM LUANDA:** an array of items for sale at the market in Benfica, including walking sticks with handles carved into dragon-shapes.

LUCY VIGNE

A rhinoceros figure carved from ivory by an Angolan, for retail sale in a Luandan shop.

ESMOND MARTIN

A selection of name seals for the Chinese market at the Benfica market.

LUCY VIGNE

An Angolan carver working on an ivory pendant and earrings, central Luanda.

## Introduction

Angola's capital, Luanda, has the largest illegal ivory market in southern Africa. A recent investigation in the city follows a number of surveys into the ivory trade in Luanda undertaken by TRAFFIC and others over the past decade which have indicated an increasing availability of ivory for sale: in 2005, an estimated 1573 kg of ivory items were displayed openly for sale at 41 retail outlets, with over 90% in the Mercado do Artesanato (Artists' Market) at Benfica in south Luanda (Milliken *et al.*, 2006). A partial ivory survey in this market in 2013 recorded 2064 items; the shape and size of the tusks indicated that the ivory mostly came from forest elephants *Loxodonta africana cyclotis* rather than savannah elephants *L.a. africana* (Svensson *et al.*, 2014). In early March 2014, the authors spent a week in and around the city to review the retail ivory trade, during which time they counted 10 888 pieces of ivory for sale illegally, nearly all of them new items. Most of this ivory is purchased by Chinese and other East Asian citizens based in the country.

## Background

By 2006, Angola's once large populations of forest and savannah elephants had declined, with estimates, according to the most recent IUCN/SSC African Elephant Status Report, of 818 elephants in the "Definite" category and 801 in the "Probable" category (Blanc *et al.*, 2007). Most of the ivory available for sale in Angola at that time reportedly originated from Central Africa (Milliken *et al.*, 2006), and this remains the case. Between 2002 and 2011, about 62% of Central Africa's forest elephants were estimated to have disappeared due to habitat destruction and as a result of the soaring demand for ivory (Maisels *et al.*, 2013).

On 31 December 2013, Angola acceded to the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). The Elephant Trade Information System (ETIS) records seizures of ivory by country, and while ivory from Angola seized in other countries has been recorded by ETIS, Angola had never reported an ivory seizure until this year (2014). Sale of all ivory is illegal in Angola without a permit (Milliken *et al.*, 2006; Svensson *et al.*, 2014). However, domestic legislation prohibiting such sales is not being enforced.

### *Chinese demand*

The soaring demand in Angola for ivory and other wildlife products (such as Leopard *Panthera pardus* skins, turtle shells and reptile skins that Chinese visitors to the Benfica market were observed by the authors to be examining) is largely due to the exponential growth in Chinese workers. Angola is booming economically, with increased production of oil and gas. The Chinese construction companies, who employ hard-working, fast builders from China, providing inexpensive labour, have gained most contracts in large construction projects all over the country, especially in and around Luanda. The number of Chinese workers has risen from 500 in 2002 to 260 000 in 2012 (Sautman and Hairong, 2007; Dongye, 2013). Chinese and other East Asian construction workers fly back and forth to their home countries for leave or at the end of their contracts. Yet at Luanda's international airport, the authors saw no signs in the form of literature or posters to indicate that exports of ivory or any other wildlife products from endangered species were prohibited, nor did they see any signs elsewhere in Luanda. When questioned, vendors indicated that it was fine to take ivory out of Angola.

During the survey the authors learned that raw ivory can be obtained wholesale in Luanda for as little as USD150 per kg for tusks weighing between one and three kilogrammes, and USD200 per kg for slightly larger ones. In 2005, a kilogramme of ivory fetched USD35–100 (Milliken *et al.*, 2006). The authors learned that many ivory items come from Central Africa; they are sold by French-speaking vendors, mainly from the Democratic Republic of Congo and Republic of Congo. Angolans were also illegally selling worked ivory carved mostly in the north of the country, such as Zaire Province. The authors interviewed two Angolan ivory carvers at their workshop in Luanda; one was making ivory earrings and pendants. At their retail outlet in the city, a variety of artistically designed ivory items were displayed in glass cabinets and were of a higher quality than the piles of ivory items laid out on tables at the Benfica market.

## Survey Results

Of the 10 888 ivory pieces on open display in Luanda, 10 026 items were in the Benfica market at 20 large stalls selling predominantly ivory. They were arranged in 12 rows of about four stalls each (half of which were unoccupied on the first day of the survey, an average week day) and a few ivory carvings were included among wooden carvings available elsewhere in the market. Each vendor had ivory items laid out on a flat table top. There appeared to be no security guards in the market. The market in Benfica was visited four times, on three days and on each visit the number of stalls selling ivory ranged from between 20 and 30; the market was particularly active on Sunday when most Chinese, and some other East Asian buyers, come to shop for ivory. The extra 10 stalls set up on the Sunday displayed equal quantities of ivory and other souvenirs and cheap jewellery.

The main ivory objects for sale at the Benfica market were beaded necklaces (23%), bangles (19%), pendants (19%), name seals (7%), cigarette holders (7%), rings (6%), figurines (5%), long hair pins (4%) and chopsticks (3%). Most figurines were Buddhas, which the Chinese prefer to Christian and African figurines that are much less common nowadays. At less than 30 cm, the figurines were mainly smaller than in 2005—clearly easier to smuggle abroad—and fewer plain tusks were on display than in 2005. Jewellery items and name seals, including tusk tips, were larger than those for retail sale in China, making them attractive to Chinese buyers in Angola. The pieces were more crudely carved than ivory items carved in China, however. If a customer showed interest in a particular item, the vendor would produce more such items from a metal trunk under his stall, wrapped in cotton sheeting and pillow cases. Items produced from these trunks ranged from combs and animal figurines to full polished tusks. At the end of the day, the vendors would return all the ivory to their trunks, which they locked with a padlock.

ESMOND MARTIN

**Chinese customers at the market in Benfica, Luanda, choosing ivory bangles from beneath the display table (above); carved ivory bangles, Benfica, Luanda (below).**

Prices were very low, sometimes a tenth of the price similar items fetch in China (Martin and Vigne, 2011), and likely an important factor for their popularity with the Chinese in Angola. The cheapest items at the Benfica market were rings for USD1 and the most expensive—at USD4000—were solid ivory walking sticks with handles carved into the shape of a dragon's head. Large bangles were offered for USD100–200, but most items could be bought for half the original asking price. Ivory vendors at the market, who were all men, spoke French, Portuguese and Chinese. Most of the Chinese buyers are involved in construction projects, and selected jewellery and utilitarian objects, examining them in great detail. Groups of Chinese men, and sometimes Chinese couples, were seen buying ivory, usually several items at a time. No other nationalities were knowingly observed buying ivory, nor wearing ivory, during the week's visit.

Apart from the market in Benfica, only six ivory outlets were seen in the city. At these, some 862 ivory items were counted: seven bangles and figurines in one hotel souvenir shop; 841 items in four other souvenir shops; and 14 large pendants being sold by a street vendor. Antique ivory or noticeably older ivory was not seen for sale in Luanda. Prior to the country's independence from Portugal in 1975, there had been an active ivory carving industry in Angola, largely for the ethnic Portuguese Angolans, many of whom fled the country when their property was confiscated during the years of civil war following independence, taking with them many ivory carvings. Vendors at these six souvenir outlets said business today was slow as there are fewer European (most still are Portuguese) and American buyers, and the Chinese prefer to go to the Benfica market where there is a larger choice of worked ivory, lower prices, and items can be bought in bulk.

## Conclusions

A large illegal retail ivory trade continues unabated in Luanda, fuelled mainly by Chinese nationals. The recently-carved ivory items for sale in the Benfica market in the capital derive mostly from forest elephants of Central Africa, where numbers are in sharp decline. No vendors displayed any apparent concern that they were offering ivory for sale illegally, perhaps owing to the fact that official inspections and confiscations are extremely rare. Growing numbers of Chinese workers, and other East Asians coming to Angola, buy ivory in this market daily. It is vital that the Chinese Embassy and other East Asian embassies warn citizens from their countries working in Angola not to buy ivory. It is also imperative that the Angolan Government closes down the huge illegal retail ivory market in Benfica.

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***Lucy Vigne*** *and* ***Esmond Martin*** *are independent consultants studying the international trade in endangered species, and in particular the trade in ivory and rhinoceros horn.*


LUCY VIGNE

# Efforts urged to tackle thriving illegal orchid trade in Tanzania and Zambia for *chikanda* production

## Background

Wild orchid harvest for the traditional delicacy *chikanda* has been recorded for many decades, primarily in Zambia, but also by tribes from neighbouring countries (Richards, 1939; Davenport and Ndangalasi, 2003). The dish originates from the Bemba tribe in north-eastern Zambia, but over recent decades has grown in popularity throughout the country, mainly due to increased urbanization. Initially, consumption took place on a small, household-scale, but more and more commercial harvest now occurs as a result of the dramatic rise in demand. Currently, ready-made *chikanda* can even be found on the menu in restaurants in Zambia's capital city Lusaka (Bingham, 2009). Most of Zambia's own orchid resources have become fairly depleted as a result, and the majority of orchid tubers used for *chikanda* now comes from abroad, principally from the Southern Highlands of Tanzania, but other reported sources include Angola, the Democratic Republic of Congo (DRC), and Malawi. These are mainly countries in which local consumption was taking place at a very small scale, but in which the Zambian demand has led to commercialized trade. Tunduma, a small Tanzanian town at the border with Zambia, seems to be the major hub for *chikanda* trade between the two countries. Tanzanian middlemen gather tubers from all over the country in their storage units and Zambian market vendors come to purchase stocks for further distribution within Zambia (Davenport and Ndangalasi, 2003).

Most of the species targeted for *chikanda* belong to the genera *Disa*, *Satyrium* and *Habenaria*, but as the orchid tubers are morphologically difficult to identify, it is not always clear which species are used for *chikanda* production (Davenport and Ndangalasi, 2003; Bingham, 2009). Market vendors and harvesters distinguish the tubers based on origin and presumed quality. Some tubers are considered to be *msekelele* or "fake", indicating a lower quality. However, vernacular names and methods of tuber distinction do not necessarily correspond to scientific classifications (Cunningham, 2001).

Although these genera are relatively widespread in Africa, they include several species at risk of overharvesting and possibly even extinction. Tanzania's Southern Highlands, and the adjacent highland areas in Zambia and Malawi, together form an area of great botanical interest and harbour several species with a very limited distribution (Cribb and Leedal, 1982). Therefore, in 2004, Kitulo National Park was established in Tanzania with orchid protection as its main objective (Davenport and Bytebier, 2004).

## Legislation

All orchids have been listed in the Appendices of CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) since 1975; orchids used for *chikanda* production are all listed in Appendix II (UNEP-WCMC, 2014). Although a CITES-listing should ensure strict regulation of cross-border trade, research indicates that millions of wild-harvested orchid tubers cross Zambia's borders each year without permits (Davenport and Ndangalasi, 2003). No orchids are reported in the CITES Trade Database as having been imported by Zambia

BARBARA GRAVENDEEL

**Above:** A woman carrying freshly collected tubers from Sumbawanga region, Tanzania. Some of the tubers harvested there are consumed locally, others will be transported to Tunduma, a small town at the border with Zambia, from where they will be distributed, largely within Zambia.

**Below:** Sack of tubers at Soweto Market, Lusaka. Tubers are gathered here from different countries and will mainly be sold locally. Each sack can contain between 7000 and 18 000 tubers.

JOSEPH OTIENO



ORCHID PHOTOGRAPHS: BARBARA GRAVENDEEL

JOSEPH OTIENO

**Tubers used for *chikanda* production are possibly derived from *Habenaria occlusa* (left) and *Disa erubescens* (centre), among other orchid species. Warehouse at Soweto Market, Lusaka (right). Warehouses seem to be shared among the traders and are located in the vicinity of the *chikanda* stalls.**

for the last 10 years, thus indicating a significant discrepancy between actual and reported trade (UNEP-WCMC, 2003–2013). Under Tanzania's *National Parks Act* (MNRT, 2002), authorities can enforce local regulations, one of which states that vegetation in parks should not be disturbed.

## Aims

The project discussed here aimed to map *chikanda* harvest and trade and to use innovative molecular identification methods to identify the species used for *chikanda* production by sequencing DNA isolated from ready-made *chikanda*. Accurate identification, combined with quantitative data should enable the authors to determine which species are most susceptible to overharvesting. In addition, the authors aimed to investigate sustainable solutions to wildcrafting of *chikanda*, ideally without negatively affecting local livelihoods.

## Methods

Surveys were conducted between February 2013 and July 2014 in the trade hubs of Soweto market in Lusaka, and the border towns of Tunduma (Tanzania) and Nakonde (Zambia), as well as in villages in Rukwa, Iringa and Njombe Regions (Tanzania) that were reported in the trade hubs as being the main sources of tubers. Market vendors, middlemen and harvesters were interviewed, as well as Customs officers on the Tanzanian-Zambian border. The authors visited the headquarters of Kitulo National Park, which continues to be targeted by harvesters, to discuss the possibility of cultivating *chikanda* and the role that the park authorities could play in this process. Several slices of ready-made *chikanda* were purchased at Tunduma market for species analysis by means of Next Generation Sequencing of ITS2 using Ion Torrent PGM™. Obtained sequences were profiled against NCBI GenBank for identification using BLAST.

## Results

*Market surveys*: At Lusaka's Soweto market two large depots were found, each containing approximately 200 bags with 100–150 kg of *chikanda* tubers in each (an estimated total of 20–30 t). Market vendors indicate that Tanzania is the main source of *chikanda* and identified several regions of origin: Sumbawanga, Iringa and Mufindi. The following regions were mentioned as *chikanda* sources in Zambia: Luwingu, Kasama, Mporokoso and Serenje, all of which are located in the central or north-eastern part of the country. Tubers also originate from surrounding countries such as Angola, the Democratic Republic of Congo, Malawi and Mozambique. The tubers differ significantly in size, however. For example, those from Zambian regions and Mufindi (Tanzania) are quite small (± 0.5–2 cm), whereas Iringa tubers are very large, with lengths of up to seven centimetres. Customers at Soweto market buy *chikanda* mainly for local consumption, but people come from as far as the Zambian Copperbelt province to buy tubers.

In Tunduma, Tanzania, similar sources for orchid tubers are mentioned. By far the most tubers come from Kikondo and Imalilo, two villages in the Njombe/Iringa region. A total of *ca.* 3000 *debe* or tins of *chikanda* are said to come from there each year. One *debe* can contain 1100–2900 tubers, depending on the size of the tubers. Three thousand tins of Iringa tubers would equate to a minimum of approximately 3.3 million tubers. Mufindi and Sumbawanga are two other regions in the country that are often reported as sources, and together account for an estimated annual 170 tins. The estimates add up to an alarming 3.5 million Tanzanian orchid tubers that are exported to Zambia each year. On top of this, Malawi and Mozambique contribute at least another 300 000 and 600 000 tubers annually, respectively.

*Chikanda* traders in Tunduma, Tanzania, mention that it is becoming more difficult to meet demand or even to maintain the supply that has been available during the last few years. Supplies from Mufindi were reported to have dwindled from 300 tins in previous years to only 120 in 2014. Supplies from Imalilo were also reported to be going down gradually, and in addition tuber size was decreasing.

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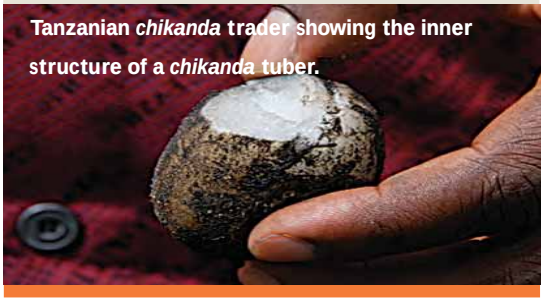
## *CHIKANDA*: WHAT IS IT?

**Women preparing *chikanda* cake in a Zambian village close to Tunduma, Tanzania.**

*Chikanda* mainly consists of ground orchid and peanut flour, preferably in a 1:1 ratio, or 1:2 if there is a lack of orchids. To prepare the dish, *chikanda* tubers are washed, sliced, and the bitter upper buds removed. The slices are dried in the sun for ±20 minutes after which time they are pounded and sieved to a fine powder. Salt, baking powder and sometimes chilli powder for flavour are stirred into a pot of boiling water, followed by the peanut flour. Once the water comes back to the boil, the *chikanda* powder is added to thicken the mixture. The surface of the cake is smoothed with a spoon and the pot covered with a plate. This is moved to a charcoal-fired stove and the plate covered with hot charcoal. After ±20 minutes, the charcoal is removed and the covered pot turned upside down on the floor to rest for a few minutes. The *chikanda* is ready to eat, hot or cold, served with some chilli sauce for extra spice.



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**Tanzanian *chikanda* trader showing the inner structure of a *chikanda* tuber.**

Customs officers in Tunduma, at the border with Zambia, claimed to be unaware of the enormous amount of orchid tubers that is crossing the border each year. Discussion of CITES and international trade regulations also revealed an unfamiliarity with these topics, especially in regard to the orchid trade. Cross-border *chikanda* traders seem to circumvent the official border post between the two countries by loading the bags onto motorbikes, bikes and donkeys, which can easily pass through the border without being searched.

*Kitulo National Park, Tanzania*: Management and rangers working in Kitulo National Park, are familiar with the problems of *chikanda* harvest. Despite the establishment of the park in 2004, largely to provide protection to the orchids growing there (Davenport and Bytebier, 2004), *chikanda* tubers are still intensively collected from the area. On some occasions parts of the high-altitude grasslands are burned to enable easier access to harvest the tubers. Villagers in and around Kitulo National Park (from Imalilo and Kikonde) were hesitant to discuss *chikanda* harvest and trade, and blamed the harvest on people from outside the area. However, when the conservation issues and possibilities of cultivation were mentioned, they showed a keen interest in participating in field trials of *chikanda* cultivation, as long as they are supplied with seedlings. The Kitulo National Park authorities shared their interest in *chikanda* cultivation and were willing to facilitate a cultivation programme by growing orchids from seeds and distributing the seedlings to the villagers for cultivation. Some small-scale cultivation projects have begun, but these are mainly in Zambia. None of these cultivation activities seem to take place in the villages where the majority of *chikanda* tubers are reported to come from.

*Identification*: Next Generation Sequencing using Ion-Torrent PGM™ has proved successful in identifying species in prepared *chikanda* to genus level, and in some cases to species level. A total of six ready-made *chikanda* samples were analysed and revealed the presence of six *Disa* species, eleven *Satyrium* species and one *Habenaria* species. Peanut *Arachis hypogaea* appeared to be present in all six *chikanda* samples, and it is known to be an important ingredient. Besides the expected ingredients, several adulterants or contaminants could be identified. These unexpected species included Mango *Mangofera indica*, Sweet Potato *Ipomoea batatas*, Pumpkin *Cucurbita maxima* and several grasses *Triticum aestivum*, *Elymus* spp. and *Eleusine coracana*. The species compositions differed greatly between the *chikanda* samples. One sample contained three species (*Disa ochrostachya*, *D. erubescens* and *Arachis hypogaea*), whereas another included at least thirteen orchid species and an additional fourteen intentional or unintentional ingredients.

## Discussion and Conclusions

*Chikanda is increasing in popularity*: Ready-made *chikanda* can be found on the menu in numerous hotels and restaurants in Zambia, but has also recently appeared in supermarket chains in Lusaka. Moreover, across the border in Tanzania more and more people have started eating *chikanda*. This broader consumption highlights the need for immediate measures to be taken to ensure sustainable harvesting practices.

*Increasing scarcity of chikanda tubers*: Harvesters need to go further afield to collect *chikanda* than in previous years and spend more time in doing so. Market vendors report that the tubers they receive now are smaller than previously and, where Zambian supplies were once sufficient to meet demand, tubers now need to be imported from other countries. These are all signs of overharvesting and unsustainable use of the local orchid resources. The absence of most *chikanda* orchid species from the *IUCN Red List* (IUCN, 2014) reflects a gap in knowledge, and more research and monitoring of trade are urgently needed to stop overharvesting.

*Joint conservation efforts*: Both at the local village level and that of the Kitulo National Park authorities, the overharvest of orchid tubers for *chikanda* production has now been recognized. There is an overall willingness to co-operate on a project to initiate *chikanda* cultivation aimed at sustainability and diversification of cash income. Follow-up work between the authors and Kitulo National Park aims at combining scientific expertise and park ranger resources to create a pilot project on *chikanda* cultivation in collaboration with villages that are currently harvesting hotspots. Since some of the local endemics might be at risk of being overharvested and tubers are targeted indiscriminately, sustainable wild harvesting does not seem a viable solution. Cultivation would create the challenge of distinguishing between cultivated and wild-harvested orchids. However, the effectiveness of proposed conservation measures should also be further evaluated.

*Identification and enforcement*: Molecular identification is successful in identifying species used for *chikanda* production. However, to have an even more accurate idea of the species used for *chikanda*, the sequence reference database needs to be expanded to include more of the orchid species occurring in southern Africa. Local Customs officers seem not to be aware of the CITES regulations relating to plants, and in order to ensure proper enforcement at the border they might need additional information about these regulations and perhaps more specifically on orchids and the *chikanda* trade. Moreover, interviews with CITES Management and Scientific authorities should be carried out to learn their opinion on the possibility of orchid cultivation and a regulated trade.

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◀ **Msekelele, or "fake" *chikanda* tubers, considered to be of inferior quality to other *chikanda* tubers, Tunduma market, Tanzania.**

## Acknowledgements

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***Sarina Veldman**, Department of Organismal Biology, Evolutionary Biology Centre, Uppsala University, Sweden;*
***Joseph Otieno**, Institute for Traditional Medicine, Muhumbili University of Health and Allied Sciences, Dar es Salaam, Tanzania;*
***Tinde van Andel**, Naturalis Biodiversity Center, Leiden, The Netherlands;*
***Barbara Gravendeel**, Naturalis Biodiversity Center, Leiden, The Netherlands; University of Applied Sciences, Leiden, The Netherlands;*
***Hugo de Boer**, Department of Organismal Biology, Evolutionary Biology Centre, Uppsala University, Sweden; Naturalis Biodiversity Center, Leiden, The Netherlands; The Natural History Museum, University of Oslo, Oslo, Norway.*

# New partnership to help disrupt illegal wildlife trade networks

*An Australasian partnership with TRAFFIC*

South-east Asia is an important region for biodiversity and an increasing global priority for averting extinction; most taxonomic groups are more threatened here than anywhere else, largely as a result of overharvesting. The region plays a critical global role in both supply and demand in the illegal and unsustainable trade of wildlife (Nijman, 2010; Sodhi *et al*., 2010; Duckworth *et al*., 2012).

Across this region, increasingly co-ordinated and prioritized efforts are supporting direct conservation action towards species protection through both *in-situ* and *ex-situ* initiatives (Rao *et al*., 2014). However, long-term species survival is dependent on the evolution of effective enforcement systems along all stages of illegal wildlife trade chains, supported by local communities and coupled with sustained, widespread reduction in market demand (Duckworth *et al*., 2012).

Ten Australian and New Zealand member institutions of the Zoo and Aquarium Association (ZAA) have come together in partnership with TRAFFIC in South-east Asia to improve understanding and ultimately to disrupt criminal networks facilitating the illegal trade of wildlife occurring in South-east Asia.

The partners so far include ZAA, Taronga Conservation Society Australia, Perth Zoo, National Zoo and Aquarium, Dreamworld, Hamilton Zoo, Auckland Zoo, Wellington Zoo, The New Zealand Department of Conservation and The Australian Museum.

The partnership is centred on financial support for a TRAFFIC Wildlife Crime Data Analyst to be responsible for collating, managing, analysing and reporting on all wildlife trade-related crime in South-east Asia, and a Research Officer to aid in improving data management and analysis. Effective crime data analysis and reporting will help proactively combat illegal wildlife trade through the identification and disruption of transnational, organized criminal networks operating across different commodities and species. It will also improve identification and understanding of trade trends, locations and methods involved which, in turn, will improve enforcement through more targeted training and informed analytical assessments for assisting with and securing prosecutions.

The partnership further aims to use zoo and museum-based expertise and data in reducing trade impacts on biodiversity through modelling sustainable industry policies, fostering mutually beneficial partnerships, driving research on husbandry and genealogy of species affected by trade, as well as implementing community engagement strategies.

As part of this project, Taronga Conservation Society Australia has released the Wildlife Witness phone app in partnership with TRAFFIC. This app aims to empower locals and tourists to South-east Asia and Australia to report suspected incidents of illegal wildlife trade.


TARONGA

**JOHN E. SCANLON, SECRETARY-GENERAL OF CITES (RIGHT) WAS INTRODUCED TO THE WILDLIFE WITNESS APP DURING A VISIT TO TARONGA CONSERVATION SOCIETY AUSTRALIA, PICTURED HERE WITH TCSA'S DIRECTOR, CAMERON KERR.**

TARONGA

*The Wildlife Witness mobile phone app will allow suspected illegal wildlife trade to be reported to TRAFFIC, so that relevant information can be passed to enforcement officials for information/action. The initial target audience is the travelling public (particularly Australians) visiting South-east Asia.*

Available for both iPhone and Android devices, Wildlife Witness enables users to report directly any suspicious wildlife trade by taking a photograph, pinning the location of an incident and sending these important details to TRAFFIC's Wildlife Crime Data Analyst.

Although only six months since inception, this partnership offers many exciting opportunities for sharing expertise, resources and networks towards delivering a sustained impact on the fight against wildlife crime.

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***Kira Husher**, Community Conservation Manager, Taronga Conservation Society Australia.*
*E-mail:khusher@zoo.nsw.gov.au*

# Illegal wild collection and international trade of CITES-listed terrestrial orchid tubers in Iran

*Abdolbaset Ghorbani, Barbara Gravendeel, Shahin Zarre and Hugo de Boer*

*Dactylorhiza umbrosa*

PHOTOGRAPHS: ABDOLBASET GHORBANI

*Orchid tubers known as* salep *are collected widely from the wild in Asia Minor, Iran and the north-eastern Mediterranean region where they are traded for use of the ground tuber in the production of ice cream and a drink, also known as* salep. *The harvest of* salep *orchid tubers in Iran has been boosted in recent years by international demand, mainly from Turkey, the main consumer in the region for* salep *drink, but also from Pakistan and India for a range of purposes. It is estimated that in 2013, 7–11 million individual orchids were harvested in Iran, mainly from the Golestan and Azarbaijan provinces. More than 19 species and sub–species are targeted indiscriminately, all of which are listed in the CITES Appendices and most are threatened with local extinction. Given the destructive nature of collection practices, the current harvest in Iran is unlikely to be sustainable. This study focuses on the current status of orchid tuber collection and trade in Iran, where collection and harvest of tubers, and export without permits, is illegal, and highlights the need for active measures to protect orchids from being overharvested, including examining the feasibility of establishing sustainable harvesting practices.*

## Introduction

Tuberous terrestrial orchids have long been used as a source of medicine for the treatment of a range of health problems, as well as in dietary supplements and as an aphrodisiac in different parts of the world (Arditti, 1992; Bulpitt, 2005; Hossain, 2011; Subedi *et al.*, 2013). Dioscorides (1st century A.D.) cited two terrestrial orchids in his book *De Materia Medica*, and Avicenna (Persian physician, 908–1037) referred to the aphrodisiacal and other healing properties of orchids (Berliocchi, 2004). In Africa, different species of *Eulophia* are used to treat diabetes or to prevent epilepsy (Bulpitt, 2005). In Asia Minor, dried tubers of terrestrial orchids are known as *salep*, a word which comes from the Arabic word *Sahlab* (Persian: *Salab*; Hindi: *Salab misri/ salab mishri/salam panja*), and refers to the dried tubers of terrestrial orchids, ground tuber flour and a hot, milky beverage made from the flour. *Salep* drink was once commonly consumed throughout the Ottoman Empire and as far as Germany and England (Bulpitt, 2005). In the late 17th century, the drink was in vogue in England under the name of *salop* or *saloop* (Davidson, 2006). Although nowadays it has lost much of its importance in Western Europe, it is still popular in Asia Minor, Greece and Cyprus (Bulpitt, 2005; Starin, 2012). *Salep* powder is also used in ice cream production as a stabilizer and to increase the melting temperature (Bahramparvar and Mazaheri Tehrani, 2011). In Turkey, traditional *salep* ice cream is called *kahramanmaraş* or *maraş dondurma* and differs in taste and texture from industrial ice cream owing to the natural flavour of the *salep* powder and its sticky consistency (Guven *et al.*, 2003). *Salep* drink is not commonly consumed in Iran and because of the high price of natural *salep*, the powder is not used in industrial ice cream production. *Salep* is also used to make a sexual tonic and aphrodisiac in Indian Ayurveda medicine and in Unani medicine in India and Pakistan.

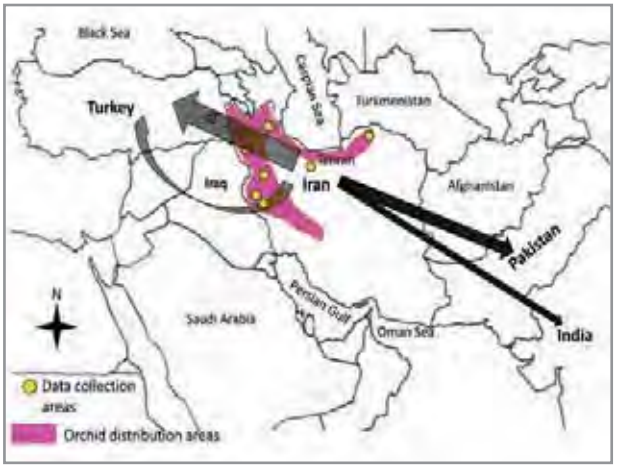


**Fig. 1. Principal *salep* orchid tuber distribution and collection areas in Iran, and the main tuber trade destinations (arrows).**

Turkey is the main consumer of *salep* in the region. Some 90% of all tuberous orchids (120 taxa) are collected in Turkey for the production of *salep*, with an estimated 30 t of *salep* produced annually, which equates to the destructive harvest of 40–50 million orchids (Sezik, 2006).

Due to its illegal status, published reports or updates of orchid collection and trade status from most *salep*-producing countries are very limited. However, it is known that in Iran the harvest of orchid tubers for *salep* has been boosted in recent years by international demand and the country has become one of the main suppliers for this trade.

Many of the orchid species used for production of *salep* are protected in their range countries, and most are threatened with local extinction (Swarts and Dixon, 2009). Collection and harvest of orchid tubers without permits in Iran is illegal.

## Methods

This study focused on the current status of orchid tuber collection and trade in Iran. It also investigated the legislation and regulations regarding orchid conservation and trade in the country, and associated enforcement. During March–July 2013 and May 2014, semi-structured and open-ended interviews were conducted with local orchid collectors to record information regarding collection practices, collection sites and seasons, processing practices, the history and volume of the harvest, and the current uses of the tubers. Whenever possible, harvest practice was directly observed in the field. Herbarium samples of harvested species were identified using the *Flora Iranica* Vol. 126 (Renz, 1978) and *Flora of Iran* Vol. 57 (Shahsavari, 2008). Surveys were conducted in the provinces of Golestan (Kalaleh and Maraveh Tappe districts) and Western Azarbaijan (Mahabad and Piranshahr districts).

ABDOLBASET GHORBANI

**Fig. 2. Digging up orchid tubers.** Yeke-Chenar village, near Maraveh Tappe, Golestan province.

A market survey was conducted by interviewing traders in herbal shops or stalls in markets in Golestan province, at bazaars in Urmieh, Mahabad and Sardasht (Western Azarbaijan province), the cities of Kermanshah and Kerend (Kermanshah province), Ardabil (Ardabil province) and Tehran Grand Bazaar (Fig. 1). Information regarding prices along the trade chain, quality preferences, the total volume of annual trade and the destinations of tubers was recorded from *salep* traders and the owners of *Attari*, or herbal shops.

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**Fig. 3. *Orchis simia.*** Once the fresh *salep* tubers have been removed, the plants and old tubers are discarded.

To estimate the number of tubers equivalent to one kilogramme of fresh tubers, five samples of 500 g of fresh tubers were purchased from Maraveh Tappe, the number of tubers in each sample was counted and the average was extrapolated to one kilogramme. To estimate the number of tubers in one kilogramme of dried tubers, samples of 50 g and 100 g of dried tubers were purchased from Mahabad, Urmieh, Kermanshah and Sanandaj, the number of tubers in each sample was counted and the averages were extrapolated to one kilogramme. These numbers were then used to estimate the total number of orchids harvested in a season, as calculated from the total weight of traded tubers obtained from the market survey. Tuber sampling was carried out mid-season. Most of the purchased dried tuber samples were from the previous year's harvest; traders hold on to their stocks until the end of the season when prices are at their highest.

## Distribution, Status and Ecology

The Orchidaceae family in Iran is represented by 46 species and subspecies, of which 30 (sub)species (65%) produce tubers that can theoretically be used for the production of *salep* flour. Members of the family are distributed over different habitats—from Hyrcanian forests and dry oak forests to alpine wet grasslands, mainly along the Alborz Mountains in the north, and the Zagros Mountains in the west (Renz, 1978; Shahsavari, 2008). Despite collection being illegal, many of these plants are intensively exploited for their tubers. The conservation status of Orchidaceae species in Iran is poorly known; the majority of species have not been evaluated according to the categories and criteria of IUCN's global *Red List of Threatened Species*, and neither have national assessments been carried out. The ecology of the plants and the potential for sustainable use is also poorly known, and limited information is available on reproduction/regeneration rates of the different species commercially harvested in Iran and the surrounding region. Terrestrial orchids have complicated reproductive and regeneration systems, and pollination is largely dependent on specific pollinator species. In some genera, such as *Ophrys*, this is particularly complex, whereby seed production is highly dependent on pollinators while seed germination depends on mycorrhizal fungi. Any disturbance to the natural environment can break this chain of plant-pollinator-fungi and cause a reduction in reproduction/regeneration of orchid populations.

## Legislation and Protection

Many of the orchid species being harvested for the production of *salep* flour are protected in their range countries, and most are threatened with local extinction (Swarts and Dixon, 2009). However, in Iran protection is not effective owing to the lack of public awareness of their protected status and because most of the collection occurs in open access areas where controls are limited. Iran has been a signatory to CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) since 1976. All orchid species are listed in CITES Appendix I or II, and international trade in specimens or products requires both export and import permits. As far as is known, in Iran these are only granted for hybrid species and those that are claimed to be of cultivated origin. Protection of orchids growing in protected areas is the responsibility of the Department of Environment (DoE) and collection of orchid tubers from these areas requires

ABDOLBASET GHORBANI

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**Fig. 4. Fresh (top) and dried palmate *salep* tuber of *Dactylorhiza* sp., Mahabad market, West Azarbaijan province.**
*Salep* flour from palmate tubers is considered to be of lower quality than that derived from oval tubers (below).

BARBARA GRAVENDEEL

**Traditional tool for digging up the tubers.**

ABDOLBASET GHORBANI

BARBARA GRAVENDEEL

**Fig. 5. Fresh (top) and dried oval *salep* tubers, Maraveh Tappe Market, Golestan province.**

permission from the DoE; no commercial collection is allowed. Those growing in other areas, including open access areas, fall under the jurisdiction of the Forests, Range and Watershed Management Organization (FRWO). The export of plant material should also be accompanied by a permit issued by FRWO as well as phytosanitary certificates. Furthermore, a recent regulation issued by FRWO to provincial offices on 12 June 2013 (number 92/1/15123) reiterated that in order to protect the genetic resources of the country from depletion, all orchid collection is illegal and should be prevented, and that FRWO offices should not permit the collection, transport or export of orchid tubers (FRWO, 2013). Unfortunately, enforcement of these regulations is not effective enough to prevent destructive orchid collection, primarily because of limited tools and resources to monitor and control this trade. Currently traders and middlemen in bazaars are trading large amounts of dried tubers (up to four tonnes annually) without any interference from the authorities (J. Iezadi pers. comm. to A. Ghorbani, May 2014).

## Results

Based on the findings of this study, 19 species and sub-species of *salep* orchids (41% of the total number of orchid species in Iran) are harvested for their tubers (Table 1). All are harvested indiscriminately and the tubers in the market are a mixture of different species. Each orchid plant generally has two tubers: one old wrinkled tuber and one fleshy over-wintering tuber, which will nourish the formation of the next flowering shoot. During harvesting, plants are dug out, the fresh tubers are collected and the plants and old tubers are discarded (Figs. 2/3). It has been observed that in Western Azarbaijan province, old orchid tubers are replanted after the fresh tubers have been harvested; success rates of such practices are unknown.

Harvested tubers are washed, boiled in water or milk for *ca.* 10–15 minutes and sun dried and traded in a dried form. Morphologically, two kinds of *salep* are recognized in the market: palmate (*Panjeh-ey*) *salep* from branched or palmate tubers of *Dactylorhiza* species (Fig. 4), and the round or oval (*Qolveh-ey*) *salep* from other orchid species (Fig. 5). Palmate *salep* is considered to be of inferior quality and fetches lower prices in the market than the round/oval *salep*.

The number of tubers in one kilogramme of fresh or dry *salep* depends highly on the composition of collected species and the life stage of the plants when harvested. The former varies geographically as distributions of species may differ. For example *Dactylorhiza* and *Himantoglossum* species produce bigger tubers which can weigh between four and six grammes, respectively, when dried. Also, tubers collected after flowering and during the fruiting period are the heaviest, lose less weight after drying and are of better quality. In Golestan province, one kilogramme of fresh tubers consists of 304 ± 73 tubers, which is indicative of the number of orchid plants that must be harvested to produce one kilogramme of fresh *salep* tubers (each tuber representing one orchid plant). Depending on the age of plants at harvest time and composition of species, between four to eight kilogrammes of fresh *salep* tubers normally yield one kilogramme of dried *salep*. On average, one kilogramme of dried *salep* from *Dactylorhiza* species (palmate *salep*) can be produced by uprooting 605 ± 219 plants, while one kilogramme of dried ovoid *salep* (from other species) requires harvesting 1117 ± 236 orchid plants (samples taken from western provinces).

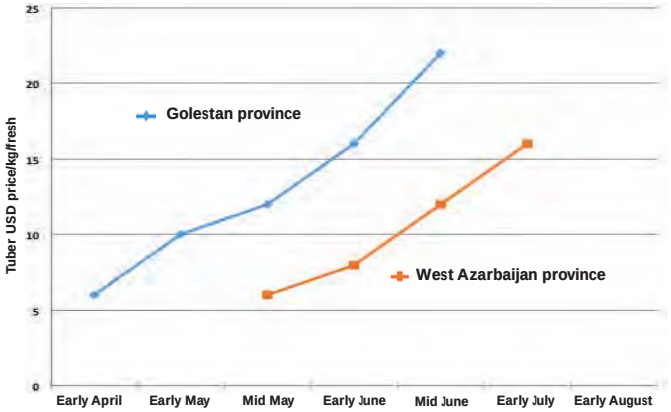


**Fig. 6. Price changes during harvest season for fresh salep tubers in northern and north-western parts of Iran.**

In Golestan province, the orchid tuber harvest in April–June 2013 was estimated at 24.5 t of fresh tubers traded by seven middlemen. This volume required the destructive harvesting of 7.4 ± 1.7 million individual orchids. In Tehran bazaar, six medicinal plant wholesalers traded 1920 kg of dried tubers during May–July 2013. The estimated number of orchids harvested for that volume is 1.16 ± 0.4 million individuals. These specimens were from other provinces, such as Mazandaran and some western provinces; it was not possible to obtain exact figures for each province or region.

Prices for fresh tubers vary from about USD5–6/kg at the beginning of the season—when they are unripe, of poorer quality, and with a higher water content—to more than USD22/kg towards the end of the season (Fig. 6). Prices also depend on the size of the tubers and the quantity available for sale. Fresh tubers are purchased by local representatives or local middlemen in the villages, directly from the collectors, who sell them to a second middleman. The tubers are dried by the second middleman and sold to wholesalers in cities like Tehran, Urmieh and Tabriz, or directly to merchants from Turkey, Pakistan and India (Fig. 1), which are the end markets. According to the traders in Tehran bazaar, since the export of *salep* is illegal, the foreign merchants either buy small volumes of *salep* tubers (*ca.* 15–20 kg), to be exported in hand luggage, or mixed with almonds to avoid detection. Considering the average price of USD13/kg for fresh tubers, *salep* trade in Golestan province was worth nearly USD320 000 in the 2013 season. In Tehran bazaar, dried *salep* is purchased for USD110–130/kg and sold for USD160/kg, with an estimated total sales value of nearly USD310 000 in 2013.

These estimates of the number of harvested plants are not comprehensive and may not represent the number of plants harvested nationally. However, this level of harvest will affect the population of orchids sooner or later. In the western provinces of Iran, which have a longer history of orchid collection, people have reported a decline in orchid populations, and as a result try to replant the old tubers after removing the new tubers. The effects of replanting old tubers on regeneration and population restoration has not yet been studied. In the northern provinces, however, where traders from outside the area introduced collection practices only six years ago, villagers still consider orchids as a gift of nature, provided to them as a resource to supplement their income. They appear not to be aware that the orchid tuber harvest may cause a decline in orchid populations.

## A SELECTION OF ORCHID SPECIES HARVESTED IN IRAN FOR THEIR TUBERS TO PRODUCE *SALEP*

PHOTOGRAPHS: ABDOLBASET GHORBANI

*Orchis adenocheila*

*Himantoglossum comperianum*

*Orchis mascula*

| Species | Provinces where collection occurs |
|---|---|
| *Anacamptis collina* | Golestan |
| *Anacamptis coriophora* | Western Azarbaijan, Kurdistan |
| *Anacamptis morio* subsp. *picta* | Ardabil, Eastern Azarbaijan |
| *Anacamptis palustris* | Western Azarbaijan, Kurdistan |
| *Anacamptis pyramidalis* | Golestan, Gilan, Mazandaran |
| *Dactylorhiza incarnata* | Western Azarbaijan, Kurdistan |
| *Dactylorhiza romana* subsp. *georgica* | Golestan, Eastern Azarbaijan |
| *Dactylorhiza umbrosa* | Western Azarbaijan, Kurdistan, Kermanshah |
| *Himantoglossum affine* | Kermanshah |
| *Himantoglossum comperianum* | Western Azarbaijan, Kurdistan, Kermanshah |
| *Ophrys scolopax* | Golestan |
| *Ophrys sphegodes* | Golestan |
| *Ophrys sphegodes* subsp. *mammosa* | Golestan |
| *Orchis adenocheila* | Golestan, Gilan, Western Azarbaijan |
| *Orchis mascula* | Golestan, Mazandaran, Gilan, Ardabil, Eastern Azarbaijan |
| *Orchis simia* | Golestan, Mazandaran, Gilan, Ardabil, Eastern Azarbaijan, Western Azarbaijan |
| *Orchis punctulata* | Golestan |
| *Platanthera chlorantha* | Gilan, Eastern Azarbaijan |
| *Steveniella satyrioides* | Golestan |

**Table 1. Orchid species harvested for production of salep flour in Iran, and the main collection areas.**

## Discussion

As *salep* is not commonly consumed in Iran, the current orchid collection boom in that country is driven by international demand, particularly from Turkey, Pakistan and India, and the resultant high prices. Collection areas overlap with areas of high orchid species diversity and the harvest is a threat to orchid diversity in these locations. The eastern part of Golestan province, for example, is one of the hotspots of orchid species diversity in Iran, yet wild orchid collection is booming there. Current orchid harvesting practices destroy individual plants and may consequently be damaging populations. The high prices of tubers have led to competition among collectors, and many commence harvesting before the plants bloom and develop seeds. Considering that the harvested parts are tubers that are needed to nourish the following year's flowering stem, that the plant is destroyed after harvest, and that the harvest mostly happens before seed production, current orchid collection practices are likely to be unsustainable. However, orchid tuber collection is important for the local people involved—most of them farmers—as it is a source of additional income at a time of the year when there is a shortage of cash.

Since the trade in *salep* must be accompanied by CITES permits and considering that FRWO is not issuing any collection and export permits, the international trade in harvested tubers is clearly illegal. Mixing tubers with nuts such as almonds, or mislabelling the tubers and exporting them with permits that have been issued for nuts or other goods, makes it difficult for such shipments to be verified by Customs through morphological tests; it is especially difficult when *salep* is exported/imported in the form of flour. Effective identification and verification methods can help in controlling this illegal trade.

## Recommendations

To address some of the problems identified in relation to the protection of orchid resources in Iran, the authors recommend several actions: in the short-term and at the national level, collection bans should be implemented in heavily exploited areas and enforcement of regulations strengthened. Forest rangers and environmental guides need training in orchid identification and the public made aware of the need for orchid conservation. To control the international illegal trade of orchid tubers, a DNA barcoding-based identification method can be used to verify the identity of traded goods and also those species that are most commonly in trade, especially when *salep* is traded in the form of flour. This, in turn, can help in the effective protection of these species by focusing conservation action on highly exploited species and specific geographical areas. DNA barcoding can also help to identify adulterants in *salep* powder that may present a health risk for consumers. Furthermore, identifying *salep* in mislabelled export/import items can assist Customs and other organizations in both the countries of origin and destination countries to control and seize illegal trade.

FRWO, as the responsible organization in Iran for conserving natural resources outside protected areas, should be provided with the necessary resources to enforce regulations on the harvest of orchids, and to strengthen the enforcement of regulations through provincial offices. Monitoring orchid populations by mapping and recording orchid population distributions and densities, and reporting new populations and significant finds to a central FRWO database should be carried out. Village councils and villagers in densely harvested areas should be informed about collection regulations and the

conservation status of orchids through educational and participatory workshops, with the aim of involving them in efforts to implement legal sustainable harvesting and production.

Over the longer term, the establishment of targeted Orchid Conservation Areas can mitigate the effects of illegal collection on orchid populations in hotspot collection areas, but also attract tourism and associated benefits. The training of local villagers in sustainable collection practices and cultivation can reduce pressure on wild populations and could sustain the financial benefits villagers derive from the *salep* trade. However, sustainable harvest practices are difficult, especially in the study area, owing to the complicated life cycle of the harvested orchid species, their reproduction and regeneration systems, which requires the presence of mycorrhizal fungi and specific pollinator species. More research is therefore vital if sustainable harvesting measures are to be developed. The practice of replanting old tubers, currently undertaken in Western Azarbaijan province, should be explored and, if found to be successful, could be used as a model in other areas for best practice for harvesting. However, for cultivation practices to become realistic, support must be provided to the scientific community, the government in Iran and local NGOs.

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***Abdolbaset Ghorbani*** *(corresponding author), Department of Organismal Biology, Evolutionary Biology Centre, Uppsala University, Sweden;*
*E-mail: abdolbaset.ghorbani@ebc.uu.se*
***Barbara Gravendeel****, Naturalis Biodiversity Center, Leiden, The Netherlands; University of Applied Sciences Leiden, The Netherlands;*
***Shahin Zarre****, Department of Plant Sciences, University of Tehran, Iran;*
***Hugo de Boer****, Department of Organismal Biology, Evolutionary Biology Centre, Uppsala University, Sweden; Naturalis Biodiversity Center, Leiden, The Netherlands; The Natural History Museum, University of Oslo, Oslo, Norway.*

# Regional Economic Integration Organizations: *their Role in Implementing CITES*

*Katalin Kecse-Nagy, Sabri Zain and Stephanie von Meibom*

*It is widely recognized that the world economy has experienced an unprecedented intensification of economic and financial integration since the latter part of the 20th century. The trend towards regional integration has been supported in many areas by regional policy initiatives, particularly in the field of trade and the result is a proliferation of regional agreements that vary widely in breadth and depth (European Central Bank, 2005). The benefits from pursuing such integration include increased supply and access to markets; the harmonization of transboundary issues such as trade, regulatory frameworks and policies, a regional infrastructure, and the management of shared natural resources (The World Bank, 2013).*

*Depending on the level of regional economic integration and trade facilitation, there is a need for a high level of formal organization and the establishment of institutional and legal frameworks to facilitate and regulate these arrangements. This paper focuses on three regional economic integration organizations (REIOs) and explores the challenges to management and regulation of the global wildlife trade, in particular in relation to species listed in the Appendices of CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). Collaborative regional action is critical if harmonized integration is to have the chance to succeed.*

## Introduction

In the context of international efforts to regulate and manage wildlife trade, REIOs such as the European Union (EU) or the Eurasian Economic Community (EurAsEC) play an important role in regulating and managing international wildlife trade. According to Matthews (2003), the classic schema of economic integration ranks integration arrangements according to the depth of integration achieved along a continuum, starting with a preferential trade area, and evolving through a free trade area, Customs union, common market, economic union, economic and monetary union to achieve a state of total economic integration. It is now common for international conventions and treaties to allow membership by REIOs. For example, the EU has been a Party to the Convention on Biological Diversity (CBD) since 1993. In response to the growing number of REIOs and an increasing level of regional integration processes globally, Parties to CITES took steps to reflect this changing geo-political and economic environment. As one of the earliest Multilateral Environmental Agreements—CITES has been in place since 1975—membership to the Convention was originally anticipated for States only. In 1983, the so-called Gaborone Amendment to CITES Article XXI, the Article which governs accession, was adopted in Gaborone, Botswana, aiming to allow REIOs to accede to the Convention. For the amendment to enter into force, two-thirds of the States party to the Convention at the time of its adoption had to accept it formally, which only took place in November 2013, 30 years after its adoption.

The entry into force of the Gaborone Amendment has drawn attention to the relevance of REIOs in the context of regulating international trade in wildlife. The aim of this article is to: i) demonstrate what REIOs would need to consider to play an enhanced role towards the regulation and management of international wildlife trade; ii) to review how some REIOs are addressing wildlife trade controls; and iii) to highlight the need for these organizations to co-operate and learn about the regulation of international wildlife trade from each other.

*Above: Fishing vessel leaving port, Kamchatka Oblast, Russian Federation. Photograph: Darren Jew / WWF-Canon*


Developed in 2005 by the Belgian Federal Police, CITES Management Authority and Customs, and TRAFFIC, the European Union – Trade in Wildlife Information eXchange, EU-TWIX (www.eutwix.org), is an enforcement tool developed for the exclusive use of European wildlife law enforcement officials. EU-TWIX is unique in that it brings together officers from all relevant law enforcement agencies responsible for combating wildlife crime in Europe, including Customs, police, border forces, environmental inspectorates, prosecutors and judges. In addition, international institutions such as the CITES Secretariat, the European Commission, Eurojust, Europol, Interpol, the United Nations Office on Drugs and Crime (UNODC) and the World Customs Organization (WCO) also have access. EU-TWIX comprises two main components: i) a mailing list; and ii) an access-secured database of seizures.

**The EU-TWIX mailing list**

Over 800 wildlife law enforcement officials from 35 European countries (the 28 EU Member States as well as some neighbouring countries) are connected on a daily basis, allowing the exchange of information in near real time. Types of information shared via the EU-TWIX mailing list include seizure details, such as the countries involved along the route and the *modus operandi* used, and relate to a variety of commodities. Thanks to information exchanged via EU-TWIX, several investigations have been triggered.

**The EU-TWIX database**

Being the only European-wide wildlife seizures database, EU-TWIX provides a unique opportunity for monitoring illegal wildlife trade trends at the national and regional levels. It currently holds over 40 000 seizure records from 28 European countries, with the majority of Customs data being transferred via the WCO. European enforcement authorities often carry out their own analyses of seizure information held in the database to assist their targeting and risk profiling.

**Regional economic integration organizations (REIOs) and CITES**

The Gaborone Amendment defines REIOs as "organizations constituted by sovereign States which have competence in respect of the negotiation, conclusion and implementation of international agreements in matters transferred to them by their Member States and covered by this Convention" (CITES, 2013a). At the Conferences of the Parties (CoP) to CITES, REIOs would vote with a number of votes equal to the number of their Member States which are Parties to the Convention. However, REIOs cannot exercise their right to vote if their Member States exercise theirs, and vice versa. Furthermore, member States of some REIOs often prepare jointly for Conferences of the Parties and negotiate as a block. The existence of a common legal framework for the regulation of international trade in wild fauna and flora is also an essential characteristic of a REIO (CITES, 2013b).

Having common legislation in place for the entire REIO places a higher responsibility on the member countries: the common legislation has to be adequate and properly enforced as it affects CITES implementation in several countries, sometimes encompassing larger regions. Furthermore, REIO members preparing jointly and potentially negotiating as a block, require internal processes to be set up for the co-ordination of a regional position. The joint position of several countries and its external communication has a bigger potential to influence the decisions of other CITES Parties than single country positions, which also justifies the focus of this article. The examples of regional integration organizations provided below—although not all of them at present formally meet the requirements set out for a REIO in the Gaborone Amendment—aim to provide further evidence of why more attention to REIOs would need to be paid in the CITES context.

***European Union***

The EU—an important market for wild fauna and flora species, their products and derivatives—is likely to be the first REIO to join CITES in the near future. The EU has been fully implementing CITES since 1984, through a comprehensive set of regulations, the so-called EU Wildlife Trade Regulations (EU WTR), currently *Council Regulation (EC) No 338/97 on the protection of species of wild fauna and flora by regulating trade therein*; *Commission Regulation (EC) No 865/2006* (as amended) *laying down detailed rules concerning the implementation of Council Regulation (EC) No 338/97*, and *Commission Implementing Regulation (EU) No 792/2012 laying down rules for the design of permits, certificates and other documents provided for in Council Regulation (EC) No 338/97 on the protection of species of wild fauna and flora by regulating the trade therein and amending Regulation (EC) No 865/2006*, which are directly applicable in all 28 EU Member States[1]. The establishment of the EU single market in 1993—allowing the free movement of goods within the EU and bringing about the abolishment of internal border controls—made it necessary for the EU to set up co-



**Map showing European Union Member States.**

ordination and co-operation mechanisms at all levels of CITES implementation and enforcement to ensure consistent application of the EU WTR across the Member States. The first level of co-ordination and information sharing—also required and regulated by EU law—takes place between the EU CITES Management Authorities through meetings of the so-called "Committee on Trade in Wild Fauna and Flora". Similarly, EU Scientific Authorities regularly meet at the "Scientific Review Group" (SRG) just like enforcement authorities at the "Enforcement Group" meetings. In addition to the face-to-face meetings, there are mechanisms for information exchange inter-sessionally. Complementing mechanisms set by the EU WTR, other processes have also been established to assist the exchange of information; an example of this is the EU-TWIX system (see text box). There is great potential for the EU-TWIX system to be replicated in other regions of the world and/or to be adapted for other wildlife trade issues. For instance, EU-TWIX is currently being considered as a possible model for a tool to facilitate the exchange of information between competent authorities to support the implementation of the EU Timber Regulation, and there are plans to apply the EU-TWIX system's experience to Central Africa to support countries exchanging information on wildlife trade, including related crimes.

Why has there been a need for such comprehensive co-ordination in the EU? As goods move freely within the EU, a mechanism has to be in place for informing other Member States if the export/import of a shipment of CITES-listed species has been denied to ensure that the same shipment cannot be granted entry/exit by way of another Member State. In a similar manner, any illegal wildlife shipment that enters the EU, can then be moved freely thereby potentially reaching and affecting any EU Member State.

[1]*Member States of the EU: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, UK.*

**Beyond the EU**

There are other regional integration initiatives which are worthy of attention in this context. The recent and not-so-recent past has seen an increasing number and various forms of regional integration organizations established globally. Free Trade Agreements have been in place for instance in North America—the North American Free Trade Agreement (NAFTA), and Customs unions for instance in southern Africa—the Southern African Customs Union (SACU). Some of these integration organizations have also found it useful to establish formal mechanisms for co-operating on the enforcement of CITES, and thus have established wildlife trade enforcement networks, such as the Association of Southeast Asian Nations–Wildlife Enforcement Network (ASEAN-WEN). Similarly, member countries of NAFTA (Canada, Mexico and the USA) set up the North American Wildlife Enforcement Group (NAWEG) to co-operate on environmental matters, including on illegal wildlife trade and to formalize the exchange of information and training on wildlife law enforcement (Vaisman *et al.*, 2013). A first meeting of these and other such initiatives from Africa, Asia, Europe, the Americas and Oceania was hosted in Bangkok on 5 March 2013 in the margins of CITES CoP16 by the International Consortium on Combating Wildlife Crime (ICCWC, 2013).

***Eurasian Economic Community***

One of the more recent but quickly developing regional economic integration processes started in 2000 with the creation of the Eurasian Economic Community (EurAsEC) by Belarus, Kazakhstan, Kyrgyzstan, Russia and Tajikistan (Vaisman *et al*., 2013). As part of this so-called multispeed integration process, the Eurasian Customs Union (ECU) was established by Belarus, Kazakhstan and Russia in 2007 and started to be implemented in 2010. The elimination of internal border controls between the three countries was made possible by the adoption of a common ECU Customs Code, replacing domestic legislation in the ECU member countries. In 2010, Kyrgyzstan stated its desire to join the ECU and its accession is expected to take place in the near future. The next step in the integration process was the creation of the Common Economic Space (CES) in January 2012. Work to allow it to function fully will begin in 2015, which is the planned start of the Eurasian Economic Union, implying an even greater level of integration (Vaisman *et al*., 2013).

While formally the ECU is not meant to affect CITES implementation and enforcement in its member countries, according to the regulations in place, CITES-listed species are not covered by the ECU and should, in theory, not affect CITES implementation and enforcement in its member countries. However, with the removal of border controls, CITES-listed wildlife can be moved freely within the ECU (Vaisman *et al.*, 2013) and this will have implications for wildlife trade. To prevent this having negative impacts on the control of wildlife trade in the region, a highly organized and co-ordinated approach

ADAPTED BY WILLOW OUTHWAITE, TRAFFIC, FROM BASE MAP ©THE IUCN RED LIST

**Map showing Eurasian Customs Union, comprising Belarus, Kazakhstan and Russia.** Kyrgyzstan (pale blue) is expected to accede in the near future.

would need to be taken by ECU member countries. An absence of such consistency could result in the exploitation of the weakest link in the chain (e.g. illegal trade entering the ECU by way of the route with least risk of detection) or permit shopping (e.g. when wildlife traders are refused an import permit by one ECU member country, the shipment may enter the ECU by way of a permit granted by another member country), which poses a threat to both native and exotic wildlife traded by the ECU members.

When the integration process in the EU reached a similar level to that of the ECU (i.e. in the absence of systematic internal border controls), the EU decided to adopt the aforementioned comprehensive set of EU regulations so that the provisions of CITES would be implemented in all Member States uniformly and in a co-ordinated manner. While some sources clearly claim that EurAsEC adapted some of its common market approach from the EU (Eurasian Economic Center, undated), when it comes to regulation of trade in CITES-listed specimens, so far the authors are not aware of any signs for taking on the EU's or any other existing REIO's approaches or experiences.

HARTMUT JUNGIUS / WWF-CANON

**Kara Tau Mountains, Kazakhstan.**

### *ASEAN*

The Association of Southeast Asian Nations (ASEAN) was established in 1967 in Bangkok, Thailand[2]. At the 12th ASEAN Summit in January 2007, the Member States signed the Cebu Declaration, affirming their commitment to establish an ASEAN Community by 2015. To this end, the Member States agreed to hasten the establishment of the ASEAN Economic Community (AEC) by 2015, transforming ASEAN into a region characterized by the free movement of goods, services, investment, skilled labour and freer flow of capital, and requiring *inter alia* the removal of non-tariff barriers as well as trade facilitation measures such as the integration of Customs structures and procedures (ASEAN, 2009).

The AEC will create a single regional common market of more than 600 million persons. While full implementation of the AEC will be a long, step-wise process, ASEAN has already removed, at least on paper, Customs duties on most intra-ASEAN trade. ASEAN has formally adopted a Customs Code of Conduct, national and regional "Single Window" systems, the ASEAN Harmonized Tariff Nomenclatures and WTO's mode of Customs valuation. "Framework" Agreements on the liberalization of trade in services, investments, goods-in-transit and multi-modal and inter-State transport have also been concluded.

The implications of future regional economic integration for CITES implementation and enforcement in the ASEAN region are yet to be fully elucidated. However, it will no doubt make possible increased mobility of illicit goods, including specimens of illegal fauna and flora, and opportunities for transnational organized crime to expand will arise if mitigating measures are not implemented.

Several ASEAN Member States have already given priority to upgrading cross-border infrastructure links which will also assist connectivity between the region and the two giants of economic development in the wider Asia region: China and India. These include the Singapore-Kunming Rail Link, as well as road networks that include the North-South Corridor from southern China through Myanmar, Thailand, Lao PDR to Viet Nam, the East-West Corridor linking Myanmar, Thailand, Lao PDR and Viet Nam; and the South-South corridor linking deep sea ports in Cambodia, Thailand and Myanmar (UNODC, 2013).

Organized criminal networks may take advantage of these improved transportation links and the simplified trade and Customs procedures along these routes envisaged under the AEC to smuggle illicit wildlife products throughout the region and beyond. The fact that some Member States share borders with China—ASEAN's most important trading partner and a major destination for many wildlife commodities—will no doubt encourage such criminal networks to exploit any weaknesses and loopholes that may emerge from regional economic integration. Even within ASEAN, some individual Member States are already significant transit countries in the global dynamic for illicit ivory (CITES, 2013c) and destinations for rhinoceros horn (Milliken and Shaw, 2012).

[2]*Member States of ASEAN: Brunei Darussalam, Cambodia, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand and Viet Nam.*

TRAFFIC

**Map showing ASEAN Member States.**

ASEAN has in place regional policy initiatives and visions to enhance sustainable trade in wildlife and forest products and to address illicit trade (ASEAN, 2008). It has established an inclusive inter-governmental wildlife law enforcement network, bringing together law enforcement, Customs and environment-related agencies of all 10 ASEAN Member States to address illegal exploitation and trade in CITES-listed species within the ASEAN region. Launched on 1 December 2005, the ASEAN Wildlife Enforcement Network (ASEAN-WEN, www.asean-wen.org) facilitates cross-border collaboration in the fight against illegal wildlife trade, enabling countries to share information and best practices, while increasing capacity and improving co-ordination through annual meetings, workshops and trainings.

ELIZABETH JOHN / TRAFFIC

**Seizure of ivory in transit through Port Klang, Malaysia (December 2012), shipped from the port of Lomé in Togo, bound for China.**

ASEAN-WEN operates at the national and regional levels. Each country is expected to establish and sustain a national inter-agency task force comprising police, Customs and environmental officers, with focal points from each agency sharing information across the region. To improve the capacity of the network, law enforcement officers in national task forces receive training targeted at improving the effectiveness of sharing information and intelligence towards national, bilateral and multilateral law enforcement action to combat illegal wildlife trade.

ASEAN has also established an Experts Group on CITES (AEG-CITES) to deliberate on issues that will be tabled at meetings of CITES CoPs, such as proposals for amendments to its Appendices. It is therefore better prepared than before to address significant issues of implementation and enforcement of CITES that are relevant to ASEAN Member States and to take a common position where there is consensus.

ASEAN has also attempted to strengthen efforts to control transboundary trade in wild fauna and flora through the ASEAN Regional Action Plan on Trade in Wild Fauna and Flora, 2011–2015 and activities identified in the Strategic Plan of Action of ASEAN Co-operation in Forestry (2011–2015) FAO (2014). These include assisting Member States in adopting effective and enforceable legislation for CITES implementation through documentation of lessons learned and identifying common gaps and conflicts in CITES-enabling legislation and promoting the adoption of Category 1[3] CITES-enabling legislation. The Plan also promotes research, including monitoring and information exchange on CITES-related issues through the establishment of an information-sharing mechanism for CITES-listed species native to more than one Member State, with a particular focus on illegally traded species, and for the exchange of information on legal systems regarding wildlife trade management, and CITES permit and certificate issuance.

Frameworks are therefore in place for ASEAN to build mechanisms and structures that would eventually allow it to implement CITES as an REIO. However, implementation of these initiatives is weak in some Member States and a comprehensive and explicit regional agenda of reconciling trade and wildlife does not exist—there is no reference to wildlife and forest products in the ASEAN Economic Community Blueprint. Given the lessons of the EU, for example, it would seem to be essential to examine at the earliest opportunity the regulatory challenges posed by the step-wise implementation of the ASEAN Economic Community to safeguard the region from additional challenges to controlling trade in CITES-listed species. In addition, ASEAN initiatives at the regional level should be fully supported to allow wildlife trade considerations to be integrated into the broader regional trade agenda.

[3]*Category 1: Resolution Conf. 8.4 (Rev. CoP15) on* National laws for implementation of the Convention *was initially adopted in 1992. It establishes the basis for a CITES National Legislation Project aimed at providing legislative assistance to Parties and preparing analyses of their legislation in relation to four requirements. Legislative analyses conducted under the National Legislation Project determine in which category the legislation of each Party and dependent territory should be placed. Category 1: legislation that is believed generally to meet the requirements for implementation of CITES (http://www.cites.org/eng/notif/2012/E036.pdf).*

## Conclusions

REIOs usually involve trade facilitating arrangements, making them relevant for CITES, which also regulates international trade, in this case, wildlife. Some REIOs have considered the implications of their trade facilitation and other integration measures for CITES and their member States have accordingly adopted various measures/regulations to address these. However, while the EU appears to be the only REIO to date that has the legislation, structures and mechanisms in place to ensure that it has the "competence in respect of the negotiation, conclusion and implementation of international agreements in matters transferred to them by their Member States" (as required by the Gaborone amendment), the continuing emergence of REIOs that reach a high level of integration and trade facilitation is likely to increase the number of eligible organizations in coming years. It is evident that the increasing level of integration in some REIOs is likely to have implications for CITES implementation and enforcement in their region and would require the integration of wildlife management and trade regulation into these existing/emerging systems. However, there is little or no indication of any dialogue, information exchange or sharing of experiences between the emerging REIOs and those that are more established and have a longer history of engagement with CITES issues, such as the EU. Such exchange of experiences and practices between established and emerging REIOs could be mutually beneficial. The new REIOs could learn from the experiences and lessons learnt of these established systems, while the established systems could equally benefit from a fresh perspective and could potentially take on novel approaches to be developed by the new REIOs. The co-operation of REIOs could lead to continued information exchange between them that could greatly facilitate effective CITES implementation in the regions concerned. Therefore REIOs are encouraged to start dialogue, exchange information and experiences and in general to work together.

There is an immediate need for the mandated national CITES authorities in the ECU, ASEAN and possibly in other emerging REIOs to monitor the evolution of their regional integration organizations in order to understand their implications for CITES implementation and enforcement in the countries concerned. Ideally, any potential problems in CITES implementation as a result of increased regional integration should be identified in advance of problems arising and the countries concerned should be encouraged to address these (potential) issues in the spirit of their broader regional co-operation.


◄ **TRAFFIC report:**

*Wildlife Trade in the Eurasian Customs Union and in selected Central Asian countries*.

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***Katalin Kecse-Nagy**, Senior Programme Officer—Europe, TRAFFIC; **Sabri Zain**, Director of Policy, TRAFFIC*
***Stephanie von Meibom**, Regional Director—Europe, TRAFFIC*

DANIEL BERGIN

# Open, Unregulated Trade in Wildlife in Morocco's Markets

***Daniel Bergin*** *and* ***Vincent Nijman***

*The Kingdom of Morocco, situated on the northwestern coast of the African continent, has a population of over 32 million people. It has a relatively well-developed tourism sector, in part due to stability the region has enjoyed compared to other North African countries and its close proximity to Europe. Morocco is classified as being within the Mediterranean Basin, an area with exceptional concentrations of endemic species undergoing rapid rates of habitat loss, and is therefore considered to be a hotspot for conservation priority (Myers* et al.*, 2000). It has 29 endemic species (21 reptiles and eight mammals) (Franchimont and Saadaoui, 1998) and is home to the Barbary Macaque* Macaca sylvanus, *the only non-human African primate north of the Sahara. Morocco's proximity to Europe, coupled with its porous borders, makes it a potentially important wildlife trade hub (van Lavieren, 2008). The sale of wildlife in Morocco is illegal and yet large amounts of wild fauna and flora are available for sale. This article reports on the findings of wildlife surveys undertaken during 2013 in Morocco's major cities, located in the north-west of the country.*

## Background

Cursory reports suggest that unregulated wildlife trade has existed for a long time in Morocco (Lambert, 1969; Highfield and Bayley, 2007). Species such as the Mediterranean Chameleon *Chamaeleo chameleon*, Spur-thighed Tortoise *Testudo graeca* and Desert Monitor Lizard *Varanus griseus* have been used in medicine since medieval times (Alves *et al*., 2013) and are still frequently used in Morocco (Highfield and Bayley, 2007). For example, users believe chameleons hold magical powers, monitor lizards harbour the souls of ancestors, and that monitor lizard heads are a potent talisman against snake bites (Highfield and Bayley, 2007). Bell's Dabb Lizard *Uromastyx acanthinura* is thought to bring good luck to a new household; cleaned out and dried, they are used as bottles to feed babies (Highfield and Bayley, 2007). Leopard *Panthera pardus* skins have been traded in Morocco (Fogg, 1938; Cuyten, 2011) and these and the derivatives of other animals are still used in the production of souvenirs and decorations for both tourists and local people (Highfield and Bayley, 1996; Benhardouze *et al.*, 2004; Martin and Perry-

**Top: Fig. 1. Skins of Nile Crocodile *Crocodylus niloticus*, African Rock Python *Python sebae* and Leopard *Panthera pardus* hanging outside a shop in Souk Laghzel in Marrakech, Morocco, April–July 2013.**

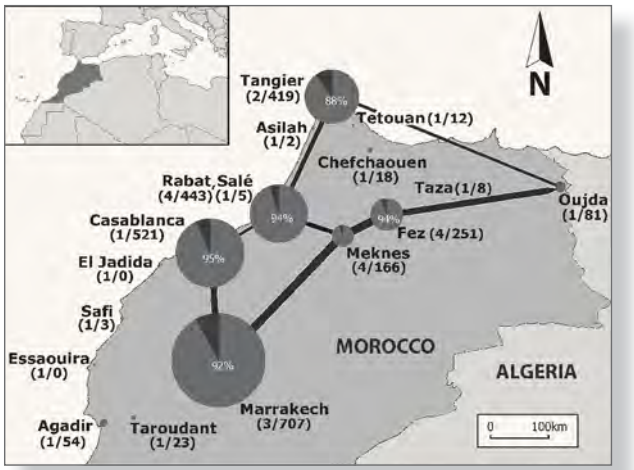


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**Fig. 2. Map showing cities/towns surveyed in Morocco from July–April 2013.**

*Circle size represents the percentage of the overall trade in each town, with empty circles indicating no trade was observed. Thickness of lines joining towns indicates the number of species found in both towns, expressed as a percentage of the town with the smaller volume of trade. Lighter areas in the pie charts represent the number of specimens found in each town belonging to species that are protected by Moroccan law. Numbers in brackets represent the number of visits to each market (which may have encompassed several days) and total number of specimens observed in the city.*

Martin, 2012). Large numbers of Spur-thighed Tortoises are traded to supply the international demand for these reptiles as pets (Znari *et al*., 2005; Shipp, 2002), as are Barbary Macaques (van Lavieren, 2008; Waters, 2011). Elephant ivory is traded in relatively small amounts (Martin and Perry-Martin, 2012).

While the illegal wildlife trade in Morocco has been widely investigated, most studies have primarily focused on one species only, are based on single visits often to just one market or on chance observations. Here, the authors report on the trade in mammals and reptiles in Morocco based on observations in 17 cities over a two-month period in 2013, with repeat surveys in five of these cities. Large quantities of specimens were observed, including 2000 live animals and hundreds of whole, stuffed animals, skins, carapaces, and horns.

## Legislation

Morocco has made commitments to protect its native wildlife, although these are not always adequately enforced. The country has been a Party to CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) since 1976 but is still classified as Category 2, which means that the implementing legislation does not meet all of the Convention's requirements. The official body for wildlife conservation and management is Le Haut Commissaire aux Eaux et Forêts et à la Lutte Contre la Désertification (The High Commission for Water, Forests and Desertification Control), known as Eaux et Forêts. In January 2011, *Law No. 29-05 on the Protection of Species of Wild Flora and Fauna and their Trade* was promulgated and adopted at national level, although can only be implemented once the relevant Ministries sign the legislation.

This law meets the country's obligations under CITES and provides a list of protected species for which the importation, capture, sale, offer for sale or killing is illegal without a specific licence, with fines of up to MAD100 000 (equivalent to USD12 250 at 2013 exchange rates) for illegal trade in animals listed in CITES Appendix I. Falsifying or misusing permits can lead to fines of up to MAD50 000.

## Methods

Surveys were conducted between 25 April and 4 July 2013 in all the major cities of north-west Morocco. The cities of Fez, Meknes and Rabat were each visited four times; Marrakech was visited three times; Tangier was visited twice and Salé, Essaouira, Tetouan, Chefchaouen, Casablanca, El Jadida, Safi, Agadir, Taroudant, Asilah, Taza and Oujda were each visited once. Medinas—distinct, typically walled, city sections in many North African cities in which markets are often found—were surveyed exhaustively for wildlife by the first author where these occurred and markets outside the medinas were visited when learned about. Conservatively, the first author checked several thousand shops during the seven-week survey. When possible, both daytime and evening surveys were conducted on the same day in order to minimize the chances of stalls or shops being overlooked.

The number of specimens of mammals and reptiles was recorded where possible, with only positive identifications included in this report, although wild meat was not actively searched for (and none was seen). While small amounts of ivory items were observed in Marrakech and Fez by Martin and Perry-Martin (2012), investigation into the availability of ivory items was not a focus for the current survey, investigation of which involves a different search strategy and the monitoring of antique shops and gemstone outlets.

Representative prices were obtained opportunistically. In many outlets, it was not possible to discuss the cost of items with the vendors without serious interest being shown in purchasing them, which the authors wanted to avoid. Prices of many goods in Moroccan markets tend to drop quite significantly if the customer enters into a discussion with the vendor but this was not deemed appropriate because there was concern that an interest in the wildlife could potentially stimulate the trade. Vendors also frequently become disgruntled if the item in question is not bought after the price has been lowered. Therefore only starting prices were recorded.

The official exchange rate at the time of the survey was MAD1=USD0.12. When possible, pictures were taken to confirm identification. Conservatively, animals or their parts observed during repeat visits that could represent the same item or individual were included only once. Deer antlers and porcupine quills were excluded

| Species | Native to Morocco | Protected in Morocco | IUCN Red List (CITES Appendix) | Live | Whole animal | Skin / carapace | Head / Horns | Price range (USD) |
|---|---|---|---|---|---|---|---|---|
| Dorcas Gazelle *Gazella dorcas* | Yes | Yes | VU | | 5 | 15 | 48 | |
| Wild Boar *Sus scrofa* | Yes | No | LC | | | 3 | 1 | |
| Barbary Stag *Cervus elaphus* | Re-introduced | Yes | LC | | | | 3 | |
| Dama Gazelle *Nanger dama* | Extinct | Yes | CR (I) | | 1 | | | |
| Red Fox *Vulpes vulpes* | Yes | Yes | | | 2 | 67 | 1 | 18–144 |
| Leopard *Panthera pardus* | Extinct* | Yes | NT (I) | | | 37 | | 289–2 643** |
| Common Genet *Genetta genetta* | Yes | No | LC | | | 12 | | |
| Golden Jackal *Canis aureus* | Yes | Yes | LC | | | 8 | | |
| African Wildcat *Felis silvestris* | Yes | Yes | LC (II) | | | 3 | | |
| Serval *Leptailurus serval* | Yes | No | LC (II) | | | 3 | | |
| Egyptian Mongoose *Herpestes ichneumon* | No | | LC | | 1 | 2 | | |
| Lion *Panthera leo* | Extinct | Yes | VU (I) | | | 2 | | 1 202 |
| Least Weasel *Mustela nivalis* | Yes | No | LC | | | 2 | | |
| Striped Hyaena *Hyaena hyaena* | Yes | No | NT | | | 1 | | |
| Barbary Macaque *Macaca sylvanus* | Yes | Yes | EN (II) | 12 | | | | 120–500 |
| Barbary Ground Squirrel *Atlantoxerus getulus* | Yes | No | LC | 48 | | | | 21 |
| North African Hedgehog *Atelerix algirus*† | Yes | No | LC | 11 | | 30 | | |
| Crested Porcupine *Hystrix cristata* | Yes | No | LC | | | 6 | | |
| Armadillo *Dasypus* sp. | No | | | | 1 | | | |
| European Otter *Lutra lutra* | Yes | Yes | NT (I) | | | 1 | | |
| Spur-thighed Tortoise *Testudo graeca* | Yes | Yes | VU (II) | 1650 | | 72 | | 1–4 |
| Chameleon *Chamaeleo chamaeleon* | Yes | Yes | LC (II) | 103 | 314 | | | 6–48 |
| Bell's Dabb Lizard *Uromastyx acanthinura*†† | Yes | Yes | (II) | 34 | 115 | 3 | | 12–24 |
| African Rock Python *Python sebae* | No | | (II) | | | 54 | | 289 |
| Nile Crocodile *Crocodylus niloticus* | No | | LC (I/II) | | 8 | 12 | | |
| European Pond Terrapin *Emys orbicularis* | Yes | No | NT | 12 | | | | 2–6 |
| Desert Monitor Lizard *Varanus griseus* | Yes | Yes | (I) | 2 | 5 | | | 7 |
| Unidentified turtle Cheloniidae sp. | Yes | Yes | (I) | | | I | | |

**Table 1. Species found in the markets of 17 cities/towns in Morocco from April–July 2013, showing status in Morocco, national and international protection status, the form in which they were being sold and representative prices, given in US dollars (exchange rate 1 MAD=0.12 USD).**

Key: LC = Least Concern, NT = Near Threatened, VU = Vulnerable, EN = Endangered, CR = Critically Endangered (Source: IUCN Red List (2014). Notes: * Reports from 2003 suggest a possible small relict population of five individuals (Cuzin, 2003); **More expensive specimens were larger and of significantly better quality; †Live individuals were all identified as North African Hedgehog *Atelerix algirus*; skins could potentially have been either this species or Desert Hedgehog *Paraechinus aethiopicus*; ††The most likely *Uromastyx* species in trade although other *Uromastyx* lizards may also have been present.

from the survey as they could have been shed naturally. Cities and towns were compared in terms of overall numbers and the variety of wildlife sold.

The percentage overlap of wildlife species for sale in nearby towns was determined by establishing what percentage of the species present in the smaller market was present in the larger market.

## Results

The majority of wildlife on sale in the markets surveyed tended to be concentrated in one area. Outside this area, specimens were more dispersed but still present. In total, 171 shops were found selling wildlife or wildlife-derived products in all but two cities—Essaouira and El Jadida—although further investigations in these two cities may uncover wildlife for sale. Wildlife was displayed prominently in the shops in which it was sold, often being hung on the façade of the shop or placed at the front of the stall (Fig. 1). Fake pelts, of which a large number were observed, were generally easily identifiable and vendors did not claim that they were real and even readily supplied the information that they were painted when enquiries were made. Vendors freely offered to sell the products to tourists, often claiming it was legal or "not a problem" to bring across international borders. Shops in which wildlife was observed almost always sold other products as well, and in most cases these products were the ones being offered by vendors to the first author.

Marrakech was found to be the city with the most trade, with 707 specimens offered for sale, almost 200 specimens more than Casablanca, the next largest centre for trade. There were two main areas of wildlife trade in Marrakech—one in Souk Laghzel in the main tourist thoroughfare catering to tourists and locals alike, and one in Mellah, the "spice market", which appeared to be more medicinally orientated and targeted more towards local customers. The level of wildlife trade in the city of Taroudant was relatively low but the authors observed a significant number of Leopard skins (nine out of the total of 37 recorded during the survey), including ones hidden from view by other Leopard skins and which could not be counted.

The live animal trade comprised eight species and 1872 individuals, the most numerous of which were Spur-thighed Tortoises (1650) followed by Mediterranean Chameleons (103). Trade in animal parts involved 25 species, the most numerous of which were Mediterranean Chameleons (314 items) and Bell's Dabb Lizard (118 items). A summary of the observed trade is given in Table 1. The majority (96%) of trade observed was in species native to Morocco, with 118 of the specimens belonging to species from elsewhere, including ones that have become extinct in Morocco. Almost 93% of the animals native to Morocco seen in the markets during this study are protected under Moroccan law.

Some cities exhibited a strong overlap in species composition—up to 100%—whereas others displayed different sets of species in their markets. The time spent in each city, the percentage of animals of protected species relative to the overall numbers of animals seen, the relative importance of each city in the trade, and the percentage of species shared between cities is represented in Fig. 2.

## Discussion

This is one of the first detailed surveys of wildlife trade in Morocco, focusing on all species being offered for sale with the exception of elephant ivory and wild meat. The number of species observed, and for many individual species the number of individuals or items observed, are significantly larger than previous single species or single market reports suggest. Open trade was observed in 15 of the 17 towns visited, with particularly large volumes of trade in Marrakech, Casablanca, Rabat and Tangier. This widespread openness of the trade is suggestive of a lack of prosecution as the vendors evidently see no reason to hide the goods.

A high number of specimens and a wide range of carnivore species were observed. Red Fox *Vulpes vulpes* skins were particularly abundant despite their protected status in Morocco. It was especially disconcerting to observe 37 Leopard skins in the markets given that the Leopard has been extirpated from most, if not all of Morocco (Cuzin, 2003). The authors found Marrakech and Taroudant to be centres of the Leopard skin trade. Shipp (2002) observed 17 Leopard skins in Marrakech in an unknown number of shops. Cuyten (2011) observed eight Leopard skins in Marrakech compared to the 10 seen during the current survey. By comparing photographs taken in 2011 and sent to the authors by K. Cuyten, it appears that between four and seven of the shops observed selling Leopard skins during this survey no longer do so, or sell fewer than previously observed. The authors were not able to find any recent reports of trade in Lion *Panthera leo* skins within Morocco and given that the species became extinct in the country at least 50 years ago (Black *et al*., 2013), the skins most likely had been imported from elsewhere in Africa. Only two Leopard and one Lion-derived products have been legally imported as hunting trophies and for personal use into Morocco over the last decade (Anon., 2013).

Of the ungulates, only Dorcas Gazelle *Gazella dorcas* occurred in abundance, the horns in particular. The total number of Dorcas Gazelles in Morocco has been estimated at between 200 and 800 individuals (Cuzin, 2003) suggesting that the 61 individuals observed during this survey may represent 8–30% of the remaining population if they were not imported specimens. The presence of a single Dama Gazelle *Nanger dama* is significant as the species is classified as Critically Endangered and the Moroccan population is very likely extinct in the wild (Cuzin *et al*., 2007).

Reptiles were overwhelmingly the most numerous live animals for sale in the markets and Spur-thighed Tortoises were found in especially large numbers. The latest assessment of this species for the *IUCN Red List of Threatened Species* was undertaken in 1996 and needs updating. The authors' data suggest that trade could be a clear threat to local populations of this species. From the one market—Marrakech—for which quantitative

**Fig. 3. A stand in Meknes, Morocco, selling medicinals which included animal products, observed between April and July 2013.**

*Photograph: Daniel Bergin*

comparative data are available, it appears that numbers of tortoises are lower than they were in 2001 (Shipp, 2002; Znari *et al*., 2005). At a global level, Mediterranean Chameleons have recently been assessed as being of Least Concern (Vogrin *et al.*, 2012), but the data from the Moroccan markets may suggest that, at the local level, trade could have a significant impact on their conservation. In fact, if all the stuffed chameleons observed are derived from populations close to the trading centres, this may lead to local extinctions.

Comparing the present survey to previous ones, it is relevant to note where and how the trade in wildlife has changed over time. For example, in the thousands of shops surveyed, only 32 banjos constructed using the carapaces of Spur-thighed Tortoises (also known as tortoiseshell banjos) were observed, in 15 shops, and, judged separately, this did not appear to be an important component of the wildlife trade in Morocco. In the past, this was clearly very different. Lambert (1969) referred to large numbers of tortoiseshell banjos produced in Tetouan and estimated that annually around 10 000 Spur-thighed Tortoises were killed to supply the demand for this trade. Highfield and Bayley (1996), citing an unpublished report from 1983, reported that each of a large number of souvenir shops in Agadir, Marrakech and Tangier, typically had 10 to 20 carapace banjos on display. The total number observed in these towns amounted to some 1500 over a two-month period. Based on their cursory observations in the early 1990s, Highfield and Bayley (1996) stated that the observations from 1983 accorded closely with their own experiences and suggested that the scale of this trade had not diminished between the 1980s and 1990s. However, it is apparent from the current surveys that a clear change in use has occurred over the last two decades. Given that large numbers of specimens of this species are observed in trade, the decline in the number of tortoiseshell banjos on sale is most likely owing to a change in demand, possibly attributable to these items falling out of fashion.

### Trade routes

Over 100 specimens, representing seven species, are not (or are no longer) native to Morocco and therefore must have been imported. In all but one case (Armadillo *Dasypus* sp.), these animals have ranges that include Central or West Africa. This suggests a potential trade route in or through this area. Leopards, Lions and crocodiles have been declared extinct in Morocco and the trade in these species is likely to be of specimens that are either very old or have been imported. Although some of the Leopard skins, especially those in Taroudant, were in a poor condition—potentially attributable to age—those in Fez and Marrakech appeared fresher. The high numbers of Leopard skins in Taroudant could also indicate trade routes from the south, although this hypothesis is not upheld by the complete lack of Leopard skins in Agadir, where vendors claimed not to believe that they could be bought in Morocco. The number of specimens of each species shared between cities does not provide a strong-enough basis for assumptions and no obvious conclusion can be drawn from the amount of crossover of species between cities.

**THE NUMBER OF DORCAS GAZELLES *GAZELLA DORCAS* OBSERVED DURING THE SURVEY IS ESTIMATED TO REPRESENT BETWEEN 8-30% OF MOROCCO'S POPULATION OF THIS SPECIES.**

DORCAS GAZELLES: MARTIN HARVEY / WWF-CANON

## Conclusions and Recommendations

The amount of wildlife found in trade in the 15 cities surveyed in Morocco is substantial. Due to the methodologies employed in the survey and the nature of the trade, the real volumes of live animals are frequently underrepresented in market surveys as they do not account for animals used or sold before they reach the markets (Allebone-Webb *et al.*, 2011; Perez *et al*., 2004). For selected species, such as Leopards, Dorcas Gazelles or Spur-thighed Tortoises, the volumes observed clearly indicate that trade may have a significant negative impact on these species. Furthermore, the observations of species that have been declared extinct in Morocco, as well as Critically Endangered species, are of particular concern.

The trade in wild animals in Morocco is an illegal activity and should be treated as such. Very few shops were exclusively selling wildlife and, for most, the volume of non-wildlife products was substantially larger than that of wildlife products. For many traders, wildlife appeared to be an auxiliary business and the display of wildlife, in particular of skins—which have a lower turnover in sales compared with live animals—is a means to draw in customers. Stricter controls and more rigorous implementation of the new wildlife protection legislation by officials at Eaux et Forêts should lead to a further shift away from the sale of wildlife products without having too much of a negative impact on the livelihood of most traders. This shift would be further facilitated by effective prosecution of offenders and appropriate sentencing. Although it is reported (Anon., pers comm., 6 March 2014) that no wildlife or related products are openly on display in Ceuta, the authors recommend that any future wildlife trade surveys conducted in Morocco include the exclaves of Ceuta and Melilla. For example, Benhardouze *et al.* (2004) investigating the marine turtle trade in Morocco, reported trade links to Ceuta. As autonomous Spanish (and therefore European) cities in North Africa, the flow of wildlife through these centres would have direct relevance for international wildlife trafficking.

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***Daniel Bergin*** and ***Vincent Nijman,*** Oxford Wildlife Trade Research Group, Oxford Brookes University, Oxford, UK.
*E-mails: danielbergin1@gmail.com; vnijman@brookes.ac.uk*

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 reports. Readers are referred to the seizures section of the TRAFFIC website (www.traffic.org/media-reports/) 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 17 July 2014, Milton Local Court, New South Wales, Hyeong Sung Kim, of Newington, and Hwan Gon Kim, of Lidcombe, were each fined AUD10 000 (USD8700) in their absence, after being caught in February diving off Bawley point and later found in possession of 378 abalones (67 kg); 372 were undersized. The bag limit per person is two abalones.

*South Coast Register: http://bit.ly/Wvg0N4, 22 July 2014*

**HONG KONG SPECIAL ADMINISTRATIVE REGION:** On 9 May 2014, Customs officials seized 989 kg of dried abalones from a container at Kwai Chung Customhouse Cargo Examination Compound that had arrived from South Africa declared as "dry goods pillow inner waste". One arrest.

*Hong Kong Customs & Excise Department, Press Release: http://bit.ly/1rDXZtg, 9 May 2014*

**SOUTH AFRICA:** On 8 July 2014, police in Benoni, near Johannesburg, arrested a Chinese national and three Mozambicans following a raid on an illegal abalone-drying facility; five tonnes of abalones were seized. This is reportedly one of the largest-ever inland confiscations. The seized abalones will be processed and auctioned off to raise money for government efforts to combat wildlife poaching and smuggling.

On 1 August 2014, two men were to appear in Kimberley Magistrates' Court, Northern Cape Province, after police stopped their vehicle at a road block near Kimberley and seized 76 kg of abalones.

On 4 August 2014, a Chinese national and a Malawian were expected to appear in Beaufort West Magistrate's Court, Western Cape, after being found with 32 bags (1257 abalones) in the boot of their vehicle on 1 August during a routine patrol near Karoo National Park.

On 14 September 2014, three Chinese nationals were arrested at an illegal abalone processing facility in Van Dyk Park, Boksburg. 10 508 dry abalones (860 kg) and *ca.* a tonne of wet abalones and drying equipment were confiscated.

*The Star: http://bit.ly/1qWxXxo 9 July 2014*
*SABC: http://bit.ly/1ocg52r, 31 July 2014*
*The New Age: http://bit.ly/1s8ZKv6, 5 August 2014*
*AllAfrica: http://bit.ly/1uzWmw, 15 September 2014*

## BIG CATS

**CHINA:** In April 2014, in Wenzhou, Zhejiang province, a man arrested in January 2014 in possession of a dead Siberian Tiger *Panthera tigris altaica* (CITES I) was sentenced to seven and a half years' imprisonment and fined USD8000.

*On the Trail No. 5, Robin des Bois, 29 July 2014*

**IRAN:** In August 2014, it was reported that a poacher arrested in Northern Khorasan while selling the skin of a Leopard *Panthera pardus* (CITES I) had been sentenced to three years in gaol. The head of the Northern Khorasan Department of the Environment said the individual had been under surveillance by investigators for some time.

Iranian courts have reportedly been handing out more severe sentences to poachers in the past year following reports of a declining number of Leopards and Cheetahs *Acinonyx jubatus* (CITES I) in the country.

*Payvand Iran News: http://bit.ly/1tnFB8z, 30 August 2014*

**NEPAL:** On 21 July 2014, Chitwan National Park (CNP) imposed a five-year gaol term on Sita Ram Thing of Manahari-2 for his involvement in poaching and smuggling Tiger *Panthera tigris* (CITES I) body parts. Thing was caught while selling Tiger skins in Makwanpur district on 27 July 2012. Although CNP had already announced the gaol term last year, affirmation of the punishment was made public on 21 July. Two accomplices, who had escaped from detention, were returned to Bharatpur Jail.

*MY Republica: http://bit.ly/1r6vj88, 22 July 2014*

## BIRDS

**BELGIUM:** In June 2014, a six-year investigation by the Belgian Federal Police resulted in the conviction of five people in Ghent; gaol terms range from between one and four years, with fines in excess of €200 000 (USD254 000). The group was convicted of being part of a criminal organization that had acquired protected birds of prey and passed them off as captive-bred using falsified and forged permits. Enforcement action involved five countries and included search warrants being executed in the UK by the police and the UK National Wildlife Crime Unit (NWCU). The court ordered the forfeiture of cash and assets in excess of €700K.

Dozens of birds of prey are now in the care of the Belgian authorities, but any cost is being borne by the defendants by order of the trial judge.

Following a two-year investigation by Gloucestershire police and the NWCU, in May 2013 a Gloucestershire man was convicted of fraud and trading in Black Kites *Milvus migrans* (CITES II); documentation in that case was linked directly to one of the defendants convicted in Belgium.

*UK National Wildlife Crime Unit: http://bit.ly/1vIybeL*

**CUBA:** On 16 May 2014, at Ignacio Agramonte International Airport, Camaguay, a man was arrested after attempting to smuggle 66 hummingbirds and finches to the USA that had been placed in pouches sewn into his trousers.

*Mail Online: http://dailym.ai/1l37woW, 3 June 2014*

**MALAYSIA:** On 10 June 2014, the Wildlife and National Parks Department (Perhilitan) seized 241 White-rumped Shamas *Copsychus malabaricus* at an oil palm estate in Kampung Sepakat. The bird is protected under the nation's *Wildlife Conservation Act*. Enforcement officers detained two suspects after they found the songbirds in cages believed to have been built as a collection centre for the birds. Two Indonesian suspects were remanded in custody.

*www.thestar.com.my/News/Nation/2014/06/12/Wildlife-smugglers-sing-the-blues-after-songbird-seizure/, 12 June 2014*

**MALTA:** On 6 June 2014, the Court of Appeal halved the fine imposed on a reoffending hunter, Branco Fenech, ruling that the first court had been too severe in its punishment.

In June last year, the man was convicted of trapping protected birds by using a mist net during the closed season. He was also found guilty of keeping protected birds and using them as bait for trapping in July 2012 at Ta' Qali. He had already been convicted of the same offence in April 2010.

The first court fined Fenech €3000 (USD3800), seized the items and disqualified him from keeping a hunter's licence for three years. However he appealed the judgement stating that he had admitted his guilt and had immediately removed the illegal trapping equipment. The Court of Appeal upheld the guilty judgement, confirmed the seizure of the illegal trapping equipment, and the three-year disqualification of a hunter's licence, but reduced the fine to €1500.

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On 23 July 2014, a passenger arriving on a flight from Frankfurt, Germany, was found in possession of 411 bird skins in his luggage. The person, from Malta, had just returned from a hunting trip in Argentina. The consignment was made up of grebes, swans, ducks, eagles, hawks, falcons, storks, flamingos, ibises, crakes, gulls, owls and passerines, the majority of which are protected in their country of origin and some 120 specimens were CITES-listed.

An official of the Wild Birds Regulation Unit said that the consignment represented one of the most significant cases of wildlife smuggling attempts involving dead protected birds during the last decade.

*Malta Today: http://bit.ly/1trvv1z, 6 June 2014; Malta Independent, http://bit.ly/1pjSSYT, 25 July 2014*

**SRI LANKA:** On 16 September 2014, at Colombo airport, a Chinese man en route to Guangzhou, China, was arrested while trying to smuggle out in cans of tea some five kilogrammes of edible nests, a delicacy in China. The confiscated nests were to be sent for display in Colombo's museum.

*Channel News Asia: http://bit.ly/1oUp59C, 25 September 2014*

**USA**: On 16 May 2014, it was reported that a Dallas man had been indicted after allegedly smuggling 61 dead hummingbirds into the country from Mexico for sale between February 2013 and January 2014. Specimens, all CITES-II listed, included 14 Ruby-throated Hummingbirds *Archilochus colubris*, three Black-chinned Hummingbirds *A. alexandri*, five Violet-crowned Hummingbirds *Agyrtria violiceps*, one Allen's Hummingbird *Selasphorus sasin* and 38 female hummingbirds of unreported species. USFWS agents said that hummingbirds are commonly intercepted by agents in the post and at the nation's airports. They are reportedly dried and sold as good luck charms in some cultures, known as *chuparrosas* (Spanish for "rose sucker").

*KLTV: http://bit.ly/1mRqeAn, 17 May 2014*

## ELEPHANTS

**CAMBODIA:** On 9 May 2014, Customs officers at Sihanoukville Autonomous Port in Preah Sihanouk province confiscated three tonnes of elephant tusks, reportedly the largest-ever confiscation of elephant tusks in the country. The tusks, placed in 108 sacks and concealed in a container of beans, were in transit—their provenance and destination not disclosed. An investigation is under way. It was the third recent seizure of ivory tusks in Cambodia: in February, Customs officers arrested two Vietnamese nationals at Siem Reap International Airport for smuggling 79.5 kg of illegal elephant tusks (see *TRAFFIC Bulletin* 26(1):22) and in March, 263 kg of ivory tusks were seized in eastern Svay Rieng province, bordering Viet Nam.

*http://bit.ly/RG6nJ7, 9 May 2014*

**CAMEROON:** On 1 September 2014, 197 ivory tusks were seized at a local checkpoint 20 km from Yaoundé. It is estimated that around 100 elephants were killed to provide the quantity of ivory seized. The offenders evaded capture but are being sought. The source of the tusks is under investigation but is believed to be the southern part of the country, around the Cameroon-Gabon border.

*http://bit.ly/1sAC55s, 18 September 2014*

**CHINA:** On 27 March 2014, at Guangzhou Baiyun International Airport, a detector dog with the Guangzhou Customs Anti-smuggling Police detected ivory in the suitcase of an inbound passenger; some 13 ivory bracelets (total 420 g) were confiscated. The dog is one of the first graduates of a detector dog training programme run by the China Customs Anti-smuggling Bureau, in co-operation with TRAFFIC and supported by WWF-Germany and WWF-UK. The reaction to the discovery from a fellow passenger raised the suspicions of the anti-smuggling police. Following another positive reaction to the second passenger's luggage by the dog, officers carried out a search and found ivory necklaces, pangolin scales and other items, weighing a total of 500 g.

These are the first seizures of endangered wildlife goods made by Customs officers in China using a detector dog.

*TRAFFIC: http://bit.ly/Qh63j4, 17 April 2014*

**CZECH REPUBLIC:** On 23 July 2014, authorities at Václav Havel Airport, Prague, seized 24 kg of elephant ivory from the luggage of a Vietnamese national living in the country who was travelling to Hanoi; four complete tusks divided into 15 pieces were confiscated and the suspect taken into custody. Two earlier ivory shipments, on 15 June and 28 January, comprising 35 kg and 33 kg respectively, were seized at the airport, again from Vietnamese citizens living in the Czech Republic and travelling to Viet Nam. Samples of the ivory have been sent for isotope analysis to determine their origin.

*CITES Department, Czech Environmental Inspectorate, CITES News, Prague Airport No. 112, 2014*

**FRANCE:** On 21 May 2014, it was reported that authorities in Var had seized at least 280 carved ivory pieces from the premises of a retired couple. The items included carved statues, lamps and jewellery, most of which had been purchased over the internet. The pieces are to be sent to museums or destroyed.

*http://bit.ly/ZAbKxJ (in French), 24 May 2014*

**GERMANY:** Two cases involving Vietnamese citizens, living in the Czech Republic, and travelling to Viet Nam: in May 2014, 60 kg of ivory was seized [location not specified]; on 8 June, 31 kg of ivory was seized at Frankfurt airport.

*CITES Department, Czech Environmental Inspectorate, CITES News, Prague Airport No. 112, 2014*

**HONG KONG SPECIAL ADMINISTRATIVE REGION:** On 24 July 2014, at Tsuen Wan Court, 15 Vietnamese passengers were each gaoled for six months after being arrested on 10 June following their arrival on a flight from Angola, via Ethiopia, with a total of 790 kg of ivory in their baggage, the largest-ever seizure of ivory brought in by plane. The suspects had reportedly been bound for Cambodia via South Korea.

"The Hong Kong authorities are to be congratulated for their diligence in detecting this sizeable quantity of ivory, but the case throws up many questions and could be a harbinger of new criminal tactics emerging in the illicit ivory trade," said Tom Milliken, TRAFFIC's Elephant and Rhinoceros Programme Leader. "This case seems to suggest employing a veritable team of "mules" to move a large quantity of ivory by dividing it up into check-in baggage-sized units for air travel. That's something very different to what we typically see: the large-scale movement of ivory in containerized shipments through seaports," said Milliken.

"Angola has one of the world's largest unregulated illegal ivory markets and these products could have been mass-produced there", he said. [See pages 44–46].

*http://bit.ly/1rF1jE8, 25 July 2014*

**KENYA:** On 25 July 2014, Customs officers at the Swissport Cargo Service at Jomo Kenyatta International Airport seized 1350 pieces of

worked ivory (260 kg) from boxes declared as containing live dogs. The shipment, destined for Kuala Lumpur, Malaysia, had been disguised as wood carvings, and the ivory painted black and red. The source of the ivory is being investigated.

*Environment News Service: bit.ly/1o1BcQk, 25 July 2014*

**MALAWI:** On 17 September 2014, at Kamuzu International Airport (KIA), Lilongwe, officials intercepted nine boxes containing some 50 kg of worked ivory destined for China via express delivery service. The owners of the ivory, two Chinese nationals working at an hotel in the capital, were later arrested and granted police bail; a resident acting as the middleman was tracked down but it is not clear whether he will be prosecuted.

*Agriculture, Environment and Development: http://bit.ly/1v4jenS, 24 September 2014*

**SOUTH AFRICA:** On 5 September 2014, at Khayelitsha Magistrates' Court, Cape Town, Cheng Jie Liang was sentenced to 10 years in gaol for illegal possession of ivory—the highest penalty ever imposed in South Africa for such an offence. He was also fined R5 million (USD443 000) for possessing one tonne of poached elephant tusks; his gaol sentence was to be suspended if he could pay the fine within a year. Liang, a Chinese national who has been living in South Africa since 2003, was sentenced to a further two years in gaol for the illegal possession of abalone. The court heard he was probably part of an international ivory smuggling syndicate working at a high level as a courier and exporter. He was arrested in September 2012 in Milnerton, where the ivory was being stored in two units. The stash included 67 tusk tips, the nerve cavities of which were mostly still moist with blood and tissue, indicating that at least 34 elephants had been killed.

*iol news: http://bit.ly/1uGT10d, 8 September 2013*

**USA:** On 4 June 2014, Victor Gordon, a Philadelphia shop owner was sentenced to 30 months in gaol for smuggling into the country a total of 400 pieces of carved elephant ivory over a period of nine years. On four occasions, beginning in 2006, he paid a smuggler to bring ivory from Gabon through John F. Kennedy Airport. In some instances, he stained the ivory and created false receipts to make it appear as though it had been lawfully acquired prior to the 1989 international ivory trade ban. Gordon was also ordered to forfeit USD150 000, along with a tonne of elephant ivory that agents seized from his shop in April 2009. The sentence marks the close of an eight-year investigation that has yielded nine convictions for smuggling and related offences. The government believes Gordon's illegal ivory collection to be the largest uncovered by law enforcement in the USA to date.

*Philly.com: http://bit.ly/1i4pmDR, 4 June 2014*

**VIET NAM:** On 24 May 2014, Customs officials in Hai Phong seized more than one tonne of cut ivory pieces smuggled from Hong Kong, by sea, in a container bound for China which was claimed to contain charcoal. The declaration form had been completed by a construction company based in Quang Ninh province.

*Tuoi Tre News: http://bit.ly/1jVNpc8, 25 May 2014*

On 11 June 2014, Customs officials at Tan Son Nhat Airport, Ho Chi Minh City, seized 77 elephant tusks (110 kg) in luggage declared as personal goods. The ivory reportedly originated from Nigeria and had arrived on a flight from Doha, Qatar. No arrests reported.

On 22 June 2014, Customs officers at the airport seized 39 elephant tusks and 100 ivory items (total of 90 kg) that had been smuggled through several transit airports, described as food.

*Wall Street Journal, Southeast Asia: http://on.wsj.com/1yBZbB6, 11 June 2014; Thanh Nien News: http://bit.ly/1uhVZbI, 23 June 2014*

## PANGOLINS

**CAMEROON:** In April 2014, a woman known to the police for the illegal trade in protected species was arrested in Yaoundé in possession of 120 kg of pangolin scales, some derived from Giant Ground Pangolins *Manis gigantea* (CITES II). She had previously been arrested in December 2012 for smuggling Gorilla *Gorilla gorilla* (CITES I) parts.

*On the Trail No. 5, Robin des Bois, 29 July 2014*

**CHINA:** On 12 May 2014, border police in Guangdong province seized 956 dead pangolins *Manis* (CITES II) from a vehicle. The carcasses (nearly four tonnes) had been concealed in 189 cool boxes. One arrest. This is reported to be one of the biggest pangolin trafficking cases ever recorded in China.

*Shanghai Daily: http://bit.ly/QEFpjZ, 13 May 2014*

**FRANCE:** On 9 July 2014, it was reported that Customs officials at Roissy Charles de Gaulle Airport had seized 250 kg of pangolin (*Manis*, CITES II) scales, the most important case of its kind to have taken place in France. Some three or four pangolins are reportedly needed to obtain one kilogramme of scales. Declared as "fish scales", the shipment had arrived from Nigeria, bound for Lao PDR. A total of 558 kg of pangolin scales have been seized at the airport since 2009.

*French Government Customs: http://bit.ly/1rQVWAZ, 9 July 2014*

**HONG KONG:** In two separate shipments arriving via Malaysia in May and June 2014, Customs seized what has been described as the largest amount of pangolin scales in Hong Kong in the past five years. The haul weighed 3.3 t.

On 28 May, 1000 kg of pangolin scales were detected in a container at Kwai Chung Customhouse Cargo Examination Compound. Customs officers selected a shipment arriving from South Africa, declared as "Plastic pet", for inspection and found pangolin scales in 40 of the 510 bags of goods in the container.

On 11 June, another container in which the contents were declared as sawn timber from Cameroon, was found to contain 2.34 t of pangolin scales packed in 115 bags. A Malaysian businessman has been released on bail in connection with both shipments.

*Hong Kong Customs Press Release: http://bit.ly/1oGPkAv, 28 May 2014; The Star: http://bit.ly/1leVidD, 19 June 2014*

**THAILAND:** On 16 May 2014, three people were arrested after 130 pangolins were found in a warehouse in Pathum Thani.

*Bangkok Post: http://bit.ly/1gfSrR3, 17 May 2014*

**VIET NAM:** On 30 June 2014, police from the Ministry of Public Security rescued 350 kg of live pangolins in Quang Ninh province. According to a report in Tuoi Tre newspaper, one worker said hundreds of pangolins are smuggled into China every day after being gathered in Quang Ninh to be force-fed a rice flour solution that increases their weight (and price). A member of the smuggling team said that he and five others were tasked with stuffing the animals with between 300 g to 500 g of the solution daily.

*Thanh Nien News: http://bit.ly/1mNxF7D, 1 July 2014*

On 23 July 2014, Customs officers at Hai Phong port seized 1.4 t of pangolin scales smuggled on a container ship from Sierra Leone. The scales were concealed under a layer of dried sardines.

The designated receiver sent a letter to Hai Phong Port authority refusing to receive the consignment soon after the case was uncovered.

*http://bit.ly/1vzMLEj, 25 July 2014*

**ZAMBIA:** On 11 April 2014, at a court in Chipata, Eastern Province, two men were sentenced to three years of forced labour after being found in possession of a live pangolin (CITES II and nationally protected).

*On the Trail No. 5, Robin des Bois, 29 July 2014*

**ZIMBABWE:** On 12 June 2014, Nyasha Binga and Gift Famba were sentenced to the maximum nine years in gaol after being found guilty of poaching a pangolin, a Specially Protected Species. In the same week, another two people were arrested for pangolin poaching; two live pangolins were confiscated.

On 25 August 2014, it was reported that a Frank Mutanha of Harare had been sentenced to nine years in gaol after being found trying to sell a pangolin.

*Tikki Hywood Trust, 16 June 2014; Bulawayo 24: bit.ly/1mMaFaM, 25 August 2014*

## REPTILES

**BRAZIL:** On 8 August 2014, a two-year police investigation culminated in the dismantling of an operation involving the illegal hunting, transport and sale of Giant South American Turtles *Podocnemis expansa* and Yellow-spotted River Turtles *P. unifilis* (both CITES II). Dozens of search and seizure warrants were issued for premises in Manaus (AM), Boa Vista and Caracaraí, in the State of Roraima.

*D24am: http://bit.ly/Xcrg1v (in Portuguese), 8 August 2014*

**FRANCE:** On 28 April 2014, Customs officials seized 70 live Spur-thighed Tortoises *Testudo graeca* (CITES II/Annex A) from a vehicle disembarking from a ferry arriving at the port of Sète from Nador, Morocco. The animals, were concealed in two bags in the vehicle's engine compartment. The driver was reportedly on his way to Belgium.

*French Government Customs: bit.ly/1oGQgon (in French), 7 May 2014*

**INDIA:** On 1 August 2014, Customs officials at Chennai airport detained a man who was attempting to smuggle 88 Black Pond Turtles *Geoclemys hamiltonii* (CITES I and Schedule I protected species in India) to Bangkok, Thailand. The suspect, who had placed the specimens in his bag underneath clothing, was handed over to forest officials. The turtles, which were examined by a veterinarian, are to be kept in a unit at Velachery, before being handed over to the children's park in Guindy.

*The New Indian Express, bit.ly/ZA9HJV, 3 August 2014*

**PAKISTAN:** On 20 September 2014, at Karachi airport, authorities foiled an attempt to smuggle to Thailand more than 218 Black Pond Turtles *Geoclemys hamiltonii* (CITES I). The reptiles, one of which had perished, were found in the luggage of a man who had boarded a flight to Bangkok after arriving from Lahore; he was removed from the aircraft and taken into custody. The reptiles are being kept at the Indus Dolphin Centre in Sukkur and are to be released into the wild.

Two hundred Black Pond Turtles smuggled out of Sindh to China were confiscated by Chinese authorities last month. Two Pakistanis and five Chinese poachers were held. The turtles were later handed over to the Pakistani authorities.

*bit.ly/1viPCRG, 21 September 2014*

**PHILIPPINES:** On 6 May 2014, authorities seized 555 marine turtles from a vessel off Palawan Island, including Hawksbill Turtles *Eretmochelys imbricata* and Green Turtles *Chelonia mydas* (both CITES I). The turtles had reportedly been fished by Filipino fishermen and delivered to the Chinese vessel. Eleven arrests. A local fishing boat was apprehended at the same time with 70 turtles on board.

*On The Trail No. 5, Robin des Bois, 29 July 2014*

**UK:** On 9 July 2014, 12 critically endangered Bahamian Rock Iguanas *Cyclura rileyi* sp. (CITES I) were repatriated to their native Bahamas following the seizure, at Heathrow Airport, by officers of the United Kingdom Border force in February. Of the 13 specimens seized, one had died and three more perished following repatriation. In April, two Romanian women were each sentenced in the UK to 12 months' imprisonment (see *TRAFFIC Bulletin* 26(1):25).

Officers from Border Force's specialist CITES team worked with the Bahamas High Commission in London to arrange for repatriation of the iguanas and IAG Cargo arranged for their complimentary carriage: special dispensation was given to carry them in the main cabin of the aircraft. The animals were initially rehabilitated at the Gerace Research Center in San Salvador before being released in Moriah Harbour Cay National Park in Exuma.

*bit.ly/1mYIZoC, 11 July 2014; bit.ly/1BDhSRj, 25 September 2014*

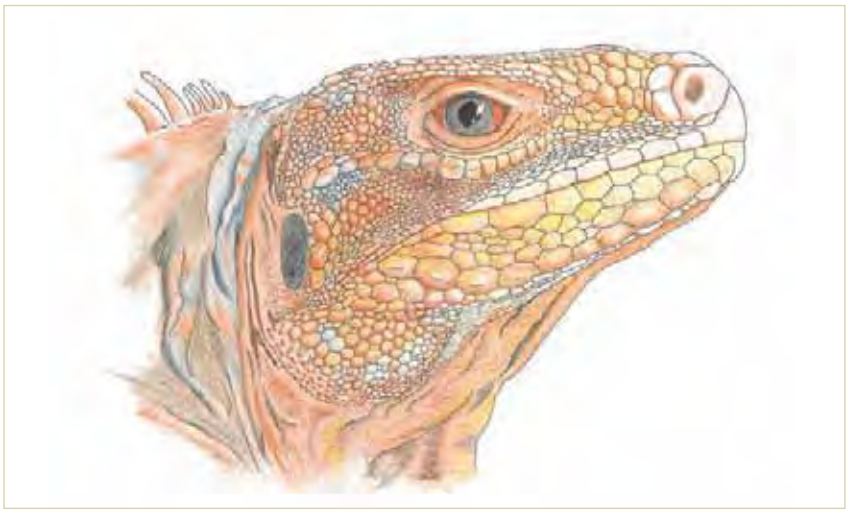

ILLUSTRATION BY JOHN BENDON

**▲ *Cyclura rileyi cristata* from White Cay, Exumas, Bahamas.**

**THE SAN SALVADOR ROCK IGUANA consists of three subspecies: *Cyclura rileyi rileyi* from San Salvador cays; *C.r. nuchalis* from Bush Hill Cay in the Exumas; and *C.r. cristata* from White (Sandy) Cay in the Exumas, the subspecies that was smuggled to the UK (see text). This animal (listed as Critically Endangered, B1+2e, C2b in the IUCN Red List) is probably the rarest of all the Rock Iguanas and may be the rarest iguana in the world. Numbers may have been decimated by raccoons which will catch and eat iguanas; the footprints of one raccoon were observed on White Cay in 1996 but the animal has since been confirmed dead. At that time, the count of *C.r. cristata* specimens was about 180 individuals and over the years has ranged from between 100 and 200 specimens. Latest sightings put the current figure as very low, maybe fewer than 100. Some individuals have been offered for sale in Europe as "captive bred" but as no permission has ever been granted for their export, they could not be of legal origin. Subsequent to this smuggling incident, the Bahamian authorities have said that two more shipments of unidentified Appendix-I Bahamian *Cyclura* sp. iguanas have taken place this year.**

*John Bendon,*
*IUCN/SSC Iguana Specialist Group*

## RHINOCEROSES

**INDIA:** On 18 July 2014, in Kaziranga National Park, forest guards found the carcass of an adult male Great Indian Rhinoceros *Rhinoceros unicornis* (CITES I) that had been killed by poachers and the horn removed. Empty cartridges and ammunition were found at the spot. It was reported that the total number of rhinoceroses killed by poachers in the park had gone up to 21 this year to date.

*India Times: bit.ly/1rIaguo, 19 July 2014*

**MOZAMBIQUE:** On 16 May 2014, at Mtubatuba Regional Court, KwaZulu-Natal, Antonio Sendes Langa of Mozambique was gaoled for eight years for killing a White Rhinoceros *Ceratotherium simum* (CITES I) in Imfolozi Game Reserve in September 2013.

*iol news: bit.ly/1yBYgRm, 19 May 2014*

**SOUTH AFRICA:** On 22 May 2014, three Chinese nationals were arrested in Gauteng for possession of and dealing in rhinoceros horn, whilst six suspected poachers were arrested in the surrounding areas just outside Kruger National Park (KNP), and a further two arrested and two fatally wounded inside the park.

On 27 May 2014, a former SANParks ranger and two policemen based at Skukuza police station in KNP were arrested for alleged involvement in rhinoceros poaching. Park rangers and officers of the Directorate for Priority Crime Investigation (known as the Hawks) came across a Black Rhinoceros *Diceros bicornis* (CITES I) carcass during a routine patrol. Acting on information, the team pulled a marked police van over and found inside a person suspected of being a poacher, armed with a hunting rifle and ammunition. Both policemen face charges of corruption and the suspected poacher is facing charges of being in possession of unlicensed firearms and ammunition. In another operation on the same

day, rangers at Pretoriuskop came across a group of suspected poachers; during the encounter, one of the suspects was fatally wounded and the remaining two managed to escape. Poaching equipment, a hunting rifle and ammunition were recovered during the operation.

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On 9 June 2014, Hawks personnel reported that two men had been arrested in connection with the theft in April of rhinoceros horns from Mpumalanga Tourism and Parks Agency, near Johannesburg. They had cut into a strong box and made off with 112 pieces of rhinoceros horn (80 kg), the first known theft of its kind. Most of the horns, which have not been recovered, were from dehorning operations undertaken by local authorities. A third suspect was arrested on 24 June.

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On 23 June 2014, at Naphuno Regional Court, Limpopo, Hlengani Reckson Mathebula and Erick Mathebula, both of Mozambique, were each sentenced to 12 years' imprisonment for rhinoceros poaching. The Hawks arrested the men after a shoot-out between a group of poachers and KNP rangers in February last year. Three poachers were shot dead while the two managed to escape. They were tracked down and arrested in Lulekani and Phalaborwa, respectively. Each was in possession of a fresh rhinoceros horn when arrested.

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On 8 July 2014, at Nelspruit Regional Court, Mozambicans Joseph Ephraim Bila and Ndombama Salvatore Nkuna were each sentenced to 16 years in gaol for their involvement in killing a White Rhinoceros *Ceratotherium simum* (CITES I) (10 years for killing and dehorning the animal; four years for trespassing and carrying out a restricted activity in a restricted area, and six years for illegal possession of a firearm and ammunition). The 10- and four-year sentences would run concurrently. The pair, arrested by rangers in KNP in April last year, pleaded guilty to the charges.

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On 23 July 2014, at Nelspruit Magistrates' Court, Mandla Chauke was sentenced to 77 years in gaol on charges relating to the hunting of three rhinoceroses in KNP in 2011. Chauke and two others had just shot a rhinoceros bull, a cow, and a calf when discovered by rangers in the park; the cow and calf were badly wounded and the adult bull was killed. A shoot-out ensued and Chauke and one other man were wounded. The third man escaped and was still at large. The wounded man died in hospital. Chauke was sentenced to 15 years for the murder of his accomplice, eight years for theft of horns, 15 years for illegal possession of a firearm, seven years for illegal possession of ammunition, two years for trespassing, and 10 years each for illegally hunting each rhinoceros.

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On 19 September 2014, the Hawks arrested the alleged kingpin of one of South Africa's biggest and most violent rhinoceros poaching syndicates; nine other members of the syndicate were arrested in various parts of the country as part of an operation that has been under way for a year; another member handed himself over to police. The arrest took place in front of Pretoria North Magistrates' Court where the suspect was due to appear on firearms charges. He is accused of obtaining 84 rhinoceros horns via illegal means.

The syndicate is believed to be responsible for the killing of 24 rhinoceroses in State and privately owned reserves around the country between June 2008 and June 2012. Of the poached animals, 22 were darted; the other two were shot. Only two animals survived the attacks. The syndicate operated in the Limpopo, Mpumalanga, North-West, Gauteng, KwaZulu-Natal and the Free State. It is alleged that members obtained up to 84 rhinoceros horns by poaching, as well as stealing the horns and obtaining them in other illegal ways: 41 of the horns were taken from 24 poached animals; 14 horns were stolen; 29 were obtained by other means. The 10 suspects were due to appear in Hatfield Court in Pretoria on 29 September.

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On 21 September 2014, three SANParks workers were arrested for alleged rhinoceros poaching in KNP after reportedly being found with a hunting rifle, ammunition, vehicle and poaching equipment shortly after the discovery of a freshly killed rhinoceros in the area where they worked.

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On 25 September 2014, Chumlong Lemthongthai, a Thai national, had his sentence for illegal trade in rhinoceros horn reduced from 30 to 13 years by the Supreme Court of Appeal (SCA). The judge said the sentence was too severe and disproportionate when compared to the minimum sentences statutorily prescribed for other serious offences. However, he stipulated that Lemthongthai had to pay a R1 million (USD89 000) fine or his sentence would be extended by five years.

Lemthongthai was arrested in 2011 after organizing illegal rhinoceros poaching expeditions having obtained 26 permits from the environmental affairs department to conduct rhinoceros trophy hunts (see *TRAFFIC Bulletin* 25(1):34); he then unlawfully used Customs documents in an attempt to export the horns. He was sentenced to 40 years' imprisonment by a regional magistrate; however after taking the matter to the High Court in Pretoria, Lemthongthai had the sentence reduced to 30 years. He subsequently approached the SCA, arguing a non-custodial sentence would be better suited in his case, but this request was turned down.

*www.politicsweb.co.za, 28 May 2014; Reuters Africa: bit.ly/1rIamlu, 9 June 2014; SABC: bit.ly/1qdr0uO, 25 June 2014; The Citizen: bit.ly/1sBtchq, 24 June 2014; http://bit.ly/VGtyEZ, 8 July 2014; iol news: http://bit.ly/1vDYvXu, 23 July 2014; The Citizen: http://bit.ly/1mkVpai, 19 September 2014; bit.ly/1qtrbwK, 22 September 2014; http://bit.ly/10iwx8R, 26 September 2014*

**USA:** On 27 May 2014, at Newark federal court, Zhifei Li, the owner of an antique business in Shandong, China, received a 70-month gaol term—one of the longest sentences to be imposed in the USA for a wildlife smuggling offence—for his role in trafficking 30 rhinoceros horns and rhinoceros horn (and elephant ivory) artefacts from the USA to China. He was also ordered to serve two years of supervised release and to forfeit USD3.5 million of the proceeds from his criminal activity.

*TRAFFIC: http://bit.ly/1iuLhUD, 28 May 2014*

## FLORA

**INDIA:** Red Sandalwood (Red Sanders) *Pterocarpus santalinus* (CITES II), selected seizures:

23 April 2014: 8.5 t from containers in Irugur, Coimbatore. 18 arrests.

28 May 2014: at Walajapet station, Vellore, 757 kg of logs from a vehicle smuggled from the reserve forest area in Andhra Pradesh via Tiruvallur, bound for Tiruvannamalai. One arrest.

Over three weeks in June 2014, Chennai port: 60 t from seven containers, some of which were recalled from overseas ports in China, Kuala Lumpur, Hong Kong and Dubai.

8 June 2014: four tonnes being loaded onto a container lorry at a nursery near Madhavaram at Moola Chatiram Main Road, Chennai. Seven arrests.

27 June 2014: 287 kg at Palasa railway station, Andhra Pradesh. The driver fled but was later arrested and taken into custody.

4 July 2014: 15 t from a godown in Nadiad town, Kheda district, Gujarat.

3 August 2014: four tonnes from a vehicle in Ambattur Estate, Chennai.

4 August 2014: 400 kg in Muttathara, Thiruvananthapuram district, Kerala, during raids on five houses; four arrests. The wood, which included carvings, was reportedly from Marayur, Aryanad and Kulathupuzha in Kerala and from Karnataka.

*New Indian Express: bit.ly/YWEmzW, 15 May 2014; http://bit.ly/1viWCy2, 29 May 2014; The Times of India, bit.ly/T1xuy6, 22 June 214; New Indian Express: bit.ly/1uGQQK5, 9 June 2014; The New Indian Express, bit.ly/1uj1Rj8, 27 June 2014; Business Standard: bit.ly/1mtTA9S, 4 July 2014; The Times of India: http://bit.ly/1orc7mr, 4 August 2014; The New Indian Express, bit.ly/1tRfwPd, 5 August 2014*

**THAILAND:** On 31 May 2014, police acting on information that a large number of rose-wood *Dalbergia* logs had been concealed in a village pending their sale to foreign buyers, seized about 3000 illegally cut rosewood logs at the village in Khun Han district, Si Sa Ket province, close to the border with Cambodia.

*Bangkok Post, http://bit.ly/1r81QbR, 31 May 2014*

**USA:** On 17 September 2014, West Virginia Division of Natural Resources Law Enforcement displayed during a press conference what they revealed to be the largest seizure of illegally harvested American Ginseng *Panax quinquefolius* (CITES II) in the State's history. Approximately 86 kg of the root had been seized in Wyoming, McDowell, Fayette and Raleigh counties before 1 September, when the ginseng season officially began. Any digging, possession or selling of ginseng before that date is a criminal offence. Eleven arrests have been made and more were likely to follow, it was reported.

Officers confirmed that many prescription drug dealers will buy the ginseng, which is

prized for its purported healing properties, for practically nothing and then hold on to the root until they can sell it for a much higher price when it is in season.

These arrests are the result of a year-long investigation. Additionally, some eight kilogrammes of ginseng were seized in August.

*The Charleston Gazette, bit.ly/1sAytjU, 17 September 2014*

## OTHER / MULTI-SPECIES

**AUSTRALIA:** On 2 May 2014, it was reported that John Kolettas of Sydney, New South Wales, was given a 12-month suspended gaol sentence and is required to perform 384 hours of community service after reportedly the largest recorded haul of illegal wildlife items was seized from his home in 2013. Items included skulls and teeth of Orang-utans *Pongo pygmaeus* (CITES I), bears Ursidae (CITES I/II) and Tigers *Panthera tigris* (CITES I). He was also fined AUD4000 (USD3700) for firearms offences.

*The Guardian: bit.ly/1xKb9Y8, 2 May 2014*

**CHINA:** On 8 May 2014, in Yongren, Yunnan province, one person was sentenced to six years' imprisonment and fined 10 000 yuan (USD1600) for smuggling 10 paws of Asiatic Black Bears *Ursus thibetanus* (CITES I), two bear gall bladders and 10 live pangolins *Manis* (CITES II). The items were seized in September 2013 from a van heading to Panzhihua, Sichuan province; various deer specimens were also found following a search of defendant's home.

On 28 May 2014, border police in south China's Guangxi Zhuang autonomous region seized a number of wild animal products along the border with Viet Nam, including the carcasses of 14 Francois's Leaf Monkeys *Trachypithecus francoisi* (CITES II), seven pangolins *Manis* (CITES II), six Leopard Cats *Prionailurus bengalensis* (CITES I/II), and five bear gall bladders (CITES I/II). Two suspected smugglers arrested as part of the case said they had purchased the animal products from Viet Nam with the aim of selling them in Nanning at a profit.

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On 1 June 2014, after a six-month investigation, Customs officials in Khorgas, Xinjiang province, near the border with Kazakhstan, seized 2351 Saiga Antelope *Saiga tatarica* (CITES II) antlers contained in 66 boxes. One arrest was reported.

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On 22 July 2014, at the Intermediate People's Court in Hulunbuir City, in the Inner Mongolia region, two Chinese and two Russian nationals were sentenced to gaol terms for smuggling 213 bear paws from Russia to China, the largest amount ever seized by China's Customs. The Chinese defendants were gaoled, respectively, to seven years and six years (and fined 300 000 yuan (USD49 000)); the Russians were each sentenced to five years in gaol.

The bear paws were seized on 22 May 2013, in the border city of Manzhouli; they had been taken from at least 63 Brown Bears *Ursus arctos* (CITES I/II) and were concealed in the tyres of a van entering the city (see *TRAFFIC Bulletin* 25(2):72).

*On The Trail No. 5, Robin des Bois, 29 July 2014*
*CRI English: bit.ly/1jLIypq, 30 May 2014*
*http://bit.ly/1n8FM3N, 22 July 2014*

**POLICE OFFICERS IN WEST VIRGINIA, USA, EXAMINE 86 KG OF ILLEGALLY PICKED GINSENG—THE LARGEST SEIZURE OF GINSENG IN THE STATE'S HISTORY.**

PHOTOGRAPHS: ANNA PATRICK / THE CHARLESTON GAZETTE

**FRANCE:** On 17 June 2014, authorities in the region of Poitou-Charente seized more than one tonne of European glass eels *Anguilla anguilla* (CITES II) and dismantled an international network involved in the illegal trade of eels. Seven arrests.

*France 3: bit.ly/1E8wewZ, 19 June 2014;*
*On The Trail No. 5, Robin des Bois, 29 July 2014*

**HONG KONG:** On 6 August 2014, Hong Kong Customs Marine Enforcement Group seized 250 kg of edible birds' nests, 550 kg of fur and assorted electrical goods from a river vessel in waters off Lung Kwu Tan, Tuen Mun. Five arrests.

*7th Space Interactive, 8 June 2014*

**INDIA:** On 7 June 2014, in Haldwani, Uttarakhand, eight people were sentenced to seven years' imprisonment (and fined Rs20 000 (USD320) for poaching Tigers *Panthera tigris* (CITES I), otters Lutrinae spp. (CITES I/II) and turtles. They were reportedly working on the orders of a close relative of Sansar Chand, a poacher and smuggler well known to the authorities, whose death was announced in March 2014 (see *TRAFFIC Bulletin* 26(1):22).

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On 21 July 2014, a Delhi court upheld a decision, made in June 2014, which sentenced Hilal Ahmad Wani to one year in gaol for keeping 49 shahtoosh shawls (made from the wool of the Tibetan Antelope *Pantholops hodgsonii*, CITES I), without a valid permit. Hani had appealed the decision and sought release on probation on the grounds that he had no previous conviction, but this was dismissed. However, a fine of Rs10 000 (USD160) was reduced to Rs5000.

*On The Trail No. 5, Robin des Bois, 29 July 2014;*
*Greater Kashmir: bit.ly/WBwFhY, 21 July 2014*

**MALAYSIA:** On 13 May 2014, at the Session Court in Johor Baru, Mohd Roshdam Bilal was fined RM35 000 (USD10 500) in default of eight months' gaol after he pleaded guilty to possessing a Sun Bear *Helarctos malayanus* (CITES II and a protected species in Malaysia). The animal was found in a cage in a shop in Jalan Tun Razak. Mohd Roshdam did not settle the fine.

*The Star online: bit.ly/R3s30G, 20 May 2014*

**ROMANIA:** In May 2014, raids carried out by more than 400 policemen yielded four tonnes of sturgeon meat and 80 kg of caviar, among other fish. The seizures were carried out at commercial premises involved in fishing storage and sale, farms, restaurants and private houses in Bucharest and the counties of Tulcea, Braila, Ialomita, Calarasi, Galati and Constanta. Many tools and illegal nets used for poaching were also seized.

*Gazetta de Agricultura: http://bit.ly/1xplWnB, (in Romanian), 18 May 2014*

# Conservation Perspectives of Illegal Animal Trade at Markets in Tabuk, Saudi Arabia

*Abdulhadi Aloufi and Ehab Eid*

## Introduction

The region of Tabuk, located in the north-western part of the Kingdom of Saudi Arabia, is divided into five major habitat groups including: (1) mountains; (2) coastal and islands; (3) water bodies; (4) plains and valleys with scattered trees; and (5) agricultural and urban environment (Aloufi, 2007), covering a total area of 116 400 km$^2$. To date, 35 mammal species, 37 reptile species and 167 bird species constituting 82 resident, and 85 migratory birds have been recorded from Tabuk region (Balletto *et al.*, 1985; Arnold, 1986; Gasperetti, 1993; NCWCD, 2000). This paper reports on the findings of a recent study undertaken by the authors at local markets in the Tabuk region, which aimed to identify the wildlife species and volumes in trade and to gain an understanding of any potential conservation impacts related to the trade.

## Background

The availability of wildlife for sale in the Arabian Peninsula has been recorded in a number of studies over the past decade. The illegal trade in reptiles in the principal animal market in Damascus, Syria (Amr *et al.*, 2007), showed that more than 10 shops specialized in selling live local birds, reptiles and mammals. Soorae *et al.* (2008) provided notes on the implementation of CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) in the United Arab Emirates (UAE), focusing on the trade in wildlife as pets; the study showed that birds are the most popular species in the pet trade in the Emirates, followed by reptiles and marine/freshwater species for aquaria. Mammals were not prominent in trade. A study of the illegal wild animal trade in Lebanon in 2009 (Dakdouk, 2009) reported that tens of thousands of animals were being imported, exported or re-exported from Lebanon each year, including Chimpanzees *Pan troglodytes* (CITES Appendix I) and CITES-listed reptiles (the country ratified CITES in May 2013). In Kuwait, a survey undertaken in 2010 into the illegal trade in raptors found 17 species being offered for sale, of which three were listed in the IUCN Red List (Al-Sirhan and Al-Bathali, 2010). Eid *et al.* (2011) identified 23 bird species and one reptile species that are listed in the CITES Appendices on sale at the Friday Public Market in Jordan.

The study reported on below is considered to be the first to investigate the illegal animal trade in the western part of Saudi Arabia, in the region of Tabuk, and to highlight conservation issues of concern associated with the trade.




**Fig. 1. Map of Saudi Arabia, showing the Tabuk region.**

## Methods

The current survey was carried out at a number of local animal markets in the Tabuk region (Fig. 1). Between September and December 2011, a group of researchers made 38 visits to four major locations in the region where animals are available for sale: (1) falconry markets (a total of three visits in the cities of Almueleh, Al Wajeh and Umluj; (2) clandestine markets located in private farms (three visits to Haqel and Tabuk cities); (3) the weekly Friday market in Tabuk city (16 visits); and (4) pet shops in Tabuk city (16 visits). On each visit, the outlets were investigated for the presence of wildlife and associated products, and information was collected about species in trade, their numbers and costs. The vendors were asked about prices and specimens available; only those items viewed for sale were recorded. The origin of the items for sale was noted, where possible, and photographs taken, where appropriate.

## Legislation

In order to protect wild species of fauna and flora from hunting for trade purposes, several laws and regulations have been promulgated by the Government of Saudi Arabia. In 1989, a hunting law was established which banned hunting without a licence, defined regulations governing such practices, and identified the consequences of non-compliance through a set of penalties. The Government of Saudi Arabia acceded to CITES in 1996, which regulates international trade in listed species; CITES implementing legislation was introduced in 2001. Despite the presence of laws and regulations controlling wildlife trade in Saudi Arabia, there have been few reports of violations or ensuing prosecutions relating to illegal trade, or of its magnitude or any associated conservation implications. A protected areas law was issued in 1995 to aid conservation activities and the establishment of protected areas in Saudi Arabia.

## Results

During the course of this study, birds constituted the majority of traded species (97%) in the Tabuk region, followed by reptiles and mammals (2% and 1%, respectively). Although stuffed animals were seen, the majority of specimens (around 98%) were alive. A total of 22 bird species of 12 families were recorded, with Common Quail *Coturnix coturnix*, which is widespread and easy to capture in Saudi Arabia, the most traded species, comprising more than 65% of the total number of specimens recorded. By contrast, only single specimens were recorded of Turquoise-fronted Amazon *Amazona aestiva*, Yellow-crowned Amazon *A. ochrocephala*, Blue-and-yellow Macaw *Ara ararauna*, Greater Rhea *Rhea americana*, and the native Griffon Vulture *Gyps fulvus* and Osprey *Pandion haliaetus* (Table 1). The Rock Hyrax *Procavia capensis* was the most commonly available mammal species, and the Spur-thighed Tortoise *Testudo graeca*, with 128 specimens recorded, the most commonly available reptilian species (Table 1).

A total of seven species threatened with extinction according to the International Union for Conservation of Nature (IUCN) Red Lists was recorded, including a Critically Endangered reptilian species, an Endangered bird species, five Vulnerable species and two Near Threatened Species. A total of 20 CITES-listed species was recorded, three of which were listed in CITES Appendix I (Table 2).

## Prices

The value of the birds in trade at the markets surveyed ranged from USD2 for a Common Quail to USD7332 for a Peregrine Falcon *Falco peregrinus*. Mammals also showed a huge variation in cost—from USD27 for a Cape Hare *Lepus capensis* to USD734 and USD800 for a Nubian Ibex *Capra nubiana* and Grey Wolf *Canis lupus*, respectively. Prices for reptiles were the lowest compared to other animal groups and ranged from USD7 and USD8 for an Egyptian Spiny–tailed Lizard *Uromastyx aegyptia* and a Western Caspian Turtle *Mauremys rivulata*, respectively, to USD35 for a Hawksbill Turtle *Eretmochelys imbricata*.

The prices for birds were similar to those reported at animal markets in Jordan and the UAE, with the exception of those for parrots and falcons, which were found to be considerably higher at the markets in the Tabuk region. Eid *et al.* (2011) stated that a single Grey Parrot *Psittacus erithacus* had sold at Amman market in Jordan for USD282; this compares with USD2133 for a specimen in Tabuk, and USD380–490 in the UAE (Soorae *et al.*, 2008). In Tabuk, the price of a Peregrine Falcon, at USD7332, was seven times that for a similar specimen on sale for USD1100 in the UAE, and a single Gyrfalcon *Falco rusticolus* was on sale for USD3067; prices for this species in the UAE ranged from USD1900–2700 (Soorae *et al.*, 2008). The higher prices in Tabuk could reflect the relatively high per capita annual income in Saudi Arabia; it may also point to lack of enforcement and implementation of the law as vendors feel confident in asking high prices with little fear of detection by officials.

## Origin of the Species

It was difficult to collect information on the origin of the specimens, but according to the sellers most of the local and migrant birds had been captured during the migration season in Almoeleh, Alwajh and Umloj, in the Tabuk region; some had also been captured in the region's valleys. Mammals such as Cape Hare, Grey Wolf, Sand Cat *Felis margarita*, Rock Hyrax and Nubian Ibex had been trapped or collected from the mountainous and desert areas of the Tabuk region. The origin of the non-native species was not provided, although it is known that the Spur-thighed Tortoises come mostly from Jordan. The critically endangered Hawksbill Turtle had reportedly been collected from Alwajh islands in Saudi Arabia, west of the Tabuk region.

**BIRDS CONSTITUTED THE MAJORITY OF SPECIES FOUND IN TRADE IN THE TABUK REGION. LARGE NUMBERS OF LAUGHING DOVES *SPILOPELIA SENEGALENSIS* WERE ON SALE AT A CLANDESTINE MARKET (BELOW). THIS SPECIES IS HUNTED FOR FOOD AND TO FEED FALCONS.**

EHAB EID

LAUGHING DOVES ON SALE AT A CLANDESTINE MARKET, TABUK REGION.

## Discussion

Results from the markets surveyed in the Tabuk region were comparable to those from neighbouring countries such as Jordan and the UAE, where birds constituted the majority of species found in trade (Eid *et al.*, 2011; Soorae *et al.*, 2008). This can mainly be attributed to traditional and cultural aspects, in particular to the use of birds of prey in the practice of falconry, particularly in the Gulf region.

The diversity of bird species recorded in markets in the Tabuk region—represented by 22 species—was generally lower than for those reported from pet shops in Jordan and the UAE, with 54 and 31 species respectively (Eid *et al.*,

| Group | Family name | Scientific name | Common name | Total no. of live specimens | Average price/ specimen (USD) | Average total cost (USD) |
|---|---|---|---|---|---|---|
| Birds | Accipitridae | *Gyps fulvus* | Griffon Vulture | 1 | 240 | 240 |
| | Burhinidae | *Burhinus oedicnemus* | Eurasian Thick-knee | 37 | 14 | 518 |
| | Columbidae | *Streptopelia decaocto* | Eurasian Collared-dove | 13 | 14 | 182 |
| | | *Spilopelia senegalensis* | Laughing Dove | 200 | 3 | 600 |
| | Falconidae | *Falco cherrug* | Saker Falcon | 3 | 2934 | 8802 |
| | | *Falco peregrinus* | Peregrine Falcon | 8 | 7332 | 58656 |
| | | *Falco rusticolus** | Gyrfalcon | 2 | 3067 | 6134 |
| | Gruidae | *Grus grus* | Common Crane | 20 | 67 | 1340 |
| | Otidae | *Chlamydotis* sp. | Houbara species | 11 | 534 | 5874 |
| | Pandionidae | *Pandion haliaetus* | Osprey | 1 | 388 | 388 |
| | Passeridae | *Passer domesticus* | House Sparrow | 162 | 6 | 972 |
| | Phasianidae | *Alectoris chukar* | Chukar | 232 | 40 | 9280 |
| | | *Alectoris melanocephala* | Arabian Partridge | 49 | 40 | 1960 |
| | | *Ammoperdix heyi* | Sand Partridge | 534 | 6 | 3204 |
| | | *Coturnix coturnix* | Common Quail | 5696 | 2 | 11392 |
| | Psittacidae | *Amazona aestiva** | Turquoise-fronted Amazon | 1 | 667 | 667 |
| | | *Amazona ochrocephala** | Yellow-crowned Amazon | 1 | 1200 | 1200 |
| | | *Ara ararauna** | Blue-and-yellow Macaw | 1 | 1334 | 1334 |
| | | *Psittacula krameri* | Rose-ringed Parakeet | 54 | 80 | 4320 |
| | | *Psittacus erithacus** | Grey Parrot | 25 | 2133 | 53325 |
| | Pycnonotidae | *Pycnonotus leucotis* | White-eared Bulbul | 158 | 11 | 1738 |
| | Rheidae | *Rhea americana** | Greater Rhea | 1 | 187 | 187 |
| Mammals | Bovidae | *Capra nubiana* | Nubian Ibex | 3 | 734 | 2202 |
| | Canidae | *Canis lupus* | Arabian Wolf | 5 | 800 | 4000 |
| | Felidae | *Felis margarita* | Sand Cat | 1 | 54 | 54 |
| | Leporidae | *Lepus capensis* | Brown Hare | 4 | 27 | 108 |
| | Procaviidae | *Procavia capensis* | Rock Hyrax | 42 | 80 | 3360 |
| | Agamidae | *Uromastyx aegyptia* | Egyptian Spiny–tailed Lizard | 7 | 7 | 49 |
| Reptiles | Cheloniidae | *Eretmochelys imbricata* | Hawksbill Turtle | 1 | 35 | 35 |
| | Geoemydidae | *Mauremys rivulata* | Western Caspian Turtle | 79 | 8 | 632 |
| | Testudinidae | *Testudo graeca** | Spur-thighed Tortoise | 128 | 19 | 2432 |
| **Total** | | | | **7480** | | |

**Table 1. Species recorded at markets in the Tabuk region, and average prices.** *non-native species.

| Group | Common name | CITES Appendices I | II | III | **IUCN Red List status |
|---|---|---|---|---|---|
| **BIRDS** | | | | | |
| *Amazona aestiva* | Turquoise-fronted Amazon* | | X | | |
| *Amazona ochrocephala* | Yellow-crowned Amazon* | | X | | |
| *Ara ararauna* | Blue-and-yellow Macaw* | | X | | |
| *Capra nubiana* | Nubian Ibex | | | | VU |
| *Chlamydotis* sp. | Houbara | | X | | VU |
| *Falco cherrug* | Saker Falcon | | X | | EN |
| *Falco peregrinus* | Peregrine Falcon | X | | | |
| *Falco rusticolus* | Gyrfalcon* | X | | | |
| *Grus grus* | Common Crane | | X | | |
| *Gyps fulvus* | Griffon Vulture | | X | | |
| *Pandion haliaetus* | Osprey | | X | | |
| *Psittacula krameri* | Rose-ringed Parakeet | | X | | |
| *Psittacus erithacus* | Grey Parrot* | | X | | VU |
| *Rhea americana* | Greater Rhea* | | X | | NT |
| *Spilopelia senegalensis* | Laughing Dove | | X | | |
| **MAMMALS** | | | | | |
| *Canis lupus* | Grey Wolf | | X | | |
| *Felis margarita* | Sand Cat | | X | | NT |
| **REPTILES** | | | | | |
| *Eretmochelys imbricata* | Hawksbill Turtle | X | | | CR |
| *Testudo graeca* | Spur-thighed Tortoise* | | X | | VU |
| *Uromastyx aegyptia* | Egyptian Spiny–tailed Lizard | | X | | VU |

**Table 2. CITES-listed species recorded at markets in the Tabuk region.** *non-native species.
CR: Critically Endangered; EN: Endangered; NT: Near Threatened; VU: Vulnerable. ***Source: IUCN (2014).*

2011; Soorae *et al.*, 2008), although the number of falcons recorded was higher than from those two locations. In addition, the large number of game birds at the market may reflect the fact that they are also caught for their meat, and to feed to falcons. Their high numbers in trade in relation to other animal groups may be attributed to (1) the high demand for falcons for traditional use by Saudi nationals to practice falconry (rather than in the raising of small passerines, for example); (2) lack of enforcement; (3) the remoteness of the Tabuk region from major cities, which attracts hunters; and (4) its close proximity to other Gulf countries.

Large mammalian species found in trade included the Nubian Ibex, classified in the IUCN Red List as Vulnerable. Hunters from the Tabuk region reportedly used to chase this animal over long distances in the belief that the more exhausted the animal became, the more its flesh would provide men with courage. This practice continues, with the animal's flesh sold to specialist customers for this purpose. Wolves are also hunted for their flesh for healing purposes, principally to treat stomach conditions and muscle pain, with adult specimens on sale for USD266, while juvenile wolves, which are believed to confer courage on children if raised as household pets, sold for USD1335. Both species are threatened locally and their populations are decreasing (Cunningham and Wronski, 2010).

The Spur-thighed Tortoise—the most common reptile encountered—is illegally in trade, and smuggling is reportedly commonplace. The low numbers of Egyptian Spiny–tailed Lizards (also known as Dabb Lizard) in the market may be due to a combination of the ready access to specimens of this species in the wild—which are easy to catch—and lack of enforcement, which enables people to hunt Dabb Lizards in large numbers without fear of detection and for whom interest in purchasing specimens is therefore low. However, one commentator cited in a newspaper report in reference to a massive seizure of this species observed that "we used to see them in large numbers, but today we have to look for them painstakingly and we do find them, they are just a few," [sic] (Anon., 2014). The presence of a single Critically Endangered Hawksbill Turtle certainly highlights the need to enforce legislation and to perform further evaluation in order to understand the level of trade in this species and ensure that it is not causing declines in wild populations of this species.

CITES-listed species found in the market were being offered for sale at higher prices than non-CITES-listed species, which accords with the findings of Courchamp *et al.*, 2006. Moreover, about 62% of species recorded in trade are CITES-listed; while this Convention doesn't apply to listed specimens if sourced in-country, their presence for sale contravenes national legislation and reflects poor enforcement and the need for routine inspections at Tabuk market.

These results show the urgent need to strengthen law enforcement, as well establishing an awareness campaign to conserve threatened species in Saudi Arabia. In order for law enforcement of wildlife trade to be an effective conservation tool, it is crucial that the implementing agencies recognize the scale of national trade in animal species, especially birds, which constitute the majority of traded specimens in the market. Improving public awareness and law enforcement must be a priority to ensure that the best conservation practices are adopted, with further investigation made into the collection of threatened species in the Kingdom.

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***Abdulhadi Aloufi**, Biological Department, Faculty of Science, University of Tabuk, PO Box 741, Tabuk 7419. Saudi Arabia. E-mail: aloufi@ut.edu.sa.*

***Ehab Eid** (corresponding author), The Royal Marine Conservation Society of Jordan, Shmesani 11183, Abedel Aziz El Thaalbi Street. Building #7. PO Box 831 051, Amman, Jordan. E-mail: eha_jo@yahoo.com.*

## Introduction

Large-bodied mammals continue to experience rapid declines in Peninsular Malaysia due to illegal hunting for local and international wildlife trade (Kawanishi and Sunquist, 2004; Clements *et al*., 2010; Shepherd and Shepherd, 2010). All large terrestrial mammals (over 25 kg, n=15) native to Peninsular Malaysia are threatened, with the exception of the Red Muntjac *Muntiacus muntjak*, Eurasian Wild Pig *Sus scrofa* and Leopard *Panthera pardus* (IUCN, 2013). At least two large mammals have already been extirpated from Peninsular Malaysia in recent times: the Javan Rhinoceros *Rhinoceros sondaicus* (van Strien *et al*., 2008) and Banteng *Bos javanicus* (Timmins *et al*., 2008). The Sumatran Rhinoceros *Dicerorhinus sumatrensis* is near extirpation, and many others are increasingly rare, including the Tiger *Panthera tigris*, Gaur *Bos gaurus*, Sambar *Rusa unicolor* and the little-known Sumatran Serow *Capricornis sumatraensis*, the subject of this paper. Demand for meat for consumption, and parts used in traditional medicines and for purported magical purposes, is the main driver behind the decline of these species in Peninsular Malaysia. Large ungulates across South-east Asia, and in particular in Malaysia, are in rapid decline due to over-exploitation (Steinmetz *et al*., 2010; Vongkhamheng *et al*., 2013) and effective conservation efforts are hindered by the absence of reliable data on the abundance and distribution of ungulates (Vongkhamheng *et al*., 2013).

Sumatran Serow *Capricornis sumatraensis*

MAZIKAB

# Observations of Illegal Trade in Sumatran Serows in Malaysia

*Chris R. Shepherd and Kanitha Krishnasamy*

The Sumatran Serow is currently categorized as Vulnerable by the *IUCN Red List of Threatened Species* (Duckworth *et al.*, 2008), with primary threats being habitat destruction caused by limestone quarrying, unsustainable logging and habitat fragmentation by roads, plantations and other human-altered landscapes, and poaching for illegal commercial trade. In Malaysia, serows are killed for their meat and for their body parts, the latter used for traditional medicinal and purported magical purposes (Rahman, 1997). Local communities adjacent to serow habitat have noted population declines due to hunting and limestone quarrying (Duckworth *et al*., 2008). Unfortunately, few people know what serows are or are even aware of their existence, and therefore this remarkable animal receives little attention from conservationists, researchers or enforcement agencies.

## Background

Of the six species of serow, *Capricornis sumatraensis* is the only serow found on Sumatra (Indonesia), Peninsular Malaysia and in southern Thailand (Duckworth *et al*., 2008; Shepherd and Shepherd, 2012), and the only wild member of the Caprinae family in Malaysia, where its preferred habitat is steep forested mountains, and limestone and quartz ridge areas. In 1936, the quartz ridge of Klang Gates, in the State of Selangor, was established as the Klang Gates Wildlife Sanctuary for the purposes of serow conservation (Wong *et al.*, 2010). While the species is found throughout Peninsular Malaysia, recorded from more than 50 localities, it appears to be concentrated largely in the north, especially in the States of Kelantan, Perlis and Perak, with many of the populations being small and isolated (Rahman, 1997). While it is estimated that populations of the Sumatran Serow in Malaysia are threatened and in decline, there are no current or reliable population estimates.

Locally known as *Kambing Gurun*, serows have been hunted out from parts of their former range in Peninsular Malaysia, largely from easily accessible areas, such as Batu Caves and Klang Gates, in the State of Selangor. In July 1988, members of the Malaysian Nature Society reported hearing gunshots from the Klang Gates ridge and saw an adult and juvenile serow flee; they reported the incident to the Department of Wildlife and National Parks Peninsular Malaysia (DWNP) whose prompt action resulted in the arrest of 11 individuals who were later fined; the amount of the fine is unknown (Low, 1988). Despite these actions, it is reported that serows have since been heavily hunted in the Klang Gates, and in many parts of the peninsula as well as numerous other localities not

far from the nation's capital, Kuala Lumpur, including Bukit Takun, Genting and more remote places, such as the Belum-Temengor Forest Complex in the northern State of Perak. It is most likely that the serow is a targeted species wherever poachers have access to its rugged habitats. Furthermore, it is likely that the serow is threatened by the widespread setting of snares in Malaysia, which indiscriminately kill a wide range of species (Krishnasamy and Or, 2014). Already in 1992, it was reported that the serow population in Malaysia had been found to be unable to meet the demands of the users of its parts and derivatives (Department of Wildlife and National Parks, 1992), and the overall population is thought to be in decline.

Despite robust legal protection, widespread poaching and illegal trade continues. TRAFFIC has carried out research into the trade in serows in Malaysia to improve understanding of the hunting and trade dynamics and to be able to provide useful and actionable information to the relevant enforcement agencies in the country, as well as to raise the profile of the threats to the species and its conservation needs, and ultimately reduce consumer demand.

## Legislation

The Sumatran Serow is afforded full legal protection (Totally Protected) in Peninsular Malaysia, under the *Wildlife Conservation Act 2010*, which means that hunting this species is prohibited unless a Special Permit has been issued by the Minister of Natural Resources and Environment (a practice that has never taken place). Anyone found guilty of hunting, taking or keeping serow parts or derivatives is liable to a minimum fine of MYR100 000 (USD33 300) and a maximum fine of MYR500 000 (USD166 670), and faces a gaol term of up to five years. The hunting of, taking or keeping female serows can lead to a fine of between MYR200 000 and MYR500 000, and a gaol term of up to five years. In addition, anyone convicted of illegally hunting, taking or keeping a juvenile serow is liable to be fined between MYR150 000 and MYR500 000 and gaoled for up to five years.

This species is also listed in Appendix I of CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora), which prohibits international commercial trade of the species, its parts and derivatives. Under the Malaysian CITES-implementing law, the *International Trade in Endangered Species Act 2008*, anyone caught importing or exporting serow parts is liable, on conviction, to a minimum fine of MYR200 000 and a maximum fine of MYR1million, or a gaol term not exceeding seven years, or both.

## Methods

Information on the illegal hunting and trade of serows in Malaysia, especially in the form of seizure reports, was collected and compiled over a 10-year period (2003 to 2012). The principal sources were published literature, including DWNP annual reports, from the *IUCN Red List of Threatened Species*, as well as media articles. Information was also gathered from direct field observations by TRAFFIC during 2012, including from the Belum-Temengor Forest Complex in Perak, where TRAFFIC's work has a strong focus. A survey of the availability of wild meat in Malaysia was also conducted in 2012.

| Johor | Pahang | Perak | Melaka | Selangor |
|---|---|---|---|---|
| 6 | 5 | 3 | 3 | 1 |

**Table 1. Number of restaurants in Peninsular Malaysia, per State, offering serow meat for sale, 2012.**

### Observations of serow trade in Peninsular Malaysia

Serow meat is prized amongst consumers of wild meat in Malaysia. In 2012, TRAFFIC carried out a study on the wild meat trade in restaurants across Malaysia, including the Bornean States of Sabah and Sarawak, where the serow does not occur. In Peninsular Malaysia, serow was the most commonly observed Totally Protected species in restaurants, being sold for up to MYR30 (USD10) per serving (Caillabet *et al*., in prep). Of the 165 restaurants that served wild meat in Peninsular Malaysia, 18 restaurants in five States offered them for sale (Table 1).

One restaurant in the Bornean State of Sabah claimed to sell serow meat; given that this species is not found on Borneo, it was likely sourced from Peninsular Malaysia or Sumatra, Indonesia (Caillabet *et al*., in prep).

Surveys in and around the Belum-Temengor Forest Complex, an important habitat for Tigers, found that at least 10 serows had been hunted from the area between 2009 and June 2013 (Or and Krishnasamy, in prep.). Serow hunting is known to be both targeted and opportunistic. In April 2012, TRAFFIC staff and other conservation NGOs encountered a serow head soaking in oil at a rest stop along the East-West Highway, some 15 km from the Belum-Temengor Forest Complex, and witnessed police officers asking the vendor about the use and benefits of serow parts. None of the police officers appeared to be aware that this incident violated a national law; no action was taken against the vendor. This information was later conveyed to the DWNP by another conservation organization.

In May 2012, an online forum frequently used by army personnel revealed serow hunting in the Temengor Forest Reserve in Perak (Wong, 2012). A forum user explained in detail how serows are hunted, including how to track these elusive mammals, the weapons used and hunting hotspots. The user boasted that he hunted serows and other mammals, despite knowing it was illegal to do so.

### Seizures of serow in Peninsular Malaysia

Despite poaching being a serious threat to serows, over the period of 10 years between January 2003 and January 2012, DWNP recorded only 10 confiscations of serow parts (Table 2). Of these, only five cases resulted in convictions.

In March 2007, in a case involving a *bomoh* (a Malay shaman or faith healer) couple (Table 2), authorities found skeletal remains of six serows in their possession. The skulls were intact, while the bone fragments and fur were mixed together and kept in a cooking container (Chooi, 2007). However, for reasons unknown, the *bomoh* couple was not prosecuted.

| Information on Confiscation | Date | Location, State | Items (quantity) | Prosecution | Source |
|---|---|---|---|---|---|
| DWNP confiscated serow meat and other wildlife species. | January 2003 | Segamat, Johor | Meat (24 kg) | Unknown | DWNP Annual Report, *TRAFFIC Bulletin* |
| DWNP arrested a RELA (People's Volunteer Corps) personnel for hunting a serow. | March 2005 | Dabong, Kelantan | Whole animal (1) | Seizure, fine of MYR2500 (USD833) | Bernama, (national news agency) |
| DWNP arrested an individual for illegal possession of serow meat. | 2006 | Selangor | Unknown | Seizure, fine of MYR900 (USD 300) | DWNP Annual Report, 2006 |
| DWNP seized remains of six serows from containers of cooking oil from a *bomoh* couple that had reportedly been using serow parts in healing rituals for over 35 years. | March 2007 | Lenggong, Perak | Six skulls, bones | Unknown | *The Star* (national newspaper) |
| DWNP arrested four men and seized the head and meat of a serow, among other protected wildlife. | January 2008 | Gua Musang, Kelantan | Meat (24 kg); head (1) | Unknown | *Utusan Malaysia* (national newspaper) |
| DWNP confiscated serow parts and other protected wildlife. | October 2008 | Kuala Lumpur | Meat (unknown) | Seizure, fine of MYR2000 (USD667) for each species seized | DWNP Annual Report |
| DWNP seized serow parts, among other protected wildlife in a raid. | October 2009 | Kuala Lumpur | Parts (unspecified) | MYR2000 (USD667) each charge (per wildlife seized), with a total fine of MYR16 000 (USD5330) or two months' gaol for failure to pay fine | DWNP Annual Report |
| DWNP confiscated two serow horns, amongst 15 live animals and other animal parts in two separate raids | March 2010 | Johor | One pair of horns | Unknown | *mStar Online* (Malay language news portal under The Star Media Group) |
| DWNP confiscated a serow head and skin near Taman Negara. | May 2010 | Nr Taman Negara, Pahang | Head and skin (unknown) | Fined MYR1000 (USD330) | DWNP Annual Report |
| DWNP and the Anti Smuggling Unit arrested a woman and her nephew for being in possession of totally protected species and their parts, including two serow horns. | January 2012 | Baling, Kedah | One pair of horns | | *Harian Metro* (national newspaper) |

**Table 2. Confiscations involving serows in Peninsular Malaysia between 2003 and 2012.**


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**Serow recorded by a camera trap (left); serow head soaking in oil. Belum Temengor Forest Complex, 2012.**

## Discussion and Conclusions

Clearly, serows are being hunted and traded in Peninsular Malaysia in violation of strong national wildlife laws. Declines in serow populations in Peninsular Malaysia have been corroborated by local people, many of whom have stated that over-hunting is the primary reason. Furthermore, despite the species being fully protected by law, serow meat is being served in restaurants, and parts, especially heads, are being used by *bomohs* in the Malay traditional medicine and faith healing system.

All first-hand information on the illegal trade of serows collected by TRAFFIC has been reported to the DWNP for action. Unfortunately, the outcomes of these reports are not often known or made publicly available, and therefore cannot be reported here. TRAFFIC calls upon the DWNP to intensify its monitoring of restaurants selling wild meat and of traditional medicine shops and faith healers, and to take action against anyone found violating the law. TRAFFIC also calls on the judiciary to issue the maximum penalties to offenders, to serve as a deterrent. Meanwhile, closer work with traditional medicine practitioners to encourage support for alternative products should be considered.

There is a need for citizens to become more involved in conservation efforts. The national wildlife crime hotline managed by the Malaysian Conservation Alliance for Tigers, a coalition of NGOs, including TRAFFIC, should be widely broadcast so any incidents of hunting or trade of serows may be reported to the authorities.

More research on the impact of hunting and trade of serows in Malaysia and throughout South-east Asia is urgently needed. Any information gathered should be published and brought to the attention of relevant enforcement agencies, conservation organizations and the public in an effort to raise the profile of threats facing the Sumatran Serow and for increased efforts to ensure that this species is not pushed further towards the brink of extinction.

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***Chris R. Shepherd**, Regional Director—Southeast Asia, TRAFFIC. E-mail: chris.shepherd@traffic.org*
***Kanitha Krishnasamy**, Programme Manager—Southeast Asia, TRAFFIC. E-mail: kanitha.krishnasamy@traffic.org*

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# TRAFFIC OFFICES


INTERNATIONAL

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

CENTRAL AFRICA

**Regional Office** c/o IUCN, Regional Office for Central Africa,
PO Box 5506, Yaoundé, Cameroon.
Tel: (237) 2206 7409; Fax: (237) 2221 6497; E-mail: tcaf@traffic.org

EAST/SOUTHERN AFRICA

**Regional Office** c/o IUCN ESARO, PO Box 11536, Hatfield, Pretoria, South Africa.
Tel: (27) 12 342 8304/5; Fax: (27) 12 342 8289; E-mail: trafficesa@traffic.org

**Tanzania Office** c/o WWF-Tanzania Country Office, 350 Regent Estate, Mikocheni,
Dar es Salaam, Tanzania.
Tel/Fax: (255) 22 2701676; E-mail: traffictz@traffic.org

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

**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

SOUTH AMERICA

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

EAST and SOUTH ASIA

**Regional Office** c/o WWF-Hong Kong, 15/F, Manhattan Centre, 8 Kwai Cheong Road,
Kwai Chung N.T., Hong Kong.
Tel: (852) 2161 9686; Fax: (852) 2845 2764; E-mail: traffic.eastasia@traffic.org

**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 6511 6211; Fax: (86) 10 6511 6261; E-mail: traffic.china@traffic.org

**India 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

**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

**Taipei Office** 3F., No. 92, Ln 106, Sec. 3, Bade Road, Songshan District, Taipei City 105, Taiwan.
Tel: + (886)(2) 25795826; Fax: + (886) (2) 25796036; E-mail: traffictaipei@traffic.org

SOUTH-EAST 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 Office** Room 203, Building 2G, 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

EUROPE

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

**Belgium Office** Bd Emile Jacqmain 90, B-1000 Brussels, Belgium.
Tel: (32) 2 340 0927; Fax: (32) 2 343 2565; E-mail: traffic@traffic.org

**Central Eastern Europe Office** c/o WWF-Hungary, 1141 Budapest, Álmos vezér útja 69/A,
Budapest, Hungary. Tel: (36) 1 214 5554 (Ext 126); Fax: (36) 1 212 9353;
E-mail: Katalin.Kecse-Nagy@traffic.org

**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: m.rocco@wwf.it

**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, is the leading non-governmental organization working globally on trade in wild animals and plants in the context of both biodiversity conservation and sustainable development.

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
E-mail: traffic@traffic.org
Website: www.traffic.org

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