WWF

NEWSLETTER

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PANDA

Illegal Wildlife Trade in India

Special Issue

LETTER FROM SG AND CEO

Dear Friends,

Illegal wildlife trade has evolved into a complex activity, estimated to be worth at least USD15 billion per year globally. The PANDA Special Issue on Illegal Wildlife Trade in India highlights the different aspects of this terrible for species depleting trade. Illegal wildlife trade is one of WWF-India's major concerns and along with its wildlife crime monitoring division of TRAFFIC India. WWF-India has been working closely with the national and the state governments as well as other enforcement agencies to help study, monitor and influence action to curb illegal wildlife trade in the country.

India is one of the world's biodiversity hotspots. Its porous borders allow for a wide range of products such as mongoose hair, snake skins, rhino horn, tiger and leopard claws, bones, skins, whiskers, elephant tusks, deer antlers, shahtoosh shawl, turtle shells, musk pods, bear bile, medicinal plants, timber and caged birds such as parakeets, mynahs, munias to be trafficked. This is endangering many of its species, including the iconic tiger, the rhino and smaller species such as the pangolin and otters.

India has a strong legal and policy framework to regulate and restrict wildlife trade. Trade in over 1800 species of wild animals, plants and their derivatives, is prohibited under the Wildlife (Protection) Act, 1972. While government and other enforcement agencies are well-positioned to act, WWF-India through TRAFFIC India engages in training and building capacity of its frontline staff to quell this trade. Challenges in the field faced by conservationists, including our own teams, bring to light experiences that other agencies can act on. This will not only prove effective in combating illegal wildlife trade which is in need of scaling up, but also be able to curb the wildlife crime nexus.

In keeping with the overall objective of WWF-India, this issue of the PANDA alerts its readers to the plight these animals are subjected to and calls for mass public awareness in order to sensitize its readers to the issue of wildlife crime and lead to a call for action.

Ravi Singh
SG and CEO, WWF-India

LETTER FROM THE EDITORS

Dear Readers,

Even as the forest cover is receding, illegal trade in wildlife is thriving. India is being robbed of its precious flora and fauna to fulfil the ever-growing demand for wildlife products in other countries. Unfortunately, India has become part of a nexus of international organized crime in wildlife which has its tentacles in various parts of the country.

The biodiversity of the subcontinent enables trade in various wildlife products. The PANDA Special Issue on Illegal Wildlife Trade in India hopes to enlighten its readers about various aspects of illegal wildlife trade in India. Wildlife is being plundered for pet trade a large part of which includes the bird trade, tiger parts, rhino horns, ivory, bear bile, reptile skins, medicinal plants, trade in marine products and more. It also has a section on the various laws that were put in place to protect wildlife and stop this vicious human activity.

The issue is a compilation of very interesting articles written by wildlife experts in different fields. While bringing to the fore the various wildlife crimes in existence, some articles point out that at time people engaging in illegal trade are not always doing so with criminal intent. It is often a desperate attempt at eking out a living without even knowing the extent of the damage their actions might be causing.

Therefore, even though we need to address the problem through policy and policing, the need for increasing consciousness among people cannot be undermined. We hope that this publication is a step in that direction.

Dilpreet B. Chhabra and Radha Beteille

Photo caption for cover image: Confiscated pieces of ivory jewellery

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INTRODUCTION

By Shekhar Kumar Niraj and Annabel Soper

The figures speak for themselves: Approximately, 3,350 pangolins poached in India from 2008 to 2014, 150 million seahorses used annually in the Traditional Medicine trade in Oriental Traditional Medicinal Systems, and another million caught annually for the aquarium trade – a substantial proportion coming from India, 70,000 tonnes of sharks caught annually from India mainly for fin trade, 1.5 million freshwater fish belonging to 30 threatened species exported from India during the period 2005-12, and 7,00,000 birds trapped annually on an average in India. Critically, approximately 44 rhinos were poached in Assam in 2013. Tigers, the national animal of India, continue to be the prime target for poachers and traders for markets, which value their pelts and bones.

Illegal wild animal trade takes place all over the country. Porous international land borders and a constrained enforcement exacerbate the situation. Native and non-native species are being rampantly brought into illegal trafficking that threatens biodiversity and conservation in the wild. From bird eggs to marmosets, and a moth to tiger, a large number of wildlife species bear price tags put on them by poachers and illegal traffickers. Even live elephants can be bought for a number of different purposes and are still offered for sale illegally in places like Sonepur and Sitamarhi in Bihar. India being the world's second largest exporter next to China has a serious stake in medicinal plants conservation. However, the current policies and laws do not underline the concerns fully.

Bird trade is perhaps one most visible form of wildlife trade in India. The Wildlife (Protection) Act, 1972 places stringent restrictions on the trade and trapping of all indigenous birds. The Convention on International Trade in Endangered Species (CITES) also regulates the international trade of birds. Nonetheless, as per an estimate more than 300 birds species out of India's estimated 1,200 bird species are found in illegal trade in numerous places in India. Many birds or wild animals die in captivity or under transportation in the course of illegal trade.

WWF and TRAFFIC are fighting this cruel and sordid trade along with governmental agencies. From January to June this year, TRAFFIC has made more than 50 interventions to prevent cases of illegal wildlife trade. Coordinated efforts by the citizens and stakeholders will be key to prevent loss if India's rich biodiversity due to poaching and illegal trade. Do not buy illegal wildlife products, souvenirs or any other such items. Illegal wildlife trade threatens the survival of many species. You might be violating the law and also endangering wildlife. Also discourage your friends and family from doing so.

If you come across any information on illegal wildlife trade, you may please contact the following:

- Local forest or police officials
- Customs at airports, seaports and other international transit points

Wildlife Crime Control Bureau (WCCB)
IInd Floor, Trikoot-I
Bhikaji Cama Place, New Delhi
Tel: (+91-11) 26182484
Fax: (+91-11) 26160751

TRAFFIC India Office
C/o WWF-India
172-B, Lodi Estate
New Delhi 110003
Tel: (+91-11) 41504786/43516290
Website: www.trafficindia.org;
www.traffic.org
Email: trafficind@wwfindia.net

Regional offices of the WCCB:

New Delhi: (+91-11) 23384556
Mumbai: (+91-22) 26828184
Kolkata: (+91-33) 22878698
Chennai: (+91-44) 24916747
Amritsar: (+91-183) 2588383
Guwahati: (+91-361) 2522709
Cochin: (+91-484) 2428706
Jabalpur: (+91-761) 2840689

South Asian chameleon(*Chamaeleo zeylanicus*), a species present in illegal wildlife trade

TAMING THE WILD

AN OVERVIEW OF PET TRADE IN INDIA

By Jose Louies

"I will give you the animal only in Meerut. Make sure you carry the full amount in cash with you." This was part of a final email sent by a 'suspect' who was trying to sell me an albino civet cat, over a social networking chat room. Posing to be an agent, with 'identity proof', he seemed convinced that I could give him the best bidding price for the cat. This clearly illustrates that the online sale of illegal wildlife parts has become rampant.

The aforementioned suspect was arrested the next day, by undercover cops, when he turned up to deliver the albino civet cat. Later in the day, I sat with him as I scanned his emails. There were pricelists along with photographs of various Indian birds—from sun birds to peregrine falcons and peacocks. Apart from the pricelists and photographs, internet banking details for swift payments, various shipping methods for ease of delivery were also mentioned in these emails. The meticulousness with which everything had been laid out was baffling.

There is a clandestine network of extremely well-organized persons, from pet-store owners to other dubious sellers who use the internet to service their clients. As middlemen, they fix deals based on their clients' preferences by asking their suppliers to provide digital visual confirmation of the animals to be sold. Thus, they are freed from having to keep the animals themselves because the animal can be sent directly from the supplier to the client for a commission.

Every year thousands of wild animals, birds, insects and fish are sold across the world because the internet is fast becoming the hub for buyers and sellers to meet for such clandestine sales

The illegal trade in wildlife—mammals, birds, insects and reptiles—is very well networked across the world. These pets meet with varying degrees of treatment. While you may find a dung beetle being very carefully taken care of in a glass jar, someone else may have a king cobra kept in near-natural conditions in a vivarium inside the house. Many a times 'wildlife pet lovers' spend a lot of money to get such exotic pets and take care of them, so much so that the illegal pet trade industry is touted to be worth millions of US dollars across the globe.

One of the main problems that investigators face worldwide is the difference in the legal status of wild animals in various countries. For instance, a star tortoise is protected under the Wildlife (Protection) Act, 1972 (WPA, 1972), in India, it is not considered a protected animal in many countries where it is sold freely and legally.

The pet animal trade is a murky affair, completely unlike the unsuspecting animals that are sold

Star tortoise–one of the most popular species in the illegal pet trade

One of the main problems being faced by investigators worldwide is the difference in the legal status of wild animals in various countries

When the trade of an animal, protected in one country, is not restricted under Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), then it can be sold as a 'captive-breed' to avoid any legal wrangles that could arise.

Every year thousands of star tortoises are smuggled from India to other countries to be sold as pets. A large number die en route because of the unsafe smuggling methods used by the carriers who care little about the conditions under which the animals are transported.

Once they reach their destination, they are taken to captive-breeding facilities where the wild animals are turned into 'captive-bred' and then put into the illegal wildlife trade network. There is no easy mechanism to distinguish between a captive-bred and a wild animal which prompts the perpetrators to get away undetected.

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Nilgai calf on display at the Sonepur Animal Fair in 2013

Not many animals are protected under Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) and every year a few countries issue permits for legal sale of a fixed number of wild animals. Many a times these permits are forged to 'legalize' a large number of illegal shipments. The trade syndicate uses these legal loopholes to their advantage so that their trade is either legitimized or goes undetected.

"There are a number of traders selling restricted exotic wildlife in India. There is also a big market out there, especially in the metropolitan cities where there are buyers who can afford such expensive pets, for many of whom owning an exotic animal or bird becomes a matter of pride and a status symbol. Earlier, an Alexandrian parakeet (*Psittacula eupatria*) or a hill mynah (*Gracula religiosa*) were kept as pets, but now we have youngsters who want to keep a snake or a spider as pets at home – cultural boundaries are also fast vanishing in this age of computers," says veteran expert on wildlife trade control in India, Ashok Kumar, Founder Director of TRAFFIC India and the Chairman of Wildlife Trust of India. Ghost banking, tax evasion, arms and narcotics trafficking are some of the associated vices of illegal wildlife trade.

The most famous example of pets gone wrong would be the release of Burmese pythons in the Everglades in Florida. They not only became carriers of diseases in the new territory but also became formidable predators, upsetting the ecological balance of the entire area.

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Hill mynah, a highly traded bird

There is a strong need for monitoring the pet trade in India. Only when the demand is brought down, will the trade get curbed. It calls for collective action on the part of the government, civic authorities and of the citizens

The release of a species, especially when non-native, must be given serious thought. Prime among the various implications of the release of a non-native animal is its survival as well as the impact the release might have on the habitat where it is released.

The other major threat the illegal pet industry poses is the spread of diseases across the world, since no quarantine rules are followed while transporting the animals. In many cases, the animals are kept in unhygienic conditions and the transport carriers/ holding areas are not sterilized or disinfected properly making them carriers of various infections and diseases.

The recent seizure of chimpanzees (*gen Pan*) in Kolkata was an eye-opener for enforcement officials. Three live animals were rescued by the customs officials from a suspect's house. After hours of online search, a contact from Africa and his team realized that these chimpanzees were only part of a larger consignment of animals which had been caught from the wild to be trafficked to India.

The trader syndicate which had helped with this trade operated internationally through cells in Pakistan, Dubai and Bangladesh. A source in the Kolkata trade market revealed that there could be two pairs of chimpanzees which had been sold to rich, famous and influential clients within India owned private 'zoos' they had got constructed in their farmhouses.

The trader in this case, was detained for a few days but is already out on bail because the authorities do not have the *locus standi* to book him under a non-bailable offence. Cases like this take years before a judgment is passed, thus giving such traders ample leeway to freely carry on with their activities.

Shikra on display at the Sonepur Animal Fair in 2013

There is a strong need for monitoring the pet trade in India. Only when the demand is brought down, will the trade get curbed. It calls for collective action on the part of the government, civic authorities and of the citizens to ensure that wildlife stays where it belongs–in the wild–and are not denigrated or objectified.

Jose Louies

He is the Regional Head of the south Indian projects and leads the division that handles wildlife trade control and litigation at the Wildlife Trust of India. He is an ex-IT professional who also runs a portal on Indian snakes.
Email: jose@wti.org.in

One of the three chimpanzees confiscated in Kolkata in January 2014

THE CAGED BIRD

ILLEGAL TRADE RENDERING BIRDS FLIGHTLESS

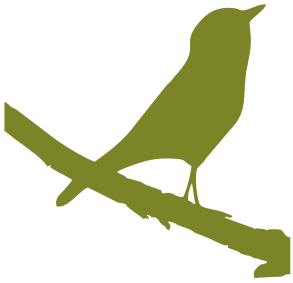
By Neha Sinha

I was in a nondescript fleabag roadside market in Jharkhand, en route from Ranchi airport to Hazaribagh. There, I saw a man standing next to some cages gesturing at what appeared to be a new species of a bird, saying, “This is the purple munia.”

Small, disconsolate birds were stashed in a cage at this market. Garish colours—purple, red and yellow—had been slapped onto their heads and breasts. The ‘purple munia’ was actually a scaly-breasted munia, dyed purple or a deep pink. The tiny munia, with a perfectly triangular beak, low melodious trills and dainty legs, is just one of the protected Indian bird species that forms part of the booming illegal bird trade.

Looking at illegally poached birds, calling sadly from their cages, is not an experience in Jharkhand alone. Hill mynahs, parakeets and munias are some of the most common species in this trade. This ‘horrifying’ trade of catching birds and pinioning their wings has led to a point where many of these species are no longer common. The trade also masks another ugly truth—every live bird shoved into small cages in an alien, stressful and noisy human setting stands for several more dead birds that simply could not make it. The trade itself thrives on ideas such as the beauty and tameness of the birds. Experts who have studied this trade will emphasize that these are misplaced ideas. Wild birds do not make good pets. They often refuse to breed in cages and die quickly out of distress. Besides, many of them are coloured with dyes to make them appear more ‘attractive’ for the buyer.

Despite the fact that a wild bird will never have a full life in a cage, or even a remotely happy life, the illegal bird trade is thriving. Why is this so? In some cases it is a question of money, as in the case of most poaching incidents. In very significant interventions, the United Nations, at several recent forums, has drawn links between illegal poaching and other illegal activities. The question to be asked is where the money from a poached bird or animal goes? In most instances, it goes back into illegal activity. Though there are no authoritative estimates on the rupee value of the bird trade, there is enough information to suggest that the trade is sustained year after year, implying that each season more and more birds are illegally caught from the wild.



The trade in birds has several dimensions. One, some of the birds, found in India, snatched from the wild are sold at very low prices. As a result, the trade escapes enforcement attention and continues unabated because it is relatively easy to catch the birds

The trade in birds has several dimensions. One, some of the birds, found in India, snatched from the wild, are sold at very low prices. As a result, the trade escapes enforcement attention and continues unabated because it is relatively easy to catch these birds.

During an ethnographic interview I was conducting in Pangti, a village in Nagaland, I remembered hearing a strange call. It was strange, because it was also piercing. Haunting not just because of its cadence but also because of the hot rage it carried. I followed the sound and found a red-breasted parakeet, caught illegally from the forest, in a tiny wooden cage. Children played around the cage, unaware that the parakeet was gripped by fury at being confined. After regular intervals, it would cry out, a sound that was as heart-rending as it was haunting. That wild bird, unlike other domestic birds that have evolved to be close to us, hated being prodded by the children. Unknown to them, it did not want to be fed or spoken to. All that its screeching call conveyed was its absolute helplessness at being poached.

Then there are other, non-quantifiable and non-commercial nuances of poaching such as poaching for private consumption or adventure. The most glaring examples throughout the country are the widespread hunting and/or trapping of birds, especially around water bodies or in forests. A poacher catches birds in an act that, though illegal, is often morally permissible. My experiences in northeast India are best described by the ‘silent forest’ syndrome. Acres and acres of wet, luscious rainforest should have bird calls ricocheting off leaves and branches. Yet, there are hardly any bird calls to be heard in states like Nagaland, Mizoram and Manipur. Most wild birds and animals are either trapped or hunted. Unfortunately, birds and small mammals are indiscriminately killed for their meat and often their meat is sold for a pittance.

Sometimes, birds are hunted just for the thrill of hunting. This aspect of poaching is related to changing behaviour and cannot be easily quantified in economic terms. For

Munias for sale in Sonepur Animal Fair 2013

a villager or a hunter, trying to put a value to what he considers a traditional skill, is hard. What is easy to ascertain, however, is that hunting of wild birds leads to loss in pollination as well as other essential ecosystem services.

The Bombay Natural History Society (BNHS) has been attempting to understand and address the factors behind bird hunting, especially in the northeastern states. In October 2012, tens of thousands of Amur falcons were slaughtered in Nagaland. A coalition of NGOs attempted to stop this arbitrary hunting. In order to do so, they had to address the root of the problem–that it was culturally admissible for people to hunt. Through a range of education and advocacy tools, villagers recognized the need to abide by the law and stopped hunting in 2013. Both Manipur and Mizoram hunt perennially, therefore dialogues have just been initiated with youth groups to bring about a change in behaviour.

Another instance of the depleting wild bird population in the northeast famous for pheasants and tragopans is that they are rarely seen or heard. There are sanctuaries named after tragopans and pheasants that have beautiful vegetation, yet no birds, because they are regularly shot with muskets, air guns or more sophisticated rifles.

The process of changing age-old practices will involve re-examining the value of a bird itself. The question of value becomes paramount be it the poaching of birds or the non-monetized private consumption and thrill of catching wild birds

Rose-ringed parakeets sold illegally at Sonepur Animal Fair

The process of changing age-old practices will involve re-examining the value of a bird itself. The question of value becomes paramount be it the poaching of birds or the non-monetized private consumption and thrill of catching wild birds. In the end, we need to value wild birds and animals as creatures best left in the wild. Apart from abiding by the WPA, 1972, leaving birds to perform their ecosystem roles will go a long way in ensuring more diverse, pollinated and productive ecosystems.

One means of creating value for birds—more valuable as free and wild, than dead or eaten—will be by creating better eco-tourism and eco-tel opportunities. Under such models, it will be more lucrative for locals if the bird were alive for its entire lifespan rather than dead.

We can stop all bird poaching. Wild birds deserve nothing short of being wild, as subjects of birding interest, but they do not need to be touched, de-feathered, smoked or shot. They simply ask to be left alone, and for their calls, soft or loud, to remain in the natural habitats from where they originate.

Neha Sinha

She works with the Bombay Natural History Society (BNHS-India) on environmental policies and endangered species conservation.
Email: n.sinha@bnhs.org

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Green Avadavats are in high demand in the illegal bird trade

ROLE OF DNA FORENSICS IN CURBING ILLEGAL WILDLIFE TRADE

By Mukesh Thakur

Mankind has exploited natural resources and wildlife for their food, clothing and medicinal needs as well as for sport. Over the years, the excessive utilization of natural resources has led to the unsustainable and ruthless exploitation of ecosystem services worldwide.

The unsustainable yet easy source of income from the commercialization of wildlife products has reached alarming proportions, resulting in threats to several species globally. However, knowledge of geographic origin can be used to distinguish between legal and illegal products, to assist in the repatriation of seized animals back to their source population, and to identify which populations are most intensively harvested for trade.

According to INTERPOL, the illegal trade of plants, animals and their byproducts is a growing black market estimated to be worth over USD20 billion per year. International illegal trafficking not only compromises local, national and global security but also threatens iconic species and erodes global biodiversity.

Studies show that exploitation by hunting for trade and pet collection are the second greatest drivers (surpassed only by habitat destruction) for the declining populations of many endangered species, impacting mammals (33 per cent), birds (30 per cent) and amphibians (6 per cent) (IUCN, 2004). Biological resources of India are threatened due to illegal trade in various species, especially large carnivores, which consequently upsets the balance of the ecosystem as a whole.

To prevent this, management authorities have to be equipped with a robust technique to apprehend the culprits. Firstly, the wildlife parts that are illegally traded have to be identified in order to enforce the WPA, 1972. Attributes such as hair characteristics, discrete measurements of long bones, species and age-specific tooth morphology and other associated traits have been used traditionally as diagnostic markers (Bell, 2011). These traits cannot be applied when the seized product lacks morphological identity like in the case of raw or cooked meat, potentially degraded or even highly processed products like tanned skin, shoes, ties, belts and necklaces.

International wildlife trafficking not only threatens iconic species and erodes global biodiversity but also compromises local, national and global security. Studies show that exploitation by hunting for trade and pet collection is the second greatest driver, after habitat loss, for the declining populations of many endangered species

© TRAFFIC

A forensic laboratory in Gujarat scoping seized samples

Several studies have demonstrated the applicability of the DNA marker technology in identifying species from various seizures such as confiscated meat samples, cooked and dried meats, dried shark fins, egg shells, animal hairs, bone, ivory, rhinoceros horns, turtle shell, feathers and fish scales

Unlike morphological markers, DNA markers are ideal for accurately identifying a species because even a partial fragment of a gene can easily be amplified from highly processed or degraded samples. Verma and Rao (1999) developed species identification based on DNA microsatellites for the first time which they presented at the 15th Triennial Meeting of International Association of Forensic Sciences in the University of California, Los Angeles, USA.

Since then, several studies have demonstrated the applicability of the DNA marker technology in identifying species from various seizures such as confiscated meat samples (Verma and Singh, 2003), cooked and dried meats (Wong et al., 2004), dried shark fins (Chapman et al., 2003), egg shells (Moore et al., 2003), animal hairs (Branicki et al., 2003), bone (Prado et al., 2002), ivory (Wasser et al., 2004 & 2007), rhinoceros horns (Hsieh et al., 2003), turtle shell (Lo et al.,2006), feathers (Mukesh et al., 2013) and fish scales (Kumar et al., 2007). Mitochondrial DNA (mt-DNA) is preferred over nuclear DNA (nDNA) for species identification.

Capacity-building workshops conducted by TRAFFIC/ WWF-India on wildlife forensics

Briefly, the procedure involves selective amplification of the informative segment of the mitochondrial gene over a PCR thermal cycler. The amplified products are then cleaned and subsequently loaded for gene sequencing using an automatic DNA analyzer. The raw sequences after validation are matched with the array sequences freely available in a public database, called National Center for Biotechnology Information (NCBI) for a similarity search. In spite of this, courts question the accuracy and reliability of the NCBI database for species identification.

It must be mentioned that the homologous sequences (based on percentage similarity) from NCBI should be retrieved with caution because this could occasionally lead to erroneous results. Generating sequences for three genes or more are recommended to eliminate chances of species misidentification. Markers derived from nuclear genes are not available for a majority of wildlife, but that might change. Currently, mt-DNA approaches dominate systems for species identification.

DNA forensics is the answer to curbing wildlife trafficking. There is thus an urgent need to ensure better inter-institutional co-ordination and strengthen institutional mechanism with respect to wildlife forensics in India.

Mukesh Thakur

He has earned his doctoral degree on red jungle fowl genetics and is currently associated with the Wildlife Institute of India, Dehradun as a Young Scientist Affiliate and conducting research on Cheer pheasant.
Email: thamukesh@gmail.com

SNIFFER DOG IN COURT OF LAW
THE EVIDENTIARY VALUE

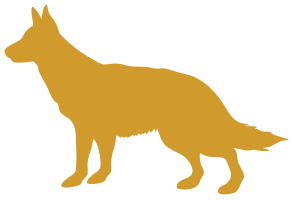
By Saurabh Sharma

The use of sniffer dogs for crime detection and prevention is proving increasingly successful in several countries around the world. The escalation in illegal wildlife trade that was once sporadic, but is now an organized activity, is alarming. It is with this premise that dogs trained under the TRAFFIC's sniffer dog training programme in India are being used regularly for search and seizures, patrolling and investigations are proving to be a highly useful tool in wildlife crime combat operations. Trained to detect wildlife articles such as tiger and leopard bone and skin and bear bile among others, they have, however, detected many other species by improvisation.

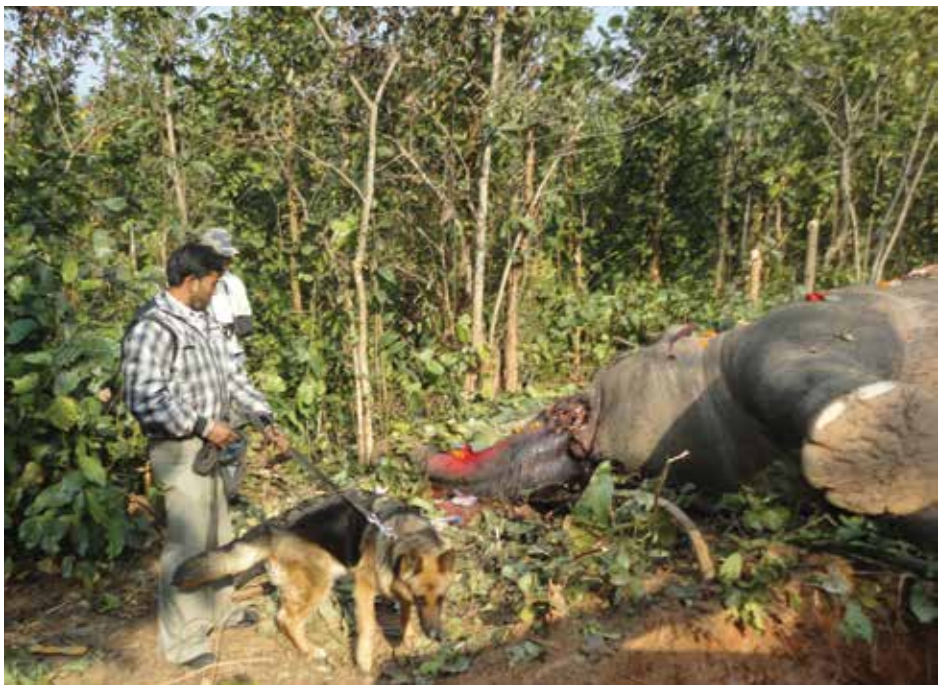
Under the Wildlife (Protection) Act, 1972, ground-level investigation like power of entry, searching any premises, land, vehicle or vessel, in the occupation of any suspect; opening and searching any baggage or other things in the suspect's possession; or conducting an inquiry, arrest and detention is to be exercised by: 1) The Director or any other officer authorized by him; 2) The Chief Wildlife Warden or another authorized officer; 3) Any forest officer or; 4) Any police officer not below the rank of a sub-inspector on grounds that the suspect has committed an offence against this Act.

The Indian Evidence Act, 1872 consists of provisions related to the evidence of scientists, doctors, chemical analysts, bomb experts, engineers and architects even though sniffer dogs play a vital role in the investigation of crimes. These dogs are proving to be invaluable in search and seizure operations, detecting and arresting criminals, locating evidence and missing persons due to their acute sense of smell. However, there are several constraints to enable their evidence to be admissible. Prime among them is that it has to pass the test of scrutiny and reliability as per the requirements of the courts, because the dog cannot be cross-examined. In India, the evidence presented in cases where sniffer dogs have been used is, therefore, considered inconclusive.

The Supreme Court of India opined, in a judgment, that the evidence of dog-tracking even if admissible, does not have much weight in the present state of scientific knowledge[1]. However, in another case[2], the Bombay High Court while appreciating a tracker dog's evidence said, "Undoubtedly, evidence in criminal cases, and in particular ones where the charges are serious, must pass the dual tests of absolute reliability



These dogs are proving to be highly invaluable in search and seizure operations, detecting and arresting criminals, locating evidence and missing persons due to their ability to detect the faintest of smells



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Sniffer dog Tracey helped recover elephant tusks

[1]Abdul Razak Murtaza v. State of Maharashtra, AIR 1970 SC 283
[2]Babu Magbul Shaikh vs State of Maharashtra, 1993 Cr. L.J 2808

Training of sniffer dogs for detection of illicit wildlife items

and infallibility. That a tracker dog cannot be influenced is something strongly in its favour and what lends this class of evidence a special blend of acceptability. On the question of margin of error, experience has shown that the special skills of tracker dogs outclass all other forms of detection, even sophisticated gadgetry. It is now universally acknowledged that in detecting drugs, where every other form of human ingenuity and gadgets are capable of being eluded, but it is virtually impossible to avoid detection when a trained tracker dog is used, explaining why this mode is found to be the most reliable and foolproof. Similar has been the experience in cases of robbery, murder and the like where the scent is fresh and the area not too crowded."

While concluding its judgment the Bombay High Court upheld, "It is scientifically accepted that dogs are rated as extremely intelligent animals and that some of their sensibilities are very highly developed and are extremely reliable. It is also to be noted that there are some breeds of dogs and some strains which are specially utilized for hunting and tracking because of their abnormally high talents. If the dog belongs to one of these categories and if it is shown to the Court that it has been specially trained for purposes of detection, not only would the dog-tracking evidence will be admissible, but it will have to be relied upon as being evidence of a very high calibre."

The Bombay High Court laid down certain guidelines for such evidence to be admissible:

(a) That there must be a reliable and complete record of the exact manner in which the tracking was done and to this extent, therefore, in this country, a *panchnama* in respect of the dog tracking evidence will have to be clear and complete. It will have to be properly proved and will have to be supported by the evidence of the handler.

(b) It will be essential that there are no discrepancies between the version as recorded in the *panchnama* and the evidence of the handler as deposed to before the Court.

(c) The evidence of the handler will have to independently pass the test of cross-examination.

(d) Material will have to be placed before the Court by the handler, such as the type of training imparted to the dog, its past performance, achievements, reliability, etc., supported, if possible and available, by documents.

The conviction rate in wildlife cases is less than 3 per cent in India. This includes evidence of the seizure provided by the tracker dog coupled with the oral evidence of the dog's handler. It also takes into account the training imparted to the dog as well as its skills in identifying various wildlife articles. The seized articles if documented properly and with precision can be used to show to the court that evidence from a sniffer dog cannot only be useful in an investigation, but can also provide effective corroborative evidence for turning the case in favour of the authorities.

Saurabh Sharma

He is a High Court and Supreme Court lawyer who specializes in wildlife cases. He has offered his services to Wildlife Trust of India, TRAFFIC and WWF-India. He was part of the team that secured India's quickest wildlife trial resulting in a conviction in 2007 when two Czech nationals were prosecuted for illegally collecting insects in Singalila National Park in North Bengal. He is the author of the booklet, *Important Aspects of Investigation in Wildlife Offences*, published by TRAFFIC - WWF-India.
Email: saurabh.wildlifelawyer@gmail.com

KILLING FOR PLEASURE

ILLEGAL TRADE IN MARINE LIFE

By Deepak Samuel

It was 6:00am and I was waiting patiently for trawl boats to arrive at Mandapam Landing Centre on the Palk Bayside. While women fish vendors greeted me with a smile, the middlemen gazed at me rather quizzically thinking, "What on earth is this stranger doing here?" A few minutes passed and a trawl boat arrived. I was not waiting for the fish that were caught offshore, but for the 'trash' (the unwanted fish and other marine creatures trapped by commercial fishing nets also called bycatch). Bamboo baskets containing the trash were transferred from the trawl boats to smaller country boats called 'vathai' and brought ashore because the shallowness of the bay restricts trawler movement. The trash was then auctioned off by middlemen to buyers at a quoted price, who transported the trash to fish drying yards, either in tractors or in tricycles.

I followed a tractor to a nearby yard to get a sense of the segregation process. The trash was segregated into small piles and the women hired for sorting used sticks to flatten the piles to enable the trash to dry properly. The dried trash is bought by poultry farmers to be used as protein supplement for their poultry. The women also separated seahorses, sea cucumbers, shells and other fish of commercial importance from the trash. I started talking to an old woman involved in the drying process, about seahorses. She told me that anywhere between one and 50 seahorses get collected from the trash of a single trawl boat. A survey carried out in 2008 (Murugan et al., 2008) documented 104,018 seahorses caught per year in fishing gear from selected landing centres off the Tamil Nadu coast. Though seahorses, pipefish and sea cucumbers are protected by Schedule I, Part II A and Part IV C of the WPA, 1972, there continues to be indiscriminate collection of protected marine species in our country, in the form of bycatch.

A survey carried out in 2008 documented 104,018 seahorses caught per year in fishing gears from selected landing centres off the Tamil Nadu coast. Though seahorses, pipefish and sea cucumbers are protected by law, there continues to be indiscriminate collection of protected marine species in our country, in the form of bycatches

Seahorses

Seahorses belong to the *Syngnathidae* (fused jaws) family. They are gentle swimmers that habitually attach their prehensile tails to seaweeds, sea grass, sea fans or corals. Their relative, the pipefish, also fall under the Protected Species List. In India, there are eight species of seahorses and about 20 species of pipefish that have been documented. The major supply of dried marine products including seahorses and pipefish is from Tamil Nadu, Kerala, Maharashtra and Karnataka (Vincent, 1996).

Dried seahorses for Traditional Chinese Medicine


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Seahorses (*hai ma* in Chinese) are exploited in large quantities around the world chiefly as an ingredient in Traditional Chinese Medicine (TCM). In powdered form, seahorses are used as raw materials to prepare traditional tonics. Approximately, 150 million seahorses are used per year as aphrodisiacs, anti-aging medicines and growth pills. Seahorses are credited with increasing and balancing vital energy flows within the body, and as a curative role for such ailments as impotence and infertility, asthma, high cholesterol, goitre, kidney disorders and skin afflictions such as severe acne and persistent nodules (Sreepada et al., 2002). While TCM practitioners claim it to be a miracle medicine, scientists are yet to come out with a comprehensive report on the medicinal properties of seahorses and pipefish.

In India, fisherfolk living along the coastal districts of Tamil Nadu consume dried seahorse powder with honey to treat ailments such as sore throats and the common cold. Seahorses are also displayed as curios because of their unique bony skeletal shape. Over 1 million seahorses are estimated to be used in the curio and jewellery markets (Save our Seahorses Trust).

There is also a significant demand for 'captive-bred' seahorses as part of the aquarium trade because they adapt more easily to tank conditions than those caught in the wild. This has led to a boom in breeding wild seahorses and raising the juveniles in captivity till they attain marketable size. Wild brood stocks are collected indiscriminately to meet the accelerating aquarium trade requirements.

The illegal route

Seahorses and pipefish are dried and preserved in sacks and kept hidden till a promising middleman purchases them. Rates are anywhere between Rs 5000 (approx. USD90) and Rs 8000 (approx. USD145) per kilogram. In the international market, a kilogram of dried seahorses can cost anywhere between USD750 and USD3000. A decade ago, consignments of dried marine products were exported illegally by shipping the consignments under false product names. These consignments were then airlifted to Southeast Asian countries where the demand for such products is high. Countries neighbouring India have no restriction or protection status for seahorses, pipefish, sea cucumbers, shells, shark fins and other marine species. Since fishermen from the southern region of India have trade links with their Sri Lankan counterparts, this illegal trade network survives despite the existence of the WPA, 1972. Nearly 14 cases of seizures have been registered with the wildlife wing of Ramanathapuram district in Tamil Nadu in 2012-13 alone, which included 250kg of dried sea cucumbers and 40kg of dried seahorses.

Hunted marine life

Besides sea cucumbers and seahorses, trade in other protected species of marine life such as sea cows or dugongs (*Dugong dugon)* are also common in the Indian waters. Dugongs are mammals which are hunted for their fat. Their meat is believed to have medicinal properties. Marine turtles are also caught for their meat, blood and carapace


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Sharks getting transported for their meat

(shell). Shark fins are in great demand because they are considered a delicacy. Six shark species and three species of ray fish have been protected under Part II A and Part IV C of Schedule I of the Wildlife (Protection) Act, 1972. Sea cows are protected under Schedule I (Part I) of the Wildlife (Protection) Act, 1972 and yet marine life continues to be exploited by individuals for personal gains.

Lack of speed boats, manpower and funds at the disposal of forest departments have led to poor management and inability to conduct surveillance of the coastal waters. Despite these deficiencies, strategies like the recruitment of Anti-Poaching Watchers (APW) in the existing force have helped gain information about the offenders, because the APWs are from the local villages. The presence of Wildlife Crime Control Bureaus has further strengthened intelligence-gathering, yet the lack of co-ordination between various relevant line departments continues to be a major constraint for joint patrolling and operations.

Although, most of the scheduled species hunted in India are not consumed locally, the lure of lucre has led to endangered species being harvested indiscriminately in Indian coastal waters to meet the demands of people outside India.

Deepak Samuel

He is a marine biologist who worked as a Programme Specialist with the Energy & Environment Division of the United Nations Development Programme (UNDP) for the Gulf of Mannar project. His fields of interest are marine conservation and management as well as molluscan taxonomy. He is currently working as a scientist in the Conservation of Coastal and Marine Resources Division at the National Centre for Sustainable Coastal Management, Ministry of Environment and Forests, Chennai.
Email: deepakocean@gmail.com

PROTECTING INDIA'S WILDERNESS

INTRODUCTION TO WILDLIFE LAWS IN INDIA

By Saurabh Sharma

History

Early references to the protection and conservation of wildlife in India have been chronicled in the fifth pillar edict of King Ashoka in third century BC. The edict clearly states providing protection to various animals and prohibiting forests from being burnt to protect the habitat of the animals. Furthermore, during his reign, Ashoka banned hunting and the indiscriminate slaughter of animals. This sentiment finds resonance in the Wildlife (Protection) Act, 1972 which mandates the need to protect wild animals, birds and plants with a view to ensure the ecological and environmental sanctity of the country.

Constitutional position on wildlife protection

The Constitution of India states: "To endeavour to protect and improve the environment and to safeguard the forests and wild life of the country." The Constitution further places a fundamental duty on the citizen in that "it shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures".

Further, the Supreme Court of India upholds that: "Article 21 of the Constitution of India protects not only the human rights but also casts an obligation on human beings to protect and preserve a specie becoming extinct, conservation and protection of environment is an inseparable part of right to life."

The Supreme Court of India upholds that: "Article 21 of the Constitution of India protects not only the human rights but also casts an obligation on human beings to protect and preserve a specie becoming extinct, conservation and protection of environment is an inseparable part of right to life."

Wildlife (Protection) Act, 1972

It is the principle act dealing with wildlife protection in India. It was enacted by the Union Parliament with a view to improve the protection provided to wild animals since the Wild Birds and Animals Protection Act, 1912 had become completely outdated and punishments were no longer commensurate with the offences. In 1972, the matter pertaining to wildlife being in State List in the seventh schedule was found to be outside the purview of the Union Parliament but in accordance with Article 252 of the Constitution. Therefore, the legislatures of Andhra Pradesh, Bihar, Gujarat, Haryana, Himachal Pradesh, Madhya Pradesh, Manipur, Punjab, Rajasthan, Uttar Pradesh and West Bengal resolved to empower the Union Parliament to pass the Wildlife (Protection) Bill, which after receiving the assent of the President came to be known as the Wildlife (Protection) Act, 1972.

A unique legislation

The WPA, 1972 has, at present 13 chapters and six schedules appended to it, with the schedules being in order of the category of wild animals facing threats. What makes this Act a unique piece of legislation is that civil law, especially the Land Acquisition Act,1894 (with subsequent revisions), criminal law and also management powers of different functionaries of the Forest Department, are all featured in a single legislation.

The second unique aspect of this legislation is that it does not make a distinction between the attempt and the actual act, and hence the WPA, 1972 is very rigid. For example the attempt to hunt and the actual act of hunting fall under a single header – Hunting.

Further, even the presumption of illegal possession of a contraband substance under this law against a person is interpreted as him/her being in possession, custody or control of any such article, making the Act both rigid and very stringent. The investigation in these cases can be both at the field level as well at the level of senior officers. While any forest official, even a forest guard can carry out a raid. The powers whether exercised by field-level forest officers or senior officers are interpreted as those exercised by the police because they have the power to apprehend or detain a suspect if they are of the rank of a sub-inspector and above. However, for a detailed and document-related investigation, an Assistant Conservator of Forests (ACF) is authorized to carry out the inquiry by exercising certain quasi-judicial powers. These quasi-judicial powers like receiving and recording of evidence when done in the presence of the accused person serves as evidence admissible in any subsequent trial.

Artifacts and curios made from ivory on display

For the investigations of Wildlife (Protection) Act, 1972 cases, the provisions of the Act along with the provisions of the Code of Criminal Procedure, 1973 need to be applied during the arrest, search and seizure.

The Act provides for punishment for a number of offences which, inter-alia including hunting, altering the boundary of a sanctuary or national park, offences related to core area of a Tiger Reserve, illegal possession and trade in wild animals and their articles/ derivatives. The quantum of punishment in most such offences is a jail term of three years which may extend to seven years with a fine, thereby making most such offences non-bailable and cognizable.

Biological Diversity Act, 2002

It provides for the conservation of biological diversity, sustainable use of its components, fair and equitable sharing of the benefits arising out of the use of biological resources, knowledge and for matters connected therewith or incidental thereto. A biological resource is defined under Section 2(c) of the Biological Diversity Act, 2002 means plants, animals and micro-organisms or parts thereof, their genetic material and by-products (excluding value-added products) with actual or potential use or value. A foreigner is required to take approval from National Biodiversity Board and an Indian citizen needs to take a similar approval from State Biodiversity Board to obtain a biological resource for commercial utilization.

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If a foreigner obtains a biological resource for commercial utilization without the approval, the punishment amounts to a five-year jail term or a fine of Rs 10 lakhs (approx. USD15500) or both, while in case of an Indian citizen the punishment is a three-year jail term or a fine of Rs 5 lakhs (approx. USD7750) or both. Noticeably, any such attempt or abetment is also an offence carrying the same punishment as the Act itself.

A notification issued by the Ministry of Environment and Forests dated 7 January 2009 states that any forest officer of the rank of Range Officer and above is empowered to file a complaint under this Act for violations which take place within their respective jurisdiction.

Other legal provisions related to wildlife protection

International trade in all wild fauna and flora in general, and the species covered under Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in particular, is regulated jointly through the provisions of the Wildlife (Protection) Act, 1972, Foreign Trade (Development and Regulation) Act, 1992 and the Customs Act, 1962.

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Convention of International Trade in Endangered Species of Wild Fauna and Flora (CITES)

On 18 October 1976 India became a party to CITES sometimes known as the Endangered Species Convention or the Washington Convention. The Director of Wildlife Preservation (now Wildlife Crime Control Bureau), Government of India is the Management Authority for CITES in India. CITES is an agreement pertaining to the entries 13 and 14 of the Union List. Further, the Central Government exercising its executive powers vis-à-vis the state, can under Article 256 give direction(s) to the state(s) to ensure compliance of the CITES provisions.

Foreign Trade (Development and Regulation) Act, 1992

Import and export of all species of wild fauna and derivatives is prohibited (except for specimens which carry the CITES certification) under the Export-Import Policy of India. India fulfils its obligations under CITES through the Foreign Trade (Development and Regulation) Act of 1992. Penalties for violation are dealt with under the Customs Act of 1962. The Export-Import Policy is framed under this Act. Import of animals and their parts and products for zoological parks and circuses or for research purposes may be permitted subject to the provisions of CITES and on the recommendations of the Chief Wildlife Warden of the states and union territories under license from Directorate General of Foreign Trade (DGFT).

Customs Act, 1962

All cases of violation of the Export-Import Policy in general and CITES in particular, constitute an offence under the Customs Act and are dealt with by the Customs officials. Section 3(3) of the Foreign Trade (Development and Regulation) Act, 1992 provides that all items (including wild fauna and flora) covered in the Export-Import Policy will be deemed to be covered under Section 11 of the Customs Act, 1962.

UNTOC and UNODC

The United Nations Convention against Transnational Organized Crime (UNTOC) provides for detailed provisions to support international cooperation in criminal matters, such as extradition, mutual legal assistance and providing for specific and innovative forms of cooperation that could be applied to wildlife and forest crime. They also provide for joint investigations through special investigative techniques, such as controlled delivery, electronic and other forms of surveillance as well as undercover operations.

The UN General Assembly affirmed the relevance of UNTOC in fighting illicit trafficking of natural resources in its resolution 55/25 of 15 November 2000, in which it stated that the Convention "constitutes an effective tool and the necessary legal framework for international cooperation in combating, inter-alia, such criminal activities as illicit trafficking of protected species of wild flora and fauna". In this connection, the United Nations Office on Drugs and Crime (UNODC) has an important role to play in strengthening the capacity of governments to investigate, prosecute and adjudicate crimes against protected species of wild flora and fauna.

In conclusion it can be said that both national and international laws are making an attempt to ensure the safe flourishing of flora and fauna in their natural habitat.

Saurabh Sharma

He is a High Court and Supreme Court lawyer who specializes in wildlife cases. He has offered his services to Wildlife Trust of India, TRAFFIC, and WWF-India. He was part of the team that secured India's quickest wildlife trial resulting in a conviction in 2007 when two Czech nationals were prosecuted for illegally collecting insects in Singalila National Park in North Bengal. He is the author of the booklet, Important Aspects of Investigation in Wildlife Offences published by TRAFFIC—WWF-India.
Email: saurabh.wildlifelawyer@gmail.com

One-horned rhinoceros under serious threat from poachers

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A hunter's trophy of bear skulls

THREATENED HEALERS

PROTECTING INDIA'S WILD AND ENDEMIC THREATENED MEDICINAL PLANTS

By Manoj Sarkar

Introduction

A group of plants, which serve as healers and health rejuvenators are known as medicinal plants (MPs). Any part(s) of these plants used by any of the Indian traditional systems of medicine like Ayurveda, Unani, Siddha, Tibetan, the rich and diverse folk medical tradition, allopathy and homeopathy are termed medicinal plants in this study. It is very essential that rare, threatened and presumed extinct taxa of plants, especially those which provide life-saving drugs, should be protected from illegal trade by law.

It is estimated that 70-80 per cent people worldwide rely chiefly on traditional, largely herbal medicine to meet their primary health-care needs (Farmsworth et al., 1991). Traditional herbal medicine has been practiced in India and China since ancient times. India is also one of the world's leading exporters of medicinal plants and herbal products, second only to China. With globalization, this industry is expected to soar. Despite its advantageous position, its share of the USD62 billion global market, is less than half a per cent. Approximately 15 per cent of MPs are cultivated while over 85 per cent of MPs used by the Indian industry are collected from forest ecosystems and other natural habitats (Gupta, 1993; FRLHT, 1997; 2001) that are mostly government-owned except for a few that are privately owned.

The increases in trade and resulting indiscriminate harvesting and export have put a large number of India's MPs under the threat of extinction. The resource custodian has no material stake in the trade, either in terms of revenue, or in terms of surveillance of what is exported from the forest and other wild areas (Sarkar, 2005).

For instance, 3,471 species found in the Himalayas (including the Eastern and Western Himalayas), 2,015 species in Peninsular India (including the Western Ghats) and 239 in the Andaman and Nicobar Islands are under serious threats of extinction.

Medicinal plant species of conservation concern

The availability of many plant species, particularly the endemic origin of trees, shrubs and herbs which provide life-saving drugs to people, has been declining very fast. Major threats to the plants are unsustainable and unscientific harvesting for commercial utilization by the unorganized and informal sectors; environmental factors like habitat fragmentation, degradation and habitat loss, ecological substitutions; biological factors like, pathological causes and anthropogenic interference in the form of habitat

It is estimated that

70-80%

people worldwide rely chiefly on traditional, largely herbal medicine to meet their primary health-care needs

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Podophyllum hexandrum Royale, a hardy perennial acquires medicinal properties upon processing

Manjista (*Rubia cordifolia*), a flowering plant from the coffee family used for a red pigment from its roots

destruction and human overexploitation. Further, analysis of the working plan operations in India's forestry sector since 1900 shows that tree species of commercial value and fuelwood have received far more importance than other lower orders like shrubs, herbs, climbers and grasses, which account for 66 per cent of the floral composition of forests and include many species actually of great medicinal and commercial value. Therefore, these wild endemic plant species need immediate and appropriate management interventions.

The International Union for Conservation of Nature (IUCN) has indicated that nearly 12.5 per cent of the known flowering plants of the world suffer from different degrees of threats.

The WPA, 1972 covers only six plant species, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, 1975) covers 20 plant species (refer to Appendix-I and Appendix-II). The Ministry of Commerce (Government of India, 1997-2002) notified 29 plant species of India including the above mentioned plants. It is however estimated that more than 1200 plants endemic to India suffer from various degrees of threats. The Biological Diversity Act, 2002 states that the Central Government is empowered to notify any species as Threatened and make a regulation on the same.

Existing legal provisions

The existing legal provisions indicate that legal support and policy vision for the conservation and management of plant species, particularly plants of medicinal value continues to be inadequate. The following table lists and qualifies the role of the various legal provisions and policies to protect the threatened MPs.

S.No.	Legal provision	Role
1	Madras Forest Act,1882	Passive
2	Indian Forest Act,1927	
3	National Forest Policy,1952	
4	Tamil Nadu Hill Areas (Preservation of Trees) Act,1955	
5	Tamil Nadu Timber Rules (1968)	
6	Wildlife (Protection) Act, 1972	Active in species protection but covers only six plants
7	Forest Conservation Act,1980	Active in habitat protection
8	National Forest Policy (1988)	Passive
9	Export-Import Policy (1997-2002)	Active but lacks a proper implementing mechanism
10	Export-Import Policy (2002-07)	With gaps in enforcements
11	Wildlife (Protection) Amendment Act, 2006	No addition since Wildlife (Protection) Act, 1972
12	Biological Diversity Act, 2002 Sector 38	Empowers the Central Government to notify threatened species

The Ministry of Commerce notification during 1998 and 2002 prohibits 29 MPs from export but it lacks a foolproof mechanism for the implementation of this regulation. Further, the notification does not provide the complete scientific name of many plant species which leaves room for ambiguity and consequently their continued trade. No direct rule is in place to check illegal harvesting of MPs from any of the forest areas. No case is booked even in the instance of a big haul of MPs if the seizure occurs outside the territorial demarcation of a reserved forest

PROPOSED PLANT SCHEDULES

(Covers Totally 201 Threatened Medicinal Plants)

PLANT SCHEDULE - I

Part - I (31) Part - II (50) & Part - III (44)
Covers 125 plants

Part – I - (27+4) = 31 Plants

Species already existing under Schedule - VI of the Wild life (Protection) Act 1972 & Partly under Govt. of India, Ministry of Commerce Notification. No (RE-98) / (1997-2002)

1. *Aconitum falconeri* Stapf var. *falconeri*
2. *Aconitum ferox* Wall. ex Ser.
3. *Aconitum kashmiricum* Stapf ex Coventry Syn. *Aconitum heterophyllum* var. *bracteatum* Stapf
4. *Aquilaria malaccensis* Lam. (Agarwood)
5. *Ceropegia beddomei* Hook. f.
6. *Ceropegia ommisa* H. Huber
7. *Coptis teeta* Wall.
8. *Coscinium fenestratum* Colebr. (Calumba wood)
9. *Cyathea nilgirensis* Holttum (Tree Ferns)[3]
10. *Cycas beddomei* Dyer (Beddomes' cycad)
11. *Cycas circinalis* L.
12. *Dactylorhiza hatagirea* (D.Don) Soo
13. *Dioscorea deltoidea* Wall. ex Griseb (Elephant's foot)
14. *Euphorbia katrajensis* Gage
15. *Euphorbia panchganiensis* Blatt. & McCann
16. *Frerea indica* Dalzell. (Shindal Mankundi)
17. *Gentiana kurroo* Royle (Kuru, Kutki)
18. *Gnetum ula* Brong.
19. *Kaempferia galanga* L.
20. *Nepenthes khasiana* Hook. f. (Pitcher plant)
21. *Panax pseudoginseng* Wall.
22. *Paphiopedilium druryi* (Bedd.) Pfitzer (Lady's Slipper Orchid) Syn. *Cypripedium druryi* Bedd.[3]
23. *Picrorhiza kurrooa* Royle ex Benth.
24. *Podophyllum hexandrum* Royle (Indian Podophyllum) Syn. *Sinopodophyllum hexandrum* (Royle) T.S. Ying
25. *Pterocarpus santalinus* L.f. (Red Sanders)
26. *Rauvolfia serpentina* Benth. ex Kurz (Sarpagandha)
27. *Renanthera imschootiana* Rolfe (Red vanda)
28. *Saussurea costus* (Falc.) Lipsch. Syn. *Aucklandia costus* Falc.
29. *Swertia macrosperma* C.B. Clarke (Charayatah)
30. *Taxus wallichiana* Zucc. (Common Yew or Birmi leaves)
31. *Vanda coerulea* Griff. ex Lindl. (Blue vanda)

(28 Illustrations provided)

Part – II - 50 Plants

Plant Species, declared as Extinct in wild, Globally Critically Endangered, (Endemic to India)

A. CAMP in South India[1]

1. *Adhatoda beddomei* C.B. Clarke (CR./G)
2. *Aerva wightii* Hook. f. (Ex)
3. *Asparagus rottleri* Baker (Ex)
4. *Biophytum insignis* Gamble[3]
5. *Cayratia pedata* (Lam.) Juss. ex Gagnep. var. *glabra* Gamble (CR./G)[2]
6. *Dioscorea wightii* Hook. f.[3]
7. *Eugenia discifera* Gamble[3]
8. *Eugenia singampa*翱 *ana* Bedd.[3]
9. *Eulophia cullenii* (Wight) Blume (CR./G)
10. *Eulophia dabia* (D. Don) Hochr. (CR./G)
11. *Euodia lunu-ankenda* (Gaertn.) Merr. var. *tirunelvelica* A.N. Henry & Chandr.[3]
12. *Garcinia travancorica* Bedd. (CR./G)[3]
13. *Janakia arayalpathra* J. Joseph & V. Chandras (CR./G) *Decalepis arayalpathra* (J. Joseph & V. Chandras.) Venter[3]
14. *Knoxia sumatrensis* (Retz.) DC. var. *linearis* Bhattacharjee & Deb[3]
15. *Madhuca insignis* H.J. Lam. (Ex)
16. *Phyllanthus singampa*翱 *anus* (Seb. & A.N. Henry) Kum. & Chandrab.[3]
17. *Piper barberi* Gamble (CR./G)[3]
18. *Pogostemon travancoricus* Bedd. var. *travancoricus*[3]
19. *Shorea tumbuggaia* Roxb. (CR./G)
20. *Syzygium gambleanum* Rathakr. & Chithra[3]
21. *Syzygium parameswaranii* M. Mohanan & A.N. Henry[3]
22. *Syzygium rama-varmae* (Bourd.) Chithra[3]
23. *Syzygium travancoricum* Gamble (CR./G)[3]
24. *Teucrium plectranthoides* Gamble[3]
25. *Trichopus zeylanicus* Gaertn. var. *travancoricus* (Bedd.) Burkill. K. Narayanan (CR./G)[3]
26. *Trichosanthes anaimalaiensis* Bedd. (CR./G)
27. *Utleria salicifolia* Bedd. (CR./G)
28. *Valeriana leschenaultii* DC. (CR./G)
29. *Vateria macrocarpa* B.L. Gupta (CR./G)
30. *Vernonia gossypina* Gamble[3]

B. CAMP in North India[2]

31. *Aconitum balfourii* Stapf var. *balfourii*
32. *Aconitum deinorrhizum* Stapf – CR-NW Syn. *Aconitum heterophylloides* (Brühl) Stapf
33. *Aconitum heterophyllum* Wall. ex Royle-CR-NW
34. *Aconitum violaceum Jacquem.* ex Stapf -CR-NW
35. *Acorus calamus* L. – CR-NE
36. *Angelica glauca* Edgew. – CR-NW
37. *Arnebia benthamii* (Wall. ex G.Don) I.M. Johnst. - CR-NW
38. *Atropa acuminata* Royle ex Lindl. – CR-NW
39. *Berberis kashmirana* Ahrendt – CR-NW
40. *Craterostigma plantagineum* Hochst. – CR-CEN
41. *Curcuma caesia* Roxb. – CR-CEN
42. *Delphinium denudatum* Wall.ex Hook. f. & Thoms. – CR-NW
43. *Fritillaria roylei* Hook. – CR-NW Syn. *Fritillaria cirrhosa* D.Don.
44. *Ilex khasiana* Purakay. – CR-NW
45. *Inula racemosa* Hook. f. – CR-NW
46. *Luvunga scandens* (Roxb.) Buch. - Ham. ex Wight & Arn. – CR-NE
47. *Meconopsis aculeata* Royle – CR-NE
48. *Nardostachys jatamansi* DC. – CR-NE
49. *Prezwalskia tangutica* – CR-NE
50. *Valeriana jatamansi* Jones. – CR-NE

(47 Illustrations provided)

Part – III - 44 Plants

Plant Species declared as Globally Endangered (Endemic to India and Nationally Critically Endangered)

A. CAMP in South India[1]

1. *Acranthera grandiflora* Bedd.[3]
2. *Anoectochilus elatus* Lindl.[3]
3. *Biophytum longibracteatum* Tadul. & K.C. Jacob[3]
4. *Cyclea fissicalyx* Dunn
5. *Decalepis hamiltonii* Wight & Arn.
6. *Diotacanthus albiflorus* (Bedd.) Benth.[3]
7. *Dipterocarpus indicus* Bedd.
8. *Dysoxylum malabaricum* Bedd. ex C. DC.
9. *Elaeocarpus venustus* Bedd.[3]
10. *Elatostema lineolatum* Wight var. *setosum* A.N. Henry[3]
11. *Gymnema khandalense* Santapau
12. *Gymnema montanum* (Roxb.) Hook. f.
13. *Heliotropium keralense* Sivarajan & Manilal
14. *Hopea utilis* (Bedd.) Bole[3]
15. *Hydnocarpus macrocarpa* (Bedd.) Warb.[3]
16. *Lamprachaenium microcephalum* Benth.
17. *Madhuca diplostemon* (C.B. Clarke) P. Royen
18. *Nilgirianthus ciliatus* (Nees) Bremek.
19. *Palaquium bourdillonii* Brandis[3]
20. *Poeciloneuron pauciflorum* Bedd.[3]
21. *Popowia beddomeana* Hook.f. & Thoms.[3]
22. *Semecarpus travancorica* Bedd.[3]
23. *Stenosiphonium parviflorum* T. And.[3]
24. *Strychnos aenea* A.W. Hill
25. *Swertia lawii* (C.B. Clarke) Burkill
26. *Syzygium zeylanicum* (L.) DC. var. *ellipticum* A.N. Henry, Chandrab. & Nair Syn. *Syzygium zeylanicum* (L.) DC.[3]
27. *Thottea barberi* (Gamble) Ding Hou[3]
28. *Vernonia penisularis* (C.B. Clarke) ex Hook. f. var. *kodayarensis* A.N. Henry & Gopalan[3]
29. *Vernonia ramaswamii* Hutch[3]
30. *Vernonia travancorica* Hook. f.[3]

B. CAMP in North India[2]

31. *Berberis aristata* DC. – EN-NW
32. *Berberis lycium* Royle – EN-NW
33. *Bunium persicum* (Boiss.) B. Fedtsch. – EN-NW
34. *Gastrochilus longiflorus* Wall. – EN-NE Syn. *Boesenbergia longiflora* (Wall.) Kuntze
35. *Gloriosa superba* L. – EN-CEN
36. *Heracleum candicans* Wall. Ex DC. – EN-NW
37. *Hydnocarpus kurzii* (King) Warb. – EN-NE
38. *Lavatera cashmeriana* Cambess. – EN-NW
39. *Polygonatum verticillatum* (L.) All. – EN-NW
40. *Rheum nobile* Hook. f. & Thoms. – EN-NE
41. *Saussurea gossypiphora* D. Don. – EN-NW
42. *Saussurea obvellata* (DC.) Edgew. – EN-NW
43. *Saussurea simpsoniana* (Fielding & Gardner) Lipsch. – EN-NW
44. *Swertia angustifolia* Buch. – Ham. ex D. Don

(42 Illustrations provided)

PLANT SCHEDULE - II

Covers 51 plants
(Plant Species declared as Globally Vulnerable (Endemic to India and Nationally Endangered)

A. CAMP in South India[1]

1. *Aglaia elaeagnoidea* (Juss.) Benth. var. *bourdillonii* (Gamble) K.K.N. Nair[3]
2. *Amorphophallus commutatus* (Schott) Engl. (VU/G)
3. *Ampelocissus araneosa* (Dalzell.) Gamble (VU/G)
4. *Artocarpus hirsutus* Lam. (VU/G)
5. *Baccaurea courtallensis* Muell. - Arg.[3]
6. *Bentinckia condapanna* Berry[3]
7. *Calophyllum apetalum* Willd. (VU/G)
8. *Capparis diversifolia* Wight & Arn.[3]
9. *Cayratia tenuifolia* Gagnep.[3]
10. *Cinnamomum macrocarpum* Hook. f. (VU/G)
11. *Cinnamomum sulphuratum* Nees (VU/G)
12. *Curcuma pseudomontana* J. Graham (VU/G)
13. *Diospyros candolleana* Wight. (VU/G)
14. *Diospyros paniculata* Dalzell. (VU/G)[3]
15. *Elaeocarpus munronii* Mast. (VU/G)[3]
16. *Garcinia gummi-gutta* (L.) Roxb. (VU/G)
17. *Garcinia indica* (Thouars) Choisy (VU/G)
18. *Hedyotis eualata* (Gamble) A.N. Henry & Subr. var. *agastyamalayana* A.N. Henry & Subr.[3]
19. *Hedyotis travancorica* Bedd.[3]
20. *Heracleum candolleanum* (Wight & Arn.) Gamble (VU/G)
21. *Holostemma annulare* (Roxb.) K. Schum (VU/G) Syn. *Holostemma ada-kodien* Schult.
22. *Humboltia vahliana* Wight (VU/G)
23. *Hydnocarpus alpina* Wight (VU/G)[3]
24. *Hydnocarpus pentandra* (Buch.-Ham.) Oken (VU/G)[3]
25. *Kingiodendron pinnatum* (Roxb, ex DC.) Harms.[3]
26. *Meteoromyrtus wynaadensis* (Bedd.) Gamble[3]
27. *Myristica malabarica* Lam. (VU/G)
28. *Ochreinauclea missionis* (Wall. ex. G. Don) Ridsdale (VU/G)
29. *Piper nigrum* L. (VU/G)
30. *Plectranthus nilgherricus* Benth. (VU/G) Syn. *Isodon nilgherricus* (Benth.) H. Hara
31. *Saprosma corymbosum* (Bedd.) Bedd.[3]
32. *Strophanthus wightianus* Wall. ex Wight[3]
33. *Swertia corymbosa* Wight ex Griseb. (VU/G)
34. *Syzygium calcadense* (Bedd.) Chandras. Syn. *Eugenia calcadensis* Bedd. (CR)[3]
35. *Tragia bicolor* Miq. (VU/G)

B. CAMP in North India[2]

36. *Berberis chitria* Buch. - Ham ex Lindl. – VU-NW
37. *Bergenia ligulata* (Wall.) ex Engl. – VU-NW Syn. *Bergenia pacumbis* (Buch. - Ham. ex D. Don) C.Y. Wu & J.T. Pan
38. *Clerodendrum colebrookianum* Walp. – VU-NE
39. *Clerodendrum serratum* (L) Moon – VU-CEN
40. *Curculigo orchioides* Gaertn. – VU-CEN
41. *Curcuma angustifolia* Roxb. – VU-CEN
42. *Gymnema sylvestre* (Retz.) Schult. – VU-CEN
43. *Hedychium spicatum* Sm. – VU-NW
44. *Ipomoea turpethum* (L.) R. Br. – VU-CEN
45. *Paeonia emodi* Wall. ex Royle – VU-NW
46. *Rheum australe* D. Don. – VU-NW
47. *Rhododendron anthopogon* D. Don. – VU-NE
48. *Rhus semialata* Murray – VU-NE
49. *Thalictrum foliolosum* DC. – VU-NW
50. *Tylophora indica* (Burm. f.) Merr. – VU-CEN
51. *Urginea indica* (Roxb.) Kunth – VU-CEN

(51 Illustrations furnished)

PLANT SCHEDULE - III

Covers 25 plants
Plant Species declared Globally near Threatened (Endemic to India) and Nationally Endangered)

A. CAMP in South India[1]

1. *Aglaia barberi* Gamble[3]
2. *Capparis fusifera* Dunn[3]
3. *Drosera indica* L. (LR-NT-R)
4. *Embelia ribes* Burm. f. (LR-NT-G)
5. *Gardenia gummifera* L. f. (LR-NT-G)
6. *Glycosmis macrocarpa* Wight (LR-NT-G)
7. *Hedychium coronarium* J. Koenig (LR-NT-R)
8. *Hedyotis albonerva* Bedd.[3]
9. *Hedyotis viscida* Bedd.[3]
10. *Knema attenuata* (Hook. f & Thomson) Warb. (LR-NT-G)
11. *Nothopegia heyneana* (Hook. f.) Gamble[3]
12. *Octotropis travancorica* Bedd.[3]
13. *Operculina turpethum* (L.) Silva Manso (LR-NT-R)
14. *Orophea uniflora* Hook. f. & Thomson Wazzu[3]
15. *Piper longum* L. (LR-NT-R)
16. *Pseudarthria viscida* (L.) Wight & Arn. (LR-NT-R)[3]
17. *Pueraria tuberosa* (Roxb. ex Willd.) DC. (LR-NT-R)
18. *Symplocos cochinchinensis* (Lour.) Moore (LR-NT-R)
19. *Terminalia arjuna* (Roxb. ex DC.) Wight & Arn. (LR-NT-R)
20. *Vateria indica* L. (LR-NT-G)

B. CAMP in North India[2]

21. *Baliospermum montanum* (Willd.) Muell. - Arg. – LR-NT-CEN
22. *Celastrus paniculatus* Willd. – LR-NT-CEN
23. *Cinnamomum tamala* T. Nees & Eberm. - LT/NT-NW
24. *Cordia rothii* Roem. & Schult. – LR/NT-CEN Syn. *Cordia sinensis* Lam.
25. *Jurinea dolomiaea* Boiss. – LR/NT-NW

(25 Illustrations furnished)

IUCN RED LIST CATEGORIES

Ex	–	Extinct
EW	–	Extinct in Wild
CR	–	Critically Endangered
En	–	Endangered
Vu	–	Vulnerable
LR	–	Low Risk
LR-cd	–	Low Risk conservation dependent
LR-nt	–	Low Risk Near Threatened
LR-lc	–	Low Risk least concern
DD	–	Data Deficient
NE	–	Not Evaluated
G	–	Globally
R	–	Regionally

1. Based on the Conservation Assessment and Management Plan (CAMP) Workshop conducted by FRLHT, Bangalore during 1994-1998;
2. Based on the Conservation Assessment and Management Plan (CAMP) workshop process WWF, India; Zoo/CBSG, India; UP Forest Department, Lucknow. 1997;
3. Conservation Assessment and Management Plan (CAMP) by the Author based on Results of the Field Study in KMTR during 2004-2009.

The protection, conservation and overall management of threatened medicinal plants needs an inventory ascertaining their species-specific threat status, effective regulations, institutional mechanism and strong legislative support, as well as the participation of all stakeholders

Historical perspective of Policies and Acts

Present efforts

Several Indian plants out of 622 taxa recorded in the Red Data Book of Indian Plants (Nayar and Shastri, 1987, 1988 & 1990) have known medicinal uses. Rapid threat assessment exercises carried out by the Foundation for Revitalisation of Local Health Traditions (FRLHT) indicated 265 wild medicinal plant species as Threatened. Under the present circumstances, the provision in the Biological Diversity Act, 2002 is pertinent.

Accordingly, the Ministry of Environment and Forests (MoEF) of the Union Government in consultation with the concerned state and union territory, notified 103 plant species as threatened during 2011-12. However, among the species selected many of them are not really in threat whereas many endemic plants which are really under threat have not been listed. This needs to be taken up with the Botanical Survey of India and finally with the Government of India for a review.

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Rauvolfia tetraphylla is a bush or small tree widely used for ornamental and medicinal purposes

Management strategies needed

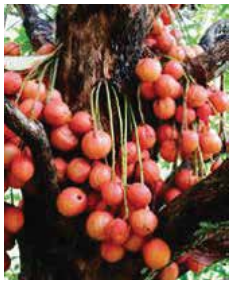
The management of flora, including MPs, needs to be prioritized and dealt with site-specific information regarding their natural habitats. Unfortunately, there are no integrated national policies on herbal medicines, their source of origin, inventories and collection procedure, cultivation practices, monitoring of production, uses by the consumers and traditional practitioners, prices, sale pattern, marketing and monitoring and finally total surveillance on MPs and herbal products being exported from India.

The protection, conservation and overall management of threatened MPs need an inventory ascertaining their species-specific threat status, effective regulations, institutional mechanism and strong legislative support, as well as the participation of all stakeholders. Therefore, what is urgently required is to facilitate the policy planners, drug regulators, health administrators and professionals including traditional and modern practitioners to regulate the market and ensure consumer safety along with conservation and sustainable use of MPs with an appropriate national policy in place (Sarcar 2005; Singh 2006).

Need for inclusion of additional legal provisions

It was expected that a number of threatened categories of plants should be included in the WPA, 1972. However, for inexplicable reasons the failure to include such a list has

A - ILLUSTRATIONS OF SPECIES PROPOSED IN PLANT SCHEDULE



Baccaurea courtallensis

Beddome's cycad (Cycus beddomei)

Blue vanda (Vanda coerulea)

Coscinium fenestratum Colebr

Curcuma angustifolia

Curcuma pseudomontana

Cycas circinalis L.

Elaeocarpus venustus Bedd.

Eugenia singampattiana

Gnetum ula Brong.

Jurinea dolomiaea Boiss

Coscinium fenestratum Colebr

Kuth (Saussurea lappa)

Ladies slipper orchid (Paphiopedilium Spp.)

Myristica malabarica

Nepenthes khasiana Hook. f.

Paphiopedilum druryi (Bedd.) Pfitzer

Rauvolfia serpentina Benth. ex Kurz

Red vanda (Renanthera imschootiana)

Rheum nobile

201

wild endemic and threatened medicinal plants have been suggested to be covered under three separate plant schedules

led to these categories of plants being left out of the Act subsequent to its amendment in 2006.

Separate schedules need to be created immediately for the imperilled plants in either the WPA, 1972 or the Biological Diversity Act, 2002 based on the list of plants already available in Schedule VI of the Wildlife (Protection) Act, the Ministry of Commerce list of notified plants, 1997 IUCN Red List of Threatened Plants and the lists of Conservation Assessment and Management Plan (CAMP) that include the threatened medicinal plants in southern and northern India (2001). This then needs to be legislated as in the case of the faunal species. Presently, it is suggested that 201 wild endemic and threatened medicinal plants be covered under three separate plant schedules.

Phyllanthus singampattianus (Seb. & A.N. Henry) Kum. & Chandr locally known as Aathuchadai by the Kanis of Tamil Nadu in India is consumed for curing jaundice, diarrhea and dysentery.

Manoj Kumar Sarkar

He is an IFS officer of 1986 batch, currently working as Chief Conservator of Forests, Tamil Nadu Forest Department, Government of Tamil Nadu, India. Dr Sarkar did his graduation and post graduation from the Presidency College of Calcutta University and Indira Gandhi National Forest Academy, Dehra Dun and MBA in Public Policy from Indian Institute of Management, Bangalore. He was conferred a doctorate degree in Botany from Bharathidasan University, Tiruchirapalli, Tamil Nadu.

As a student and an IFS officer, Dr Sarkar conducted study on the Endemic and Threatened Medicinal Plants of India located in the world famous Kalakad Mundanthurai Tiger Reserve (KMTR).
Email: manojkumarsarkar1954@gmail.com

PACHYDERMS EXPLOITED FOR SALE CONCERNS VOICED OVER ILLEGAL LIVE ELEPHANT TRADE

By Shekhar Kumar Niraj and Shubhobroto Ghosh

TRAFFIC and Elephant Family recently released an investigative report stating that smugglers in Myanmar were looking to revive the lucrative trade in wild Asian elephants (*Elephas maximus*). These elephants, mainly calves, were being held in 'horrific' conditions. The wildlife crime monitoring network – TRAFFIC was concerned that this would imperil the survival of the elephant population in Myanmar. The study also stated that up to 81 live elephants were illegally captured for sale into the Thai tourist industry between 2011 and 2013.

The report further averred that the animals are mainly used to entertain foreign and domestic tourists at trekking camps. Visitors tend to prefer younger elephants, thereby leading to an escalation in the value of elephant calves, such that the current market value is around USD33,000 for a healthy specimen.

The trade in captive wild elephants extends beyond the borders of Myanmar to India. Here the capture and transportation of elephants to the infamous animal fair in the district of Sonepur in Bihar, appears to be a regular occurrence.

While there are laws in place to prohibit such action in India, the trade in Asian elephants transported from Assam continues unabated. In fact, as a Schedule I animal, under Section 40 (2) of the Wildlife (Protection) Act, 1972, the possession, acquisition, disposal of and transportation of a captive elephant without the written permission of the Chief Wildlife Warden or the authorized officer under the Act is prohibited. Further, Section 43 of the Act restricts the sale, purchase and/or transfers of captive elephants from one person to another for monetary considerations or any other profitable gain. Nevertheless, TRAFFIC India observed 37 elephants at the Sonepur Animal Fair in 2013, including six tuskers and six calves. Reportedly, some of these animals were transported from Assam to Bihar for sale at the fair in contravention of the Act. There was ample evidence of to suggest that these trade deals were finalized before the fair began or at the time of the fair's conclusion. Information from reliable sources suggests that only a fraction of the elephants are displayed at Sonepur for sale, while a larger number are traded privately.

"Elephant populations are being depleted all over Southeast Asia," added Dr Shepherd. TRAFFIC and other campaigners want to see a toughening of the laws in Thailand. If an animal is captured at the border it can be seized. However, if the animal gets into the country there are significant loopholes. Elephants do not have to be registered until they are eight years old, creating an opportunity for these smuggled calves to be 'laundered' into the domestic population.

"You take a wild elephant and beat it long enough and suddenly the switch goes off and you have a tame elephant," avers Dr Chris Shepherd–TRAFFIC

© SHUBHOBROTO GHOSH

Elephant adorned for sale at Sonepur in Bihar

Vincent Nijman (compiler) (2014). TRAFFIC International

Elephants lined for display at Sonepur Animal Fair in Bihar

Furthermore, there is also a demand for live elephants in Kerala wherein full grown tuskers have been bought from the Sonepur Animal Fair for temples. Elephants are also bought by rich landlords who keep them as status symbols. While the influx of these animals from Assam seems to have reduced due to the tightening of regulations, an overwhelming majority of the elephants from Assam are reportedly wild caught.

These recent investigations reveal that the illegal trade in live elephants is still very much rife and needs immediate enforcement attention. Legal loopholes have to be urgently addressed to prevent traders from taking advantage of the ambiguity in laws that allow for display and sale of elephants in places like Sonepur. Transborder vigilance has to be bolstered in the South Asian region and beyond to ensure there is no trafficking of live elephants from one country to another. Persistent campaigns in the public domain can raise awareness and encourage tourists to move away from patronizing any activities linked to this illegal trade that threatens the existence of India's National Heritage Animal that is also revered in Thailand.

Shekhar Kumar Niraj

He is an IFS officer of the Indian Government who has been associated with wildlife law enforcement and illegal trade control for nearly two decades in different positions. He now heads TRAFFIC India. Prior to this he spearheaded the Gulf of Mannar Biosphere Reserve as its Director and worked relentlessly to save corals, dugongs and sea cucumbers among several other coastal marine species. He earned his PhD from the University of Arizona and his papers on illegal wildlife trade and poaching have been published in reputed international journals.
Email: sniraj@wwfindia.net and shekhar.niraj@gmail.com

Shubhobroto Ghosh

He is a former journalist for The Telegraph who has also been published in *The Times of India, The New York Times, Statesman, Asian Age, Montreal Serai* and *The Hindu*. Ghosh has been active in animal protection issues since the early nineties and has been a member and supporter of several animal protection organizations. Ghosh currently works as Senior Programme Officer at TRAFFIC India in New Delhi.
Email: sghosh@wwfindia.net and sgpowerofwords@gmail.com

HUNTING IN INDIA'S NORTHEAST SOME PERSPECTIVES

By Sonali Ghosh

My most vivid memories of hunting are that of a confiscated Chinese pangolin from the Ripu-Chirang Reserved Forests of Kokrajhar. The poor creature had a very young baby and she had curled her body around her in an effort to protect it against the hunters. The small-time poachers told me that they had dug up the entire burrow to capture the animal and that the meat, scales and other parts would have been sold off in the clandestine market, had the Chinese pangolin and her baby not been confiscated by forest officials.

In another instance, the tea garden labourers adjoining Chakrashila, a wildlife sanctuary designated for the preservation of golden langurs were apprehended with bows and arrows, locally-made snares of bamboo and wires. I was told that production of tea during the winter season was low and hence, this group was keeping themselves busy by hunting whatever they could lay their hands on. They hunted rodents, birds and pythons but the favourites were wild pig and an occasional deer that strayed from the adjoining forests.

Fish populations have faced a much deeper onslaught. The traditional system of abstaining from eating fish during certain months, thus conserving the fish population and allowing the juveniles to mature, has eroded. The use of fine mosquito nets, that catch even the smallest of fingerlings, or the use of dynamite blasting and pesticides in water bodies has also severely depleted the fish population from several of the small beels (lakes) and rivulets that characterize the Terai landscape of lower Assam.

While it is difficult to quantify exactly how much wildlife was being removed from the government-owned forests, we could form a rough estimation by systematically maintaining a diary of rescued animals. For example, a total of 136 animals were rescued from December 2005 to July 2008 by the Kokrajhar Wildlife Division. This signified that on an average, six to seven animals had been rescued every month. The records also indicated that there were a total of 43 species that were being hunted and rescued and that several of them belonged to the various schedules of the WPA, 1972. This was in 2008. I have since been transferred from Kokrajhar Wildlife Division to Manas, a larger Protected Area. The cause of hunting gets amplified here because of a greater diversity in animal species and hence large amounts of money at stake for the poachers.

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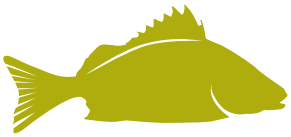
A rescued Chinese pangolin



The traditional system of abstaining from eating fish during certain months, thus conserving the fish population and allowing the juveniles to mature, has eroded

A live Tokay gecko rescued by Manas National Park officials in Assam

The Manas landscape has a unique northern location. It is sandwiched between the protected areas of Buxa-Jaldapara in Bengal, Royal Manas, Phibsu and Khaling protected areas in Bhutan to the forests of Nameri, Pakke, Namdapaha in India and Hukaung Valley tiger reserves in India and Myanmar respectively. Together, it forms the single largest protected landscape for Bengal tigers in the world. It has an assemblage of habitat types that range from the dense tropical semi-evergreen, moist deciduous forests to the savannah woodland to the floodplain alluvial grasslands of the Brahmaputra river system. It is for this reason that it has a unique collection of wild species. The landscape is spread over a total of 2,840km^2 and is formed of at least 23 forest blocks with varying degrees of protection. It is also a landscape with six different tribal communities who have traditionally practised hunting as part of their subsistence. This complex socio-cultural assemblage combined with a decade-long period of armed conflict and the prevalence of gun culture, unsettled local rights, abrupt forest-habitation edges and unemployment, has transformed hunting for subsistence to hunting for commercial purposes.

Recovery of weapons and articles used by poachers in Manas National Park

Systematic research has clearly indicated that hunting for subsistence is no longer sustainable. Invertebrates, amphibians, insects, fish, reptiles, birds and mammals are all targeted by the hunting trade. Biomass removal due to hunting is difficult to quantify and research is currently underway. For example, one study on select tribal communities of Arunachal Pradesh, Nagaland and Mizoram reported an average economic dependence of up to 25 per cent on wild meat.

At least 135 species of wild animals were known to be hunted with ungulates, primates and birds contributing to the highest proportion of biomass extracted. Similarly, a paper published in 2010 from a study in Arunachal Pradesh, reported a total of 33 mammalian species that were reportedly hunted, of which only 11 were reported by hunters during formal interviews. The extent of off-take of mammals was related to the altitude of the village and the use of guns. Over-hunting had in some areas resulted in what is typically known as 'empty forests' or 'green deserts' and this is an area of growing concern, especially for the survival of large prey-dependant species such as tigers.

I have often asked the people in the communities as to why poachers risked their lives to venture into the forests. While there is no straight answer, one hunter-turned reformer told me that lack of employment opportunities is one of the main drivers. According to

Studies have shown that remote rural communities often see conservation projects as a kind of developmental strategy that would provide education, health care and improve the quality of life, in exchange for their co-operation and participation in conservation projects. The critical link between welfare measures and wildlife conservation by understanding the socio-cultural realities would then be the key

him, visiting the forest was a part of their cultural habit, something they have been doing since their childhood. This was particularly prominent during the winter months, when the agriculture production was low, the weather was conducive and forests provided greater accessibility.

Wildlife population has largely depleted at the edge of forests and the poachers now have to travel deep into the forests and even camp inside forests for large and more lucrative animals. This was evident from the equipment that a group of poachers with a freshly shot wild pig were carrying. When we apprehended the group, the group was wearing army fatigues that provided easy camouflage and were carrying a week's supply of rice, one plastic tent, some ropes, four locally-made guns and some crude bullets made from lead and firecrackers. I was told that the modus operandi was to open the firecracker and use the chemical as gunpowder for the muzzle loading rifle. The weapons were good enough to kill a wild pig or even a large sambar.

I found it enlightening, when one person remarked that most of the state or NGO-sponsored alternative livelihood programmes targeted village women by providing them with piggery, goatery and weaving units and therefore, these had limited impact. There were instances where power tillers and tractors were also provided to the menfolk, but such group ownership became ineffective in the long run. Given the low purchasing power of most forest dwellers and the dynamics of the agricultural economy in forest-rich environments, extensive livestock husbandry is seen as a feasible option. Most livestock are kept as a form of reserve banking, and to satisfy particular cultural needs.

Wild meat is often the most accessible and sustainable form of protein source and is cheaper than the cost of raising livestock. Similar studies have shown that remote rural communities often see conservation projects as a kind of developmental strategy that would provide education, health care and improve the quality of life, in exchange for their co-operation and participation in conservation projects. The critical link between welfare measures and wildlife conservation by understanding the socio-cultural realities would then be the key.

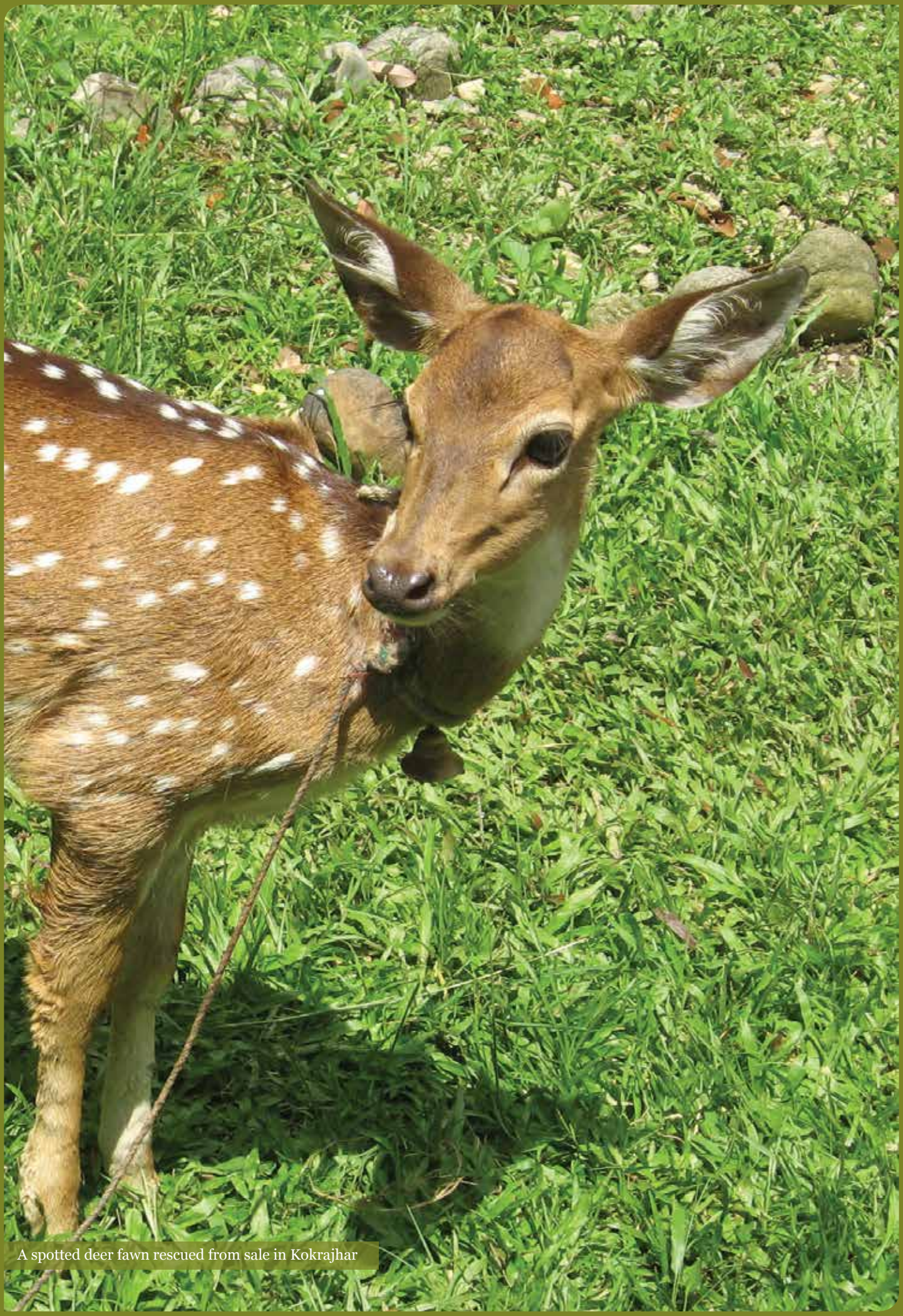
Another aspect worth noting is the prevalence alcoholism among the tribal men who hunt and sell wild meat in exchange for cheap liquor from the local market. Such opportunistic hunting sometimes yields lucrative catches such as otters or the Asiatic black bear (*Ursus thibetanus*) that are sold at much higher rates to middlemen.

Erosion of traditional values is also a cause of concern. For example, golden langurs were revered as sacred by the traditional Hindu Bodo communities. Instances of hunting are now being reported from areas where the locals have converted to other religions. Similarly, traditional values of not hunting during certain seasons or not hunting certain species are also being ignored primarily for economic reasons.

Then you wonder–is there any hope for that Chinese pangolin mother and her young one? I am an optimist and strongly feel that conservation awareness and information documentation are the first steps towards making a difference. The second step would be law enforcement, including the laws related to weapons use. At the same time, site-specific innovative methods that make the conventional 'development' path more attractive have to be devised to wean away the old as well as the young poachers. Till then, it is hard work for all of us.

Sonali Ghosh

She is an Indian Forest Service officer currently serving as Deputy Director Manas Tiger Reserve. She completed her master's in wildlife science from Wildlife Institute of India and recently a PhD studying tigers in the Indo-Bhutan Manas landscape from Wales, UK. She has over 15 years of working experience in the field of wildlife conservation and her current interests include land use planning and use of remote sensing technology in Protected Area Management.
Email: ghoshsonali@gmail.com



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A spotted deer fawn rescued from sale in Kokrajhar

TRAFFIC'S WILD CARD

A MULTI-PRONGED APPROACH TO PRESERVING INDIA'S WILD HERITAGE

By Shekhar Kumar Niraj and Dilpreet B. Chhabra

Illegal wildlife trade, driven by high profits and consumer greed, has taken a toll on the endangered flora and fauna globally, in general and in India, in particular. Illegal wildlife trade has depleted populations of many species, whereas many are facing the threats of extinction

Jimmy, a two-and-a-half year old German shepherd dog, was accorded a Certificate of Merit by the Governor of Madhya Pradesh in 2013. Jimmy has been trained as a sniffer dog, also known as detector dogs, at the prestigious 23rd Battalion Special Armed Force Training Centre of the Madhya Pradesh Police, where sniffer dogs are trained for wildlife crime detection in India. Jimmy has helped bust at least 25 wildlife poaching and smuggling cases, and has nabbed poachers.

Jimmy is not alone in this pursuit. Jacky, another wildlife sniffer dog stationed at Bhopal in Madhya Pradesh has also helped in nabbing poachers and in seizing smuggled wildlife contrabands in 2013. Tracey, a two-year-old female sniffer dog, helped recover two elephant tusks, weighing over 32kg from the forests of Dalma Wildlife Sanctuary in Jharkhand on 30 January 2012. These dogs belong to the group of 12 dogs trained under TRAFFIC's wildlife sniffer dog training programme launched in 2008 to fight wildlife crime and to curb illegal wildlife trade.

These trained canines are currently deployed by the Forest Departments of Haryana, Maharashtra, Madhya Pradesh, Jharkhand, Bihar and Uttarakhand. The sniffer dog training programme is one of the pivotal programmes of TRAFFIC India and the organization has plans of making these trained dogs a significant tool in fighting wildlife crime by increasing the number of trained dogs available to the states where wildlife crimes are high, particularly for the Asian big cats.

Illegal wildlife trade, driven by high profits and consumer greed, has taken a toll on the endangered flora and fauna. Many species are already extinct and many more are facing the threat of extinction. Rhinos are being hunted for their horns, which fetch exorbitant amounts in the international illegal wildlife markets. Tigers and leopards are being butchered for their body parts, elephants are being killed for ivory, reptiles are being skinned to make fashion accessories and birds are being caught, clipped and dyed for a variety of illegal uses including pet trade. The oceans and seas with their precious marine wealth are also being continuously plundered for shells, seahorses, ornamental fish, corals, sponges, seaweeds, sea grasses and numerous other marine species. The list is exhausting and unending. The fact confounds the concern that most of Indian poached wildlife are meant for international illegal wildlife markets.

TRAFFIC India has identified that paucity of resources, shortage of man power in forces fighting poaching and illegal wildlife trade, lack of regular training in combating wildlife crimes, absence of modern tools and techniques available with the enforcement agencies, lack of coordination among various enforcement agencies, and least but not the last a low priority accorded to fighting wildlife crimes might constitute major gaps in wildlife law enforcement in India.

To bridge these gaps, TRAFFIC mandates enforcement capacity-building programmes across India for enforcement agencies like the Forest, Police, Customs, Railway Protection Force, and the various paramilitary forces, e.g. Border Security Force and the Shashtra Suraksha Bal. Till date, through over 50 workshops and training above 3,500 personnel, TRAFFIC India has helped strengthen wildlife investigation and law enforcement capacities in India. These processes have helped in networking and building a spirit of cooperation among various enforcement agencies to fight wildlife crime. Since, judicial support, is paramount to effective wildlife law enforcement, TRAFFIC has organized a series of sensitization programme for over 500 senior and middle level judicial officers from Karnataka, Assam, Kerala, Delhi, Himachal Pradesh, Manipur and Mizoram.

Another core function of TRAFFIC India is to generate and provide actionable information support to various law enforcement agencies that are in charge of protecting wildlife species in various protected areas in the country and detecting and combating illegal wildlife trade. Over the last seven months TRAFFIC has strengthened this component of its national programme to a considerable extent, thus leading to detection and seizures in above 60 cases and arrest of more than 30 poachers and wildlife smugglers. TRAFFIC has performed these tasks with astute professionalism and meticulous precision. The control of rhino poaching in Assam which had become one of the most serious challenges for the enforcement agencies and forest department has been extensively contributed by TRAFFIC in the new dispensation during May-July 2014.

TRAFFIC gathers information through its well established network of committed field investigators and after verifying the same, at fine levels, provides it to the concerned

Forest officials use deep search metal detectors to locate traps and snares to catch wild animals

enforcement agencies for immediate action. The field investigator constantly support with information during the combat operations TRAFFIC also trains the enforcement officials in information collection tools and techniques during its enforcement capacity building exercises. TRAFFIC is particularly active along India's transborder regions for the support of the forests and wildlife protection agencies and forces. It has assisted Assam Police and CBI in their fight against rhino poaching and constantly assists the Wildlife Crime Control Bureau in its works.

TRAFFIC has helped strengthen wildlife investigation and law enforcement capacities of nearly 3500 enforcement officials and has helped in networking and building a spirit of cooperation among various enforcement agencies to fight wildlife crime through more than 50 training workshops and sensitization programmes that it has conducted from 2008-14

TRAFFIC also provides in post seizure prosecution support by making legal assistance available to various forest departments across the country. Effective investigation of the crime scene is the key to a successful prosecution. Hence, TRAFFIC strongly encourages the use of forensic as an important tool for proper investigation and collection of evidence in wildlife crime cases and provides relevant training on the same to the enforcement officials. For this, TRAFFIC has collaborates with nodal agencies in India, e.g. Wildlife Institute of India and Centre for Cellular and Molecular Biology and has developed a high-utility wildlife forensic kit for enforcement officials across the country. The kit helps in collecting samples from the crime scene in a standardized manner.

To help locate snares during patrolling, TRAFFIC has provided 78 deep search metal detectors (DSMD) to enforcement officials in 23 Tiger Reserves and 12 Protected Areas in 13 states. TRAFFIC has also trained the officials in their use at combat levels. The DSMDs can also be used during post-mortem examinations to detect bullet wounds in snared animals. This helps in case investigations and thus increases the chances of conviction in wildlife crimes.

The impact of poaching and illegal wildlife trade on biodiversity is poorly understood. Given the dynamics of trade, it is important to continuously gather information on poaching and illegal trade, trade routes, and determine spatial and temporal trends and finally share such analyses with various stakeholders including policy-makers and law enforcers. This enables a better understanding of wildlife trade and helps in developing appropriate polices on wildlife protection on one hand and optimization of resources on the other. TRAFFIC India values the significance of this requirement and thus provides documented analyses on the trends to the key decision-makers and enforcement officials to help in their actions and efforts for more effective wildlife conservation.

In 2012, TRAFFIC through its well analyzed report revealed a dangerous trend in leopard poaching and illegal trade. The report stated that at least four leopards were poached and their body parts were sold illegally every week during 2001-11 in India. The TRAFFIC investigation into the illegal trade, trapping and utilization of owls in India also disclosed a

TRAFFIC's "Don't Buy Trouble" campaign that appeals to tourists to be aware of what they buy as souvenirs during their travels has been running successfully since 2008 at various airports, tiger reserves, national parks, wildlife resorts/hotels, travel agencies, schools, colleges and in other prominent location

terrifying truth about the covert owl trade in India. Owls were not just being used in black magic and sorcery but were one of the prime target species in illegal bird trade. TRAFFIC's research extends beyond the most-known species, such as the elephant, tiger and the other Asian big cats, to lesser-known species such as a variety of mammals, as well as pangolins, turtles and tortoises, endangered birds, medicinal plants, timber and marine species.

Wildlife smuggling and trade has evolved into a sophisticated and well organized crime. Some creditable study indicates global trade of worth at least USD15 billion per year, making it perhaps the fourth largest illegal global trade after narcotics, counterfeiting, and human trafficking. As per TRAFFIC studies most of the illegal wildlife trade in the country does not exist in isolation but is well connected to crime networks in others countries. Therefore, transnational cooperation in the region is essential to deal with this menace. Towards this end, TRAFFIC has pioneered in constituting the South Asia Wildlife Enforcement Network (SAWEN), a network of eight South Asian countries in order to effectively address illegal wildlife trade occurring through borders. TRAFFIC works closely with SAWEN to achieve its long term objectives of biodiversity conservation by eliminating illegal trade in endangered species.

Finally, the wild card to abolish the illegal trade in wildlife lies with the consumer. If they cease buying wildlife products, poaching could be eliminated. TRAFFIC strongly believes in this philosophy and has launched campaigns to generate awareness on illegal wildlife trade and to reduce demand. TRAFFIC has also produced a five minute film on illegal wildlife trade that captures glimpses of the burgeoning illegal wildlife trade in India. Besides this, TRAFFIC has produced numerous posters and leaflets on similar issues. TRAFFIC's latest public service advertisement campaign – **WANTED ALIVE** – reminds people that the big cats are "Wanted Alive" in their natural habitat! Campaign posters feature the four Asian big cats—Tiger, Leopard, Snow Leopard and Clouded Leopard—all of them threatened by illegal trade in their body parts.

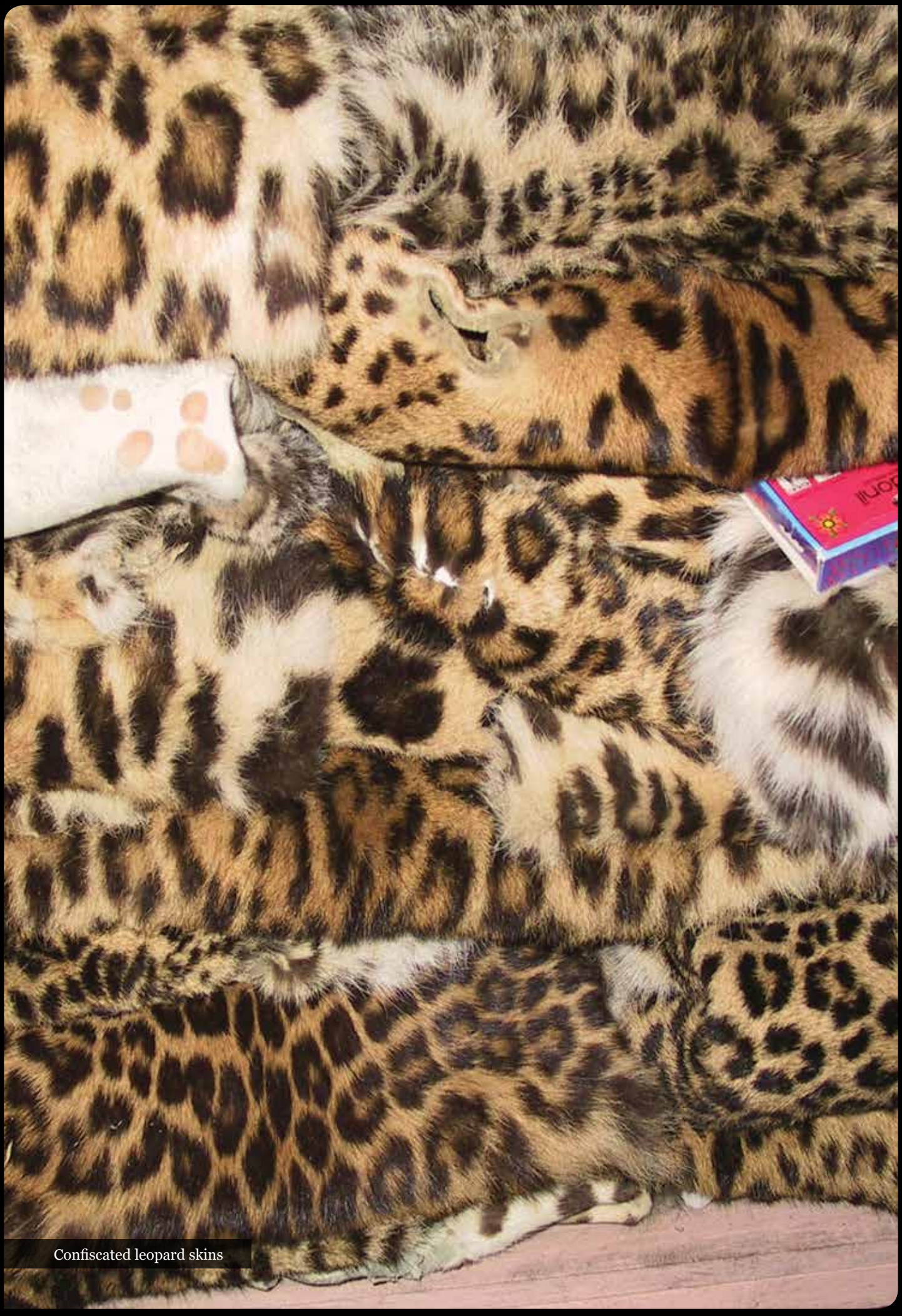
Since no objective can be met in isolation, TRAFFIC regularly partners with credible and reputed agencies such as CBI, Police, Forest Departments, Wildlife Crime Control Bureau, Wildlife Institute of India, NTCA, SAWEN and INTERPOL among others to curb poaching and illegal trade in the country and the region. TRAFFIC is committed to its mission of curbing poaching and illegal trade in protected species and ensuring that legal trade in various medicinal plant and timber species remain at sustainable levels. All its programmes are directed towards achieving this, perhaps, one of the most challenging missions of 21st century.

Shekhar Kumar Niraj

He is an IFS officer of the Indian Government, has been associated with wildlife law enforcement and illegal trade control for nearly two decades in different positions. He now heads TRAFFIC in India. Prior to this he spearheaded the Gulf of Mannar Biosphere Reserve as its Director and worked relentlessly to save corals, dugongs and sea cucumbers among several other coastal marine species. A PhD from the University of Arizona, he has authored several papers on illegal wildlife trade and poaching that have been published in reputed international journals.
Email: sniraj@wwfindia.net or shekhar.niraj@gmail.com

Dilpreet B. Chabbra

She works with TRAFFIC in India as Manager–Communications. Dilpreet has been with TRAFFIC since it reopened in India in December 2006, and has been instrumental in building the communication and outreach initiatives and campaigns for the organization in India. She is the Managing Editor for TRAFFIC's newsletter TRAFFIC Post, that has already completed 20 successful editions since its inception and Tiger Chronicles, e-newsletter on Tiger, trade, poaching and other related issues, that crossed its 50th issue. Before TRAFFIC, she was working with WWF-India in the Species Conservation Programme. Dilpreet is an ardent nature and animal lover and this is what motivated her to work on these issues from an early age. She has also worked with Sanctuary Asia Magazine and PETA India.
Email: dchhabra@wwfindia.net or dilpreetbeasley@gmail.com

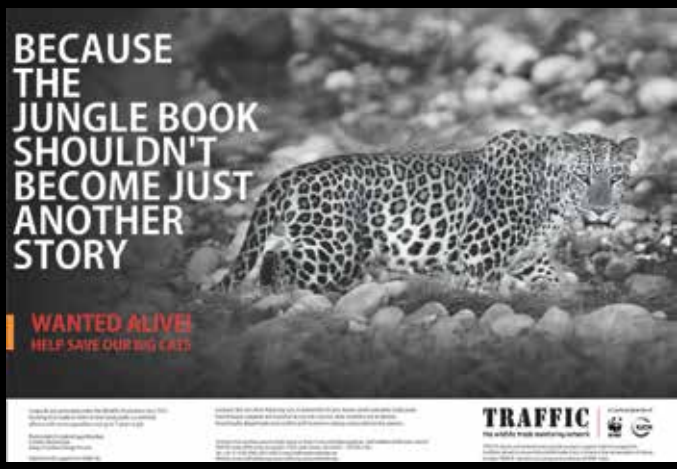


Confiscated leopard skins

TRAFFIC'S AWARENESS

DO NOT BUY TROUBLE

CAMPAIGNS IN INDIA



WANTED ALIVE
HELP SAVE OUR BIG CATS

Clouded Leopards are protected under the Wildlife (Protection) Act, 1972. Hunting of or trade in them or their body parts is a criminal offence with severe penalties and up to 7 years in jail.

Photo credit: David Lawson / WWF-UK
Creative: Maverik Geist
Design: Ermahera Design Pvt. Ltd.

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Clouded Leopard, the acrobat of the trees, is a highly arboreal cat. Found across the Himalayan foothills in Nepal to China and throughout mainland South-East Asia, it is very rare with the Indian population likely to be fewer than 1000 individuals. Clouded Leopard is widely hunted for its unusually patterned skin, its claws and extraordinarily long canines are used as decorations, its bones and meat are used in traditional Chinese medicines.

To know more and how you can help, log on to http://www.wwfindia.org/about_wwf/investors/traffic/tiger_actions/
TRAFFIC India, WWF-India Secretariat, 172-B, Lodhi Estate, New Delhi - 110 003, India
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Website: www.traffickids.org, www.traffic.org, www.wwfindia.org

TRAFFIC
the wildlife trade monitoring network

is a joint programme of WWF and IUCN

TRAFFIC carries out research and provides analysis, support and encouragement to efforts aimed to ensure that wildlife trade is not a threat to the conservation of nature in India. TRAFFIC operates as a programme division of WWF-India.

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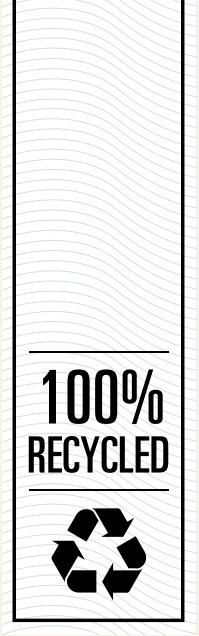

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