

# Conservation news

## Progress in breaking the link between narcotics crime and rainforest loss in Cambodia

One of the least publicized causes of rainforest destruction in recent years has been the production of amphetamine-type stimulants, including methylenedioxymethamphetamine (MDMA), commonly known as ecstasy. An important precursor of MDMA is safrole oil, refined from sassafras oil from the lower trunk and roots of various trees, including the Lauraceae genera *Ocotea* and *Cinnamomum*.

In the densely forested Cardamom Mountains, south-west Cambodia, Fauna & Flora International (FFI) staff observed a dramatic escalation in sassafras oil production in 2004, soon after stricter controls had been placed on this industry in neighbouring Vietnam. Sassafras is illegally refined in Cambodia from the uncommon *mreah prew phnom* tree, tentatively identified by local biologists as the Data Deficient *Cinnamomum parthenoxylon*. The trees are felled and their roots cut into pieces and boiled in huge cauldrons over wood fires for 5–8 days. The distillation process consumes an enormous quantity of other trees for fuel, and the waste is typically discarded into streams, causing severe pollution. It takes an estimated 100 kg of oil-rich material to produce 1 kg of safrole.

The oil is carried out of the forest in 35 l containers by local labourers, earning a monthly wage of c. USD 25, before being smuggled to Vietnam, China or Thailand, where it fetches upwards of USD 1,725 per litre according to research by the FFI team in Cambodia. In 2005 the United Nations Office on Drugs and Crime sent a mission to Cambodia to investigate the source of a large quantity of oil found in Vietnam. They reported that international efforts to track and control the production of ecstasy were complicated by the fact that safrole has other, legitimate uses, including the production of degreasants, toothpaste and paints. The felling and processing of *mreah prew phnom*, however, is unequivocally illegal in Cambodia.

Besides *mreah prew phnom* the Cardamom Mountains support exceptionally rich biodiversity, with many endemic animals and plants and > 60 globally threatened species. Nearly 30,000 people live in and around the mountains, including indigenous forest-based minorities. Considerable efforts have been made to close the illegal distilleries that threaten these forests and hence these communities. In Phnom Samkos Wildlife Sanctuary, for example, FFI supports 49 locally-recruited Ministry of Environment rangers who have successfully raided dozens of distilleries in the past 4 years, and destroyed or confiscated many tens of tonnes of safrole oil and the equipment to produce it. The distilleries are usually guarded by men armed with assault rifles and some are booby-trapped with anti-personnel mines.

Local people frequently come forward to report these and other threats to the forests they depend upon. Villagers

in O'Som commune, in the Central Cardamom Mountains, for example, earn most of their annual income from harvesting wild cardamom *Amomum krevanh*, and consider pristine *mreah prew phnom* forests to provide the optimal conditions for cardamom to grow. In 2006 the villagers alerted FFI to the presence of 16 Vietnamese-owned sassafras distilleries in and around their 11,000-ha cardamom forest, where cutting trees is forbidden. FFI responded by organising a successful joint operation in collaboration with Conservation International, the Ministry of Environment, Forestry Administration, Military Police and Royal Cambodian Armed Forces to close the distilleries and arrest the owners.

On 20 June 2008, 33 tonnes of sassafras oil were burned in Cambodia at a public ceremony organized by the Cambodian Ministry of Interior, the National Authority for Combating Drugs in Cambodia and the Australian Federal Police (AFP). Although this was only part of the oil seized and destroyed in recent years, the AFP Border and International unit calculated that it could have produced 245 million ecstasy tablets, with a street value of > USD 7 billion. Even in its raw form, the 33 tonnes would have fetched > USD 69 million in Thailand.

To date the enforcement operations appear to have been highly effective. While there were an estimated 75 active distilleries in the western Cardamom Mountains in 2006, aerial searches in late 2007 and 2008 found none. Given the exceptionally high value of safrole, however, this highly destructive industry could reappear at any time, and Cambodia's rangers are few in number and often underpaid. Consequently, even though the sassafras industry is just one of many crimes that rangers must address, we hope that organizations concerned with halting the narcotics trade will consider contributing financial or technical support to continue the rangers' vital role to protect Cambodia's forests.

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## Population estimate doubles for world's rarest ape

Hope for the survival of a species that has been described as the world's rarest ape has been given a great boost following a population census carried out last year on the Vietnam–China international border. Historically, the eastern black

crested gibbon was distributed to the east of the Red River, in southern China and northern Vietnam. Only two extant populations are known. One population on Hainan Island numbers < 20 individuals (see *Oryx*, 38, 452–456), and the other population is in a fragment of forest that lies on the international border in a remote corner of north-east Vietnam. The gibbons found at these two locations are now commonly referred to as the Hainan gibbon and cao vit gibbon, respectively, and there is general agreement that they are sufficiently distinct to be considered separate species.

The cao vit gibbon *Nomascus nasutus* population was only recently discovered, in 2002, by a team from Fauna & Flora International (FFI) Vietnam Programme, in a relatively small area of forest in a block of steep limestone mountains in Trung Khanh District, Cao Bang Province. Only 26–28 individuals were recorded in five groups. Nevertheless, the discovery was significant enough for FFI to initiate a project to protect this population, focusing mainly on community-based forest patrols and interventions to reduce firewood extraction. In 2006 the FFI China Programme also began conservation measures close to the border area in China, having seen there was viable habitat for the gibbons. Towards the end of 2006 a survey led by the Guangxi Provincial Forestry Bureau and supported by Kadoorie Farm and Botanic Garden recorded three more gibbon groups and announced the rediscovery of the species in China.

Soon after, plans were developed for a transboundary census led by FFI through its Vietnam and China Programmes, supported by the DEFRA Flagship Species Fund, UK, in Vietnam and National Geographic and the US Fish and Wildlife Service in China, and with the support of the government forestry agencies of Cao Bang and Guangxi Provinces and the participation of the local communities. A methodology was developed based upon small survey teams being assigned to listening posts on the summits of the mountains before dawn and recording gibbon groups by listening to their vocalizations. Visual observations were used to determine the numbers and structure of gibbon family groups, either from listening posts or by walking to valleys where the gibbons had been heard. The survey covered the entire area of forest that was of sufficient quality for the gibbons to inhabit. The same methodology was followed by both the Vietnam and China survey teams, with both sides beginning close to the border on 8 September 2007. The survey lasted for 11 days in Vietnam and 7 days in China, the latter with a smaller area to cover.

The Vietnamese census recorded 94–96 individuals in 17 groups and the Chinese census c. 32 individuals in six groups. By comparing data from both surveys, the team of combined Vietnamese and Chinese scientists have concluded that 18 different groups were recorded, totalling c. 110 individuals. Three groups appear to move across the border, and this has been confirmed by field research conducted since the beginning of 2008 in China.

The revised population estimate is much higher than expected, and the results of the census indicate the success of conservation efforts so far. There is other evidence that this population of cao vit gibbons is growing, with residents from one village close to the edge of the forest having recently reported that they have started to hear gibbon songs in the morning.

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### New hope for possibly not yet extinct Javan bird

The enigmatic Javanese lapwing *Vanellus macropterus*, endemic to Java, Indonesia, has not been recorded with certainty for over 60 years, despite intensive searches, and as such it is one of only a few bird species in Asia for which the demise has been properly documented. The species was confined to wide steppe-like marshes in river deltas on the densely populated island that is now home to 220 million people at a density of > 900 km<sup>-2</sup>. The marshes have almost all been converted to rice fields, shrimp ponds and settlements. Several searches over 1984–2007 in areas where the species was historically found or where seemingly suitable habitat was present failed to record the species. All known records of Javanese lapwing come from two discrete areas, one in the west along the north coast and one in the east on the south coast, 750 km apart. In the south-east the species is known from three localities and was last recorded in April 1939. The north-west site comprises 10 localities along a 100-km stretch of coast line, with the most recent (breeding) record from June 1940, but possibly after 1949.

In 2005, after years of oblivion, a collection of handwritten and typographic notes and manuscripts from the German amateur ornithologist August Spennemann (1878–1945) surfaced, including one with detailed descriptions of his observations of the Javanese lapwing (van Balen & Nijman, 2007, *Bird Conservation International*, 17, 225–233). Between July 1927 and August 1931, and possibly later, he observed the species in the abandoned rice fields near Pamanukan (6°17' S, 107°49' E) and Tegalarung (6°15' S, 107°47' E), 110 km east of the western site. Many of his observations in this area during this period were made with fellow amateur ornithologists, including Jan van Houwing, who reported some of his

observations in sports hunting magazines, and combining these sources allowed us to retrace their itineraries.

Subsequently we found Spennemann's zoological notebook, coding breeding records of all bird species, with an entry for the Javanese lapwing for August 1931. A nest was observed at Tegalurung near the mangrove forest, possibly on the edge of the abandoned rice fields. It contained a fresh clutch of two eggs and, being one of the few nests observed of the species, his observation extends the known breeding period to include the end of the dry season. The accounts show that as of 1931 the Javanese lapwing was still regularly encountered along Java's north coast and bred locally.

With the reappraisal of the lapwing's habitat requirements, partly based on Spennemann's information, we believe that up until 80 years ago the range of the Javanese lapwing covered most of the north coast of the province of West Java, possibly extending into western Central Java. It would be well-worth searching for yet unexplored areas with suitable habitat in this extended region. One of us (SvB) surveyed the Poponcol-Tegalurung area in November 2006 and did not find any Javanese lapwings. However, the bird is expected to migrate locally and we anticipate that the best time for surveying is when the birds are on their breeding grounds, which we now know lasts from May until at least August. These are also the areas where we anticipate the birds to be most vocal, during courtship and defence of their nests, greatly increasing the chance of detection by human observers. By means of this communication we hope to raise renewed awareness for the plight of this possibly not yet extinct bird and its habitat in the Javan coastal zone, where three other endemic birds occur (Javan plover *Charadrius javanicus*, Sunda coucal *Centropus nigrorufus*, Javan white-eye *Zosterops flavus*), each waiting reappraisal of its conservation status.

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### **An increase in demand for ivory items in Ethiopia threatens elephants**

Tusks from elephants poached in northern Kenya and Sudan are being moved into Ethiopia to be made into trinkets, and the few remaining elephants in Ethiopia are also being poached. Wholesale prices for tusks (which weigh < 5 kg) in Addis Ababa have tripled over 1999–2008 to USD 121 kg<sup>-1</sup>. In January 2008 we carried out a survey for Care for the Wild International of the curio shops in Addis Ababa. We counted 2,152 ivory items for retail sale, including 706 new items

stored away, mostly in crisp paper bags. There were 1,790 items that had been crafted well after the 1990 CITES ban. While pre-1990 carved items are recognizable by their large size (such as heavy bangles, figures and carved tusks), the newer items are mass-produced trinkets. Most are thin bangles, rings, earrings, necklaces and pendants, and are identical in the various shops. As well as jewellery the most common items are chopsticks, cigarette holders and signature stamps, items all popular in China.

Turnover for new, small items is the greatest; they are easier to hide in luggage or, in the case of jewellery, to wear under one's clothes. We were advised not to put ivory items in hand luggage because they are often identifiable by x-ray. No vendor offered us a CITES document or other permit for any ivory item, telling us instead to take the items in our suitcase.

The main buyers of ivory items are foreigners. As well as tourists, there are many foreign businessmen, diplomats and conference attendees in Addis Ababa, and there are growing numbers of Chinese labourers. In 2001 there were 100 workers from China, mostly involved in road construction, and by 2006 there were c. 3,500. The Chinese are known to be the main buyers of ivory items all over Africa. While newer ivory items are out of fashion in much of the world, they are still in high demand in China. In Guangzhou the price for ivory chopsticks in 2004 was USD 139 compared with USD 16 in Addis Ababa in 2008. It is thus understandable why demand has increased and why the handful of Ethiopian craftsmen who remain working in Addis Ababa are carving items specifically for the Chinese market.

The Ethiopian government needs to crack down on the shops and confiscate the illegal ivory items offered for sale. Officials succeeded in doing this in 2005 in collaboration with TRAFFIC and the CITES Secretariat. However, to prevent another build up of ivory items for sale in Addis Ababa's curio shops a new strategy needs to be implemented. Law enforcement officers need to monitor the shops on a frequent basis so that vendors cannot display their ivory. The Chinese ambassador does ask company managers to warn their staff against buying ivory but reminders are probably warranted. Publicity, and penalties for buying ivory, must also be increased if elephant poaching for ivory is to be curbed in Ethiopia and neighbouring countries.

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### **Convention on Biological Diversity: 9th Conference of the Parties**

The 9th meeting of the Conference of the Parties (COP 9) to the Convention on Biological Diversity (CBD) took place over 19–30 May 2008 in Bonn, Germany. The CBD is a global treaty addressing the conservation and sustainable use of

biodiversity. With 191 country parties, it is one of the most widely accepted environmental agreements. The COP, which meets every 2 years, is the decision-taking body of the Convention. In addition to the negotiations within the official agenda, the meeting offers the opportunity for biodiversity practitioners to showcase their work at side events, and an exhibition area. This makes the COP one of the major global biodiversity meeting points, this year attended by c. 5,000 participants.

The COP took 37 decisions, of which some were hailed as particular successes. There was agreement on a roadmap for the final negotiations of the international regime on access and benefit-sharing regarding genetic resources. This includes three more meetings of the Working Group on access and benefit-sharing and the concluding of the regime at COP 10 in 2010. The COP adopted scientific criteria for identifying ecologically significant marine areas in need of protection and scientific guidance for designing representative networks of marine protected areas, which represents a major breakthrough after many difficult negotiations under the CBD. Expectations were high regarding biofuels. While parties could not agree on sustainability guidelines to be developed under the Convention, the COP recognized the CBD's role in biodiversity-related aspects of biofuels and urged Parties to develop policy frameworks for the sustainable production and use of biofuels. On another hot issue, the COP requested Parties to ensure that ocean fertilization does not take place until there is an adequate scientific basis and an effective control and regulatory mechanism. The COP established an Expert Group on biodiversity and climate change to provide scientific advice on biodiversity relating to the relevant processes of the United Nations Framework Convention on Climate Change. In addition, parties were asked to ensure that actions for reducing emissions from deforestation and forest degradation do not run counter to the CBD's objectives. Parties also agreed on a process for the revision of the Strategic Plan beyond 2010, including its 2010 biodiversity target of substantially reducing the rate of biodiversity loss, stressed the role of cities and local authorities for the conservation and sustainable use of biodiversity, and adopted the first resource mobilization strategy for the Convention.

As often at CBD Conferences of the Parties, events outside the negotiations hit the headlines. At the High Level Segment, attended by ministers of many countries, the first results of a major study, *The Economics of Ecosystems and Biodiversity*, led by the economist Pavan Sukhdev, were introduced. The study is expected to mirror, for biodiversity, the Stern review of the costs of inaction regarding climate change, and will be launched in the International Year of Biodiversity 2010. The German Chancellor Angela Merkel pledged EUR 500 million for 2009–2012 and then EUR 500 million annually from 2013 for forest conservation and protected areas. The LifeWeb initiative, introduced by Germany, aims to bring together donors with developing countries seeking support for sites

that qualify as protected areas. By the end of COP 9 proposals for new protected areas amounted to 460,000 km<sup>2</sup>. Further pledges for the protection of biodiversity-rich areas include the Dinaric Arc Initiative, comprising the countries of the former Yugoslavia and Albania, and the announcement by the Democratic Republic of Congo of the establishment of protected areas in 15 million ha of forest. At side events many more initiatives, stimulated by the CBD process, were presented.

Fifteen years after its entry-into-force, the CBD has manifested its role on the stage of sustainable development. It is now much more widely understood and accepted that biodiversity crucially underpins social and economic development. On the other hand, the challenge for COP 10, to be held in Nagoya, Japan, in October 2010, will be to keep the Convention's momentum in the knowledge that the 2010 target will not be reached at the global level. For more information, see <http://www.cbd.int/cop9> and <http://www.iisd.ca/biodiv/cop9>

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### Learning lessons from the International Gorilla Conservation Programme

The International Gorilla Conservation Programme (IGCP) was founded in 1991 as a partnership between the African Wildlife Foundation, Fauna & Flora International and WWF. For 17 years IGCP has worked in the Democratic Republic of Congo, Rwanda and Uganda to help conserve the world's remaining mountain gorillas and their habitat in the Virunga-Bwindi montane forest blocks. During this period the Great Lakes region has suffered grave political instability, including the Rwandan genocide of 1994 and almost continuous war in DRC since 1996. The legacy is of poverty, weak institutions and ongoing civil war on the DRC side of the Virungas.

Set against this most troubled of histories, it is all the more remarkable that the population of mountain gorillas has not only stabilized but increased. There were times during the last 17 years that IGCP and partners were essentially fire-fighting: doing whatever they could to maintain a semblance of functional conservation, such as trying to get wages and equipment through to those staff who stuck to their jobs despite the evident dangers. Now that a stable peace appears to have been achieved in Rwanda and Uganda, IGCP has found space in its schedule to reflect critically on its experience and to share what it learns with the wider conservation community. IGCP has been at the forefront of some innovative and timely initiatives during this period: the development of gorilla tourism and Ranger Based Monitoring, the introduction of

transboundary management and revenue sharing, and new models for community conservation involving private sector partnerships.

The new Lessons Learned initiative of the IGCP will involve a series of analyses over a 2-year period, each concentrating on a key theme of IGCP's work. One of the first of these studies focuses on IGCP's experience with community conservation. This is currently nearing completion and two main lessons have been learned:

- (1) *Conservation will only be achieved through development when there is a strong conservation logic.* IGCP's most significant and successful community conservation ventures have a strong connection between conservation and development objectives. This connection is strongest where it involves two forms of linkage. Firstly, development outcomes are dependent in the long-term on successful conservation (e.g. gorilla tourism) and, secondly, there is some contractual understanding that development benefits are provided with the expectation of certain conservation duties. IGCP and other conservation practitioners will benefit from regularly reflecting on the conservation logic underpinning their development projects, asking whether this is robust, and thinking creatively about ways to enhance this.
- (2) *Strong information systems support effectiveness and efficiency.* Ranger Based Monitoring data have been used to establish the link between threats to the park and the livelihoods of people living around the park, and thus to provide an essential knowledge base for well conceived community conservation projects. Such use of monitoring data enables identification of conservation-livelihood linkages and facilitates the design of projects that are win-win in nature. For example, Ranger Based Monitoring data provided details of bee-keeping and honey collection within the forest (which had been problematic due to associations with poaching and use of fire). This enabled a well directed response towards communities where the greatest incidence of illicit honey collection took place, through support for bee-keeping around the park. It is the failure to identify genuinely win-win interventions that has contributed to the disappointing results for community conservation elsewhere. In the future, IGCP and partners may expand Ranger Based Monitoring systems to include collection of some basic socio-economic data. This could further strengthen the design and monitoring of community conservation enterprises. For conservation practitioners without such extensive involvement in monitoring it may be possible to explore collaboration that could enrich the information base upon which community interventions are designed.

Apart from the community conservation study, there is also a study of capacity building that is nearing completion,

as well as a document that summarizes what IGCP considers to be its main achievements. For information about the Lessons Learned initiative contact Maryke Gray at IGCP (marykegray@yahoo.co.uk).

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## Restoring degraded veld in the Eastern Cape of South Africa

An extensive field trial in restoring degraded veld has been initiated in South Africa's poorest province, the Eastern Cape. This biome-wide investigation across a distance of 800 km aims to determine areas for optimal survivorship and best growth from cuttings of the succulent-leaved shrub spekboom *Portulacaria afra*, as well as variation in rate of carbon sequestration. This initiative is building on scientific evidence that indicates that this plant, known locally as elephant food, has carbon storing capabilities equivalent to those of moist subtropical forests. Studies over the last 7 years have shown that carbon storage in intact spekboom thicket in the arid Eastern Cape exceeds 20 kg m<sup>-2</sup>. Furthermore, the ability of spekboom to sprout from replanted truncheons without any irrigation or nursery costs makes it a very good candidate for large-scale restoration of degraded land.

Thicket vegetation evolved under the moderate grazing pressure of megaherbivores such as elephant and rhino that browse from above, promoting spekboom's unique umbrella-shaped canopy that maintains a cool, dry microclimate conducive to carbon-rich ground litter. However, over the past 80 years this thicket has been effectively mined by overgrazing, primarily by goats, especially the mohair-producing angoras. Circa 800,000 ha formerly covered by spekboom-rich thicket have been degraded by overstocking. Evidence suggests that once the water-efficient facultative C<sub>3</sub>/CAM spekboom has pumped carbon into the soil and thereby improved soil quality, other flora and fauna re-establish, and biodiversity begins to return to former levels.

An important aspect of this trial is to determine the potential for replanting to earn carbon credits on the international market. This project is being driven by a partnership between a group of scientists calling themselves R3G, working in partnership with the South African government's Department of Water Affairs and Forestry/Working for Woodlands, and supported by poverty-alleviation funds from the government's Expanded Public Works Project. The work is being supervised by the Gamtoos Irrigation Board, the implementing agency that has been managing large-scale plantings, restoring c. 400 ha over the last 3 years in the Baviaanskloof Nature Reserve (a World Heritage Site), the Addo Elephant National Park and the Great Fish River

Reserve. The project has been selected for the Society for Conservation Biology's first investment in carbon. The carbon costs incurred by delegates' air flights to the Society for Conservation Biology meeting in Port Elizabeth, South Africa, in 2007 have since been donated to the Baviaanskloof project.

Data on the extraordinary rates of carbon storage under replanted spekboom were collected on a farm inland from Port Elizabeth. Over the last 27 years the farmer has systematically restored a degraded hill slope using spekboom truncheons. The oldest stands are > 2 m tall, an impressive growth from truncheons planted in bare ground under only 250–350 mm annual rainfall. The different-aged plantings enabled estimates of potential rates of carbon sequestration, with the oldest stand having sequestered 11 kg C m<sup>-2</sup> over 27 years, indicating an average rate of 0.42 ± SE 0.08 kg C m<sup>-2</sup> yr<sup>-1</sup>. This rate of sequestration is comparable to many temperate and tropical forests, and potential earnings through carbon credits are likely to rival forest planting schemes.

The biome-wide trial commenced in January 2008, and nearly 30 of the planned 300 plots were established by June. Located in degraded veld, each 25 × 25 m plot is fenced off and manually planted with spekboom truncheons. Concurrent with the field trials, R3G is investigating the complex requirements to qualify for carbon credits via the Clean Development Mechanism as a future means of funding land restoration on freehold and communal land. Ultimately the potential benefits of restoration to degraded thicket landscapes are enormous: reduced soil erosion, increased wildlife carrying capacity, improved water infiltration and retention, the return of biodiversity and, ideally, the earning of carbon credits on international markets that can provide employment and income to rural communities.

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### Biodiversity and the Bottom Line

On 29 May 2008 biodiversity, ecosystem service and finance experts came together to discuss the implications of biodiversity and ecosystem service degradation on the corporate sector (and vice versa) and explore ways to influence finance institutions' investment policies and practices to favour biodiversity. The event, convened during the 9th Conference of the Parties to the Convention on Biological Diversity (CBD), was co-hosted by Fauna & Flora International (FFI) and the UNEP Finance Initiative and focused on the need for recognition of the importance of biodiversity and ecosystem services within capital markets.

Dr. Leon Braat of Alterra, Wageningen University, presented the findings of an important report *The Cost of Policy*

*Inaction*, one of five reports that fed into a first assessment by a major new study, *The Economics of Ecosystems and Biodiversity*, led by the economist Pavan Sukhdev. According to the report, unless current trends change, the annual loss of welfare from the cumulative loss of terrestrial ecosystem services will be USD 14 trillion by 2050. This is equivalent to 7% of projected global GDP for 2050 and does not include the value of coastal or marine biodiversity and ecosystem services.

The sheer scale of estimated loss draws sharp relief on the relevance to the private sector. Richard Burrett, former Head of Sustainable Development at ABN AMRO, noted that biodiversity and ecosystem services' risks and opportunities are still largely unmonitored within the finance sector but highlighted examples of where companies are already feeling the impact of biodiversity and ecosystem services degradation. One case is honeybee Colony Collapse Disorder in the USA, which has contributed significantly to an increase in the cost of pollination services of c. 40% for the USD 61 million apple industry in Pennsylvania compared to previous years.

The finance sector, through investment and project finance decisions, leverages great influence over corporate sector practice. To this end FFI, the UNEP Finance Initiative and the Brazilian business school FGV have established the Natural Value Initiative, which is developing a toolkit to assist finance institutions to incorporate biodiversity and ecosystem service issues into their decision-making. The NVI toolkit will initially be used to benchmark 31 companies within the food, beverage and tobacco sectors, based on their performance in managing biodiversity and ecosystem service risks and opportunities. Six finance sector institutions with investments in these companies have agreed to pilot the toolkit. The results will be used to refine the toolkit and launch the final version early in 2009, which will be used to help mainstream biodiversity and ecosystem services into finance sector decision-making.

Annelisa Grigg, Director of Environmental Markets at FFI, is leading the Initiative. In the past year she has observed a noticeable increase in the receptiveness of the finance sector to biodiversity and ecosystem services issues, prompted by developments such as the emergence of a market for carbon credits linked to forest conservation. With a global assessment of ecosystem services showing that > 60% of ecosystem services are in decline, and with ever increasing pressures on natural resources, the materiality of this issue to the corporate sector is set to increase significantly.

For more information about the Natural Value Initiative and the business case for managing biodiversity and ecosystem service risks and opportunities, visit <http://www.naturalvalueinitiative.org> or email [info@naturalvalueinitiative.org](mailto:info@naturalvalueinitiative.org)

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## The Indian blackbuck recovers from the brink of extinction in Chennai, India

Indian blackbuck *Antelope cervicapra* is an antelope endemic to the Indian subcontinent, with an estimated 35,000 in the wild. The Wildlife (Protection) Act, 1972, of India places it in Schedule I along with the tiger, rhino and other highly threatened animals, and it is categorized as Near Threatened on the IUCN Red List. Although formerly a widespread and familiar ungulate, the blackbuck is locally extinct in many parts of India.

Thirty blackbuck were trapped within the 237 ha campus of the Indian Institute of Technology-Madras in the city of Chennai (erstwhile Madras) in 1986 when the authorities of the State Forest Department permanently enclosed the Guindy National Park with walls. Outside this insular habitat, the last few blackbuck that roamed the outskirts of Chennai disappeared in the early 1990s. Within the campus the uncontrolled proliferation of invasive plants, especially *Prosopis juliflora*, and competition from the more adaptive chital *Axis axis*, which shares the Campus, triggered a decline in numbers, and in 2006 there were only 13 blackbuck and no signs of fresh recruitment.

Faced with the threat of losing a charismatic species, the Director of the Institute called for immediate action to check the decline. Critical habitats were identified throughout the Campus after a comprehensive study of biodiversity and threats. Efforts began in 2007 to remove invasive plants and restore blackbuck habitats, improving connectivity between patches isolated by buildings and fragmented by roads. Counts in July 2008 revealed the presence of 20 blackbuck: three adult males, three subadult males, seven adult females and seven fawns (more or less of the same age). While the recovery in numbers is encouraging, the presence of one albino male fawn indicates some possible inbreeding.

With the population of blackbuck showing signs of recovery, there is an urgent need to restore as much grass and scrub habitats as possible in the coming years. Although at present there are c. 40 species of native grasses on the Campus, the excess shade created by tree canopies has prevented the proliferation of natural meadows. The Campus was originally a mosaic of cultivation, secondary scrub, thickets, scattered palms, trees (predominantly figs), grass and seasonally waterlogged depressions. Such a vegetation mosaic was traditionally described as *paalai*, a Tamil word that means desertification of a landscape.

Southern India witnessed large-scale desertification rather early in history. Tamil literature that dates back to the Sangam period (300 BC–300 AD) first used the term *paalai* to describe the condition. The blackbuck probably thrived in parts of the south, taking advantage of the *paalai*. Reforestation, irrigated agriculture and urbanization have taken a massive toll of *paalai* habitat, threatening the long-term survival of the blackbuck in southern India. Restoring

the *paalai* at a time when there is so much awareness of global warming, and the role that trees play in mitigating the carbon balance of the atmosphere, is a major challenge.

Urban campuses are emerging as wildlife refuges in many parts of the world. The Indian Institute of Technology–Madras is a good example, and the conservation model that is being developed with the blackbuck as the flagship species is the first of its kind in India. The authorities of the Campus are under constant pressure to improve the existing infrastructure and, being an academic institution, the primary focus is on education and research. Nevertheless, sensitivity to biodiversity conservation has come as a boon to the last of the surviving blackbuck in Chennai.

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## Attention for Sri Lankan monkey paints a bleak picture yet gives a glimmer of hope

Listed as Critically Endangered since 2000, the Western purple-faced langur *Trachypitecus vetulus nestor* caught the attention of the world in 2004 when it was included on Conservation International's biennial list of the *World's 25 Most Endangered Primates* (<http://www.primates-g.org/T25fullo7.htm>), with a repeat appearance in 2006. Censuses to identify forest areas for conservation, quantify populations, and provide a better understanding of their demography in the disturbed habitats where the species occurs were deemed of great urgency. After years of scientific neglect, six research teams from Sri Lanka, Japan, the USA and the UK have started reporting the results of their work, ranging from molecular phylogenetics to behavioural ecology.

Three surveys during 2004–2007 greatly increased our knowledge of the species' distribution range and, given the small total number of individuals observed (in the low hundreds), painted a bleak picture of the species' survival prospects. It appears to be absent from approximately half the sites where it was known historically, and remaining populations are isolated by kilometres of unsuitable habitat. Essentially, deforestation has led the monkeys to exchange the forest jungle for the urban jungle. The gardening traditions of local people, mimicking the layers of the rainforest, may give a clue to how these populations have lingered, and how they may be preserved.

Detailed studies on the diet of two troops, and observations of multiple groups throughout their range, revealed the species to be largely dependent on fruit grown in traditional home gardens. This makes the langurs almost wholly dependent on the tolerance of local people. With increasing urbanization, however, perceptions of local people towards the langurs have changed for the worse. In particular, negative

attitudes towards the monkeys increase with the amount of time monkeys spend in close proximity to humans. Besides the loss of habitat, attacks on monkeys by landowners' dogs add another source of mortality, and the need for arboreal continuity has repeatedly put them into lethal contact with electric power lines in this urban domain.

Not all is bleak, however. The Sri Lankan Forest Department has expressed an interest in proactive management of the species' remaining habitat. Eco clubs are sprouting up in Sri Lanka, spreading the word about the plight of this species through environmental education workshops and exhibitions. Apart from scientific interest, local and international media have reported on the plight of this hitherto largely unknown primate. As noted by Rudran (*Primate Conservation*, 22, 139–144, 2007), who pioneered the study of this species in the 1970s, deeply-rooted Buddhist cultural sentiments about protecting animals is a strong factor in favour of preserving the species. New techniques are being tested to study the monkeys non-invasively in their urban environment. Not only can males be recognized individually by their calls, allowing longitudinal studies to be conducted in a non-intrusive manner, but daily morning loud calls provide a reliable measure for estimating densities over a large area in a short time.

A prime motive of the *World's 25 Most Endangered Primates*, a joint initiative of the IUCN/SSC Primate

Specialist Group, the International Primatological Society and Conservation International, is to generate research and interest in little-known species. In the case of the western purple-faced langur this is on the way to being achieved. The collective efforts of a multinational body of researchers show that in a relatively short period of time we can gain a greater insight into the species' biology and its conservation status, thus allowing for positive conservation action to be taken.

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### **Jaguar Conservation Network**

Chester Zoo has recently developed a new website, the Jaguar Conservation Network (<http://www.jaguarnetwork.org>). The website aims to enhance efforts to reduce human-jaguar conflict across the jaguar's range and has been designed as an independent resource for researchers, conservationists, and those people affected by conflict with jaguars. The site includes information on jaguars, including survey methodology, a news section, and information on publications and projects.