Conservation news

New threat to Ugandan cycads

A colony of rare cycads, said to be the one of the largest and most impressive populations in Africa, is threatened by a hydro-electric project in western Uganda. *Encephalartos whitelockii* is endemic to the Mpanga Gorge on the escarpment of the Albertine Rift Valley, the western arm of the African Rift Valley System.

South Asia Energy Management Systems hope to generate power by diverting the Mpanga River from its 40 m plunge over the spectacular Mpanga Falls. A small dam immediately above the waterfall would impound river water and divert its course down a lateral channel to drive turbines in a powerhouse below the Falls. The Mpanga Small Hydro Power Station would generate 18 MW of power, a useful contribution for a country experiencing a widening gap between supply and demand. The 300 MW produced by two large dams on the Ugandan Nile are inadequate and have recently been supplemented by an additional 100 MW generated by costly thermal diesel plants.

However, Mpanga Gorge is an extremely sensitive location in which to offset the shortfall. Firstly, the Falls are immediately inside the boundary of the Queen Elizabeth National Park. Although the weir would be outside the Park, the conduits and powerhouse would lie inside it, reducing the waterfall to a trickle and compromising international expectations of a high category protected area. The integrity of Ugandan protected areas is currently a moot point. Conservationists are currently riled by approval for a limeworks within Queen Elizabeth National Park, and in 2007 a government decision to release a quarter of the Mabira Forest Reserve for sugar cane monoculture aroused unprecedented public opposition.

Secondly, it is difficult to understate the importance of the Gorge's cycads. *E. whitelockii*, which is endemic to Mpanga, is categorized as Vulnerable on the IUCN Red List, and the dam could elevate its threat status. Many consider that this concentration of large arborescent cycads within an area of just 72.9 ha is unmatched elsewhere in the world, and is more impressive than the more famous Modjadji Cycad Nature Reserve in South Africa. Nor is the significance of *E. whitelockii* limited to species conservation. Seeds from specialist nurseries in the USA sell for up to USD 20 each. First generation, CITES-accredited seeds and seedlings obtained from the parent colony in Mpanga could command far greater sums: useful revenue for this underdeveloped and isolated rural district.

The Gorge, an isolated forest remnant in an area now dominated by farmland and secondary grassland, provides refuge for other rare species including the Vulnerable Uganda red colobus *Procolobus rufomitratus tephrosceles* and cycad-dependent insects. Several of the latter are recently new to science, including a species of *Antliarhinus* beetle first recorded in 2007. As the riverine forest is constricted by the narrow Gorge, which is <100 m wide, any impoundment of the river or clearance for roads and other site infrastructure will reduce the habitat available for forest-dependent species.

The threat is not news to Ugandan conservation organizations. Earlier this year, the Uganda Wildlife Authority (UWA) and others objected to an Environmental Impact Assessment (EIA) submitted to the regulating National Environment Management Authority (NEMA) on behalf of the developer. Not only did the EIA claim that the waterfall lies outside the National Park, but it also suggested that vegetation damage might be offset by encouraging local people to plant cycads around their homes.

Following submission of these objections UWA and others assumed that Mpanga Gorge remained safe pending review of the EIA. They were wrong. Two botanically-minded tourists visiting the Gorge in May 2008 found newly opened roads descending into the Gorge, lined with piles of smashed cycads. It transpires that, while Ugandan conservationists awaited a response to their concerns, NEMA had given the green light for the bulldozers to move down into one of the world's largest cycad forests. Communication of the tourists' discovery to regional conservation bodies has caused widespread concern as well as condemnation of this apparent disregard for the EIA process. As I write, UWA and others are pressurising NEMA to halt further activity in the Gorge pending a full and transparent review of the EIA, while a team of conservationists is travelling west to establish the extent of the damage. It is to be hoped that these efforts are not too late.

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Sharing experiences in human-elephant conflict mitigation

Living with elephants can be a serious problem for farmers and local communities in both Africa and Asia. Human-elephant conflict is a major conservation challenge on both continents because it is fuelling an increase in elephant killing and the loss of elephant habitat and range. Solutions lie in identifying appropriate mitigation methods that can improve the livelihoods of local people and their tolerance of elephants, and that provide tangible benefits from elephant conservation. Fauna & Flora International, together with a range of regional and international partners,

© 2008 Fauna & Flora International, *Oryx*, 42(3), 325–328 doi:10.1017/S0030605308423013 Printed in the United Kingdom

https://doi.org/10.1017/S0030605308423013 Published online by Cambridge University Press

has just released a report that aims to shed some light on the problem (M. Walpole & M. Linkie, eds, 2007, *Mitigating Human-Elephant Conflict: Case Studies from Africa and Asia*. Fauna & Flora International, Cambridge, UK. ISBN 9781903703267). The report presents the proceedings of an international symposium held in Nairobi in September 2006 that brought together researchers and practitioners from a number of African and Asian elephant range states to share experiences in monitoring, managing and mitigating human-elephant conflict.

Thirteen case studies were presented, focusing mainly on the mitigation methods used and their efficacy. The case studies presented reflect a range of contexts and experiences, and include a number of innovative *in situ* trials of both traditional and novel crop protection and elephant deterrent methods. The case studies described mitigation methods such as fencing and guarding, the increasingly widespread use of chilli-based deterrents, and other novel approaches such as the use of bees. In addition, broader topics were discussed such as the economics of human-elephant conflict management and issues that need to be taken into account alongside technical solutions to the problem.

The majority of case study presentations from the meeting are included as chapters in this report. The recommendations emerging from the symposium are also presented in full. Some of the key findings include:

- Simple, community-based methods of crop protection continue to be promising in various sites across Africa.
- Comprehensive land-use planning at local and national levels, such as zoning to maintain elephant migration by ensuring connectivity between main elephant ranges, can go a long way towards reducing conflict.
- Ownership of the problem is fundamental. A standard reaction from communities affected by human-elephant conflict is to expect the government 'to solve the elephant problem'. When the government does not do so animosity towards wildlife in general, and elephants in particular, often escalates. Therefore an important first step is to persuade affected communities to accept some responsibility for tackling the problem.
- Community-based strategies incur costs. If affected communities are expected to bear these costs in the long-term, they must receive a greater share of benefits earned from elephants.
- To ensure lasting outcomes for both people and elephants it is necessary to move towards more integrated cross-sectoral approaches to conflict mitigation. Communicating the human-elephant conflict problem, including its economic implications, effectively and accurately to politicians and decision makers is critical, and a more integrated approach to policy making is required.

There is still much to learn about how best to reconcile elephant conservation and local livelihoods. In particular, more research is required to help understand the driving factors and develop more effective strategies. Key questions that repeatedly arise are: (1) Are the methods replicable in other contexts? (2) How do we define and measure the success of human-elephant conflict interventions in the short-, medium- and long-term, and from whose perspective? (3) How do we ensure the social, economic and environmental sustainability of human-elephant conflict interventions after a project, especially an externally funded project, has ended? It is hoped that these proceedings will complement existing literature and tools, and be of both scientific and practical value to those involved in mitigating human-elephant conflict.

The report was formally launched at the 9th Conference of Parties of the Convention on Biological Diversity in Bonn in May 2008, and is available from FFI (email livelihoods@fauna-flora.org).

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An innovative economic tool for conservation: granting of easement concessions used to create new private protected areas in southern Brazil

In an initiative between British American Tobacco, its subsidiary in Brazil, Souza Cruz, Fauna & Flora International, and a Brazilian NGO, Preservação, an innovative scheme has been developed and trialled to secure the protection of highly threatened forest in the state of Paraná in southern Brazil. Private rural properties are required, under the Brazilian Forestry Code, to set aside a portion of their land to preserve native habitat. These parcels of land are known as Legal Reserves and in the Atlantic Forest biome comprise 20% of the total property area. Landowners that have not maintained native forest within their property are now obliged to rehabilitate the required area or, alternatively, they can acquire their Legal Reserve through the granting of an easement concession, as long as it is negotiated within the same watershed (Civil Code, article 1.378). Signing up to an easement scheme is equivalent to buying the appropriate amount of land elsewhere, and in the landowner's property deed this land will be the Legal Reserve even though it may actually be located, for example, in a protected area. The current partnership has taken this opportunity a step further, using it to develop a scheme to promote the conservation of Araucaria Forest remnants, named after the dominant *Araucaria angustifolia*, a unique and highly threatened ecosystem type within the Atlantic Forest.

The scheme uses the granting of easement concessions as an economic mechanism to acquire remaining Araucaria

https://doi.org/10.1017/S0030605308423013 Published online by Cambridge University Press

Forest and to create private protected areas. Private Nature Heritage Reserves (Reserva Particular do Patrimônio Natural, RPPN) are legally recognized in the National System for Conservation Units (Sistema Nacional de Unidades de Conservação) as areas of perpetual protection and restricted use. Funds initially made available by the partnership allowed the purchase of *c.* 240 ha, and the granting of easement concessions will generate funds for the acquisition of a total of 1,254 ha. This is the first time that such a strategy of land purchase for protection has been attempted in Brazil.

The granting of easement concessions as an economic tool for the acquisition and implementation of RPPNs in Brazil is essential for the conservation of forest remnants, especially in the state of Paraná where it is estimated that $<3\%$ of the original Araucaria Forest still remains, and only 0.8% (*c.* 950 km^2) consists of forest where little logging previously occurred. It is hoped that more RPPNs will be created in the state of Paraná using the same mechanism. The granting of easement concessions for the creation of RPPNs could also be implemented in other states in Brazil.

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9th Sahelo-Saharan Interest Group meeting

At the kind invitation of H.H. Sheikh Sultan bin Tahnoon, Chairman of the Al Ain Wildlife Park & Resort, the 9th Annual Meeting of the Sahelo-Saharan Interest Group (SSIG) was held from the 29 April to 2 May, 2008, at Al Ain Zoo in the United Arab Emirates. SSIG is an informal network of individuals and institutions with a common interest in the conservation of Saharan wildlife. The group is organized by the Sahara Conservation Fund (SCF) as a science forum, and meets annually to network, share experiences and present conservation work and research findings. The Al Ain meeting brought together more than 60 participants from across North Africa and the Middle East. Thanks to the generous support of Al Ain, San Diego, St Louis and Marwell Zoos, and the Convention on Migratory Species, conservationists and wildlife managers from Senegal, Morocco, Algeria, Tunisia, Niger and Ethiopia were able to attend.

The meeting, opened by SCF's Chair, Steven Monfort, and Al Ain Zoo's Director, Mark Craig, heard presentations of ongoing conservation work from Senegal in the west to the Horn of Africa. The speakers described the efforts underway to conserve wildlife such as the Critically Endangered slender-horned gazelle and addax populations of Algeria and Niger, and the reintroductions of dorcas gazelles and scimitar-horned oryx in Senegal and Tunisia.

A full session was devoted to conservation work in the United Arab Emirates by the Environment Agency of Abu Dhabi and non-governmental organizations such as WWF and the Emirates Wildlife Society. The meeting learnt of the increasing commitment of the Abu Dhabi authorities to international conservation and the opportunities this opens up for partnerships to address the major threats facing Sahelo-Saharan wildlife, including sensitive issues such as hunting and sustainable use. With support from Abu Dhabi significant efforts are already underway to restore ailing African populations of the houbara bustard and Cuvier's gazelle. With SCF's partner in the region, Al Ain Zoo, now under full development, SCF also expects to be able to launch joint conservation programmes for the Critically Endangered dama gazelle, as well as scimitar-horned oryx reintroduction projects based on the collections of Abu Dhabi's founder, H.H. the late Sheikh Zayed bin Sultan Al Nahyan.

Next year is SSIG's 10th anniversary. Established following the benchmark Djerba Declaration of the Seminar on the Conservation and Restoration of Sahelo-Saharan Antelopes (convened by the Convention on the Conservation of Migratory Species, which adopted an action plan for Sahelo-Saharan ungulates), SSIG has gone from strength to strength, demonstrating not only the relevancy of conservation work in the Sahara but also the progress that can be made when like-minded folks get together and actually do something. To learn more about SSIG, see http://www.saharaconservation.org

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Tigers above 4,000 m in Bhutan

Fresh camera-trap photographs and pug-marks from Jigme Dorji National Park in northern Bhutan show that the tiger *Panthera tigris* occurs here at altitudes higher than it has ever been recorded, so high that its range overlaps that of the snow leopard *Uncia uncia*. The tigers have been recorded up to 4,300 m. Snow leopards from the same region of Bhutan are known to occur over altitudes of 2,000–5,500 m. Bhutan is the only country where the presence of tigers has been recorded at such high altitudes, and is also the only country where the habitats of snow leopard and tiger appear to overlap. The study, led by Tiger Sangay of the Department of Forest's Nature Conservation Division, began in April 2008 and is using 38 infrared-trigger cameras to estimate tiger population numbers and document their distribution. At the moment the research is focused in Jigme Dorji National Park but will be expanded to all of Bhutan's protected areas. The study also plans to use the same photographic techniques to estimate the number of snow leopards in Bhutan. The reasons for tigers being found at

https://doi.org/10.1017/S0030605308423013 Published online by Cambridge University Press

such high altitudes, and the implications of tigers overlapping with snow leopards—such as whether the two species are interacting—will hopefully emerge from the study.

An immediate reaction to tigers occurring at such high altitudes is to implicate global warming but it is more likely that landscape processes such as habitat clearing at lower elevations in neighbouring countries is of greater influence. In Bhutan, however, forest cover remains at *c.* 75% and allows tigers to reach high altitudes through continuous forest cover that stretches from the lowlands to the tree line. It may be that tigers have always occurred at high altitudes across the eastern Himalayas but it is only now that we are learning about it.

Records of tigers at such altitudes suggest that research is required to understand how tigers and snow leopards are partitioning habitat, and whether the two species are interacting. Because tigers do not usually tolerate other large cats it is possible that they could out-compete the smaller snow leopard. It is also possible that both tigers and snow leopards are following the migration pattern of domestic yaks and cattle, the densities of which are increasing. There are *c.* 300,000 cattle in Bhutan, many of which are allowed to graze and browse in Bhutan's forests, including those in protected areas. With more and more livestock penetrating the forest, the hunting patterns of tiger and snow leopard are possibly being affected. Research by Tiger Sangay and myself has shown that over 2003–2005 there were several hundred confirmed tiger kills of yaks, cattle, horses, mules and sheep across Bhutan, and several dozen livestock kills by snow leopards (*Biological Conservation*, http://dx.doi.org/10.1016/j.biocon.2008.02.027). Livestock kills by the more abundant common leopard *Panthera pardus* numbered *c.* 1,000 in the same period. The study identified several predation hotspots in the mountainous northern regions of Bhutan, where leopards, snow leopards and tigers all co-occur. Like other parts of the eastern Himalayas, human-wildlife conflict in Bhutan is a significant conservation issue, and careful management will be needed if the preservation of large predators in the region is to be successful without threatening the economic livelihoods of the region's pastoralists.

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News from Durrell: building capacity for *ex situ* amphibian conservation

With over one third of amphibians considered to be threatened with extinction there is an unprecedented need for amphibian conservation initiatives. For many species the threats facing them in the wild may be so great that the only hope in the short-term is to bring them into captivity. The Durrell Wildlife Conservation Trust, based in Jersey (British Channel Islands) has been managing threatened amphibians in captivity for head-starting and supplementation to the wild for *c.* 20 years. The Durrell International Training Centre has been training overseas conservationists since 1985 in the application of captive skills for species conservation. In February 2008 the Centre launched its first Amphibian Conservation Husbandry course, in collaboration with Chester Zoological Gardens. The course built on the success of the 2006 Amphibian Biodiversity Conservation course, with a stronger focus on developing captive management skills. Twenty-one mid to senior level amphibian husbandry managers from zoos in 11 European countries attended the course. Topics covered included biosecurity, marking amphibians, enclosure design and water quality, and breeding amphibians in captivity. Course feedback was highly complementary, 95% of participants stating that the course was very valuable, with the remaining 5% saying that it was valuable to their professional development. The next step is for these participants to design their own amphibian training initiatives to build capacity Europe-wide for *ex situ* support of amphibian conservation projects. Those interested in finding out more about the course or downloading course materials should visit the training pages at http://www.durrellwildlife.org

Conservation Leadership Programme workshop

The Conservation Leadership Programme is a partnership of five organizations—BirdLife International, Conservation International, Fauna & Flora International, the Wildlife Conservation Society and BP—working to develop the potential of future biodiversity conservation leaders by providing a range of awards, training, advice and sustained support via an active international network of practitioners (see call for applications, p. 467). In a new initiative the Programme ran a 2-day workshop in March in Rio de Janeiro, Brazil. The workshop provided past and present award winners, under the guidance of Martin Fisher, Editor of *Oryx*, with the skills and knowledge to write publications more effectively. The workshop was funded through a combination of Conservation Leadership Programme funding and funding directly from BP Brazil. The students were also able to present their work to staff at the BP office in Rio de Janeiro, allowing the BP staff to get a better understanding of the work being carried out in Brazil. Following the success of this workshop the Programme hopes to be able to run similar workshops in the future. Further information on the Conservation Leadership Programme can be found at http://www.ConservationLeadershipProgramme.org or by e-mailing clp@birdlife.org

https://doi.org/10.1017/S0030605308423013 Published online by Cambridge University Press