Talks and Posters

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Building links among young conservation scientists and practitioners

Contents

Abstracts of Talks

Innovative human-wildlife conflict mitigation solutions as a basis for sustainable natural resources management.

ANDAMA EDWARD
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This study investigated effectiveness of several human-wildlife conflict mitigation strategies used around protected areas. Stone wall hedge deterred buffaloes and porcupines. Trapping was effective for crop loss to root rats but not baboons. Crop guarding was effective deterrent against baboons. Red chilly smoke effectively repelled elephants. Fencing with Caesalpinia decapetala hedge was effective against wide range of wildlife species. Cultivating non-attractive crops (tea, wheat, and artemisia) mitigated crop raids by primate species. Locating vulnerable crops away from frontline areas and regular clearing bushes around gardens reduced raiding incidence. Scaling up successful interventions can provide long-term solution to human-wildlife conflict.

Area and edge effects on understory birds: how it happens in patches of Atlantic Forest, Brazil

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This study aimed to understand whether patches of secondary Atlantic forest exhibit edge effects in vegetation structure and on the bird community, and how edge effects might vary with patch area and the amount of forest cover in the surrounding landscape. Results show that although vegetation structure and bird species richness does not differ from edge to interior, abundance and community composition is significantly altered. The difference in species composition between edges and interior sites is more pronounced in large patches in which the edge area presents a bird community typical of small patches or areas of low forest cover.

Global habitat loss and species' extinction risk: Re-thinking the Species-Area Relationship for conservation

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Methods have been developed to predict the number of extinctions from reduced habitat area. One accepted method is the Species-Area Relationship (SAR), however, there is little empirical support for this relationship. A global-scale test of the SAR for extinction was conducted for amphibians, birds, and mammals. Habitat conversion was calculated for each species and the effect of habitat loss on threat status was determined. The best fit is not the traditional SAR. Despite lack of empirical support, the SAR is used to make important conservation decisions; our finding emphasises the need to re-think the classic SAR for predicting extinction.

Who benefits from protected areas? Visitor numbers, demographics and knowledge.

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Public support for protected areas depends upon demonstrating the importance of the ecosystem services that they provide. We assess how recreational benefit is distributed across society, how much visitors know about sites and the site characteristics that predict usage. Fieldwork was undertaken in Yorkshire on Sites of Special Scientific Interest. Our results show that a biased subset of the population enjoys recreational benefit on protected areas, suggesting a worrying disconnect between much of society and conservation efforts. Conservation goals will only be met if broad public support for the natural environment is engaged and maintained, for example through nature recreation.

Landscape associations and home range selection of a multi-species bat assemblage

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Bat conservation in Europe is hampered by a lack of large-scale, multi-species studies. Here, we use data from the National Bat Monitoring Programme to provide the first nationwide analysis of associations

between roost location, home range and landscape structure and composition for six British bat species. Bats exhibited a consistent preference for wooded and pastoral landscapes. Distance from the roost to the nearest broadleaved patch was as important as extent of broadleaved cover, whilst the size of the nearest patch was unimportant. Broadleaved planting, even in small patches, is likely to provide the greatest landscape improvements for bats.

The impact of pesticides on pollinator biodiversity and the provision of pollinator services.

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The impact of pesticides on pollinator biodiversity and pollination is being investigated through this PhD. Field work was carried out in an Italian model agricultural system with a fine-scale spatially explicit pesticide pressure map. Pollinator sampling was conducted and pollination levels measured using experimental plants. The data will allow the relationship between pesticides, pollinators and pollination to be explored. This will help identify any groups most at risk from pesticide exposure and quantify the impact on associated pollination services. Such information is important for the formation of policy on pesticide use and guiding measures for pollinator conservation in agri-environment schemes.

Accounting for costs in conservation priority setting: what if we are wrong?

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Predictions of conservation costs are essential for cost-effective decision making, but cost is often ignored due to uncertainties in land availability and the actual cost the conservation action. We test the robustness of relative conservation priority (irreplaceability) to uncertainty in the predicted cost of land acquisition for reserves in Australia. We used Marxan to allocate relative conservation priorities (irreplaceability) to sites based on their likelihood of inclusion in a cost-effective network to represent a set of biodiversity targets. We suggest the robustness of conservation priorities can be improved by (i) accounting for uncertainty in cost, and (ii) using simple rules of thumb to estimate how a more accurate cost estimate of a site (e.g. actual price of land for sale) might change the priority of a site for conservation.

An assessment of the functional structure of South African avian communities

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Determining the patterns and causes of functional richness across landscapes will aid broad scale conservation efforts. For the South African avifauna, although taxonomic richness is an adequate qualitative predictor of functional richness, the former is not a good local predictor for the latter. Indeed, plots of residual variation show that preserving species rich 'hotspots' may not necessarily ensure the functional integrity of a landscape. Process-oriented conservation plans and assessments would benefit from considering local variations in the relationship between taxonomic and functional diversity when areas are prioritised for conservation.

Advancing Asian elephant conservation through enhanced knowledge on biology and habitat constraints in Manas National Park, India

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Asian Elephant is facing challenges in terms of habitat loss, degradation, poaching and of late conflict with human crafting its position endangered across its range. This paper focuses on biological attributes of elephants in Manas landscape and also distresses of habitat change. Initial findings revealed a density of 1.19 (±0.32)/sq. km., while their habitat usage pattern differs considerably among four major vegetation types in the Park. The sex ratio of the population is 1: 3.7 (male-female) providing some hints of male poaching during unrest period. Mean herd size shows a year round stable 6.85 (±1.23). I recommend restoration policies of key habitats and managing grasslands through enhanced knowledge on habitats and impact factors including grassland burning and extraction activities.

Tackling wild meat consumption in Vietnam

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Vietnam is a major thoroughfare for illegal wildlife trade and rapidly growing urban prosperity is believed to be increasing domestic demand for wild meat. With enforcement failing to restrain trade, conservation interventions - such as education campaigns and producing farmed substitutes - are increasingly targeting consumers. A greater understanding of wild meat consumers and consumption behaviour will help inform the design of effective interventions. I will describe wild meat consumers, the context of consumption and the values associated with wild meat, and the implications these findings may have for interventions aiming to reduce consumer demand.

Recent land cover change on Important Bird Areas (IBAs) in East Africa

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Habitat loss is a major threat to biodiversity and monitoring of land cover change allows problems to be identified and priorities to be set. Changes in land cover on a subset of Important Bird Areas were assessed using interpretation of time-series remote sensing data from 1970s to present. This was complimented with ground-truthing fieldwork to verify and calibrate features observed on satellite data. Spatially explicit, quantified estimates of land cover change, especially through agricultural expansion, are described for the IBAs. Additionally, the potential of using simple methods for the interpretation of higher resolution remote sensing for future monitoring is highlighted.

Patterns of conservation investment in the United States

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Habitat loss is the main driver of biodiversity decline and current levels of protection are inadequate. To help conservation effort both public and non profit sectors must allocate resources as efficiently as possible. Using data

from the largest land trust in operation, The Nature Conservancy, I examine the spatial distribution of conservation investment across the US. I explore what explains where resources have been directed and examine how conservation investments have been structured, in terms of both the area protected and the upfront financial costs. The results inform strategic conservation planning and highlight where there is need of greatest improvement in conservation design.

Of Pigs and Palms: Exploring the biodiversity, oil palm paradox

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Much of the responsibility for the destruction of the high biodiversity forests of south has been apportioned to the growth and expansion of oil palm plantations. In this paper we review both quantitatively and qualitatively the issues associated with the oil palm and biodiversity debate. Using a case study in Sumatra we explore the potential for mammals within the oil palm landscape and consider methods by which the management practices employed by a plantation can influence the scale of the impact and increase the biodiversity value of the concession.

Spatial variation in correlates of global mammalian extinction risk

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Because many species today are threatened with global extinction, researchers need to understand how species differ in their vulnerability to different threats. Using mammalian species trait data and the global IUCN Red List, I investigated correlations between global extinction risk and species traits such as geographic range size and body mass within each WWF terrestrial ecoregion. My results show that the ecological and life-history correlates of extinction risk vary considerably across the globe. Spatial analyses reveal that environmental factors and intrinsic species traits interact to determine species extinction risk on a regional scale.

Should we protect the strong or weak? An analysis of risk and resilience in marine protected areas

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Marine reserves have often been touted as way of ensuring recovery from uncontrollable disturbance at a faster rate than unprotected habitats; but should we protect those areas at greatest risk, or those at least risk? We formally define this problem and explore the conditions under which each of these strategies is optimal. Illustrating these strategies with an example of cyclone disturbance to coral reefs, we find that the optimal conservation strategy with regard to the risk of uncontrollable disturbances can differ dramatically depending on your conservation objective and the level of success expected within reserves. Counter intuitively, this may mean it is best to protect sites at highest risk of uncontrollable disturbance. A proper treatment or risk is fundamental to all conservation actions and can indicate surprising routes to conservation success.

Tourist use and non-use economic values for marine protected area. a case study from Belize.

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Contingent valuation is used to explore distinct tourist values for a Belizean reserve (a) use values, (b) use values for whale shark (Rhincodon typus) interactions, (c) existence/ bequest values for reserve visitors and (d) non-use values for non-visitors. Econometric analysis explains values in terms of socio-economic, attitudinal and behavioural variables. Mean willingness to pay for visitors was estimated as US$25 for one day visitation, with a $15 premium for the chance of a whale shark interaction and $70 for non-use values. Non-visitors have a US$14 non-use value. Although significant, pooled use values are small compared to existence/ bequest values.

Integrating development with conservation in Central Africa- linking benefits to behaviour

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Recognising the need to enable local support for conservation efforts, integrated conservation and development projects (ICDP's) attempt to provide benefits to mitigate or compensate conservation-related costs. This evaluation of a Central African ICDP adopted an economic valuation approach to compare conservation-related costs and benefits at the local level. Local appreciation of these impacts, and their links to pro-conservation attitudes, were investigated using participant observation, semi-structured interviews and formal questionnaires. Links to conservation related behaviour- in terms of both wild-food extraction and wild-food consumption- were investigated using a 12-month market survey and a household consumption and income survey.

Evaluating effects of contrasting conservation interventions on attitudes towards Saiga antelope conservation

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Does the type of conservation intervention employed; social engagement, low-level propaganda; and traditional 'fences-and-fines' conservation, influence ecological knowledge and attitudes towards conservation? 250 randomly chosen individuals, exposed to one of three conservation interventions, were questioned on their knowledge of and attitudes to saiga populations. Results were analysed using linear mixed effects models. Conservation strategy doesn't influence ecological knowledge but affects willingness-to-pay (WTP) for conservation (as an attitudinal measure). Low-level propaganda increases WTP whilst, social engagement encourages protest bids relating to others paying. This study demonstrates that effects of different conservation interventions vary culturally and may be counter-productive in some cases.

Assessment of Land Cover Dynamics and its Conservation Implications in Tropical Forests of Western Ghats, India

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The proximate and underlying causes of forest cover change were studied in the Anamalai Hills of Western Ghats, India. A thresholding technique was applied on NDVI images of IRS-P6-LISS-III data of 2006 and Landsat-MSS data of 1973 to generate positive and negative change areas. Two major and divergent trends were observed. A dominant degradational trend attributed to livelihood dependence and infrastructure development while a positive successional trend correlated to protection of the area. The underlying causes involve a complex set of social, political, economic and cultural variables. The delineation of vulnerable areas helps the managers to implement suitable conservation strategies.

The relationship between HIV/AIDS and harvesting of biodiversity for household food security.

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The incorporation of wild plant and animal-source foods into household diets is explored through quantitative household and individual surveys in three rural sites in South Africa. Surveys make use of household AIDS proxies (mortality, morbidity and demographic variables) and household socio-economic data to explore the association between AIDS, household socio-economics and wild food use. The dietary intake of three hundred households were monitored using 3-monthly repeat assessments over a year. The results indicate that use of bushmeat, and wild leafy vegetables is more prevalent in household with a lower socio-economic status, higher incidence of chronic illness and paternal orphan fostering.

Ecotourism finances biodiversity protection in the Peruvian Amazon

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It has often been suggested that ecotourism can protect natural habitats and biodiversity directly by financing conservation. However, little evidence shows that ecotourism is profitable and contributes to large-scale

biodiversity conservation in developing countries. I report here how an ecotourism destination in south-eastern, Amazonian Peru, attracted US$11.6 million in spending in 2005, and how high levels of profitability coupled with international conservation funding and new land-use legislation have allowed ecotourism businesses to protect 35,000 ha of rainforest, and to begin shielding key protected areas from the deforestation that will result from the paving of the Interoceanica highway.

The impact of large mammal herbivores on woody vegetation in the Sand Forest of Phinda Game Reserve, South Africa

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The Sand Forest, harbouring endemic species, is limited to the Maputaland Centre of Endemism. The structure within Sand Forest has changed markedly the past decade. Sand forest has a low resilience to disturbance and poor recruitment rates. Elephants and nyala may have substantial impact on Sand Forest dynamics. To test this, exclosures have been erected and vegetation has been monitored. Results indicate that characteristic Sand Forest species are recolonising and that damage to the Sand Forest is declining. Results derived from this system can provide a framework for other reserves on the effects large herbivores can have on woody vegetation.

Predicting vulnerability of Philippine marine fishes using comparative phylogenetic analysis

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This phylogenetic study linking life histories with catch per unit effort (CPUE) trends of reef associated and pelagic finfishes of the Philippines was based on CPUE trends in 14-32 intensively exploited marine finfish stocks from three major fishing grounds. Finfishes that have decreased over 22 years in CPUE compared with their nearest relatives attained a larger maximum body size and exhibited slower growth. Such trends were not evident in earlier and more traditional cross species analyses and suggests a simple way of predicting depletion.

Land tenure systems and protected sites in southwest Cameroon: effects on livelihoods and resources

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Creating government managed protected areas is an old, worldwide strategy to conserve the environment. But does the strategy still work in all parts of the world, and can we improve park effectiveness for biodiversity and local livelihoods? My talk will examine this broad question using two case studies from Southwest Cameroon. Data was collected using semi-structured interviews and through field observation. Immigration of non-locals for fertile land, the ease with which they can buy farmland within the reserve, and local farmers re-planting tree species outside the reserve and not within, due to insecurity in tenure, results in a higher level of deforestation inside these reserves than in adjacent private/community forestlands. For some areas, where government management is weak, and in certain tenure situations, top-down strict protection mechanisms might not work. There is a need to evaluate different forms of management and governance for different areas of the world, to find national and regional best practice.

An examination of shifting baseline syndrome in perceptions of bird populations

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Two forms of shifting baseline syndrome have been described. 'Generational amnesia' occurs when observers are not aware of changing populations; 'classic shifting baseline syndrome' occurs when observers are aware of change, but their knowledge is determined by their experience. Data were collected on observer perceptions of bird populations in Yorkshire, U.K. Analysis showed that both generational amnesia and classic shifting baseline syndrome can occur in one population, and provides the first evidence of both forms. These results suggest that the syndrome should be of real concern to all conservation practitioners, particularly those collecting social data or involved in decision-making.

Hunting for sustainability in secondary forest

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Over-hunting of tropical forest mammals threatens both conservation and local livelihoods. We investigated the sustainability of hunting in primary and secondary forests in Brazilian Amazonia. Harvestable production, estimated in both forest types using line-transect surveys, was higher in primary forest due to the absence of several game species in secondary forest. However, comparing these production estimates with actual offtake as measured in three villages revealed that most species were hunted unsustainably in primary forest. Although the production of three species was threefold higher in secondary forest, hunting in second-growth is likely to supply only ~1% of required protein to Amazonian smallholders.

Conservation crisis in a biodiversity hotspot: is the Kerala part of Western Ghats (India) losing its endemic and threatened ornamental fish germplasm?

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Streams and rivers of Kerala, part of the Western Ghats (WG) are an exceptional hotspot of freshwater fish diversity with a high degree of endemism and the presence of many threatened species. Wild collection and exports of indigenous ornamental fish has increased rapidly in the last few years and the region is currently an important contributor to the global trade. At present, 114 species are exported- a ten fold increase from the year 2000. 30.7% (n=35) of the exported species are threatened and 38% (n=44) are strictly endemic to WG. Conservation implications of this unmanaged fishery and trade are discussed.

Characterization of the pathogen load in large cetaceans from Baja California, Mexico.

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In order to characterize the respiratory and digestive pathogen load, we collected 64 blow samples from gray and blue whales and 54 faeces

samples from blue, fin and sperm whales. Using PCR, 25 blow samples amplified the DNA products expected for Mycobacterium, Haemophilus, Aspergillus and/or Streptococcus. Also, two Streptococcus species were isolated from 2/6 gray whale cultures, while two Staphylococcus species grew from one blue whale culture. Using coproparasitoscopic techniques, we have found non-identified nematode eggs in 2/28 faeces samples analysed so far. The detected respiratory pathogens are potentially zoonotic and can cause chronic infection and death in inmunosupressed animals.

Evaluating tiger (Panthera tigris) population and density estimation approaches in a mark-recapture framework in Kanha Tiger Reserve, India.

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Conservation and management of wild tigers require accurate and precise estimates of population and density for monitoring and evaluating conservation programs. However estimates for low density, wide ranging and intelligent animals like tigers are likely to be biased and thus need to be tested for accuracy and biases. We used different approaches of population and density estimation in a mark-recapture framework and evaluated these against a known population of free ranging tigers. Our data suggests that grid based placement of cameras, near circular area coverage, population estimation using heterogeneity models and using likelihood based approach and home range radius for estimating density provides accurate population and unbiased density estimates. Tiger search can be a useful tool for monitoring tigers.

Gall Bladder in the State Of Uttarakhand, India

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The Himalayan Black Bear, *Ursus thibetinus* inhabits in the states of Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Arunachal Pradesh and West Bengal in India. A questionnaire survey was conducted in thirty villages of Uttarakhand. The extent of trade in bear gall bladder, community involved in the trade, poaching affected areas, trade routes and price of the products in Indian market were evaluated. The market price of gall bladder range from Rs 2500 to Rs 4000 per 10 gm. Bhutia tribes were identified as main

poachers. 22 Bhutia settlements were reported out of which six were involved in the trade. The three major trade centers were Shimla, Chandigarh and Delhi from where traders tranported to China through Indo-Nepal Border or Indo-Tibet Border. We suggested education awareness targeting the tribes involve in trade and creation of Anti-Poaching Teams.

Sustainable Use in Papua New Guinea: conservation through private enterprise?

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Papua New Guinea (PNG) harbours 5% of global biodiversity. It is a fractured and failing state, dependant on revenues from natural resources yet is under pressure to achieve conservation gains. Attempts to reconcile PNG's conservation and development needs have seen the long-term implementation of Sustainable Use (SU) projects. Ranching of CITES listed butterflies and crocodiles by private enterprise aims to satisfy the global collector and luxury markets, local livelihoods and conservation goals. Research into the implementation of SU in PNG using a combination of qualitative and quantitative analyses has yielded insights into the nature, impact and practicality of these initiatives.

When theory becomes applied: Using ecological criteria to evaluate ecosystem sensitivity to climate change in Panama

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Climate change will affect biodiversity at all scales, from the species to the biosphere. Understanding how ecosystems, as intermediate units, may respond to global warming is important for conservation. Given current ecological knowledge, we identify features of ecosystems that would make them more sensitive to climate change and apply this set of ecological criteria to Panama as a case-study. Our method produces an index that compares individual ecosystems' relative sensitivity to climate change. This index can be used in conservation prioritization schemes, is based on data that is freely available and is easily implementable.

Long-term impacts of coastal development on coral reefs in Bonaire: learning from experience

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This study focuses on the long-term impacts of coastal development on coral reefs in Bonaire (Caribbean), and the implications for the diving industry. In order to do so, we surveyed 76 dive sites distributed around Bonaire and identified variables associated to development. We used statistical analysis to understand the relations between reef conditions and development variables. Coral reefs located within the proximity of hotels present worse health than those further away from the developed areas. Understanding the direct and indirect impacts of coastal development will provide coral reef managers with the tools to promote a more sustainable development.

Abstracts of Posters

Effect of logging on butterfly habitats in central Bobiri Forest Reserve.

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The ability of remote sensing data to contribute to the mapping and prediction of invertebrate diversity is poorly investigated and even when done, much of these have focused on pests rather than for conservation purposes. This study sought to predict the distribution of butterflies in central Bobiri Forest Reserve using the Genetic Algorithm for Rule-set Production (GARP) and Maximum Enthropy Method (Maxent) using presence only data. Three forest blocks with different levels of disturbance and at different stages of regeneration were sampled and results show that there is significant difference in diversity of the blocks.

Ecological Education and Conservation of the Darevsky's viper

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The range of the Darevsky's viper (*Vipera darevskii*) spreads over the south-eastern part of the Javakheti Ridge in the Shirak Province, north-western Armenia, up to the border with Georgia. This species has very limited distribution and is listed in the IUCN Red List of Threatened Species as critically endangered (category CR C2b). We obtained the first-hand information essential for assessment and development of conservation measures aimed at mitigating the conflicts with local land-users. The key habitats are mapped, studied and proposed to be incorporated into the Arpi Lich National Park which is, in 2007, in the process of establishment in the Shirak Province. An awareness-raising campaign was also carried out with local communities. The surveys were done to investigate the possibilities to create new watering points for livestock and fence off the viper habitats so that to prevent livestock damage to viper haunts.

Status of Persian Leopard (Panthera pardus caucasica) throughout its distribution range in the Caucasus eco-region

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Caucasus eco-region is a globally biodiversity hotspot, and there is multi organization International conservation project running to help its endangered Species survive, Persian(*Caucasian*) Leopard (*Panthera Pardua caucasica*) is a significant and a flag specie of this mountainous region, which several projects running for its conservation in the countries listed as fully or partly within the Caucasus eco-region, which are Georgia, Russia, Armenia, Azerbaijan, Turkey and Iran.

Ecological, socio-economic basis, impact and conservation implications of spotted necked otters (Lutra maculicollis) – fish farmers' conflicts in Southern Benin.

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Otters, species poorly known and threatened are in permanent conflict with fishermen in Benin. A monitoring and threats assessment by local interview and field records allow assessing hunting and capturing records, quantifying damages, document adaptation methods and identifying conservation issues. Otters destroy from 40 to 200 gears / fishermen / year. Eight hunting's methods little selective are improved each year. We recorded accidental catching, pollution, fisheries overexploitation and the practice of poisoned soft food used as bait. Otters are highly endangered in Benin' wetlands and extinction could occur if the current threats are maintained.

Collaborative wildlife management and community conservation in Rwenzori Mountains National Park Ecosystem, Uganda.

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The Rwenzori Mountains National Park, a World Heritage Site covers 100,000 ha in western Uganda. The parks unique conservation values are;

scenic landscapes, natural habitats of endangered species, a rich and unusual flora and fauna. These unique values are threatened by illegal activities carried out by local communities that range from poaching, illegal resource off-take setting of fires and encroachment. A community conservation approach is used to secure better management of the park through conservation education and awareness, resource access agreements, revenue sharing activities, community based tourism enterprises, collaborative park boundary management and popularising alternatives to the park resources.

Impact of artisanal fisheries on marine turtle habitats in the southeast Pacific and the implications for their conservation

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Flagship species like sea turtles spend almost their entire lives at sea, yet at-sea studies for these species are scarce. As a consequence, many management plans focus on nesting ground studies, which in many cases may be inappropriate. Here we present an overview of findings based upon fisheries observation, satellite tracking and genetic analyses to study marine turtles while at sea. Endangered and Critically Endangered species, like loggerhead Caretta caretta and leatherback turtles Dermochelys coriacea, use Peruvian waters as foraging grounds and migratory paths. Based on these results we present recommendations for an NPOA for these species in the region.

Development of a blueprint for a western Indian Ocean Regional Dugong conservation strategy

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This study combined local knowledge of fishers with in-water habitat surveys to identify the distribution, current threats and key habitat of the dugong in the Comoros. A public awareness campaign was initiated to promote understanding of this species and a National Conservation Action Plan is under preparation. A collaborative monitoring programme, implemented by local organizations, communities and national government

will ensure that dugong conservation is centred on a participatory and inclusive approach to ensure sustainability. This low-cost, yet effective approach is being promoted as a blueprint for dugong conservation throughout the region, where technical capacity and financial resources are limited.

Simians and Prosimians in Africa and Asia: emerging patterns

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The conservation status of African and Asian Simians and Prosimians (2007 UICN Red List) were analysed through Loglineal, Correspondence and Qui-square analysis. Current threat patterns and their causes were compared with reference to past diversity patterns and extinction causes. The probability that a species is threatened depends on the grade it belongs to and on its interaction with the geographical distribution of the species. Such a higher than species-level analysis may be useful in devising patterns of resilience of species belonging to the same taxa, enabling predictions about the vulnerability of species in these taxa that are not currently endangered.

Cost-effectiveness, strengths and weakness of a participatory approach to ecological monitoring in Madagascar

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Fire, wood-cutting, hunting, over-fishing are main biodiversity pressures in Madagascar. What kind of approach makes villagers integrated into conservation's action to reduce these pressures? To solve the problem Participatory monitoring is an effective approach which cost less than 1$/ha/year. A villager meeting is followed by fieldwork for data collection. A team including villagers is formed to visit transects in the forest. Results are explained publicly during village meetings attended by local authorities and government services. Data are used to make a decision for improvement of resource management. The yearly ecological monitoring takes 3-5 days per village. Thus, data are not always scientifically reliable; sometimes real tendencies, trend of the population size or pressures are not significant.

Eco-dynamics of small mammal communities in Kerangas forests, Brunei Darussalam

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Small mammal surveys were conducted in eight Kerangas fragments and three undisturbed Kerangas forests from 2005 to 2007 in Brunei Darussalam. Mark-recapture method was used to census small mammal populations, and the species richness and relative abundance of species in fragments and undisturbed forests were compared. Species encountered in disturbed fragmented forests were not found in continuous undisturbed forests, whereas species which were commonly present in undisturbed forests were generally absent from fragments. The relative abundance of small mammal species found in forest fragments were very high whereas there was a consistent lower abundance of small mammals in undisturbed forests.

Relative abundance, agonistic behaviour, and resource partitioning in three scavenging bird species on the university of ghana campus, legon

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The populations of the Hooded Vulture (*Necrosyrtes monachus*), Pied Crow (*Corvus albus*), and Cattle Egret (*Bubulcus ibis*), all of which are scavengers at refuse dumps at the University of Ghana, are currently higher compared to four decades earlier. This study examined their populations, interactions while feeding, and food types they consumed. Transect surveys and point counts indicated the highest relative abundance for Vultures, followed by Crows and Egrets, respectively. Eleven different agonistic interactions were observed in the three species, whereas seven food types were identified. Further studies are recommended due to sudden change in the ecology of the refuse dumps.

Revisiting reconciliation ecology: Mammal conservation in traditional coffee plantations in the Western Ghats, India.

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We examined the scope for reconciliation between socio-economic goals and conservation objectives in traditional coffee plantations in Western Ghats, India. We studied mammalian diversity and practices of local communities. Results show that traditional plantations can support rich mammalian diversity but two factors constrained conservation: widespread hunting and conversions of diverse-shade to monocultures of timber species. Economics strongly influence the outcomes of conservation efforts as State policies lack effective implementation and local communities lack awareness and interest in biological conservation. Alternately, since most respondents agreed to comply with laws if direct incentives were provided, bottom-up approaches may be a better strategy.

Habitat structure studies for manned sloth's conservation in the Brazilian Atlantic Forest.

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The main goal is to describe and identify forest resources used by maned sloths through microhabitat characterization in forest fragments and cocoa plantations. Eight animals were followed using radiotelemetry, through primary forest, secondary forest and cocoa plantations. We registered height and position of each sloth on the tree. Botanical species used by sloths were collected, identified and measured (height, diameter and liana and latex presence). Sloths in disturbed areas use smaller trees and were found at shorter heights. Animals that reside in primary forests used the most tree diversity. Cocoa agroforests have native trees potentially used by sloths.

Effect of railroad on migration and mortality of Mongolian gazelles in central Mongolia

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The international railroad between China and Russia has opened in 1956, through Mongolia, which bisects the habitat of the Mongolian gazelle. We satellite collared three gazelles to examine the movements of this migratory ungulate in relation to the railroad and also we conducted a gazelle carcass census along the railroad. The collared gazelles never crossed the railroad, despite the fact that most of their location points were close to it. We found 241 gazelle carcasses died within a year, in which 166 were in the western and 75 were in the eastern side railroad.

Relationship between nutrient loading and the growth of the benthic cyanobacterium, Lyngbya wollei, in Lake Mahopac.

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Lyngbya wollei, a filamentous cyanobacterium that forms benthic mats in southeastern U.S. eutrophic lakes, has been observed in Lake Mahopac, NY. A study of possible nutrient sources and effects on its presence was undertaken in summer 2007. Greater available NH4+-N was measured in sediments from Lyngbya habitats versus other localities; terrestrial soils adjacent to these sites had more than 10x greater available NO3- -N and SRP than lake sediments. Trends suggested that N and/or P additions stimulated Lyngbya growth. Overall, results suggest that adjacent soils are important sources of NO3-N and SRP to the littoral zone of Lake Mahopac and that Lyngbya wollei abundance is greater in these locations.

Human pressures on amphibian biodiversity are concentrated in regions critical to conservation

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We investigated how past and emerging human pressures overlap with amphibian biodiversity distribution. We overlaid an equal-area hexagon

grid over global amphibian ranges and evaluated irreplaceability of grid cells in the context of human pressures. 66% of highly irreplaceable sites are densely populated, compared to only 35% of remaining sites. 85% of the most irreplaceable sites are suboptimal for agriculture, and 90% have experienced low habitat conversion. Thus, the main threat to these regions may be population pressure, not commercial agriculture. Emerging pressures are notably concentrated in northwestern South America, coastal North America, Central Africa, Madagascar, northern Australia and Borneo.

Main results of the opinion poll on bird hunting in Tunisia within the framework of the Sustainable Hunting Project, Tunisia – 2006/2007

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Hunting is one of the major factors contributing to declines in birds and is often indiscriminate due to lack of knowledge and/or irresponsible behaviour. In 2006 Association "Les Amis des Oiseaux", the BirdLife International Partner in Tunisia, in the framework of a EU funded project[1] designed a field survey on the general awareness of the Tunisian hunters and bird hunting. The survey was developed in collaboration with the main national stakeholders in hunting and game management. The survey was carried out among registered hunters. This poster presents the main findings of the survey, which will allow promoting more sustainable hunting practices in Tunisia and making a contribution to international conservation efforts.

[1] Building Capacity for Sustainable Hunting of Migratory Birds in Mediterranean Third Countries. Project Ref: 04 TCY/INT/000054

Biodiversity in a Forest Island: Amphibians of the Atewa Upland Forest Reserve

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We report the results of the first amphibian survey in the Atewa Upland Forest Reserve; a proposed mining site. We recorded a total of 32 species and predict an overall species richness of 40-50 species. The recorded amphibian community is exceptional by comprising an extremely high proportion of threatened species (almost one third), a very high percentage of species that are endemic to the Upper Guinea Forests and the largest

possible remaining population of the critically endangered species (*Conraua derooi*). Atewa represents an outstanding site for the maintenance of West African amphibian diversity in particular and biodiversity in general.

Canopy disturbance in Amazonian forest fragments.

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The loss of pristine habitat is a major cause of extinction in tropical forests. In this study, the proportion of primary forest was estimated for 265 forest fragments in the Brazilian Amazon (151,559 ha) based on canopy disturbance data obtained using remote sensing. The loss of 50% and 20% of primary forest cover was found at a median of 50 and 200 metres of distance from fragments nearest edge, reaching a maximum of 1200 and 3450 metres, respectively. This result indicates that edge effect can reach large areas inside forest fragments and cause severe habitat impoverishment in the Amazon.

Factors influencing the spread of Clidemia hirta in a highly disturbed (large trials) and less disturbed (small trails) areas of the Amani, Nature Reserve

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The project goal was to examine the abundance of *Clidemia hirta* (invasive plant) in relation to disturbance and environmental factors. Comparison of number of Clidemia between two trails of different sizes carried out indicated that, the larger trail had more individuals of Clidemia. The distance from the edge into the forest based on environmental factors (temperature, light intensity and relative humidity) influenced Clidemia number between plots. Vigour was tested from height and diameter. These parameters both decreased from edge to interior. The % of herbivore was not related to fruit number.

Trends in sea turtle mortality in Bahía Magdalena, México: Effects of human consumption

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In Bahía Magdalena, Mexico, endangered sea turtle populations struggle against anthropogenic forces, particularly human consumption of turtles. With the School for Field Studies, we researched trends in turtle mortality in the region. Mortality survey results showed that sites with the largest human populations had the highest numbers of consumed turtles. The majority of dead turtles found were below reproductive size, and this, in addition to other results, may point to the possibility of a continued population decline. Though human consumption remains a threat to sea turtles – especially since many turtles are extracted and eaten before they reach reproductive size – our data also suggests that environmental education may reduce consumption rates over time.

Beyond Subsistence Energy Use: Integrating Local Energy Needs and Conservation Efforts

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Poor relations exist between park officials and local communities in the Saloum Delta National Park in Senegal. The forestry code has criminalized resource extraction in the park but officials are unable to enforce the code uniformly creating misconceptions about official policy. A nationwide construction boom, fueled by remittances from émigrés, has created local commercial wood and shell-lime markets. These markets have increased wood scarcity forcing women to travel longer for subsistence collecting. However, conservation policy that prohibits these commercial activities will be viewed by local communities as a barrier to economic development and thus have little chance of success.

Ecological development of soil microbial community in three restored quarries in Hong Kong

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Ecological changes in soil covers were studied in terms of microbial community size, activity and metabolic diversity at different restored phases in three quarries in Hong Kong. Results showed that soil microbial population, biomass and diversity of utilized carbons increased with increasing restoration age in Shek O Quarry, but these trends were not obvious in Lam Tei and Turret Hill Quarry. These suggested different engineering constructions and exotic species adopted in quarry rehabilitation could have different effects on the ecological development of soil microbial community.

Measuring protected area effectiveness for conservation.

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Relatively little is known about the status or effectiveness of protected areas as a conservation strategy. Most systems that currently assess protected areas do so by measuring inputs and processes. However the knowledge required by conservationists is the outcome and output of the protected area. The aim of this work is to use population trends from within protected areas as a measure of how well they are doing. By modelling these population trends it is hoped to show the correlates of more or less successful protected areas and thus provide guidance for policy makers and protected area managers.

Toward collaborative monitoring and evaluation in adaptive co-management: a framework and lessons from South Africa

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Although adaptive co-management is based firmly on the principle of 'learning by doing', the relationship between learning and collaborative monitoring in adaptive co-management has not been expressly articulated in the literature. In this poster we present an integrated framework and

methodological approach to collaborative monitoring and evaluation that has been tested in several sites around South Africa in an on-going manner over the course of a year. Based on this experience, methodological lessons are presented, as well as practical lessons about the future of adaptive co-management under resource poor conditions.

Species diversity and abundance of fig wasps in two Ficus species in Amurum Forest Reserve, North Central, Nigeria

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Fig wasps associated with *Ficus umbellata* and *Ficus exasperata* in the Amurum Forest Reserve were surveyed. 18 species of wasps were collected from *F. umbellata*, 17 previously unrecorded; and 2 species from *F. exasperata*. A sample size of 120 figs from study trees showed sufficient sampling effort to record associated fig wasp species for the two study fig species, as their species accumulation curves reached an asymptote. In *F. exasperata*, the pollinator (*Kradibia gestroi afrum*) dominated the community, while *Philosycus* sp., a galler dominated the community in *F. umbellata* species. Gallers generally had higher abundance than parasitoids.

Responses of the butterflies to the natural tree fall gaps in a tropical evergreen forest in Western Ghats, India.

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The study attempted to find out what is the relationship of forest gap dynamics and butterfly community assemblages in the rainforest of the Western Ghats. Different microhabitats, with respect to butterflies, namely, natural forest and treefall gaps were compared using fruit-bait trap data. At the gaps, higher diversity, greater evenness and lower scaled dominance of bird assemblages were observed. Species abundance was more in gaps, than natural forest. The study unequivocally showed that treefall gaps are not neutral with respect to the community structure of butterflies and provided excellent setting to understand the ecosystem dynamics.

The structures and genetics of an Austrian relict population ofEnglish yew (Taxus baccata L.)

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The English yew (*Taxus baccata* L.) is a native evergreen long-lived dioecious, conifer tree species in central Europe. At present it has come into prominence throughout the world due to its anti-cancer substance Taxol and it has recognised as an endangered tree species. The aim of the present work was to describe the population (height, DBH, etc) and genetic structure based on isozyme analysis. It represents a core population of yew, which has 2236 individual trees with a DBH range from 5 to 24,8 cm. For isozyme analysis 10 isozyme gene loci and 29 alleles were investigated. It has showed high level of genetic variation with 90 % of polymorphic loci. Considering the population structure, high level of genetic diversity, and relatively large population size, the site Stiwoll represents high endurance ability and an important gene pool for yew. From the result it is clear that this stand has to be recognised as a unique population compared to other gene conservation forests in Austria.

Dynamics of dune slack vegetation on a barrier island in the Netherlands: the effects of changes in the hydrology due to global climate changes

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The effect of global climate change on dune slack vegetation on the barrier island of the Netherlands has been studied. The most prominent factors affecting the dynamics of dune vegetation were isolated and tested. The hypothesis that changes in the amount of rainfall (precipitation surplus) observed in recent years affected water table and has altered the balance between groundwater and precipitation and accelerate the succession of dune slack vegetation was tested. Several Multivariate analyses were used to unravel the trend of vegetation changes over time. Successional changes were observed in plots where the local hydrology has been changed.

Can lizards pathogens and parasites influence on their fitness under high predatory pressure?

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Aim of the study was to understand how mites and mites-transmitted pathogens influence on lizard demography, morphology and their interaction with predators (shrikes Lannidae). Important pathogen for a lot of animals is *Borrelia burgdorferi sensu lato*, which was discovered only in a few species of lizards till now, e. g. in blood and tissues of species used in this study (*Lacerta agilis* & *L. vivipara*). Role of lizards in cycle of spread of the bacteria isn't examinated enough and is still controversial. Better understanding of these relations can help to develop suitable conservation tools for protection of lizards.

Sustainable shrimp farming and its potential implications in East Africa

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The advancement of the production technology and the increased demand of shrimp products from emerging markets (like China) alongside the traditional markets of North America, Japan and Europe have resulted into private investors, development agencies and some governments to be very keen in encouraging shrimp production from less developed countries. The overdevelopment of the industry in other developing parts of the world, together with the need of new sources of income and affordable protein for coastal communities in Africa, indicates that a certain amount of investment will occur in the future. Indeed many governments are beginning to look into the potential of using their coastline for shrimp culture development. Inconsiderate expansion of the industry could result in serious environmental, social and economic problems in the region.

Correspondance between scientific and traditional ecological knowledge: Forest types in the Colombian Andes

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Local knowledge has been historically ignored by western scientists. I matched western science methodologies with the traditional ecological

knowledge of Campesinos, to test their efficacy in cataloguing different forests. Floristic composition and environmental variables were recorded in 0.7 ha. Non-metric Multi-dimensional Scaling (MDS) ordinations of the plots revealed two vegetation types that matched the ones described by local collaborators. Campesinos' ecological knowledge proved to be an effective shortcut to assess forest beta diversity. Rapid ecological assessments should include and test traditional ecological knowledge as a methodology, and a way to build alliances between conservationists and local communities.

Protea abundance and diversity determining nectar feeding bird community composition in the Cape, South Africa

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The topic of pollination communities has hardly been touched on in South Africa, while little is known about the factors determining bird community composition in general. The nectar feeding bird community is relatively simple (few species), aiding in understanding the processes governing its assembly and disassembly. I test the hypothesis that these simple communities follow a predictable sequence of assembly in relation to nectar availability. By combining Bird and Protea Atlas data, I find that nectar feeding birds are assembled in a nested way (were species present in species-poor communities are subsets of species present in more diverse communities) with protea abundance and diversity the determinant factors.

Designing conservation strategies for Nothapodytes nimmoniana : An endangered medicinal tree from Western Ghats of India

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Nothapodytes nimmoniana is an endangerd tree species from Western Ghats of India, a global biodiversity hot-spot. It is threatened because of over-harvest of its bark that yields Camptothecin (CPT), an anti-tumour alkaloid. As a result, the population of this species has declined over 50-80% in the last decade. In view of the mounting demand and perceived threat to the native populations, it is highly essential to develop an appropriate strategy for its conservation. Present study addresses this by (a) transferring the standardized technology to mass propagate the species,

(b) identifying sustainable methods of harvest and (c) prospecting alternative plant species for CPT production.

Estimating population sizes of forest elephants at the Bia Conservation Area (BCA) in Ghana.

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The standard line-transect method was used for counting elephant dung piles and determine age clusters. Distance® software was employed to calculate the dung piles density on 50 transects using a stratified sampling. Rainfall model was used to estimate number of forest elephants. According to our estimations 208 elephants were found at the BCA with a predominance of individuals between 3 - 6 years old. The study also includes an analysis of the potential threats for the species and possible future solutions. The results of this study will be useful to guide conservation actions and to make policies that deal with the effects of human disturbance.

Aspect and edge orientation explain patterns of cyclonic disturbance in fragmented Australian tropical rainforest

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We assessed whether patch-scale factors influenced levels of disturbance to fragments of critically endangered 'Mabi' rainforest in north Queensland, following Cyclone Larry. We measured damage by estimating loss of canopy cover and by categorizing plots on a disturbance scale. Directly exposed edge orientations had significantly more plots with severe disturbance levels and aspect influenced the percentage of canopy cover at sites sampled within plots. We recommend conserving and restoring Mabi on a wide range of aspects and topographic positions to provide refugia from future cyclones and to establish shelterbelts of cyclone resistant tree species to protect existing patches.

Using tradtional knowledge to understand species

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Preserving biodiversity requires understanding the factors that determine species distributions. Examining the distribution of plant species by habitats can help identify these factors and provide a strong foundation for successful conservation practice. Enabling indigenous peoples to conserve endangered landscapes requires that they understand habitat-species relationships. Using 113 plant species in Monduli District, Tanzania, this study shows that a western habitat classification scheme of plant distribution closely matches one based on traditional knowledge. This strong correlation suggests that traditional knowledge, in conjunction with ecological data, will make it easier for communities to understand patterns of species distribution thus fostering conservation.

How does the arachnid community structure change with tree growth?

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The research is focused on the community structure and diversity of arachnids in three different growth stages of beeches. Insecticide knockdown fogging were used in order to obtain arboreal arthropod on a monthly basis. Totally 24,216 specimens from 324 beeches were collected in Bavaria forest between June 2005 and October 2007. There are three main seasonal patterns with the highest abundance in August and least in February. The amounts of spiders and insects sampled with beating trays are strongly positive correlated in winter (r = 0, 91). The results could be used as references for sustainable forest management and conservation.

Building civil society capacity for biodiversity conservation within the Eastern Mindanao Corridor

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A project to build capacity within Eastern Mindanao Corridor to map biodiversity, set scientifically based conservation priorities, and monitor

progress in priority areas is on-going. While the project centers on three key biodiversity areas it aims to generate skills and information for the development of a corridor-wide conservation framework for use by government and civil society to conserve Eastern Mindanao's biodiversity. Building awareness among planners and decision makers and providing access to information is very important and should couple biodiversity research. Local government units and indigenous communities are strong conservation allies as the government has devolved forest management to them.

Social taboos and narratives in the species conservation – a case of the Babakoto (Indri indri) from the Analamazaotra Forest in Madagascar

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The existence of fady (taboo), places Babakoto (*Indri indri*), as a sacred species in the Betsimisaraka worldview. Stories about indris, apart from building cultural identity, open a new perspective on cultural mechanism in the species conservation. Based on different narratives, the cultural model of indris' conservation is proposed. The origin of taboo is enforced by mysterious encounter with indris. In the process of rationalization, the strength of taboo is challenged by daily crises such as food shortage. Therefore, narratives have to regain their core values, in order to avoid breaking of taboo and to maintain ancestors' legacy in the communities.

The causes of insect endemicity with the example of Madagascar

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Madagascar presents outstanding biodiversity richness and imbalance, and high levels of endemism across the different taxa, which places it as one of the world's biodiversity hotspots. The island is presently the target of a considerable effort of biological research, but to date, little is known about its insect fauna. In this project, DNA barcoding and phylogenetic tools were used to investigate water-beetle endemism, suggesting an underestimated diversity of several endemic taxa and a strong correlation between species turnover and ecoregions distribution on the island. The importance of habitat diversity for optimizing the conservation of species richness is discussed.

Response of macroinvertebrate communities to river rehabilitation in a section of lowland chalk river

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River rehabilitation measures are commonly implemented in UK lowland rivers, primarily as a method for safeguarding fish stocks. Rehabilitation is based on the premise that increased habitat heterogeneity leads to favourable changes in biota. However, detailed assessments of the longer-term impacts of these measures on macroinvertebrates are rare. This study used data from two surveys collected in 1999 and 2007 to look at changes in community composition and identify possible causes of this change. The results show that rehabilitation had no adverse impacts on diversity and suggest that the encouragement of marginal vegetation be of high priority for macroinvertebrate conservation.

Population status of endemic tree species in northern Western Ghats of India, a biodiversity hotspot

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Present study assesses the conservation potential of endemic tree species from a biodiversity hotspot. Demographic status of these species was studied and correlated with their reproductive strategies so as to prioritise them for further conservation actions. Endemic species were intensively sampled across grids using 60 belt transects. It was found that the endemic richness increases from north to south latitude with increase in evergreenness. Out of the total 25 species encountered, 6 species were extremely rare and highly localised, recorded only once in very low abundance and were also represented very poorly in regeneration plots. This study also highlights potential sites for reintroduction and recovery of these species if further need arises. This study promotes an ecosystem conservation approach as most of the vulnerable endemic species depend on biological vectors for their dispersal.

Towards integrated aquaculture: the key to the emergent pressure on kelp resources due to the growing abalone industry in Namibia

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Aquaculture is one of the fastest growing industries in Namibia with Shellfish fast overtaking the traditional fish aquaculture. For a long time oyster farming have been the frontrunner, but in the past eight years there has been a marked shift towards the farming of abalones *(Haliotis midae*). The staple diet for abalone is kelp (*Laminaria pallida* and *Ecklonia maxima*) which is a fairly limited resource. In the neighbouring South Africa, integrated aquaculture, utilizing mainly *Ulva* and *Gracilaria*, has been introduced to counter the dwindling supplies of kelp. With no other alternatives in sight, Namibia has to follow suit.

Tree species functional classification and its importance in restoration of degraded forests; a case of Mabira forest, Uganda

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Forest degradation is a major problem in many countries. Human aided forest restoration is a key intervention that has to be guided by information on the role of tree species in ecosystem functioning. Morphological data that represents adaptation for succession for 120 species was compiled from several tree species publications in Uganda. Multivariate analysis methods were used to generate groups of species with similar functional roles. Fifteen groups were generated and since the 120 species are about 40% of tree species in the forest, these groups represent much of the variation therein, therefore; choice for restoration through replanting is simpler.

Wildlife in dispersal forest corridors

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Thong Pha Phum National Park, a forest corridor connecting protected areas in western Thailand, is difficult to manage. Wildlife disturbance has

always occurred in this easily accessed area. To maintain this corridor for wildlife dispersal, reconnaissance surveys of 300 km^2 on ungulate were made. Relative abundance was calculated and mapped using ArcView. Information on areas of high abundance of ungulate has been given to protected area manager for protective measures. Such management will help ungulate movement from one area to another like stepping stone. Cooperative monitoring by training basic techniques to wildlife rangers and conservation success will eventually be evaluated.

Nutrient hotspots in a South African savanna: soil-plant-herbivore interactions

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Abandoned cattle holding pens, known as "kraals", have been found to remain high in nutrients decades after abandonment. This study explores the long-term effects of anthropogenic nutrient hotspots on herbivore distribution and the balance between grasses and trees in South Africa. It was found that kraals contain more nutrients in both the soil and the vegetation. The lack of trees on kraals might be attributed to increased soil nutrient levels, which seem to alter the tree-grass balance in favour of grasses. Herbivore use was higher on kraals, indicating that herbivores respond to heterogeneity in soil and plant nutrients across the landscape.

Community engagement in the Sustainable Management of Rivers: Barekese Catchment Area, Kumasi, Ghana.

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The Barekese Reservoir is a facility created to serve the purpose of reserving water for treatment and subsequent consumption of the populace in the Kumasi conurbation and its environs. The reservoir which provides 80 percent of the total public water supply of the Kumasi locale is visage with persistent degradation through anthropogenic activities along its catchment area which also raises concern on the deteriorating water quality. The study aims at finding the attitudes of people towards their involvement in river water management and sustainable exploitation of natural resources. The results suggest that individual residents in these communities have not been involved in the management of the watershed

which has adversely affected its sustainable management. There is the need for a collaborative approach from all stakeholders in the use of freshwater resources.

Conservation and poverty; Human elephant conflict study in Ghana

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The Digya national park is believed to host probably a quarter of Ghana's elephant population. Located in one of Ghana's most important food production areas and reports of elephant crop raiding are common. We conducted a systematic survey of elephant issues in the range. We employed transect count, PRA and GIS techniques to determine elephant distribution and understand the problem of human elephant conflict in the area. We estimated 357 +/- 54 elephants in the area. Location and crop type influenced their raiding. Raiding was pronounced in April-June. Yam was the most preferred. Local mitigation methods applied in isolation were temporary effective. We recommended the combination of local methods and a special cropping system and provided vital information on strategic control by the wildlife division staff.

Microhabitat structure analysis: one way to explain the distribution of the two Mouse lemurs' species in North-western Madagascar.

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An uneven distribution pattern of the Golden-brown mouse lemurs (*Microcebus ravelobensis*) and the grey mouse lemurs (*Microcebus murinus*) is found in North-western Madagascar. In one area, the two species lived sympatrically, whereas in other forest area, Microcebus ravelobensis occurred exclusively (Antje et al. 2003). Our studies try to show how it can be related with their microhabitat structure? Our results indicate preference differences of the two species for their habitat. *Microcebus ravelobensis* prefers habitat with a higher percentage of trees with many lianas whereas *Microcebus murinus* prefers habitat with a higher percentage of trees with DBH > 10cm.

Conservation of molluscs and bioremediation of polluted lakes in Yunnan Province, PR China

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Little is known about the biota of China's lakes. Yunnan's plateau lakes contain over 50 endemic fish species and many undescribed molluscs. We have documented dramatic declines in these taxa but we are working on rehabilitation and education projects to help conserve species and improve these important ecosystems. Review of the literature, structured standardised surveys for fish and molluscs, development of baseline water quality monitoring, establishment of pilot sites to test the effects of using indigenous bivalves as biological filters. Improved water clarity, discovery of new species, quantification of extinctions, engagement with local communities. Prevention of further declines, sustainable improvements to water quality, development of techniques that can be used effectively in other polluted lake systems around the world.

Kenya's plastic pollution menace; a nation's effort to save itself

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The Kenyan government has discouraged the use of polyethene bags by banning thin plastic bags and imposing excessive taxation on others, thus an importation worth $100,000 raises $219,000 in taxes alone. Plastic bags are currently unaffordable to the population – 55% living under a dollar daily– that uses them as packaging materials for virtually all foodstuffs. With no proper refuse collection mechanism, their disposal is uncontrolled. Players have introduced recyclable and biodegradable bags while local authorities plan to introduce penalties on polyethene use in public. The shocked social fabric adopts new trends as a grumbling nation accustoms to the new rules.

Site selection for conservation at Mesoamerica, Tropical Andes and Choco hotspots: a preliminary analysis

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Species' ecological niches were modeled for 78 species in the IUCN categories of CR, EN and VU. Niche models were constructed using the Maxent software. Areas were prioritized for conservation using a complementarity-based algorithm in the ResNet software. Targets of representation for species were set at 10 -90 %, in 10% intervals, and for the ecoregions at 10%. Selected areas were widely dispersed across the study region, confirming its importance for biodiversity. In general, existing protected areas were no more representative of biodiversity than areas outside them. Biodiversity conservation in Mesoamerica, Tropical Andes and Choco, will require integrative landscape management.

Managing stingless bees for forest conservation: a case study of Kakamega Rainforest

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Enormous challenges face Africa while striving to balance the conservation of the natural resources and improving the livelihoods of the people. There is a great need to find species that can offer an economic incentive to communities to enhance their active role in the conservation of natural resources. Stingless bee keeping is an activity that is highly suitable for local communities around protected areas. It provides rural people with additional income and provides pollination services. This study identified 5 stingless bees species found in Kakamega forest and nesting preferences using the local people, developed a rational hive for domestication and colony multiplication methods.

Assessment of genetic variability in genes involved in disease resistance and reproductive fitness in species of high conservation priority

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Conservation scientists are ever-appreciating the role of genetics in species conservation. My project aims to utilitse current genetic and genomic technology to elucidate the level of genetic imperilment, and hence future evolutionary potential, of species of conservation significance. The focal species for my project is the New Zealand (Hooker's) sea lion, the rarest sea lion in the world. Despite protection efforts, the species remains in decline through by-catch and a high susceptibility to epizootics. I will characterise the level of neutral genetic variation - evolvability - of the species and will describe a number of genes important for species fitness, correlating heterozygosity with species fitness and aiding future species conservation.

Using ground beetles to compare the conservation status of Kingfisher's Bridge, a newly recreated fenland reserve with Wicken Fen, parts of which are original fen.

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Ground beetles (Coleoptera, Carabidae) were used to compare the conservation value of Kingfisher's Bridge, a newly recreated fenland, to Wicken Fen, parts of which are original fen. Ground beetle samples obtained from pitfall trapping at Kingfisher's Bridge were compared with ground beetle records from Wicken Fen collected by various recorders. Although there were more ground beetle species found at Kingfisher's Bridge, there were more wetland and rare species found at Wicken Fen. The habitat preferences and dispersal capabilities of species indicated that habitat selection, possibly for vegetation composition or structure, rather than colonisation opportunities, largely determined ground beetle assemblages.

Effects of wood habitat fragmentation on suburban populations of Vipera aspis (Reptilia, Viperidae), in a Mediterranean area of central Italy

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The effects of different degrees of habitat fragmentation on central Italy populations of the asp viper (*Vipera aspis francisciredi*) in urban environment were studied. Size, shape, isolation and matrix type of the patches influenced population structure. The presence of physical connections (= corridors) among remnant fragments, and the development of ecotonal areas (forest edge) were the main ecological determinants for the viability of the viper populations. Our results indicate that it is crucial for any conservation programme that wants to preserve forest-dwelling, sedentary, specialized and scarcely vagile snake species, to maintain patch heterogeneity and connection between sparcely spread wooded fragments.

Spatial distribution and environmental correlates of landscape impermeability in Afrotropical birds

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To move beyond simplistic models that either assume that species move freely across a homogenous landscape or assert that particular features act as hard barriers, we develop models that quantify landscape "impermeability" using Afrotropical birds as our study group. We correlate this impermeability with environmental variables representing distinct hypotheses of the determinants of range boundaries. Non-spatial models implicate measures of energy as the best predictors, while spatially-explicit models down-weight these variables in favour of human population density and two measures of habitat heterogeneity. These outcomes confirm the interplay of multiple factors in determining range boundaries, and identify regions where critical levels of these factors coincide, preventing free movement of species. They also suggest that the permeability of the Afrotropical landscape is not static and will alter following both climate change and land-use transformation.

Nutrient hotspots in a South African savanna: soil-plant-herbivore interactions

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Abandoned cattle holding pens, known as "kraals", have been found to remain high in nutrients decades after abandonment. This study explores the long-term effects of anthropogenic nutrient hotspots on herbivore distribution and the balance between grasses and trees in South Africa. It was found that kraals contain more nutrients in both the soil and the vegetation. The lack of trees on kraals might be attributed to increased soil nutrient levels, which seem to alter the tree-grass balance in favour of grasses. Herbivore use was higher on kraals, indicating that herbivores respond to heterogeneity in soil and plant nutrients across the landscape.

Soil Seed bank and its implication for biodiversity conservation of degraded land in mid law-lands of Ethiopia

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A degraded land rehabilitation project was started in Dodota, Arsi Zone of the Oromia region in Ethiopia. Among the objectives of the project was investigation of potentials of the land (soil seed banks) for rehabilitation. Soil samples were taken 3 times (before, six months after and a year after area closure) from three soil depths (0-15cm, 1-30cm and 31-45cm) in 4-replications. Moreover, woody plants were enumerated during soil sample collections. The results indicate that there were 22 grasses, 16 woody, (mainly *Acacias*) and more than 35 other plant species emerging from the samples. With respect to the number of EPs' from the samples, there was no significant difference between the first two soil-sampling times. The number of EPs' during the last sampling time significantly decreased. This positively correlated to the plant enumeration during the same time, indicating that there has been recruitment of new plants from the soil seed bank.

Decline of Irish pollinators: The case of Bombus terrestris

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An increasing number of Irish farmers are using imported bumblebees to improve fruit yield and quality. Unregulated importation of exotic bumblebees has a number of associate risks, including loss of bee diversity as a result of competition and hybridasition. A phylogenetic tree of north European *Bombus terrestris*, including commercially reared stock, will be carried out to assess risks involved in importing bees and in an attempt to identify hybrid material. This study will bring more information on bumblebee management and importation legislation and, it will be fundamental in the implementation of conservation programmes of native bumblebees in Ireland.

Studying and conservation of rear species of birds in the South-Eastern part of the West Siberia, Russia

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At present we do not know the real number of White-headed duck, Sociable lapwing, Black-winged pratincole and Dalmatian pelican and its distribution in the southeast part of Western Siberia. Still we do not know the reasons and factors that lead to reduction of White-headed duck and Black-winged pratincole population in the region. The main research methods were using GIS system, quantitative monitoring, selecting the limiting factors, revealing IBA. The most important results were revealing seven IBA, finding about 100 of individuals of White-headed duck in the Barabinskay lowland, approximate estimation of Sociable lapwing, Black-winged pratincole and Dalmatian pelican numbers.

Youth and community volunteerism towards achievement of Environmental sustainability

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This poster presents a case study of a Conservation Education program with demonstrated success. It looks at tapping into the aspect of volunteerism an impetus in bringing about the necessary change in

environmental and resource management practices so as to contribute towards the achievement of environmental sustainability for sustainable development. This project aims at sensitizing the youth and community members on the MDG and proper environment and resource management practices, mobilizing and engaging the youth and the community in environmental management maintenance and protection practices as well as developing a sustainable youth and community voluntary movement on environmental awareness, protection and management as well as the MDG.

Fragmentation in Eastern Mau Forest; What Does It Mean to Avifauna

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Forest fragmentation, destruction and habitat alteration in Eastern Mau Forest have affected the population of birds in that ecosystem. There are distinct differences between the bird species composition and diversity in the different fragments depending on the size, structure and proximity of a fragment to intense human activity and features like a river. Forest species are limited to the larger fragments or rather the seemingly continuous fragments and are few in number. Forest opening has seen forest bird species replaced gradually by species that are associated with human activities.

Understanding Human-large carnivore conflict in Chobe, Botswana.

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This study is part of the Large Carnivore Research Project initiated by African Wildlife Foundation in the Chobe-Caprivi area of Botswana and Namibia. Using GPS collars and spoor counts, data are being gathered on population size, distribution, movement patterns and habitat use of large carnivores; human settlements are also being mapped. Preliminary results confirm that areas of high carnivore activity correlate positively with protected areas and water availability, and negatively with human presence. Additionally, enormous difference in space usage was observed between male and female lions, which is likely to bring males closer to humans and exacerbate conflicts. Results from this project will be incorporated into the current Chobe Land Use and Management Plan.

Is Pantepui protected in front of the Global Change? A new list of threatened species.

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Pantepui is a biogeographical province of the Guayana Highlands which its biodiversity and endmism are threatened by global warming. This work analizes the endemic species currently included in red lists of endangered species as IUCN and WCMC. Previous studies involving habitat loss modelling predict a potential extinction of 60% vascular plants endemics. This study shows that less than 2% of these species are under offical protection, and stresses the need of considering global warming predcitions on conservation planning.

Managing human-elephant conflict: a case study at Thong Pha Phum National Park, Kanchanaburi Province, Thailand

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The best solutions for Human-Elephant Conflict have been explored using information on human and elephant behaviors. Observations on elephant behaviors in controlled and experimented raiding farms were used for detecting effective repellent stimuli. Human behaviors have been compiled during solution implementations including crop protecting measures and using elephant for ecotourism. Most elephants responded by hiding, lone male elephant responded to super-loud noises but elephant family group fleeing even by spotlights. Villagers selected effective repellent measures using the above information to different elephants. Villagers using elephant for ecotourism spent more time towards elephant management by group discussing and developing management plans.

Tamarindus indica establishment methods and niche ecology on farms within the Great Rift Valley Ecozones in East Africa

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The World Agroforestry Centre is promoting increased adoption of tamarinds on-farms in East Africa, to increase production while ensuring conservation ex-situ for the declining wild habitat populations. Tamarind (*Tamarindus indica* L.) is a multipurpose legumnoseae tree species recently prioritsed by farmers for livelihood diversification in East Africa. Knowledge on establishment methods and niches of on-farm tamarinds East Africawide was needed to elucidate regionally appropriate conservation interventions, including mechanisms for farmer involvement. Thus our objective in this study was to characterise on-farm tamarind populations using their method of establishment and niches in East Africa. Our findings imply that genetic studies of the wild and planted tamarinds in their distinct on-farm niches are needed to elucidate specific conservation guidelines. Sensitization of farmers and securing their commitment to preserving wild tamarinds in the elsewhere niches on-farms could be a conservation option for East Africa's declining wild habitat populations.

Comparison between the use of higher plants and lower plants as biomonitors: case study of Jacaranda mimosifolia and Permelia sulcata

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We compared the effectiveness of *Jacaranda mimosifolia* (higher plant) to lichen, *Permelia sulcata* (lower plant) in Tshwane area, South Africa. Lichens species were transplanted on the tree trunk of *J.mimosifolia* in 10 different sites in the city. Collected samples were analysed for heavy metals concentrations using ICP – MS. The result showed that lichen and bark gave a relatively similar result. Sites with high concentrations of trace metals showed absence of lichens. It was concluded from the study that the tree of *J.mimosifolia* can also serve as a good biomonitor especially in areas that were highly polluted in the city.

Feeding ecology and associated movement patterns of a poorly-known primate: the bald-faced saki monkey (Pithecia irrorata)

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Knowledge of species' resource requirements and distribution patterns are essential to their protection. Through scan sampling, habitat plot inventories, and GIS analysis, we investigated factors associated with bald-faced saki's high densities in a sustainable resource use area in SE Peru and its absence or low density in two neighbouring protected areas. These monkeys consume over 200 species of plants, and their relatively small home ranges include a variety of forest habitats, indicating a lack of both dietary and habitat specialization. Factors causing their apparently patchy distribution may instead include fine-scale differences in forest structure or presence of large rivers.

Biodiversity Conservation in the Sierra Gorda Biosphere Reserve, México

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The Sierra Gorda Ecological Group (México) obtained in the 2001 the approval from the international community for the outstanding ecodiversity of the Sierra Gorda Biosphere Reserve, finally receiving a response from the Global Environment Facility. The ambitious and holistic project "Biodiversity Conservation in the Sierra Gorda Biosphere Reserve" was awarded a 6.7 million dollar seed fund on behalf of GEF, managed by the United Nations Development Programm, administered by the National Commission of Natural Protected Areas (CONANP) and executed by the SGEG, obtaining a broad social participation and pioneering with new conservation schemes, like productive diversification, environmental education and the development of ecosystemic products and payments among others.

Developing molecular tools for Pteronura brasiliensis studies

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The expansion of non-invasive genetic techniques in recent years has proved useful for elucidating the relationship both between individuals and

between populations. However, although there have been several such studies involving Lutra lutra, research in this area concerning Pteronura brasiliensis has been lacking. A three year project at the Institute of Zoology and Durrell Institute of Conservation Ecology has begun firstly to identify microsatellite and control region primers in the genome of the giant otter, and secondly to use these tools to reveal the structure of relatedness and distribution of individuals within populations in study sites in Bolivia, Guyana and Peru.

Managing an emerging infectious disease in an endangered endemic species

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Despite its rapid recovery over the last 20 years and its recent downgrading by the IUCN the echo parakeet (Psittacula eques) is still under threat. The emergence of Psittacine Beak and Feather Disease (PBFD), a highly contagious viral disease is having an impact on the population and the way in which its recovery can be managed. Disease data is being considered alongside genetic data to investigate the possible impacts of inbreeding on disease resistance. Understanding the spread of the disease will not just help the echo parakeet programme but also help to manage the spread of emerging infectious diseases in other projects.

Threatened medicinal plant of north-western Himalaya: status, indigenous uses and conservational aspects

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The study deals with the diversity, distribution, indigenous uses, status and conservational aspects of threatened medicinal plants of North-Western Himalaya in detail. A total of plant 68 species belonging to 56 genera and 33 families have been reported from the region. Of these, 9 species are trees, 15 species are shrubs and 44 species are herbs. The study is an attempt to see how the above stated factors are interlinked with each other and what influence do they have on conservational aspects of reported taxa. Also the study is first ever integrated conservation effort from the region taking into account various important factors in conservation biology.

Conserving Malagasy Fruit bats through environmental education

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Malagasy fruit bat populations are declining because of habitat loss and overhunting. Legislation authorizes hunting and few roosts are in protected areas. Our project aims to increase population awareness to conserve bats. We worked with the Ministry of Education to write booklets on bat conservation fitting with the curricula in primary schools. Using these booklets, teachers in pilot schools included bats examples and conservation issues during classes. Feedbacks from teachers and market visits provided evidence of conservation progress. We recommend such approach to be developed for all taxa for effective conservation in Madagascar and other hotspot countries.

Applied research for conservation of the Herpetofauna of Bangladesh

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Roughly 85% of the amphibians and reptiles of Bangladesh are facing conservation threats. This is obviously an under-estimate since it includes 46 'data deficient' species and survey effort has mostly been conducted by British researchers over a century ago. This current study, conducted by a Bangladeshi student in collaboration with western experts, aims to prepare an updated species list and to prioritize most species diverse habitats in Bangladesh for immediate conservation measures. Results, to date, include 13 additional species for the country, and an evergreen forest in the northeast, Lawachara National Park, was identified as the best habitat for herpetofauna.

Nest protection and electro-fences to increase brood survival in a ground nesting farmland bird, the Lapwing Vanellus vanellus.

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Poor reproduction in farmland is a major reason for the decline of the Western Lapwing. In our study we showed that nests protected or removed during agricultural activities did not get deserted more often than control

nests. Evaluations on the basis of telemetry data further suggested that fences can increase nest and chick survival: inside the fence 17.9 % of the chicks survived compared to only 0.5 % outside. Protecting nests from destruction by agricultural activities and fencing selected habitats could thus be important tools in lapwing conservation.

Climate change and its effects on species distribution of legumes in Madagascar.

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This study evaluates the threat of climate change using a widespread plant family (Leguminosae) in the tropics (Madagascar). GIS modelling (Maxent) using georeferenced specimen data measures species ranges now and under future climate change scenario. The results show that one in ten endemic legumes in Madagascar is expected to lose over half its habitable range in 2100 due to climate change alone. However, certain vegetation types are more threatened with extinction risks more than twice as high. The results are also used to assess conservation status through range size, and in such way help to assign scientifically-supported conservation priorities.

Stump Survival in commercial Sitka spruce plantations in Ireland

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Deadwood is a crucial component of healthy, well-managed, biologically diverse forests. This study estimated the number and volume of stumps and roots that were still alive after thinning had taken place in a series of Sitka Spruce (*Picea sitchensis*) forest stands. The results show the level of survival of stumps, at different times since their creation as a result of thinning operations, through root grafting to neighbouring trees. The amount of 'live' stumps has implications for the delay in the decomposition of the roots and stumps, thus affecting the recycling of nutrients and carbon and their availability to the ecosystem.

Genetic diversity and population structure of the Hawaiian monk seal

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The Hawaiian monk seal (*Monachus schauinslandi*) was hunted to near-extinction in the nineteenth century. Though partial recovery was made by the late 1950s, the species has since declined. To assess genetic diversity and population structure, I isolated microsatellite loci from the Hawaiian monk seal genome. Of 143 loci tested, only seven are polymorphic, with low alellism (on average, 3.5 alleles/locus) and low heterozygosity (He = 0.49). During the bottleneck, the effective population size likely fell below 50 individuals, but there is little indication of inbreeding (FIS = 0.018). Analysis of 2,402 individuals from seven populations provides little evidence for substructure.

Climate change, rainfall patterns and breeding phenology in a tropical bird

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The tropical island of Mauritius is experiencing climate change in the form of changing rainfall patterns. The number of rain days has significantly increased within the study area in the last 50 years, which can in part be explained by increasing Sea Surface Temperature and ENSO effects. This in turn has implications for the breeding phenology of the formerly endangered Mauritius kestrel. The timing of egg laying is significantly affected by the number of rain days prior to breeding and increasing number of rain days cause the birds to lay their eggs significantly later.

An interdisciplinary assessment of the spiny forest in southern Madagascar

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The spiny forest of Madagascar is rapidly disappearing and proportionally underrepresented within all protected areas. The challenge to conservation professionals is to acquire reliable biological data for successful planning and to understand the needs and culture of local villagers to implement protected area that are sustainable in the long term. The aim of this project

was to get an insight into the diversity of plants, abundance of lemurs and the activity of human livelihood in the spiny forest of southern Madagascar. This data will serve, among others, as a base for implementing further protection policy.

Wildlife damage compensation models: an overview of strengths, weaknesses, and effectiveness

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Livestock and crop depredations by endangered wildlife are a problem worldwide. Conservation status of these species leaves people living amongst them few options for protecting their livelihoods and preventing future incidents. Compensation programs are a controversial option that is widely used to mitigate economic losses and provide positive incentive for coexisting with wildlife. This study provides understanding of how compensation is applied by examining the basic forms of wildlife damage compensation programs. Three case studies are examined: a program that failed (Israel), one that has persisted but has many problems (India), and a program that is an overall success (Pakistan).

Conservation and ecology in European tidal freshwater wetlands: opportunities and challenges

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Tidal freshwater wetlands (TFWs) support characteristic species composition and perform fundamental ecological functions. In this study, an overview of the River Minho TFWs' diversity and their conservation state is provided, including temporal comparisons documenting faunal declines. We also discuss how this study can be representative of actual ecological and conservational conditions of European TFWs and the alarming actual rates of biodiversity losses. Probably, other European TFWs with comparable characteristics are under a similar unexpected risk and, therefore, they should also be considered for conservation purposes. Finally, the principal threats to these estuarine ecosystems are discussed and some practices that should be implemented to reverse this situation are indicated.

Woody species diversity across Protected Areas of northern Western Ghats, India.

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The study outlines protocol for developing biological richness maps that aid in identifying conservation priority areas. Non-Metric Multidimensional Scaling technique was employed to identify gradients affecting woody species composition. Study spans over 40 belt transects covering an area of 20ha. High conservation priority areas were identified based on ranking that includes parameters such as species richness, endemicity and RET status. Tree-based models and prediction mapping was done to find whether species rich areas also exist outside PAs. Low temperature seasonality was correlated with high species richness whereas endemic species richness was governed by evergreen to deciduous ratio.

Changes in Age Structure of Mussel Populations Over 2 Decades

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The Freshwater Pearl Mussel (*Margaritifera margaritfera*) has undergone a massive decline and is now threatened throughout its range, due to pollution, pearl fishing and habitat modification. It is believed that many populations are not successfully recruiting juveniles, and are therefore considered as functionally extinct. This researched aim to see how the age-structure of particular populations changed over 2 decades. Sites first visited in 1984 were revisited in 1997 and then again in 2006/07. Sites were searched for mussels, and the length of these measured. Lengths were then converted into age by age-at-length equations. The age structures of the three periods were then compared. Some rivers have maintained a reasonable level of recruitment, with very little change in the age structure over time, while others show a marked decline in the proportion of juveniles present, indicating recent poor recruitment. On a more positive note, some populations are showing an increase in the proportion of old mussels since the introduction of the ban on pearl fishing.

Prioritizing stakeholders of integrated conservation management of forest ecosystems in Arasbaran, Iran

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Arasbaran biosphere reserve suffers from on going overuse of ecosystems by livestock grazing, fuel wood and timber harvesting. A prerequisite to any participative conservation planning is a stakeholder analysis to identify and classify stakeholders. I demonstrate a multi-criteria stakeholder analysis method and discusses its implications for participative conservation planning. The Analytic Hierarchy Process was used to prioritise stakeholders to derive cardinal rankings per indicator, dimension and overall. This research highlights the characteristics of forest dwellers and their relations to forests. The proposed approach extends the proposition by Colfer et al. (1999) and includes a powerful multi-criteria analysis method to derive consistent local rankings of stakeholders. Successful conservation plans need to secure the participation of all relevant stakeholder groups.

Bamboo-Aves association in Southern Ghana: A missing link

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Sympodial bamboos are believed to have many unrecognized associations including its aves association in the tropics. My main aim was to investigate the association of different bamboo species with bird types and the relevance of such association for conservational purposes in different ecological zones in Ghana. Questionnaires and field observations revealed that Bambusa vulgaris association with Ploceus cucullatus was predominant in the Moist Semi- Deciduous Forest types in Southern Ghana. I concluded with recommendations for further international collaboration and research on this association for enhanced understanding and full conservational benefits.

A Study on identification and distribution of Sea urchins ((Phylum: Echinodermata, Class: Echinoidea) in coastal zone of Sri Lanka

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The true diversity of sea urchins is a mystery in tropical waters. In Sri Lanka, sea urchins experience disturbances due to coastal reclamation, fisheries and ornamental trade. To date, no proper studies have been conducted on the diversity, abundance and habitat preferences of them. In this study collected specimens are recorded for external features and tests are identified through a key developed by British Natural History Museum, UK. So far 8 species have been identified falling into 4 families (Stomopneustidae, Toxopneustidae, Diadematidae,Echinometridae) namely; *Stomopneustes variolaris, Tripneustes gratilla, Echinothrix diadema, Astropyga radiata, Toxopneuses pileolus, Diadema savignyi Echinometra mathaei* and *Echinothrix calamaris*.

The feeding ecology of the golden monkey (Cercopithecus mitis kandti) in the Volcanoes National Park, Rwanda

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The Albertine Rift is the only confirmed location for this endangered subspecies (IUCN Red List). The influence of seasonality on diet and feeding behaviour was determined. Both opportunistic and scan sampling methods were used to collect data during a 3 year period from April 2004 to March 2007. The two study group's sizes are estimated between 54 and 82 individuals. Home range sizes were 0.76 km2 and 0.68 km2 respectively and are considered to be small in comparison to blue monkeys. Golden monkeys are mainly folivorous (bamboo was the key food species) and they spend 56.21% of their time feeding.

Conservation in Alpine environment of Nepal

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High value medicinal plants are important resources in alpine environment of Nepal. Rural communities are dependent on these resources for the

livelihood since time immemorial. But the sustainability of these resources is questioned because of over-exploitation due to high market demand and habitat loss. Conservation programmes are low prioritised due to lack of awareness among people and also lack of other resources. It is important to conserve these resources for the livelihood support and ecosystem conservation. Interdisciplinary attempt is made to analyse these situations in Nepal.

Matrix use determines edge effect in amphibian diversity in montane forests, southern Mexico

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Mexican amphibians and tropical montane cloud forest (TMCF) are highly threatened and remains isolated in forest patches surrounded by a matrix of agricultural lands. We surveyed eight ecotones containing TMCF edge, TMCF interior and coffee or corn plantations. We found 41 individuals of 5 species in the ecotones between forest and coffee, and 4 individuals of 2 species in the forest-corn ecotones. Shaded coffee plantations play an important role for the TMCF conservation because the similarity between the structure of coffee plantations and the TMCF, the capacity to buffer the edge effects and the maintenance of microhabitats for the amphibians.

Direct consumptive use value of ecosystem goods and services in the Bale Mountains Eco-region, Ethiopia

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The Bale Mountains support diverse ecosystem goods and services. However, environmental contributions to crops, livestock and forest products are not adequately represented in policy, resulting in Eco-region degradation. Assessing the economic importance of ecosystem attributes supporting agro-pastoral livelihoods, annual household direct-consumptive-use value is US$1157 from crops, US$228 from livestock, and US$407 from forest products. Production decisions appear opportunistic but motivated by a subsistence level; overall value is US$1791 irrespective of livelihood sources. Under current management, declining resource quality will impact rural communities substantially. Understanding economic incentives and household dynamics, considering ecological conditions, is required to align conservation and development strategy.

Saving Species on the EDGE: Prioritising based on Evolutionary Distinctiveness and Global Endangerment

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Conservation priority setting based on phylogenetic diversity has frequently been proposed but rarely implemented. Here, we define a simple index that measures the contribution made by different species to phylogenetic diversity and show how the index might contribute towards species-based conservation priorities. The approach has been applied to the Mammalia and Amphibia. Many species that are both evolutionarily distinct and globally endangered (EDGE species) do not benefit from existing conservation projects, suggesting that global conservation priorities may have to be reassessed in order to prevent a disproportionately large amount of evolutionary history becoming extinct in the near future.

Extinction risk of Venezuelan terrestrial ecosystems: human impacts in two contrasting regions

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Extinction risk estimates are a key input for defining conservation priorities. We assessed the status of terrestrial ecosystems in two Venezuelan regions: Margarita Island and Amazonas state. We contrasted historical and recent land cover at multiple scales and applied a set of quantitative criteria which explicitly separate risk assessment from priority setting. We found that in Margarita Island, both evergreen and dry forests were threatened at all spatial scales, mainly due to land cover loss for urban developments. In contrast, evergreen forests in Amazonas state were threatened only at the finer spatial scales, mainly in areas of indigenous settlements.

Importance of Kolguev Island for maintaining European populations of White-fronted Goose (Anser albifrons)

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One third of the Western Palearctic Population of White-fronted goose arrives to Kolguev Island at spring. Any changes there can influence number of geese in Europe. We individually observed 800 nests of this species. Breeding success factors were analyzed (landscapes, human impact, biogenic and abiotic factors). Nesting density (35-56 nests/km2) and success (82-91%) were extremely high and regular in all available landscapes. But in areas with human impact it locally dropped to 44%. High breeding density on Kolguev makes one third of European White-fronted geese very sensitive to any changes in human activities. Sustainable management of traditional activities and special conservation regime of this territory are necessarily.

Sexual size dimorphism in breeding plovers Charadrius ssp in Madagascar

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In Madagascar plover, there is an assortative mating between males and females in regards to the body mass, tarsus length and wing length (T-test from monomorphic is significant, with significant allometry $\beta>1$ in all traits). In Kittlitz' s plover, there is not an assortative mating between males and females in regards to any traits (T-test from monomorphic is not significant). In White-fronted plover, there is an assortative mating between males and females in regards to wing length only (T-test from monomorphic is significant, with significant allometry $\beta >1$ in this trait).

The inshore fish community of Lake Kariba half a century after its creation: what happened to the Upper Zambezi species invasion?

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When Lake Kariba was created 50 years ago, little was known about the fish fauna of the middle Zambezi or how the native species would respond. The appearance in the lake of some species normally found in the upper Zambezi above Victoria Falls led to the suggestion that they might be in the process of colonising the new lake. An extensive survey undertaken in 2006 found no evidence that any of these species occur in significant numbers, except the cichlid Serranochromis macrocephalus. It is suggested that these invaders failed to become established owing to the absence of suitable ecological niches.