

Talks and Posters



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Building links among young conservation scientists and practitioners

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Does having more time to think alter people's responses in a choice experiment?

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Respondents to discrete choice experiments (DCEs) may lack pre-defined or well-informed preferences for large environmental interventions. We evaluate whether more time to think and discuss with others influence responses to a DCE assessing the local welfare impacts of forest conservation in Madagascar. We used a within-subject design and debriefing interviews. Giving respondents more time significantly affects individual-level preference parameters and compensation estimates. While qualitative debriefings provide limited evidence for recall and suggest extensive deliberation within household members, we also found evidence of strategic behaviour. We discuss the implications of our results on the application of DCEs in developing countries.

Using identification guides to identify UK bumblebees: is expertise an advantage?

GAIL AUSTEN

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Visual species identification is integral to many conservation activities. The large datasets required to make informed decisions are populated by observations from both expert and citizen science communities. However, some experts have questioned the usefulness of data collected by non-experts. Using paradigms from face recognition research, the image matching abilities of experts and non-experts were investigated. Even under highly optimised conditions, overall accuracy was less than 60%, and comparable for all levels of expertise. The implications of misidentification are huge, and further research into the differences between expert and non-expert observers could aid identification training.

Climatic influences on range-restricted birds in Ethiopia

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The Ethiopian Bush-crow and White-tailed Swallow's small, near identical, global ranges are neatly described by a climate envelope of cooler, drier climate. For my PhD I have been investigating the mechanisms of their restriction; looking for environmental correlates of their distribution and abundance, investigating the effects of temperature on Swallow breeding success, and studying the Bush-crow's behavioural responses to temperature. I will present the key results from

my research, and discuss the implications for their conservation in the face of climate change.

Jaguar conservation in agricultural landscapes

VALERIA BORON

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Reconciling agricultural expansion and biodiversity conservation is an increasing challenge. Large carnivores like jaguars (*Panthera onca*) are particularly vulnerable to habitat loss and are keystone species in their ecosystems. Using camera trapping, we estimated jaguar density across an agricultural area in Colombia (3.0 individuals/100km²) and suggest that jaguars can persist in these landscapes if natural habitats and especially wetlands are present. Interviews to experts/stakeholders and network analysis revealed that to conserve jaguars while improving overall sustainability in the region it is key to focus on the oil-palm sector, strengthen institutions, and adopt stricter regulatory frameworks and incentive schemes.

Using ecological genomics to understand threats to dwarf birch

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The persistence of woody plant populations faces numerous environmental challenges, including climate change, hybridisation and population fragmentation. Here we explore the genomic signatures and relative importance of these pressures in Dwarf Birch (*Betula nana*), which has declined significantly over the last century across the Scottish Highlands. We used 18 microsatellite markers, genome wide RADseq generated SNPs and the *Betula nana* reference genome to assess genetic diversity across the species extant range. Initial evidence suggests introgression from two substantially more abundant congeneric species appears to be 'swamping' Dwarf Birch populations whilst climate change may lead to range shifts and increased interactions.

How do you understand a frog that surfaces for only seven days in a year?

SANDEEP DAS

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The description of Purple frog (*Nasikabatrachus sahyadrensis*) in 2003 was the first time in 77 years that a new family of amphibians had been described and its conservation was high on agenda. Direct observations and call surveys were used to observe breeding in Purple frog which surfaces for two weeks every year. Male frogs called out to potential mates from within the ground! Large egg clutches (4000) were laid at rocky pools, which hatched into suctorial tadpoles

within a week. Complete metamorphosis occurred within 110 days and the froglets disappeared underground soon after.

Seabird tracking to monitor ecosystems and engage people

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Understanding seabird foraging ecology helps elucidate factors affecting populations. A key factor in the marine environment is interaction with fisheries. This investigation of Gentoo penguin foraging ecology revealed how some populations in the Falkland Islands may be influenced by fisheries. In particular, the cessation of a major fishery, for *Micromesistius australis*, has increased the abundance of the primary Gentoo penguin prey species, *Patagotothen ramsayii*, with a resultant growth in Gentoo population. Bird-borne camera loggers further revealed interactions with *Patagotothen ramsayii* as well as other novel behaviours at sea. Camera footage was identified as a potential tool for community engagement.

Snow leopards and sustainability

JONNY HANSON

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This talk addresses the assumptions that more diverse and resilient livelihoods, and a decentralised conservation governance model, will improve attitudes to and reduce conflict with snow leopards, and their conservation. Using random sampling, a quantitative questionnaire was administered to 705 households at two sites in Nepal. Attitudes to snow leopards were best predicted by attitudes to snow leopard conservation and numbers of livestock; with attitudes to snow leopard conservation, it was attitudes to snow leopards and livelihoods. For conflict with snow leopards and with snow leopard conservation, the number of livestock lost was the foremost predictor.

Communicating climate change: the effectiveness of place-based information

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Climate change education is considered an essential tool for mitigating climate change. However, a general lack of engagement related to mitigating climate change, mainly due to the local and individual irrelevance of climate change in people's perceptions, often prevents education from being effective. This study introduces the effectiveness of a place-based communication strategy of climate change education, emphasizing experience-based interpretation and showing the relevance of global climate change to local impacts and individual experiences by

inter-generational communication, which will draw attention from a wide audience for engaging in climate change mitigation.

Climate change and Acacia invasion in a biodiversity hotspot

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Grasslands of montane forest-grassland mosaics of Western Ghats, where native trees don't establish, are threatened by the non-native Acacia tree invasion. We, through in situ transplant experiments, tested the influence of micro-climates and soils of forest and grassland on germination and seedling survival of Acacia and native trees. Further, in situ night-time warming experiment examined temperature's role in survival of Acacia and native seedlings in grasslands. Greater germination and seedling survival of Acacia in grassland micro-climate underlie its ongoing invasion of grassland. Future warming will accelerate it. If not addressed immediately, this invasion poses an extinction risk to these unique grasslands.

Assessing the socio-ecological impacts of small dams

SUMAN JUMANI

India

Small hydro-power projects (SHPs) are being widely propagated environmentally benign and socially beneficial sources of energy. Our study assessed the ecological and social impacts of a cluster of four SHPs in a biodiversity hotspot in India. Ecological impacts were studied with respect to forest fragmentation, freshwater fish assemblages and water parameters. Social surveys were conducted to understand impacts on SHPs on socio-economic activities, resource access and human-animal conflict. Ecological and social impacts were found to be substantial, especially with regard to fish assemblages and human-elephant conflict. In light of our findings, we suggest that the policy regarding SHPs be revised.

Seasonal dynamics of bushmeat hunting around Korup National Park

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Local hunters often change their practices depending on the season. However, how these changes impact on the prey species remain unknown. We investigated the dynamic of hunting patterns from rainy to dry season by monitoring 65 hunters (1,346 hunter-days; nine months). Gun-hunting was conducted year-round, while trapping was undertaken mainly in the rainy season. Harvest rates were significantly higher for the brush-tailed porcupine and lower for the tree pangolin in the rainy season. Because such changes can be highly site-specific, further offtake estimations should carefully examine them. However, a thorough attention should be paid on data collection and analysis protocols.

Impact of Ebola market closures on bushmeat hunting

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Unsustainable bushmeat hunting in Central/West Africa poses serious threats to wildlife. Efforts to combat illegal hunting for bushmeat require strong political will. This study examines the effect of market closures in Nigeria during the Ebola outbreak in 2014 to understand the impact of such decisions on hunting in adjacent Cameroon. Acoustic sensors recorded gun hunting activity continuously in Korup National park since 2013. Hunter, household and bushmeat market surveys were conducted concurrently. Results show the efficiency of the novel acoustic monitoring units that record hunting intensity at very fine temporal scales.

Molecular evidence for two distinct hog deer lineages in India

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We examined genetic variation and differentiation among two subspecies of hog deer, using mtDNA cytochrome b and control region gene. Two distinct subspecies were reported; *Axis porcinus porcinus* from the Indian subcontinent including Myanmar and *Axis porcinus annamiticus* from Southeast Asia. Our study suggested that the hog deer populations in India also have two genetically distinct units, which indicated a long term historical isolation of Manipur population from other existing populations in India. Therefore, we recommend

that both distinct populations (western and eastern lineages) of hog deer should be managed as evolutionary significant units (ESUs).

Art collection and investment in China: a neglected demand for rhino horn

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No rhino horn market survey was conducted in China in the last decade. Western media mostly reported rhino horn consumption in China for their medical value, while Chinese media predominantly reported their investment and artistic values. There is significant positive correlation between the volume of rhino horn auctioned in China and the rate of rhino poached in South Africa. An information gap exists between the demand end in China and the western countries where most rhino conservation efforts were initiated. Rhino horn art investment is potentially a critical yet underestimated driver for the recent surge in horn consumption in China.

Charismatic species in conservation marketing

PIIA LUNDBERG

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Charismatic species are frequently used in raising funds and awareness of conservational issues, which has also awoken opposition. The key question is: do flagship species necessarily need to be charismatic? By conducting a survey we asked how much people are willing to donate to conservation of species differing in their assumed appeal. Our preliminary results support the idea that charisma and attractiveness influence willingness to pay. Species with presumably pleasant appearance attracted more funding than less attractive species. However, people value also other traits, and there may be differences between respondent groups that should be taken into account in marketing.

Sea sparing vs sea sharing

JENNIFER MCGOWAN

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The land-sparing vs. sharing debate involves how best to balance competing demands for biodiversity persistence and food production in agricultural landscapes. We apply the broad thinking from this debate to the sea and propose a framework based on three possible management zones: no-take marine reserves, regulated fishing and open access areas. We investigate an approach that maximizes biodiversity, considered here as standing fish biomass, while maintaining a minimum fishery production rate. We find that when management

budgets are small, the classic sea-sparing strategy is the optimal zone allocation, given that the production target is lower than the open access equilibrium.

Are local perceptions of wildlife populations reliable?

EHSAN MOHAMMADI MOQANAKI

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In many countries wildlife managers rely on local knowledge or perceptions to assess the status of wildlife populations. In this study we compared the perceived-abundance of a Caucasian brown bear population by local rangers with that of faecal-DNA analyses. The rangers perceived that the abundance of this bear population was approximately five times higher than the estimate suggested by the spatial capture-recapture analysis of DNA samples (mean= 38 bears, 2.5%-97.5% CI = 26 - 56). We showed that lack of accurate knowledge about the status of wildlife populations may substantially increase the probability of misleading the prioritization of conservation actions.

The plight of Du Toit's torrent frog

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The amphibian species *Arthroleptides dutoiti* is endemic to Mt Elgon, Kenya but hasn't been observed since 1962 despite several surveys. The species is currently considered critically endangered by the IUCN redlist but it might be extinct. Compiling data on all amphibians collected in Mt Elgon and the time it took to collect these specimens over the years I will assess whether declines are species specific or assemblage wide phenomena. This talk will shed light on the conservation status of *A. dutoiti* and the potential threats that might have led to the species decline and potential extinction.

Wind farm prioritisation based on impacts on wolf habitat in Croatia

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Wind energy represents a major threat to wolves in Croatia, where 33 wind farms are planned to be built by 2020 to meet European targets. However, only half of the total installed capacity would be necessary to meet such targets. In this study, a habitat suitability model for wolves in Croatia was carried out using Maxent. Model predictions were used as proxy for wind farms' potential impact on wolves. Finally, Marxan was used to prioritise wind farms, in order to ensure the achievement of targets at minimum costs on wolves. This framework can be expanded to multiple species and infrastructure.

Implications of poor boundary-setting for future protected area management

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The success of protected areas can be greatly affected by the initial process of boundary demarcation. We used key informant interviews and community-level focus groups at several sites around the Corridor Ankeniheny Zahamena (CAZ) protected area in Madagascar to understand different perceptions of the boundary demarcation process for this new protected area. We found that the process was not perceived to be as participatory as was intended in the regulations. This has led to discontent among key stakeholders, with communities wanting access to their 'ancestral' land in the park, and government staff frustrated by lack of involvement in the process.

Monitoring forest birds using satellite data

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Many species of endemic birds in Madagascar are threatened by habitat loss. However Madagascar does not have established long-term monitoring programmes to detect trends in bird populations. In this study I used GBIF records of birds, a time-series of environmental variables derived from high resolution satellite data, and species distribution modelling to estimate the extent of suitable habitat for birds in Madagascar from 1990-2015. This method allows area of habitat for bird species, a proxy for population size, to be monitored retrospectively. I found that forest dependent species with restricted ranges have experienced greater relative range contractions than generalist species.

Livelihoods and the pet trade in Madagascar

JANINE ROBINSON

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The global trade in wildlife is big business, and is a significant conservation issue for many species. However, the benefits of wildlife trade in terms of livelihoods associated with sustainable use of natural resources, an important goal of the Convention on Biological Diversity, are often little-understood. This study follows the trade chain from exporters to local communities at the source of the herpetofauna trade in Madagascar, in order to understand the livelihood and related conservation implications of this trade. This is the first step in assessing potential social, economic and conservation implications of future policy interventions to regulate wildlife trade.

Lion tamarins in cocoa agroforests

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The golden-headed lion tamarin (GHLT) is an endemic primate from Brazil's Atlantic Forest which is threatened by habitat loss. Its range is dominated by cocoa agroforests (cabruca), a simplified habitat with high predation risk. This project aims to understand the role of predators and vegetation structure on GHLT's occurrence in cabruças. Active search, playback, fixed point and camera traps were applied in sixteen cabruças to detect GHLTs and its predators. Habitat variables were collected on vegetation plots. Predators were not determinants but vegetation structure seems crucial for GHLTs, suggesting that intensively managed cabruças may not be favourable to the species.

Unravelling the migration of the Critically Endangered hooded grebe

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Hooded Grebe is a migratory species that moves from inland Patagonia to the southern Atlantic Coast. Both, winter and summer grounds are well known but nothing is known about migration routes and timing of migration. The main methods are banding using plastic colour bands, geolocators/beeper tags, and repeated censuses in both winter and summer grounds. The most important results show that it is highly philopatric, meaning they return to the exact same lake they have born. Another important result in winter grounds the use of the estuaries is not homogenous. Lastly, that juveniles use inner lakes during the winter.

Understanding the outcomes of environmental collaborations

JANNA STEADMAN

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Cross-sector collaborations, such as those between non-governmental organisations and corporations, are proliferating in conservation. However, little is known about their efficacy and subsequent impact on the wider natural environment. Here I present WWF's Global Forest and Trade Network (GFTN) as a case-study, which we investigated via content analyses, interviews and social network analysis. The results show that most participants join to fulfil organisational strategic objectives, rather than to address concerns regarding sustainable forest use. While not all GFTN members improved their forest product sourcing, many have achieved external chain-of-custody certification. Certified participants tend to occupy more influential positions within GFTN.

Using camera traps to find fishing cats in Cambodia

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The fishing cat (*Prionailurus viverrinus*) had only been recorded through camera-trapping once in Cambodia. Survey aimed at recording fishing cat presence in suitable wetland habitats of south-west Cambodia. We deployed 16 camera-traps at Pream Krasop Wildlife Sanctuary (PKWS) and Botum Sakor National Park in Koh Kong province, and Ream National Park (RNP) and Prey Nop district in Preah Sihanouk province, between January and May 2015. Fishing cat recorded from PKWS and RNP. Two individuals, a male and a female, were photographed at PKWS as well as four other IUCN listed species: Pangolin (CR), Hog Deer (CR), Smooth-coated Otter (VU), Large-Spotted Civet (VU) and Sambar (VU).

Land-use change and elephant conservation

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Human-wildlife conflict is one of the most challenging issues facing conservationists today. However, many studies focus on technological fixes and do not look at the broader issues of land-use change and spatial planning. This study documents the impacts of land clearing on elephant crop-raiding in the Trans-Mara, Kenya. We found that high levels of forest loss has led to conflict almost doubling since 2000. This conflict is influenced by the location of elephant dispersal pathways but land-use change has also had a strong impact on crop raiding locations. This research should inform management of human-elephant conflict in Kenya.

Spatially-explicit call surveys for the mistbelt chirping frog

MEA TRENOR

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Many frogs exhibit cryptic behaviour, making mark-recapture surveys challenging. Audio transects depend on surveyors' experience, hindering standardization. Using automated song meters, in a spatially explicit array with GPS synchronization, one can confidently count the frogs present and determine their exact location. We employed this method for the endangered Mistbelt Chirping Frog (*Anhydrophryne ngongoniensis*). Its habitat is severely fragmented due to agricultural afforestation with no official protection. The results will provide insight into calling behaviour and distribution of the frog within a breeding site. The data obtained will be used to update population estimates and guide conservation measures for important areas.

Conservation implications of elevational diversity patterns in reptiles

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We studied the elevational patterns of reptile diversity in Agasthyamalai Hills (100-1860m ASL), Western Ghats, India. Reptiles were sampled by Visual Encounter Surveys and vegetation by 10x10 plots. Climatic data were extracted from WorldClim. We did not find evidence for mid-domain effect in reptile species diversity, implying the role of climatic or historical factors in the observed elevational patterns. Stepwise multiple regression revealed that area and temperature contributed most to the reptile diversity, which showed a declining trend with elevation. The lower elevations that show high species richness of reptiles with narrow altitudinal ranges need immediate attention for conservation.

Dewlaps in the wind: an unexpected trophic cascade from clean energy

AMOD MOHAN ZAMBRE

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Renewable energy sources like wind power are globally promoted as safe alternatives to fossil fuels to mitigate effects of climate change. My work on fan throated lizards in the Western Ghats of India shows that the presence wind turbines is causing a trophic cascade that involves changes in predation pressures, which in turn influences lizard density, as well as morphology, behaviour and physiology. Given the short history of wind farms in the study area, and the fact that these lizards are the main mesopredator in the community, such changes can have major ecological and evolutionary consequences.

Notes

Conserve marmot, sustain Himalaya

BIKASH ADHIKARI
Hedmark University College, Norway

Although Himalayan marmot play key role in survival of endangered snow leopard and high altitude ungulates, there are no conservation and research initiatives on it. My poster would highlight the impact of climate change on Himalayan marmot at Shey Poksundo National Park, Nepal. Downward shift and unexpected burrowing inside forest at lower elevation indicates habitat plasticity in marmot.

Assessing wild ungulate abundance in the rugged terrain of Northern Pakistan.

HUSSAIN ALI
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Wild ungulates are critical prey items for many endangered carnivores in the rugged mountains of northern Pakistan. However, abundance estimates are problematic because of remoteness and topography. A new method (Double observer method), developed in India and Mongolia, was tested in Northern Pakistan to estimate blue sheep and ibex abundance. The method was found feasible in the rugged terrain, as it is easy to exercise and need less financial resources than earlier vantage count method.

Chameleons and land use change

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Madagascar's chameleons are known for their high diversity and endemism but most of them are threatened by habitat loss. We conducted research to evaluate the impact of habitat change to chameleon distribution and abundance. Five land uses were assessed: primary forest, tree fallow, shrub fallow, degraded land and reforestation plots. Chameleons were surveyed along transect, using distance sampling methods. In total, fifteen species are found. Most are found and abundant in the forest but some exist only in the open area. This study gives an idea how chameleon respond to land use change and it's can help to their conservation.

Conservation Conversations; Understanding the potential impacts of future policy interventions in Uganda

LUCY ARCHER

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This study used Murchison Falls Conservation Area (MFCA) and Queen Elizabeth Conservation Area (QECA) in Uganda as case studies to investigate the efficacy of potential conservation interventions in terms of reducing wildlife crime and their impacts on local people. It suggests that attitudes towards conservation at MFCA and QECA are driven by the costs of the protected areas, despite the benefits conservation interventions might provide. It argues that by tackling economic poverty and perceived injustice through reducing human wildlife conflict and facilitating agricultural improvements, people and park relations could be improved and the probability of engagement in wildlife crime reduced.

Microhabitat selection by the ring ouzel *Turdus torquatus*

ARNAUD BARRAS

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Montane bird species are expected to be particularly at risk to climate change. We studied the ring ouzel, an alpine bird that recently decreased in Europe. Using radio tracking, we performed a habitat selection study to identify key habitat predictors of the foraging areas in the Swiss Alps. Three environmental variables turned out to be crucial in the selection of foraging sites, i.e. vegetation height, soil moisture & soil hardness. Fine scale species-habitat associations are of great importance, as we can hypothesize how climate and land-use changes may impact alpine populations of ring ouzels in the future.

Ethical perspectives on introduced species

VANESSA BERRIE

Independent researcher

Many intractable debates in conservation are underpinned by differences in ethical viewpoints, but these are rarely explicitly addressed. Demonstration case studies highlighting the ethical aspects of conservation problems can facilitate increased understanding and resolution of such debates. Here, the ethical aspects of an introduced species case study are investigated through theoretical research and discussion with stakeholders. Several topics explored in ethics literature are helpful in understanding this case study, including human stewardship, animal welfare and rights, and the relevance of native/non-native status. Combined with social and ecological

understanding, considering ethics provides useful and novel perspectives to inform decision-making.

Assessing environmental change in tropical habitats

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Trends in avian demographic indices provide information on environmental quality. To assess the usefulness of bird ringing data for avian conservation in tropical environment, we modelled species accumulation, juvenile recruitment and body mass variation of birds using data collected between 2001 and 2011 in the Amurum Forest Reserve, Nigeria. Birds of prey and frugivores continue to accumulate species. Juvenile recruitment increased marginally while body mass patterns were consistent with improved foraging conditions. The results parallel habitat improvement after designation of the reserve in 2001 and suggest that bird ringing data are robust for assessing habitat quality where specific monitoring schemes are lacking.

Wildlife disease surveillance and reporting

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Pathogens of wildlife may infect humans and/or domestic animals, and have been linked to species declines. Effective surveillance facilitates understanding and mitigation of these impacts. Here, a systematic review of literature on the surveillance of amphibian ranaviruses, pathogens notifiable to the World Organisation for Animal Health (OIE) which have been linked to global amphibian declines, reveals inadequacies in wildlife disease reporting. Responses to two questionnaires are also analysed in combination with the published literature to investigate the validity of commonly used screening tests for ranaviruses, and examine the contribution made by citizen science to amphibian disease surveillance.

Variations in *Psittacara wagleri* occurrences

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Psittacara wagleri is a parrot reported in illegal trade and listed as Near Threatened by IUCN. Populations seem to be absent for months in some locations and to be declining, but studies are scarce. We studied its distribution changes between seasons and years in Venezuela through estimating presence probabilities and its changes using species records and

climate variables with MaxLike. Distribution area with high presence probabilities was reduced 19% from dry to rainy season and reduced 16% the last 70 years. Species presents local and seasonal migrations and needs specific studies to understand its presence reductions and its conservation status.

Sex-specific foraging patterns in hoopoes

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In Switzerland hoopoes are classified as vulnerable and are one out of 50 priority species of high conservation concern. Our main goal was to quantify habitat-preferences of male and female hoopoes on different spatial scales. To do so we used miniaturized GPS loggers to quantify habitat use and preferences over a whole day. We found that males and females differed in the composition of prey item as well as their food allocation to their chicks. This different prey composition was reflected by differences in foraging niches in relation to foraging distance and habitat characteristics (e.g. % bare ground).

Marine Bio-invasion in South Brazil

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Non-indigenous species (NIS) are invading natural habitats, what can impact the structure and functioning of ecosystems. The subtidal rocky community was surveyed on both artificial and natural habitats in a subtropical region of Brazil. Of the total of 20 benthic NIS, 18 occurred on both habitats. All known studies show greater NIS occurrence in anthropogenic habitats. Despite the higher frequency of NIS on artificial habitats, our results alert for a higher infiltration than expected, which must be contemplated at research and monitoring programs. Finally, this research confirms the susceptibility of a World Heritage site to Bio-invasion and the need of specific management plans.

Temporal variations in environmental DNA

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Environmental DNA (eDNA) is a relatively new survey tool, with its applications growing rapidly. We track how eDNA concentration changes through the active season for a temperate semi-aquatic amphibian, the

great crested newt (*Triturus cristatus*). We observe how eDNA concentration changes relative to adult and juvenile population size and time of year. The results suggest that the concentration of eDNA recovered may relate to relative abundance of individuals between identical systems in a single time period. However, we show that this is not the case between time periods with season specific activities influencing the amount of eDNA in a sample.

Conservation insights from disturbed habitats

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Highly disturbed, moderately disturbed and undisturbed semi-evergreen and moist-deciduous forests of Northern Western Ghats were studied to understand impact of disturbance gradients on the biodiversity. Remote Sensing for habitat mapping, line transect and point counts for avifaunal surveys and GIS for nest mapping were used. Disturbance found to be singularly most dominant factor impacting diversity of avifauna. Moderately disturbed forests though showed high diversity, undisturbed forests were preferred by habitat specialist and endemic birds. Nesting of specialist bird species affected significantly across the disturbance regime. People living closer to the forests have greater willingness to conserve the biodiversity.

Valuing ecosystem services in Koh Rong Archipelago

PHALLIN CHEA

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The loss of ecosystem comprises a main hazard to maintain of human society, especially poor coastal communities. Cambodia's coastal ecosystems are currently much less understood especially its value. Without understanding of the value of ecosystem services it is difficult to make conservation or development decisions. The ecosystem service survey valuations used the contingent valuation method to determine the maximum a respondent is willingness to pay for potential services. The results show the correlation between value of ecosystem services and human well-being, in the context of a Cambodia's first MPA which provide tangible recommendations to conservation and development practitioners.

Goshawk reproductive performance and habitat

IRENE CONENNA

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This study aims to test whether climate and vegetation structure interact in affecting reproductive performance of the Northern Goshawk differentially in closed (i.e. forest) or open (mainly forest-farmland mosaics) nesting habitats. Brood size and individual chick weight were used as measures of breeding success. No specific patterns involving brood size were identified; conversely, body mass was more negatively affected by rainfall in open than in closed habitats. Therefore, despite that goshawks can successfully exploit human dominated habitats, these results suggest the need to preserve forest cover in the proximity of the nest, especially in the current scenario of climate change.

Fenland ditch bank pollinator services

HILARY CONLAN

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Pollinator declines in farmed fenland. There are 20million km of drainage ditches in the East Anglian fenlands. The banks of these ditches represent the only stable habitat for wild pollinators. There is a need to develop a model of measured pollination services in relation to environmental variables. White clover, which is a non-apomictic, obligate out-crosser, was used as a phytometer for pollinator services across 40 intensively farmed fenland ditches, 5 in Wicken Fen and 7 in Great Fen. Environmental factors were included in PCA analysis to determine the effectiveness of a measured pollination service.

Integrated Population Modeling and Conservation

LAURENCE COUSSEAU

Terrestrial Ecology Unit, Ghent University, K.L. Ledeganckstraat 35, 9000 Gent, Belgium

Estimating reliable demographic parameters of species of conservation concern is very challenging when data, typically, are sparse due to low detection probabilities or methodological issues. This is the case of the cooperative breeder, Cabanis's Greenbul, in the severely fragmented cloud forests of the Taita Hills (Kenya). The long-term dataset available is very heterogeneous, with discrepancy in the sampling design and the type of data collected. While the different sources of demographic data available for a species are traditionally analyzed in separate models, Integrated Population Modeling combines them in one, increasing precision of parameters while optimizing the use of inconsistent datasets.

Digital Citizen Science for Conservation

CHELI CRESSWELL

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Citizen science in conservation nothing new, but is currently enjoying a renaissance thanks to digital technology. This poster looks at how conservation-related citizen science projects have evolved over the last hundred years. It examines whether cutting-edge conservation citizen science is merely a 'supersizing' of existing tools and strategies, or if -- and how -- innovations and affordances of new technology are changing the relationships between the various participants, the types and applications of data being collected and analyzed, and even what is being fundamentally achieved in the process.

Evaluating perceptions towards saiga conservation

SONIA DHANDA

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The Saigachy Reserve in northern Uzbekistan is in the process of being re-designated. The goal of the reserve is to conserve the Ustyurt saiga antelope (*Saiga tatarica*). This study adopted a participatory approach to assess stakeholder knowledge, attitudes and perceptions towards the re-designated reserve and saiga conservation. The re-designation will have minimal impact on the stakeholders, but there are issues such as poaching, park management and enforcement that should be highly considered in the final stages of the implementation. Recommendations were suggested for the re-designated reserve and saiga conservation, stressing the need to understand people's perceptions to benefit protected areas.

Ungulate monitoring in rugged landscapes

LUKAS EGLI

Workgroup on Endangered Species, J.F. Blumenbach Institute of Zoology and Anthropology, Georg-August-Universität Göttingen, Bürgerstrasse 50, 37073 Göttingen, Germany

Robust monitoring is crucial for evaluation and guidance of conservation efforts, but is often missing in rugged landscapes. We assessed the feasibility of various methods to improve traditional practices of ungulate monitoring in north-eastern Iran and updated the population status of four species. We found that all methods tested had some shortcomings regarding their reliability, cost-efficiency or applicability, but all agreed that populations had suffered significant declines since the 1970's. Given that some species are now on the verge of extinction, we suggest urgent actions to address poaching along with further development of some of the methods presented here.

Human pressure in Conservation Priorities

RUBY FINLEN

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Nine global biodiversity priority templates guide hundreds of millions of dollars for conservation actions. Using a recently updated Human Footprint, we provide the first globally coherent analysis on the amount and degree of change in human pressure across these templates from 1993 to 2009. There is now evidence of significant human pressure in all nine templates, ranging from 95% in Crisis Ecoregions to 21% in Last of the Wild. All templates declined in wilderness, areas defined with no evidence of human pressure. Templates proactively prioritising large intact wildernesses were least influenced by human pressure, suffering the least amount of change.

The Secret Role of Elephants

URSA FLEZAR

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Elephants are important mediators of savannah vegetation structure and elephant-induced vegetation changes may influence major interactions between organisms. Focusing on predation, I experimentally tested the influence of elephant-mediated vegetation changes on habitat and within-habitat scale predation risk. I used camera trapping, herbivore behaviour analysis, vegetation surveys and risk manipulations, i.e. adding predator scat and/or coarse woody debris to the experimental plots. The results show that elephants influence predation risk for vulnerable prey species, but not for mega herbivores. Furthermore, the response of vulnerable species to predation risk strongly depends on the time of day and the presence of immediate risk.

Tooth Morphology in White Sharks

GEORGIA FRENCH

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It is generally accepted that white sharks undergo an ontogenetic shift in diet once they attain a length of roughly 3m. This dietary shift is reported to be accompanied by a change in tooth morphology, from pointed teeth suitable for grasping piscivorous prey items, to broad teeth suited to tearing flesh from mammalian prey. This study investigated the relationship between tooth morphology and shark size, sex and maturity level. Significant differences in ontogenetic tooth morphology were found between sexes and maturity classes, suggesting differences in ecology between male and female sharks that could have important implications for their effective management.

Felids and rainforest ecosystem restoration

ELVA GEMITA

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The Harapan Rainforest covers 98,455 Ha in two provinces in Sumatra; Jambi and South Sumatra. Single camera placement based on side wide grid of predetermined position 1.8 km x 1.8 km apart and paired camera placement to maximize the chance of detecting animals. 2003 trapping days of single camera trap, 15 mammal species include 2 felids (Sumatran tiger, Marbled cat) and 1 birds were recorded. 1399 trapping days of paired camera trap, 21 mammals species include 4 felids (Sumatran tiger, Sumatran Clouded leopard, Marbled cat, Leopard cat) were recorded. The findings suggest that Harapan plays important roles for felids conservation.

Climate suitability explains population trends

ELIZABETH GREEN

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Climate envelope models project how species' ranges may shift in the future, but their ability to predict actual changes in distributions is often disputed. Using population data from 1998-2014 and climate suitability values from 1960-2009 for the Dartford warbler in Spain, I show there is a significant relationship between recent population trends and climate suitability trends at sites across the country. These results demonstrate that climate envelope modelling can be a useful tool to project future changes in species' distributions.

Experimental fisheries management for African penguins

JENNIFER GRIGG

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The African penguin has suffered a dramatic population decline, primarily driven by changes in the abundance and distribution of prey and competition with fisheries. This study investigates the effectiveness of fishing closures as a conservation management intervention. Temporary fishing closures were alternated at penguin breeding colonies between 2008 and 2015. Breeding success, measured by chick growth and chick condition, and foraging parameters were compared from two colonies. Overall, fishing closures were shown to have a positive effect on breeding success and foraging parameters, although these relationships were not all significant. In conclusion, spatial management of fisheries can benefit African penguins.

Temperature effects on Himalayan herbs

PRIYA DARSHINI GURUNG

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Sikkim Himalaya presents an ideal system to study warming effects on plant diversity along an elevation gradient ranging from 280m–8586m. We study the effect of in-situ warming using Open-top chambers(OTCs) on survival, growth, reproduction and biomass production of three wide-ranging and two narrow-ranging *Primula* species, dominant herbaceous plants in the region, along the elevation gradient. In the OTCs, survival and reproduction decreased except at higher elevation sites (>4300m), and aboveground biomass increased, while growth responses were highly variable among sites. We conclude that warming mediated increased vegetative growth and decreased plant fitness may change the *Primula* community dynamics in this region.

Mosquito net fishing global review

RAJINA GURUNG

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Malaria is one of the most severe global public health issues and policy concern has led to the mass distribution of insecticide-treated nets in affected regions globally. These nets are intended for malaria protection, however there have been widespread anecdotal reports of mosquito nets being used for fishing. Ecologists and policy makers lack information on the scale and extent of mosquito net fishing. My study provides the first global perspective of the practice and an insight into its role in people's livelihoods as well as advice on how to manage this poorly understood issue.

Circannual habitat selection of birds

CLAIRE GUYOT

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We aimed to get season-specific habitat selection curves of avifauna in vineyards at two spatial scales. At the landscape scale we monitored birds along 1-km transects over one year. Vineyards with enhanced hedges and small wooded areas harboured higher bird abundance, species richness and diversity independent of the season. At the field scale we compared vineyard characteristics of visited to unvisited parcels. Birds showed a season-specific pattern with a linear preference for 100%-vegetated parcels in winter. In spring and summer, an optimum at intermediate vegetation cover was detected. Our results allow designing precise, season-

specific management recommendations to promote avian biodiversity in vineyards.

Conservation of medicinal plant species

THOMAS GYIMAH
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Most important medicinal plants are being lost to high patronage and destructive collection methods. This study sought to find out the availability, sources and parts of plants used in the treatment of diarrhoea and male sexual weakness in Ghana. Structured questionnaires and interview guides were used in the survey. DNA barcoding was employed to establish the identity of the plants collected from the markets. Of the 72 different plant species found in the survey, 82.61% were obtained from the wild. Roots and bark were the dominant parts used which if not controlled can affect the survival of such plants.

Belowground responses to grassland intensification

CHANTAL HERZOG
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The effect of liquid manure and aerial irrigation application on litter decomposition and root colonization by arbuscular mycorrhizal fungi (AMF) was investigated. The experiment started in 2010 and was replicated in eleven montane or subalpine meadows across the Swiss Alps. In 2015, decomposition, measured by litter loss in buried tea bags, was higher under intensive management (high manure and water inputs) compared to low intensity management. Soil samples were collected and a trap culture experiment was conducted to assess AMF colonization. Results will help to find the best trade-off between biodiversity conservation and hay production.

Orchid trade on social media

AMY HINSLEY
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We carry out the first systematic survey of wildlife trade on an international social media website, using the global orchid trade as a case study. We analyzed 150 orchid-focused groups using social network analysis, and surveyed trade in 30 randomly sampled groups using kappa analysis. We found closely linked sub-communities based on language; with one community of English-speaking and Southeast Asian orchid growers particularly central to the network. Trade was found in 8.9% of posts in

sampled groups, 22-46% of which was in wild-collected orchids. Our results support calls for better monitoring of social media for trade in wild-collected plants.

Assessing livelihoods to find a future for Bengal florican

HARRIET IBBETT

Department of Zoology, University of Oxford

Land use change and hunting are two of the greatest drivers of biodiversity loss. Yet, often conservationists lack adequate understanding of the human dimensions of these drivers. Social research techniques were used to investigate how changes in local communities' livelihood activities affect grassland breeding habitat of the Bengal florican, a critically endangered bustard species. Household questionnaires (n=616), focus group discussions (n=21) and Unmatched Count Technique (UCT) were conducted in Kampong Thom province, central Cambodia, to determine changes in livelihood activities and prevalence of bird hunting. Results identified significant temporal and spatial shifts in rice cultivation as farmers transitioned from subsistence to commercial agriculture and documented a low but persistent level of bird hunting within the grassland landscape. Findings demonstrate the value of social research for conservation and highlight the need to incentivize conservation in agricultural landscapes across the developing world.

Macroinvertebrates response to disturbance gradient.

ISSAH SEIDU

Kwame Nkrumah University of Science and Technology. Private Mail Bag, University Post Office, Ghana

Freshwater habitats are known to harbour diverse aquatic macroinvertebrates. The population of these fauna are however under great threat from anthropogenic activities. This study investigated the response of macro invertebrate assemblages to changes in different land use patterns along the Kwamkoro River using the kick sampling and direct hand search methods. Our significant result was that Ephemeroptera, Plecoptera and Trichoptera (EPT) and all species biodiversity decrease immediately when the river enters the tea plantation, and that neither recovers further downstream. The effect is strong with habitat type explaining 49% of EPT and 40% of all species of the variance in biodiversity.

Ocelot Density in Agricultural Landscape

LAURA LIZBETH JAIMES RODRIGUEZ

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Ocelots have a wide distribution in Central and South America and are relatively common compared to other felids. However, little is known about their status in areas of fragmented habitat. Using camera-trapping, we estimated ocelot density in an oil palm plantation in Colombia's Middle Magdalena region, using both spatially-explicit and traditional capture-recapture methods. While the reported density between 5.02 and 12.24 animals per 100km² which is one of the lowest for the species in South America, our study shows that ocelots can persist in agricultural landscapes, probably relying on small prey such as the Agouti paca.

Bengal Florican habitat-use and movements

ROHIT JHA

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I investigated habitat-use and movement patterns of *Houbaropsis bengalensis bengalensis* throughout one year in northern India, including breeding and non-breeding areas. Through the deployment of satellite-tracking devices (PTTs) on three adult individuals in northern India, the sampling strategy involved physical measurement of habitat covariates at selected points derived from high-accuracy location fixes every fortnight in the birds' 'use' areas. Satellite data from tagged birds showed that they moved 25-30 km from their breeding territories in protected areas into non-protected floodplain-agricultural landscapes. The birds seem to use habitat consisting chiefly of short vegetation within areas of taller vegetation.

Model and field data comparison

MARTIN JUNG

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Broad-scale biodiversity models are useful tools to inform policy-makers and conservationists of the likely response of species to land use. However, such models often need to generalize across wide areas. In this project I compared model estimates for the African continent with two independent bird datasets collected in Tanzania and Kenya. My results show that species responses to land use in the independent data followed the same trend as the broad-scale model, however with notable exceptions. The results highlight the importance of considering locally relevant factors in conservation decisions as well as broad-scale models.

Carnivore abundance in Benoue complex, Cameroon

KAMGANG SERGE ALEXIS

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Population trends of large carnivores are difficult to determine, but are often needed to inform conservation actions. In Cameroon, the lion distribution is currently restricted to two populations in the Waza and Benoue ecosystem (Faro, Bouba-Ndjidda, Benoue National Parks and Hunting zones). In 2013, Cameroon Government adopted a national action plan for the conservation of the species. However, the lack of baseline data on lion status considerably undermines any actions. We present findings of a spoor survey along transects in the Benoue ecosystems. Estimated lion population density was lower (1.03/100 km²) than that of leopards (1.31) and hyenas (5.69).

Rewilding and HNV Species

TIM KASOAR

Department of Zoology, University of Cambridge, UK

Certain cultural landscapes have been identified as 'High Nature Value' (HNV) – areas that support high species and habitat diversity, or species of conservation concern. It has been suggested that HNV landscapes favour certain species because their management mimics natural disturbance processes. In the face of declines in HNV farming it has therefore been suggested that "rewilding" – restoring natural disturbance processes – could be a valuable tool for conserving HNV species. I tested this idea by examining whether flood-disturbed systems provide suitable habitat for HNV species in the Pripyat-Stokhid National Nature Park in Ukraine.

Impact of human disturbance on the behaviour of the Ethiopian wolf (Canis simiensis)

GEBEYEHU RSKAY KASSA

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Small populations of the endangered Ethiopian wolf (*Canis simiensis*) survive in Afroalpine relic grasslands under high levels of human and livestock disturbance. Because Ethiopian wolves are diurnal, specialized rodent hunters, my study explored the behavioural mechanisms they might develop to cope with such disturbance. Data from 43 systematic focal observations (142 hours) show that the wolves segregated from humans and livestock both temporally and spatially by hunting alternative prey and shifting to a more crepuscular (dawn/dusk) hunting pattern. We suggest that promoting effective livestock husbandry could afford the endangered

wolf packs more hours to forage and meet their high metabolic requirements.

Survey of an agri-environmental scheme

NORBERT KELLER

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In the European Union, there is a need for more, result-oriented agri-environmental schemes (AES). Where the goal is to mitigate the negative effects of land-use techniques in agro-ecosystems, the small game may become bioindicator, due to its ecological role. In Hungary, a cycle of the Agri-environmental Support System (AKG) had been finished in 2014. In the AKG, the bioindicators were three small game species. Our research included the approved habitat-use- and population measuring methods. By analyzing our data, we can recognize the effect of the AKG, therefore, in the future, we will have chance to improve other AES as well.

Rapid expansion vs. ecological representation

CAITLIN D. KUEMPEL

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Area-based conservation commitments within Aichi Target 11 have spurred the rapid expansion of reserve networks. However, it also requires these areas to be ecologically representative. We explored potential trade-offs between rapid area accumulation and creating ecologically representative reserves. Additionally, we identified trends and explored potential drivers of representation (Protection Equality) globally from 1954-2013. We found that large increases in area are correlated with increases in PE, but is dependent on the count and average size of the areas protected and has not improved with time. Results offer guidance and reveal knowledge gaps in achieving equal representation in rapidly expanding reserves.

Habitat effects on bird communities

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The Guinean Forest-Savanna mosaic experienced dramatic land use changes during the last decades. Although gallery forests are heavily affected, their conservation importance is largely unknown. We addressed this knowledge gap for eastern Guinea-Bissau by comparing bird-community composition between Wooded Savannas and three gallery

habitats: Sacred Groves (primary forest), Young Secondary Forests and Annual Cultures. Despite a lower overall species richness in Sacred Groves, they hold a relatively high number of forest specialists. We observed a loss of forest specialists and the emergence of newly composed communities in Annual Cultures and Secondary Forests. This demonstrates the importance of conserving primary habitats.

Wilderness at Sea

VILMA KUULIALA

Durrell Institute of Conservation and Ecology (DICE), University of Kent, Canterbury, UK

As marine conservation gains increasing attention and popularity, concepts and policies are borrowed from terrestrial conservation. However, some of the concepts are vague enough in the terrestrial environment, and there is even less consensus of their use in the marine context. The use and interpretation of the concept of 'wilderness' is studied in the context of Scottish coastal and marine conservation, in legislation and media, and by the local people and other stakeholders. The findings will be used to locate potential conflicts in the coastal and marine management processes.

Selenga Delta. Environmental variability

DARIA KUZNETSOVA

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Selenga Delta is the site of high conservational value, protected under Ramsar Convention. This study aims to investigate the extent of present human impact on Selenga Delta wetlands, as well as trace environmental effects of land use history in the basin during the 20th century, using ostracods from contemporary and core sediments of the Delta as bioindicators. Obtained results indicate the shift in the wetland trophic status that may have been caused by anthropogenic activity in the basin. Three ostracod species new to the region were recorded and environmental preferences of two ostracod species were studied for the first time.

Conserving Hong Kong Country Parks: Factors related to ecologically responsible behaviours of visitors

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Hong Kong Country Parks are Category V urban protected areas by IUCN classification. Other than having conservation objectives, they are also important public recreational spaces, receiving heavy visitation annually. This study applies the Place Meaning concept and the Theory of Planned

Behaviour to identify factors that relate to responsible visitor behaviours. Regression analysis was performed on data collected from 419 questionnaire survey respondents. Attitude and Self-expression (Place Meaning) were found to be positive predictors of responsible visitor behaviours. However, Ecological Meaning was negatively related. These findings offer valuable insight into improving visitor management to protect Country Parks and wildlife within.

Urban Grasslands as Cultural Heritage

JUSSI LAMPINEN

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Remnant patches of semi-natural grasslands maintain populations of threatened species and provide ecosystem services in urban areas. However, urban grasslands are often threatened by land use changes and lack of management. In addition to their biological values, historical, social and recreational values are at stake if the grasslands are lost. When restored, historical grassland patches could help connect urban inhabitants not only with nature, but also with local environmental and cultural history. Conservation biologists thus need stronger, practical collaboration with cultural historians, archaeologists and social scientists to show policy makers what grassland restoration aims to preserve and for what reasons.

Road impacts on tropical bats

BENAJMIN P. Y-H. LEE

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Roads and vehicular traffic pose many challenges to the conservation of wildlife, which includes habitat loss, road-kills, and severing of commuting routes in natural areas. I investigated the impacts of roads on bats and the effectiveness of a wildlife overpass as a mitigating structure in Singapore. Using broadband acoustic survey method, I recorded bat activity at ten recording points along 20 800-m transects (in forests and urban areas) at a standardised duration post sunset. This study showed that major roads do have an impact on forest bats, and wildlife overpasses have the potential to reduce the barrier effects of roads.

Dynamics of implementation of EIA

SAM LLOYD

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Significant effort is invested in using conservation science to develop practical tools and approaches. Often the systems that these tools are designed to affect are hugely complex. As a result the factors that govern

their effectiveness can be unclear. My research aims to use anthropological techniques to map out the dynamics that govern the EIA process in South Africa, a system with high conservation significance for which many conservation tools are designed. By better understanding these systems we can identify the factors that drive effectiveness of conservation tools.

The Wild Wild East

SATEMMENLA LONGCHAR

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Camera trapping for wild mammals, secondary information for mammal's presence would be interviewing the hunters, tracking animal's mark and scats/pellet. Socio-economic surveys, Interviews with the locals for hunting and other cultural related issues. Capturing of various species of mammals (documentation of wildlife by camera trapping in Nagaland in the Indo-Burma border). Highlighting on the trends of hunting. And emphasizing the pros and cons of conservation in a tribal dominated landscape.

Are marsh frogs affecting the distribution of common frogs?

AIDAN MACKAY

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The common frog (*Rana temporaria*) has suffered declines in the UK countryside but remains widespread because of its ability to thrive in urban and suburban garden ponds. The introduction of the non-native marsh frog (*Pelophylax ridibundus*) into Kent and Sussex may have accelerated the common frog decline in this region. Species distribution models have revealed that the distribution patterns of the species are largely non-overlapping. This may be partly down to differences in habitat preferences, but complex interactions with other species may also play a role in determining the distributions.

Reintroduction, Relocation and Revival

DIBYENDU MANDAL

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Carnivore reintroduction to isolated reserves is an intensive process and requires active management. We assessed the current scenario after seven years of tiger reintroduction with respect to village relocation and grazing pressure and evaluated future population management prospects. Sariska is capable of sustaining a population of 33 ± 6 (SE) adult tigers across 600 sq. km. based on preferred prey availability. Grazing pressure has decreased remarkably due to village relocation and tigers are utilizing and breeding in

inviolate areas created by village relocation. However, if the current small and isolated population is not supplemented at all, the extinction probability is inevitable.

Evaluating novel mobile livestock bomas

LIOMBA-JUNIOR MATHE

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Human carnivore-conflict presents serious socio-economic challenges for people living adjacent to protected areas. We tested the effectiveness of bomas in protecting livestock overnight from predation by carnivores, while concurrently increasing field productivity by loosening the hard soil by cattle hooves and fertilizing it with cattle dung. Crop yields of field where bomas had been placed were compared to those of control fields. Our findings show that the bomas both protected livestock from carnivore attacks, and increased maize yields (height, stem diameter, length of cobs and number of cobs /plant) of fields they had been placed at.

Conservation planning trade-offs

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Conservation planning requires the prioritisation of species and habitats to be protected and/or managed. These decisions are value-laden and require careful trade-offs between biodiversity conservation and other social, political and financial constraints. Managed for over 900 years as a protected area, the somewhat ironically named New Forest in southern England is a complex socio-ecological system. During the current revision of the Forest Design Plan, I have employed participant observation and semi-structured interviews to assess conflicting visions for the New Forest and the relative influence of the many stakeholder groups over the development of the plan.

Chick survival of Black-tailed godwits

LARA MIELKE

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Reduced chick survival has been identified as the main driver of the decline of Black-tailed godwits. Causes include agricultural intensification, changes in food availability, vegetation phenology and predation. To pinpoint which

factors influence survival most directly in the Netherlands, we tagged chicks with transmitters to estimate survival and link environmental variables. Out of 77 tagged chicks, only seven fledged. We found that daily survival rates decreased with increasing age and that mortality hazards were influenced by body-condition-indices and insect abundance, emphasizing the importance of food availability and timing of reproduction. Our results aid in implementing measures to counteract the decline.

Biodiversity governance and global knowledge

JASPER MONTANA

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Biodiversity loss is increasingly seen as a global crisis that demands collaborative action at the international level. This poster examines the knowledge-making practices of an expert body for biodiversity in the United Nations system to understand how it has responded to the demands of diverse audiences. Findings are drawn from two years of empirical research, including qualitative analysis of interviews and participant observation. This poster sheds light on a debate about whether biodiversity is best managed through global treaties or more localised policy mechanisms by clarifying the tension between 'consensus-building' and 'capacity-building' as competing models of democratically accountable knowledge production.

Collaborative conservation for Orangutan

COURTNEY MORGANS

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Collaboration is thought to enhance the achievement of conservation goals. However, collaboration can only be successful if benefits outweigh costs. The costs and benefits of collaboration are unlikely to be equally received between partners, which will influence effectiveness. Using the Bornean Orangutan conservation sector as a case study, we conceptualise collaborative partnerships as a social network and employ exponential random graph modelling to analyse the network. We find that collaboration is frequently occurring within the study system however, organisations with more collaborative partners experience diminished benefits. Our results suggest that collaboration should be strategically implemented to maximise returns from investment.

Melaleuca Swamp Ecology: Aquatic Invertebrates

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Tropical *Melaleuca* swamps (MS) are poorly known, highly threatened wetlands dominated by *Melaleuca cajuputi*, occurring between sandy beach ridges along the NE coast of Malaysia and SE Thailand. This study compares macroinvertebrate communities and aquatic food webs between two sites in younger coastal *Melaleuca* swamps with patchy tree cover, and a thin layer of organic matter with two sites in older, forested, inland sites with a thick organic layer, in the dry and wet seasons. Stable carbon and nitrogen isotope analyses were used to compare food webs. The fauna was more diverse and abundant in sites with greater *Melaleuca* cover and it was richer and more abundant in the wet season than in the dry period. Food web analyses showed greater linkage complexity in the wet season compared to the dry season, indicating that the aquatic food webs are more complex and stable during the wet period. There is evidence suggesting that as the organic layers build up over long periods of time, *Melaleuca* Swamps develop into Tropical Peat Swamp Forests which are unique ecosystems of global importance due to their high carbon sequestration and biodiversity.

A Wild Boar Chase

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Wild boar were technically extirpated from the British Isles approximately 700 years ago, however in recent years isolated populations have become established. This research represents the first attempt of estimating wild boar distribution through the utilisation of an occupancy based approach within the British context. A large scale sign based investigation was instigated in the highlands of Scotland, a 'single season single species' occupancy model was employed to predict the probability of boar occupancy throughout the survey area. The study offers a successful framework of studying boar distribution and offers recommendations on how to better this approach in future investigations.

African manatee conservation in Cameroon

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The African manatee (*Trichechus senegalensis*) is the least studied marine mammal in Cameroon and very little is known about the ecology of the species particularly in Cameroon. This project aims to identify and map the manatee hotspots in Cameroon by conducting interviews and regular

transect boat based surveys on different potential manatee habitat in Cameroon. So far, we found that the Lake Ossa and Douala-Edea Wildlife Reserves, the Wouri, Ntem, Nyong and Nkam rivers are the six African manatee hotspots in Cameroon. These sites need immediate conservation attention to save the remaining population of manatee seriously threatened by human activities.

Sea turtles at the Virrila estuary

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Virrila estuary is an important aggregation area for Green Turtles at the Peruvian Northern Coast where they feed and grow before migrate to the mating areas; however, anthropogenic activities are affecting the sea turtle population. Scientific captures were performed using gillnets, the parameters analyzed were as follow: length structure, weight, residence time, growth rates and body condition. Mortality was estimated through stranding records. A total of 478 Green Turtles were captured from 2012 to 2015, being 73.6% juveniles. Major threats were identified as illegal direct captures, bycatch and boat strikes. These results will be use to propose conservation measures.

National Forest Inventory of Bhutan

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Sustainable forest management requires practical ways of measuring and monitoring biodiversity. Bhutan's national forest inventory is a multipurpose database on timber, wildlife, biodiversity, biomass and carbon storage resources. We present how data from the systematic sampling of 2,424 4x4 km plots across the country can use forest structure values (e.g. tree/hectare) as indicators of wildlife/biodiversity, and as such to identify priority conservation areas. The national land use management plan of Bhutan can serve as an example for other countries.

Agri-environment schemes: effects on biodiversity

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Beneficial effects of biodiversity promoting areas (BPA) are only modest, which is often explained by missing connectivity and their poor ecological quality. The investigation of 46 agricultural landscapes in the Swiss

lowlands showed that birds and butterflies are differently affected by BPAs. We found a positive effect of % of BPA area (ha of BPAs over total ha of utilized agricultural area) on overall bird species richness, as well as for overall and farmland butterfly species richness. Farmland and red-list birds reacted positively to the quality of BPAs. These results can help to allocate financial resources optimal to agri-environment schemes.

Gazelle reintroduction in Azerbaijan

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The Goitered gazelle (*Gazella subgutturosa*) was once common in Azerbaijani grasslands, but populations crushed by mid-20th century. Efforts to reintroduce gazelle within the species' historical range are key for the restoration of degraded ecosystems, including the return of top predators. We report on the status of reintroduced gazelle populations that were studied via direct observations, as well as on our findings on local people's attitude towards the species over time. The gazelle focused actions had a beneficial impact on the ecosystem, including vegetation, which shows an important role of reintroductions in restoring and ensuring the ecological integrity of historical landscapes.

Ownership and Deforestation in Romania

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Different property regimes can prioritise a variety of management outcomes. Romania is transferring public land back to its pre-socialist owners, but it is suspected that the creation of new private forests led to widespread deforestation. Maramureş Mountains Natural Park contained high levels of deforestation from 1990-2010, especially in 1990-1995 (12,304 ha), yet there was little difference between private and public properties. Rather, remoteness was a key factor in determining forest disturbance. I propose that forest disturbance is driven largely by availability and accessibility. Furthermore, old-growth forest is disappearing much more rapidly than the total forest extent.

Training Conservation Impacts at Durrell

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Conservation NGOs have to increasingly understand the impacts of their interventions in order to improve their capacities to save endangered species from extinction. A mixed-methods approach was used to evaluate the conservation impacts of training at the Durrell Training Academy. A qualitative scoping study was conducted followed by the collection of quantitative data through an online questionnaire. The impact of training within species management was affected by level of education and employment status, and for education and awareness was affected by course type and age. Such results should allow Durrell to adapt their training practises to increase their desired impacts.

Science-policy for mire conservation

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In science-policy interface of biodiversity conservation not only ecological knowledge, but also power and values are essential. We study how knowledge about biodiversity, climate change and ecosystem services have been included in decision-making of mire conservation policy in Finland. Benefiting content analysis, we analysed following policy documents: Peatland strategy, Government resolution, Environment protection act and Proposal of mire conservation group. We found that the values and power affected remarkably in science-policy interface, especially spatial allocation of conservation and used policy instruments. During the process expert power has changed to political power, with highly relevant implications to conservation policy and practice.

Seasonal patterns of Microcrustacean communities

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Astatic soda pans have unique ionic composition and represent a rare aquatic habitat type in Europe. They frequently dry out in summer causing intense changes in the environmental factors. Examining how these seasonal changes affect to the Microcrustacean communities we found that when conductivity level starts growing in summer, species richness starts decreasing, unlike the density, which despite the expectations begins to increase. We identified the most dominant species –Arctodiaptomus spinosus, Moina brachiata, Daphnia magna– during the year, and investigated how the composition of the community changed. Right

rehabilitation programs needed for this unique habitat type – this study can help.

Last surviving wetlands

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The current trend of industrialization and urbanization in developing nations has a huge impact on biodiversity. This study was conducted in Navi Mumbai, an extension of Mumbai which was once upon a time an open land with clusters of huge wetlands. The urbanisation and development projects here had led to land filling of these wetlands and decreasing the available habitat for the migratory birds. Our study therefore focuses on understanding the effect of urbanisation (land use changes) on status and distribution of winter migratory birds and conservation problems in the rapidly developing landscape of Navi Mumbai.

Reassessment of the endemic Peleng Cuscus

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Peleng Cuscus is listed as Least Concern. The study aims to understand if this IUCN threat level is appropriate using a questionnaire to interview 82 respondents throughout Peleng Island, May 2015. Peleng Cuscus faces the dire threats in comparison to four other endemic animals. ~ 40% of respondents have consumed or kept one as a pet, and 25% of them recognized its population decline in ten years. Hunting and restricted distribution may cause the species threatened in near future, thus should be considered as Near Threatened. Reassessing the threat level of it is a critical step in setting conservation priorities.

Conservation value of new ponds

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Despite their small size, ponds have the capacity to be exceptionally rich in freshwater species and to colonise quickly. The creation of pond networks could therefore play a key role in strategic freshwater conservation. However, pond communities are highly stochastic in nature and data for new ponds (particularly outside of controlled mesocosm experiments) are still lacking. In 2008, the Freshwater Habitats Trust initiated a nationwide pond creation scheme: the 'Million Ponds Project (MPP)'. This study utilises

a subset of the MPP ponds to examine the effectiveness of pond creation as an intervention for supporting wetland plant species in the UK.

Leopard status, habitat-use in Mozambique

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Occupancy and spatially-explicit capture-recapture modelling were employed to investigate leopard (*Panthera pardus*) status and habitat use in Limpopo National Park and Xonghile Game Reserve, two areas of southern Mozambique experiencing different levels of anthropogenic pressure. Multi-scale replicated detection/non-detection camera-trap surveys were carried out to estimate the proportion of area occupied by leopards in Limpopo National Park, and to provide inferences on the relative impacts of environmental and anthropogenic factors on occurrence, at two different spatial and temporal scales. The study also established a baseline leopard density for the region, and provided the first empirical leopard density estimate in Mozambique.

Finding Money for Conservation

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As efforts to preserve global biodiversity expand and accelerate, scientists and practitioners continue to seek larger and more stable sources of money for conservation. In this competitive funding landscape, financial innovation has become a critical means of maintaining steady support for conservation, and new tools and mechanisms (e.g. green bonds; impact investment portfolios; reverse auctions; advance market commitments) have formed the basis of the nascent conservation finance discipline. We briefly introduce this field and locate the current status of conservation finance knowledge; and suggest paths forward for greater scientific engagement.

Bioclimatic analysis of Eurasian buntings

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The bioclimatic preferences of Eurasian buntings (Emberizidae) were analysed with a control for phylogenetic dependence. We used the data of bunting specimens, measuring body metrics and recording collection data. For bioclimatic analyses, we developed Generalized Linear Mixed Models

applying the MAXENT programming infrastructure which is expected to provide robust inference on the importance of various bioclimatic parameters for each bunting species. We applied Phylogenetic Generalized Least Squares modelling approach using species-specific model parameters as response variables and ecological as well as life history proxies as predictor variables. The findings of our analyses are expected to expand our knowledge on the bioclimatic preferences of a large passerine avian family, representative of Eurasian bioclimatic responses.

Landfill and avian ecotoxicology

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Brominated flame retardants (BFRs) have been applied to a wide range of consumer and other products since the 1970s to adhere to fire safety standards and regulations. Certain BFRs have been found to contain high toxicity, lipophilicity and are known to bioaccumulate. The production and use of two BFR compounds (penta-BDE and octa-BDE) has been severely restricted in North America and the EU, although many obsolete products containing these chemicals exist in landfill sites. Using avian egg sampling, this project seeks to establish whether birds nesting in close proximity to landfill sites have higher BFR burdens than birds nesting elsewhere

Carnivore conservation: steps after diagnosis

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Conservation biology can be considered as the medicine of wildlife populations, following four key steps: 1) general ecological knowledge, 2) diagnosis of threats to its persistence, 3) actions taken to address these threats, and 4) evaluation of action effectiveness. We collected bibliometric data and run GLM to quantify which of the four steps explained above have received the most research attention and which predictors explain this attention. We found that taking actions in conservation of threatened carnivores and evaluating those actions is overlooked in conservation research and although the threats are known, documenting the effects of actions proposed is lacking.

Disease Risk Analysis for the reintroduction of Lynx to the UK

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Large carnivores are considered keystone species that change the trophic cascade and transform whole ecosystems. The largest carnivore in the UK at present is the badger, all others having been hunted to extinction in the last few hundred years. There has been recent interest to reintroduce the lynx as it is non aggressive to humans and rarely preys on domestic livestock. Lynx have been successfully reintroduced to several other European countries and are spreading across green borders on the continent. This is not option for the UK and so a well thought out plan about sourcing, quarantining, disease testing and release will have to be made.

Monitoring cryptic snakes with telemetry

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Low density, cryptic species are challenging to study. This is epitomised within many snake species. Radio-telemetry provides detailed ecological and behavioural data, however secure external tag attachment on mobile snakes is challenging. We addressed this issue and fitted external radio tags to 23 grass snakes with a tape attachment method. Regular tracking identified key habitat features, familiarity with territories, and small movements with occasional large journeys. Snakes were regularly in sheltered positions, explaining poor detection. Radio-telemetry was vital in revealing how a cryptic species is surviving in a highly developed and fragmented island, and for informing local land management.

Himalayan Wolf in Nepal

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The Himalayan wolf appears to form a basal genetic lineage of wolf which is distinct from present day Eurasian and North American grey wolves (*Canis lupus* ssp.). The data available on this wolf however remains scarce to date. We investigated the genetics of wolves found in Humla district of western Nepal and compared D-loop control regions of their mtDNA with sequences of wolves from around the globe on GenBank. Our results support the genetic distinctness of the Himalayan wolf from other grey wolf lineages and verify the presence of this basal wolf lineage in the Transhimalayas of western Nepal.

Habitat overlap analysis of deer

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We estimated the potential habitat of cervids, typical ungulates in the northern China, using the present location for red deer (*Cervus elaphus*; N=90) and roe deer (*Capreolus capreolus*; N=106) in a Maximum Entropy (MaxEnt) model. Our study area was a human-dominated landscape in the Tieli Forestry Bureau located at the southern slope of the Lesser Xing'an Mountains. We found that cervid species probably has the similar suitable habitat pattern and red deer showed greater selectivity than roe deer. Regarding management measures, we suggest that priority protection should be given to the potential areas of overlapping deer habitats.

Tibetan Feral Dogs Issue

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With pastoral activities being increasingly abandoned, local people have started to farm Tibetan mastiffs as an alternative livelihood since the 90s, because of their exorbitant prices; for example, a puppy can be sold at £1.2m.1 Owing a Tibetan mastiff as a pet has become a status symbol of the ultra-rich in China. However, in recent times, the Tibetan mastiff has become an ingredient for cheap hotpot. Local villagers cannot afford to breed the dogs anymore, and have released them across townships, monasteries and pastures. These feral dogs have caused more issues to humans and the ecosystem.

Local perception towards jaguar reintroductions

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We report on local actors' perception towards jaguars and their planned reintroduction within the Iberá, Corrientes region of Argentina where jaguars have been extirpated. The study involved open interviews with local inhabitants in the periphery of the natural reserve where the jaguar will be reintroduced. There was considerable variation in people's memories of jaguars in the region. The predominant perception of jaguars was that of fear, characterising the species as a hunter. Perception towards jaguar reintroduction was in general favourable, without an evident opposition. The current study represents one of the first qualitative studies prior to a jaguar reintroduction.

The environmental footprint of China's dietary transition

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As developing economies urbanise and grow, their populations tend to undergo a dietary transition. The consumption of traditional staple foods declines, and meat and dairy consumption rises. Livestock products, however, have a disproportionate impact on the environment, and so there is concern about the sustainability of these emerging diets. Using government data on the grain use in different pork production systems, we quantified the changing land use of Chinese pork production – which increased 50% from 2000-2013. While pork production doubled, we find that the arable land used for Chinese pork production increased by only 17%. This figure masks two competing trends: the increasing efficiency and growth of modern, industrial pig and arable farming, and the decline of and increasing grain feed use in smallholder production. We find that land use would have been 29% larger if yields had not increased over the time period, 4% larger if large farms had not become more efficient, and 9% lower if smallholder production had not declined in importance. Our results highlight both the importance of efforts to increase agricultural yields, and promote the use of low impact animal feeds – such as the food and green wastes used in traditional pork production systems.

Notes