Bristol Zoological Society

SAVING WILDLIFE TOGETHER:

Conflict, co-existence and conservation

7th Annual Symposium – 11th February 2015

Bristol Zoo Gardens

United Nations Decade on Biodiversity

BRISTOL 2015 EUROPEAN GREEN CAPITAL

Bristol Zoological Society
Saving Wildlife Together

INTRODUCTION

Launched as the Bristol Conservation and Science Foundation (BCSF) in 2008 as an operating unit of the Bristol, Clifton & West of England Zoological Society Ltd, BCSF was charged with running the Society's wildlife conservation and research programmes at Bristol Zoo Gardens and in the field. With the opening of a second site, Wild Place Project, just to the north of Bristol in 2014, the foundation underwent some internal reorganisation and is now positioned wholly within the Bristol Zoological Society.

The amount of land around the world that is protected for wildlife, as national parks or wildlife reserves, is incredibly small. In most parts of the world, the 'wild' is no longer an unspoilt wilderness. Many species are now under increasing threat of extinction due predominantly to human activities.

The role of good zoos is to provide visitors with amazing experiences for learning about wildlife and biodiversity, to apply our specialist skills to investigate threats to biodiversity, and to support communities in tackling specific pressures that give rise to conservation need.

The Conservation Science Department of the Bristol Zoological Society, staffed by international conservationists, scientists and enablers of conservation, undertakes original research to provide the critical insights that help to fulfil our conservation goals. The department also delivers courses at the zoo in association with local universities and staff supervise BSc, MSc and PhD students.

Saving wildlife together:
Conflict, co-existence and conservation

11th February 2015

09:30 - 10:00	***Arrival and coffee***	
	Symposium session 1	
10:00 - 10:03	Bryan Carroll	Welcome from CEO Bristol Zoological Society
10:03 – 10:25	Neil Maddison	Saving wildlife together: welcome and context
10:25 – 10:50	Jo Setchell	Why conservation needs anthropology
10:50 - 11:15	Kate Hill	The elephant in the room: the conservationist as social actor
11:15 – 11:40	Angela Cassidy	Animals, people and places: historical perspectives on human/animal conflicts
11:40 – 12:05	Niki Rust	Can consensus building find effective conservation solutions? An example from carnivore management in Namibia
12:05 - 13:00	***Lunch***	
	Symposium session 2	
13:00 – 13:25	David Fernández	Engaging stakeholders at every level: Biodiversity conservation on Bioko Island, Equatorial Guinea
13:25 – 13:50	Eddie Mole & Emma Moore	The Bristol Community Plant Collection
13:50 – 14:15	Simon Garrett	Can zoo visitors save the natural world?
14:15 – 14:40	Josephine Head	Effecting behaviour change around bushmeat consumption in Africa and Asia
14:45 - 15:15	***Tea***	
	Symposium session 3	
15:15 - 15:40	Stephen Emmott	Computational ecology: Why, what, how?
15:40 - 16:05	Paul Williams	Conservation in disguise: Natural history on TV
16:05 - 16:30	Laurie Marker	A future for cheetahs: How biofuels and goat cheese can save wildlife and lead to sustainable development in Namibia
16:30 - 17:00	Christoph Schwitzer	Discussion and summing up
17:00 – 18:30	***Reception***	***Conservation Education Centre***

Bristol Zoological Society Conservation Science Team

Dr Bryan Carroll – CEO Bristol Zoological Society

Dr Bryan Carroll joined Bristol Zoo in August 1995, having come from the Jersey Wildlife Preservation Trust (now Durrell Wildlife Conservation Trust) where he was Curator of Mammals at Jersey Zoo. This background in an establishment that pioneered the idea of the zoo as a conservation organisation has enabled the development of Bristol Zoo's conservation and scientific programmes.

Bryan is a member of the Council of the European Association of Zoos and Aquaria (EAZA) as well as being a member of the EAZA EEP Committee (which oversees all European co-operatively managed species programmes) and the EAZA Conservation Committee. Bryan is also a member of the IUCN's Primate Specialist Group, Bat Specialist Group and the Conservation Breeding Specialist Group. He became Director of Bristol Zoo Gardens in September 2010 and is CEO of the Bristol Zoological Society.

Dr Christoph Schwitzer – Director of Conservation

A biologist by training, Dr Christoph Schwitzer received his PhD in Zoology from the University of Cologne, Germany, for his work on the nutritional ecology of lemurs. He worked as part of the primatological research group at Cologne Zoo for several years and also coordinated the European Endangered Species Programme for Ruffed lemurs. In 2003 he took on the position of Programme Coordinator for the European Association for the Study and Conservation of Lemurs (AEECL) in northwest Madagascar, where he directed a field research and conservation programme that has led to the creation of a national park. Since August 2006, Christoph has been Head of Research at Bristol Zoo Gardens, and was promoted to Director of Conservation in 2014. He is the Vice President for Capital Care of the International Primatological Society, the Executive Secretary of AEECL and sits on the Steering Committee of the IUCN SSC Primate Specialist Group as the Red List Authority Coordinator, Vice Chair for Madagascar and editor of *Lemur News.*

Neil Maddison - Head of Conservation Programmes

Neil Maddison gained his first degree in Zoology at the University of Bristol and went on to work for several conservation charities before joining the Bristol, Clifton and West of England Zoological Society in 1997, initially as Development Manager. His experience in field conservation has led him to focus on working with communities to develop sustainable solutions to wildlife conservation, looking for practical ways to support disadvantaged people in their development. This often leads to an examination of the 'business case' for conservation, and finding new sources of revenue for local communities. Neil obtained his MBA from the University of the West of England, with a specialisation in pro-poor ecotourism. He is a Trustee of Ape Action Africa, an NGO working to address the commercial bushmeat trade in Africa and was previously a Trustee of the Hawk and Owl Trust. He is also currently a member of the IUCN Conservation Specialist Breeding Group and is leading the review process on the IUCN Guidelines for Managing Confiscated Species.

Dr Grainne McCabe – Head of Conservation Science

Dr Gráinne McCabe heads up the conservation science and research team at the Bristol Zoological Society. She leads the Society's growing team of Higher Education & Research Officers and is developing and implementing a proactive research strategy and programme. She is also involved with managing and developing research aspects of the Society's vital conservation projects overseas in collaboration with the Head of Conservation Programmes.

Gráinne received her MA from the University of Calgary, Canada, in Primatology. She gained her PhD in Biological Anthropology from the University of Texas at San Antonio, for her study on the reproductive ecology of the Sanje Mangabey in Tanzania. She has spent many years working in the field on primate conservation in Tanzania, specialising in primate behaviour and ecology. Gráinne's research focuses on how local ecology, such as the availability of nutritious food, influences reproduction in wild monkeys to gain a better understanding of the factors impacting reproductive success.

Dr Sue Dow – Research Officer

Dr Sue Dow trained as a Zoologist at the University of Oxford and carried out a PhD at the University of Exeter on foraging and learning in pigeons. She carried out research at Bristol University on the biomechanics of bird flight in the zoology department and investigations into tendon injuries and humane treatments for horses in the anatomy department.

Sue worked part time at London Zoo setting up environmental enrichment projects before joining Bristol Zoo Gardens in 1992. She worked with construction projects but was also co-ordinator of research projects undertaken at the zoo. She has been increasing involved with research projects and now works as Research Officer, lecturing on to the Foundation Degrees taught at Bristol Zoo and supervises undergraduate and post graduate students. Her research interests include a longitudinal study into the social dynamics of Bristol Zoo's group of gorillas but she maintains her interest in bird and bug behaviour and biomechanics.

Dr Amanda Webber – Higher Education and Research Officer

After working in West Africa, Amanda spent six months in Costa Rica collecting behavioural data on mantled howler monkeys. An MSc in Primate Conservation at Oxford Brookes University followed which led to a PhD in human-wildlife interactions, specifically the actual and perceived risk of crop damage by primates and other large vertebrates in Uganda.

Amanda taught and supervised undergraduates and MSc students at Oxford Brookes and the University of Bristol before joining BZS in 2013. Her main research interests are human-wildlife interactions, perceptions of 'pest' species, and animals more generally, and wildlife conservation. Since 2011 she has contributed to the Foundation Degree as part of the ISDC module teaching three sessions on Human-Wildlife Conflict.

Daphne Kerhoas - Higher Education and Research Officer

After focussing on ethology throughout her biology degree in France, Daphne studied in an Animal Behaviour program in the USA, where she first experienced observing primates. After a year of field work on wild capuchins in Costa Rica she completed her MSc on Animal Behaviour in Paris and then went to Nigeria for six months, recording vocalisations and social interactions in wild olive baboons, in collaboration with Roehampton University.

Daphne is a PhD candidate in the Max Planck Institute for Evolutionary Anthropology, in collaboration with the German Primate Centre. She spent two years in the forests of Indonesia studying on male-infant relationships including playback experiments in the wild and genetic analyses in the laboratory. Daphne has been involved in conservation issues and actions, including environmental education, patrolling against poachers and illegal loggers, and dialogs with government representatives. Daphne joined BZS in 2013 and her main research interest is primate ecology and behaviour, animal social interactions and how they are affected by their environment.

Alison Cotton – Higher Education and Research Officer

Alison's interest in animal behaviour and conservation became apparent in her Bachelor degree studies in her home country of New Zealand. She then spent a few years travelling in Central and South America and Indonesia, volunteering at rescue and rehabilitation centres and gaining insights into global conservation and wildlife issues. On returning to New Zealand she worked with the Department of Conservation, investigating the efficacy deterring dogs from killing kiwis. In 2008 she moved to England for her MSc at Oxford University where a love of evolutionary research was born. A Masters by Research and PhD at UCL followed, studying the evolution of sexually selected traits in stalk-eyed flies, in both the laboratory and the rainforests of Malaysia.

Alison joined the BZS Research team in 2014, teaching on the UWE undergraduate courses taught at the zoo and supervising BSc and MSc students. Her main interests include sexual selection and genetics, animal behaviour, welfare and enrichment. She also assists with primate Red List assessments, edits the journal Lemur News and organises university day visits and monthly conservation lectures.

Jen Nightingale - UK Conservation Officer

Jen Nightingale gained a degree in Zoology from the University of Bristol, a Masters in Wildlife Management and Conservation from Reading University and is a full member of the Institute of Ecological and Environmental Management. With extensive experience in the aquarium industry, from Vancouver Aquarium and European Sealife Centres, she became Curator of the Aquarium at Bristol Zoo Gardens in 1997 where she focused on a programme of extensive modernisation of exhibits, off show breeding facilities, infrastructure and educational themes.

During this time Jen also played a major role in two successful water vole reintroductions and extended this to establish the position of UK Conservation Officer within the BCSF. Within this current role Jen focuses on the conservation of UK species both *in*-and *ex-situ* and project manages the South West Crayfish Project, the largest white-clawed crayfish initiative in the UK. This project has established 8 ark sites for this species, is developing a captive breeding programme at the zoo and an extensive communication outreach initiative. Jen is on the Steering Committee of the BIAZA native species focus group. She is also studying part-time for her PhD.

Jennifer Garrett – Conservation Campaign Manager

Jennifer's role is to research, develop, coordinate and evaluate an annual behaviour-change campaign to enable Bristol Zoo's visitors to engage in wildlife-friendly behaviours. The 2014 conservation campaign encouraged visitors to choose household products certified by the Forest Stewardship Council to help conserve wildlife habitat. She has a BSc in Psychology and Zoology from the University of Bristol and an MSc in Science Communication from the University of the West of England. In her spare time, Jennifer is co-chair of the Bristol Nature Network, a new community of students and young professionals aged 18 – 30(ish) who take action for nature, develop skills in wildlife recording and nature engagement in the city.

About the speakers

Dr Angela Cassidy

Department of History,
King's College London

Angela Cassidy is a Wellcome Trust Medical Humanities Research Fellow at King's. She is a contemporary historian of science and medicine, with particular interests in public controversies, cross-disciplinary interaction, and the interfaces between humans and other animals. Her work has explored these themes in the contexts of popular evolutionary psychology, food chain risks, badger culling, and 'One Health' agendas – advocating the collaboration or convergence of human and animal health. Her current project is investigating the history of debates over wildlife disease and the management of bovine TB in the UK since the late 1960s.

Prof Stephen Emmott

Head of Computational Science
Microsoft, Cambridge

Stephen is Head of Computational Science at Microsoft. He leads an international, inter-disciplinary research programme and scientific team. At the centre of this is Microsoft's Computational Science Laboratory, in Cambridge, which Stephen leads, which aims to make, enable and accelerate transformational scientific and technological advances in areas of societal importance. Stephen is also Visiting Professor of Biological Computation at University College London, Visiting Professor of Computational Science at the University of Oxford, and Distinguished Fellow of The UK National Endowment for Science, Technology & the Arts.

Dr David Fernández

Science and policy advisor

Bioko Biodiversity Protection Program

David Fernández is a biological anthropologist specialising in primate behavioural ecology. He is conducting research and conservation activities in Tanzania, working on the Sanje mangabey, an endangered primate endemic to the Udzungwa Mountains; and in Equatorial Guinea, serving as Science and Policy Advisor for the Bioko Biodiversity Protection Program (BBPP). He is also an associate lecturer at Oxford Brookes University. In 2002 he travelled to Bioko to participate in BBPP's annual Expedition to the Caldera de Luba to census Bioko's primate and sea turtle population. He stayed on to work as Research Advisor and as co-leader of their Expeditions until 2005. David returned to Bioko as a Postdoctoral Researcher in 2013 to update the conservation status of Bioko's seven species of diurnal primates. He also served as BBPP In-country Manager, overseeing and coordinating all research and educational activities, and representing the BBPP at meetings with Equatoguinean and International government and military officials, and with local leaders. David holds a PhD and MA in Biological Anthropology from Stony Brook University (USA), and a BS in Zoology from Alcalá University (Spain).

Simon Garrett

Head of Learning, Bristol Zoological Society

Simon grew up fishing for minnows, observing wildlife in Richmond Park, getting muddy working on an RSPB reserve, and watching Dottie the ring-tailed lemur on Animal Magic. After graduating in Biology at the University of Bristol, he led an expedition to Venezuela's Henri Pittier National Park, before starting at Bristol Zoo Gardens as an Education Officer in 1990 and actually meeting Dottie the ring-tailed lemur. Whilst at the Zoo, Simon has been involved in many overseas projects: setting up an Education Centre at Chipangali Wildlife Orphanage, Zimbabwe; conducting research and education work around the critically endangered Livingstone's fruit bat in the Comoro Islands; and initiating an education programme for Ape Action Africa in Cameroon. As Head of Conservation Learning at Bristol Zoo he is driven by exploring how to harness the opportunity of face-to-face engagement with zoo guests to maximise the Zoo's impact in biodiversity conservation. An active participant in national, European and international zoo education conferences, Simon chaired the BIAZA Education and Training Committee for six years, and now sits on the Steering Group of the Bristol Natural History Consortium.

Dr Josephine Head

Consultant conservation biologist
Arcus Foundation

Josephine Head is a conservation biologist who has spent many years studying great ape behaviour in Central Africa. After completing her PhD with the Max Planck Institute of Evolutionary Anthropology in Germany, Josephine began to work as a freelance consultant, carrying out research for different non-governmental organisations working on wildlife conservation in Africa and Asia. While Josephine began her career focusing on ecological studies of the apes, her interactions with local populations living around the protected areas she worked in led her to understand that successful wildlife conservation is dependent upon working with people and not against them, and she has since focused her research efforts towards human behaviour.

Prof Catherine Hill

Professor of Anthropology
Oxford Brookes University

Catherine (or Kate) Hill's research interests focus on people-wildlife interactions, attitudes towards, and perceptions of wildlife, social constructions of animals and their relevance to conservation. She has previously carried out research in Uganda exploring farmer-wildlife interactions with small-scale farmers around protected Forest Reserve, and with Graham Wallace, developed and trialled a series of humane, non-lethal crop protection tools for reducing primate depredation on standing field crops. More recently she has been examining the impact of external, socio-economic constraints and opportunities on farming strategies, land use decisions, and human-wildlife interactions within rural populations living around unprotected forests in Uganda.

Dr Laurie Marker

Cheetah Conservation Fund
Otjiwarongo, Namibia

Laurie Marker began studying cheetahs more than 40 years ago at a wildlife park in Oregon before starting her field research in Namibia. During trips to Africa Laurie learned about the human –wildlife conflict that was decimating the wild cheetah population and recognised the problems as being rooted in a lack of information. In 1990 Laurie founded the Cheetah Conservation Fund (CCF), with its headquarters near Otjiwarongo, Namibia, and initiated *in situ* research. Projects undertaken studied cheetah biology, ecology, health, reproduction and genetics along with habitat, ecosystems and effects of human impact. This led her to becoming involved with educating rural and subsistence farming forming cooperative alliances. Laurie chaired the Conservation Association of Namibia, which developed partnerships between neighbouring farmers to manage wildlife on their land, for more than six years. Currently she chairs the Large Carnivore Management Association of Namibia bringing together conservationists the Ministry of Tourism and the farming community. She has linked the economies of cheetah-range countries' landowners to the interests of international trade and consumers, working to market "wildlife-friendly" beef to those willing to pay a premium to ensure the provenance.

Laurie gained her D Phil in zoology from the University of Oxford. She is an Andrew D White Professor-at-large with Cornell University. She sits on the Cat Specialist Group of the IUCN SSC and is International Cheetah Studbook keeper. Laurie and the work of CCF have been recognised with many international awards.

Eddie Mole

Head of Horticulture, Bristol Zoological Society

Brought up in rural Northumberland, Eddie trained at the Royal Botanic Gardens in Edinburgh and has since worked in botanical and zoological horticulture collection. He joined Bristol Zoo Gardens in 1996 and is now Head of Horticulture and has played a key role in the development of "Wild Place". His responsibilities include the care, maintenance and development of the gardens of the Bristol Zoological Society, which includes Bristol Zoo Gardens, The Wild Place Project, Bristol Community Plant Project (BCPC) and the backup facilities and estates. This includes plant conservation and education projects, beautiful landscapes and notable plant collection, including the Plant Heritage Calendula Collection BCPC. Bristol Zoo's award winning gardens are known for an innovative approach to its education and conservation displays.

Eddie is Director of PlantNetwork UK and chairs the European Zoo Horticulture Group.

Emma Moore

Garden Supervisor, Bristol Zoological Society

Emma joined Bristol Zoological Society in 2006 after working in various fields and retraining in horticulture through a Foundation Degree in Sustainable Horticulture. She has taken on various roles as gardener, nursery supervisor and garden supervisor.

Emma is the Project Co-ordinator for Bristol Community Plant Collection, the first ever 'Dispersed National Plant Collection' dealing with the day to day running and the community engagement aspects of the project working with community groups and schools across the city, delivering talks, training, outreach sessions and support.

Niki Rust

University of Kent

As a trained carnivore conservationist and a specialist in human-wildlife conflict, Niki Rust is undertaking a PhD at the University of Kent on the social, political, historical and economic factors that affect predator conservation on unprotected lands in Namibia. She is using predominantly qualitative methods to understand the in-depth, complex problems involved with this conservation challenge and enjoys exploring novel methods to gain a better understanding of the situation. Previously she has worked at various carnivore conservation organisations in Africa as well as at BirdLife Malta. She was trained in ecology but has more recently become interested in social science. Along with her academic writing, Niki enjoys engaging with her creative side and writes for the general public. Some of her recent articles have been published in The Guardian, The Conversation and Mongabay.

Jo Setchell

Director of Research
Anthropology Department, Durham

Jo received a PhD in Zoology from the University of Cambridge then went on to conduct research in the Centre for Research in Evolutionary Anthropology at Roehampton University and the Department of Biological Anthropology at the University of Cambridge. After a temporary lectureship in Anthropology at UCL she joined Durham's Anthropology Department as a lecturer in 2007. She was promoted to senior lecturer in 2010, and Reader in 2013. She is currently Director of Research for the Anthropology Department and considers herself lucky to work in an integrated Anthropology department that focuses on communication between sub-disciplines.

Jo has been conducting long-term studies of mandrills in Gabon since 1996, and has also conducted primate fieldwork in Cameroon, Congo and Sabah, Malaysia. Her field experience has caused her to reflect on the broader context of conservation. Collaborating with Dr Sandra Bell, an environmental anthropologist, they are addressing questions concerning human/wildlife interactions and conservation. Jo has a strong interest in the ethics of primate research. Jo is Editor-in-Chief of the International Journal of Primatology, Vice-President (Research) of the International Primatological Society, and a member of the Conservation Working Party of the Primate Society of Great Britain.

Paul Williams

Producer and Director
BBC Natural History Unit

Paul researched palaeontology at the Natural History Museum in London before starting his career in wildlife Television. Since 2003 he has worked on a diverse range of programmes including Life in Cold Blood, Life, and Wonders of the Monsoon. As a TV producer he believes his work would be impossible without the cooperation and mutual support from scientists and conservation organisations. He recently worked with the Sumatran Orangutan Society to document their work rescuing orang-utan under extreme conditions. Paul is a producer and Director in the BBC Natural History Unit. Having filmed in more than 30 countries, Paul is also part of a team developing innovative solutions to lower the carbon footprint of wildlife TV production.

Abstracts

Why conservation needs anthropology

Jo Setchell

Approximately half of the extant species and subspecies of primates are in danger of extinction. It is, therefore, impossible to study primates without becoming aware of the threats to their survival in the wild.

I will present what I have learned, as a primate behavioural ecologist, about the complex issues involved in primate conservation. I will explore the fact that many people become interested in wildlife conservation due to their background in wildlife biology (like me), or a deep desire to help, or even rescue, individual animals. However, I will argue that conservation is really about human behaviour, and that anthropology, not biology, is the best training. To address conservation needs, it is crucial to engage with people, at all levels.

I will use examples from work by an inspiring group of conservation researchers: Emilie Fairet (crop-raiding in Gabon); Kat Shutt (gorilla habituation in the Central African Republic); Sian Waters (Barbary macaques in Morocco); and Pedro Mendez-Carvajal (primates in Panama).

The elephant in the room: the conservationist as social actor

Catherine M Hill and Matthew R McLennan

Conservation research, as well as conservation action, requires conservationists to develop relationships with different groups of people including local residents and government officials. As a consequence it is impossible to carry out these activities without influencing the attitudes, behaviour and decision-making of such individuals, at least to some degree (Wilson 1992; McLennan & Hill, 2013). While this 'researcher influence' has long been recognised by social scientists in relation to the human groups they study (e.g. Kloos, 1969), a similar effect is rarely acknowledged within the scientific or conservation literature. However, conservation activities, including research, are carried out with, or at least in proximity to, and with permission and support from, local people as well as district and national level government and agency personnel. Consequently, the implications of these relationships require careful consideration. In this paper we use the case study of M.M.'s fieldwork experience as a researcher examining chimpanzee ecology in a human-dominated habitat in Hoima District, Uganda to (i) explore the role of the conservation researcher as a social actor, i.e. the influence an outsider's arrival and subsequent research activities can have on local social processes and political dynamics, affecting what people say or do; (ii) examine the effects of this 'researcher influence' on fieldwork and conservation activities and outcomes; and (iii) consider the implications for the researcher's perceived role, interactions and standing with local people and government personnel. We argue it is imperative that those engaged in conservation research and conservation action consider their inadvertent role in local social and political dynamics because these may have a direct impact on their own research and conservation activities, as well as unanticipated impacts on the animals or habitats they study and work to protect.

Animals, people and places: historical perspectives on human/animal conflicts

Angela Cassidy

In this talk, I will argue that historical perspectives can make a valuable contribution to current conversations about human/animal interactions, conservation and 'conflict'. While research and practice in conservation is increasingly engaging with the need to understand human and social aspects of such problems, human/animal relations are also situated in specific places and will have developed and changed over time. Therefore questions of historical contingency and legacy - how past events shape the present and future - must be of central importance in understanding and mitigating conservation conflicts. I will draw on case studies from environmental history, animal studies, and social studies of science, technology and medicine to demonstrate how histories of human/animal relations can shed light on the present. My own research on the contemporary history of bovine TB in the UK will provide a worked example, where longstanding constructions of badgers as 'charismatic wildlife' or 'vermin' have driven the current controversy, alongside the recent history of interactions between veterinarians, ecologists, policymakers and publics.

Can consensus building find effective conservation solutions? An example from carnivore management in Namibia

Niki Rust

Consensus-building techniques have been heralded as participatory and deliberative methods that can help to create effective environmental policies; however, critics doubt the validity of these methods. We sought to determine whether consensus building could produce an effective conservation solution using a case study approach based in Namibia. Our aim was to understand whether agreement could be made between farmers and conservationists on the best course of action to resolve the conflict caused by threatened carnivore species killing livestock. Despite a majority consensus being reached on the need for conservation education and husbandry training schemes, clear challenges emerged: 1) consensus building was useful in finding agreeable, somewhat effective, benign solutions, but did not find the most effective solutions because these were the most controversial; 2) this technique masked minority viewpoints; 3) there may not be a single effective solution for every environmental problem despite consensus building searching for one; and 4) this method hid the underlying drivers of conflict. Consensus-building techniques should therefore be used with caution when their purpose is to inform policy, as the outcome may only be agreeable rather than effective in the long-term.

Engaging stakeholders at every level: Biodiversity conservation on Bioko Island, Equatorial Guinea

David Fernández

Bioko Island, Equatorial Guinea, with its large remnants of continuous, pristine rainforest extending from sea level to more than 2,000 m, has long been recognised as a hotspot for faunal and floral species richness. Unfortunately, an ever-growing bushmeat trade, rapid population growth, and increasing road construction through protected areas seriously threaten its unique species and ecosystems. The Bioko Biodiversity Protection Program (BBPP), an academic partnership between Drexel University (Philadelphia, USA) and the National University of Equatorial Guinea (UNGE), has been working since 1998 for the conservation of this extraordinary place. To achieve their goal, BBPP has adopted a multi-level engagement approach, operating at all levels of Equatoguinean society. At the highest level, BBPP works closely with the Ministry of Fisheries and Environment and the Ministry of Agriculture and Forestry, advising them and making policy recommendations based on research. They also coordinate activities and share results with other Equatoguinean governmental bodies and NGO's involved in the management and protection of their natural resources. Similarly, BBPP regularly reports to local government and military officials whenever they witness any illegal activities within the protected areas. Finally, BBPP engages with the local community through higher-education teaching at UNGE, outreach activities in schools and villages, and scientific training of local residents, who they employ to conduct the core of their research and monitoring activities. This work has proved successful at all levels, including the creation of a School of Environmental Studies at UNGE and a 2007 Presidential Decree banning the hunting, trade, possession and consumption of primates. There is, however, a long road to walk before the future of Bioko's extraordinary biodiversity is safe. Our goal is to pass on our mission to the next generation of Equatoguinean conservationists and researchers, who will make Equatorial Guinea an example of successful biodiversity conservation.

The Bristol Community Plant Collection

Eddie Mole and Emma Moore

Bristol Community Plant Collection (BCPC) is the first UK Plant Heritage Plant Collection of annual plants and the first to run as a community project. BCPC first ran as a pilot project in 2012. The original aim of the pilot was to engage with community groups around the city of Bristol who would grow different species and varieties of *Calendula* (Pot Marigold). Nine community groups were given training, equipment and support to produce 30 plants for display at Bristol Zoo Gardens (BZG) and to collect seed from plants retained to be returned at a later date. The successful growing of the plants and collection of the seed indicated that a National Plant Collection of *Calendula* grown as a dispersed collection would be feasible.

The first year's findings not only demonstrated that growing this way could be successful but also had benefits to the individuals and groups involved. Outcomes such as increase in self-worth, desire to improve participant's immediate environment and community cohesion were displayed. This was especially apparent in the community groups consisting of older individuals.

In 2014 over 200 people in 6 schools and 9 community groups participated in BCPC. All but one returned plants with a much higher germination rate than the previous year. Exhibiting at the RHS Hampton Court Palace Flower Show created a great amount of publicity for the project as well as generating positive feedback from the general public. All of the community groups were able to produce a superb selection of Calendula species to display and the school decorated pots and plants were much admired. The collection has recently been awarded National Dispersed Plant Collection status and the 2014 end of project 'Garden Party' was attended by over 300 people. The activities on offer to guests were very successful with very positive feedback. Nearly all of the schools and community groups have expressed a desire to participate in the project again next year. Several community groups have already approached the project to participate next year.

The Botanical importance of the collection and plant material continues to grow with support from Botanic Gardens Conservation International, the Millennium Seed Bank, Kew and through them the wider world botanic community. In the future we hope that rare endangered plants can be used in education out-reach sessions to highlight the plight facing similar plants around the globe.

Can zoo visitors save the natural world?

Simon Garrett

Conservation breeding and *in-situ* conservation programmes constitute important conservation work, but are by their very nature highly focused either taxonomically or geographically. In order to deal with wildlife threats in a more systemic way, and achieve long-term and widespread solutions, we need to engage *people* at large. Zoos have hordes of more or less normal people spending several hours within a wildlife-focused environment, which provides an opportunity to try out some social science concepts, to attempt to achieve lasting behaviour change.

This talk explores how zoos are taking their first steps in making a measurable difference through *people*; encouraging pro-environmental behaviour, whether it be choosing certified products or encouraging the use of recycled toilet paper.

Effecting behaviour change around bushmeat consumption in Africa and Asia

Josephine Head

Bushmeat hunting is the consumption of wild animals for food, and it forms a staple part of the diet for many rural households in less economically developed countries. Hunting is currently one of the primary threats driving the decline of wildlife across equatorial Africa and Asia, and without urgent changes to this practice many vulnerable populations may soon be wiped out.

Behaviour change is commonly defined as a five step process which addresses the knowledge, attitudes and practices that are intrinsically linked to programme goals. While many behaviour change approaches have been employed to mitigate hunting of wildlife on a localised scale, to date success stories have been few and far between. There are a multitude of factors which influence hunting behaviour including limited economic opportunities, environmental variation, a lack of alternative protein sources and widespread poverty to name but a few. Superimposed on top of these issues are factors such as localised or international conflict, urbanisation and the commercialisation of the bushmeat trade, all of which amplify the problem and increase the threat to wildlife. Furthermore, in addition to socio-economic and geographic factors, culture also has a significant influence on behaviour. Even though certain influential factors may be present across many landscapes, given the complexity of the issue it is unlikely that any two conservation sites will exhibit the exact same combination of influential factors described above.

The focus of the behaviour change work outlined in this presentation has been to disentangle all these different influential factors, to move past the superficial assumptions often made in the context of bushmeat consumption and to develop a strategy to address the problem as a whole, encompassing all these different influences.

Computational ecology: Why, what, how?

Stephen Emmott

Despite over 200 years of ecological data collection, we still do not know how many species there are. We know surprisingly little about how those we do know about interact, and obviously know nothing about how those we do not know about interact. And we therefore know remarkably little about how interactions between species produce ecosystem structure and function. As a consequence, making accurate predictions of the consequences of the unprecedented changes to ecosystems – ultimately, that is Earth's life's support system – as a result of anthropogenic impacts is currently not possible, but urgently needed. *Effective* conservation priorities and strategies are almost certainly simply not possible until we solve this problem. I will talk about how we might address this.

Conservation in disguise: Natural history on TV

Paul Williams

In this talk I will share examples of how we have worked with scientists and conservation organisations to show behaviours not filmed before and new species, and how we told the story of the conservation efforts behind them. Like most wildlife TV producers I consider myself to be primarily a naturalist. It is inevitable that a deeper understanding and experience of the natural world should lead us to want to protect it. This is a passion that we hope to pass on to our audiences, after all TV is the medium through which the polar bear and the orang-utan became animals as familiar to us as the fox and the badger.

By creating films which captivate and inspire, we can reveal the intricate and awesome beauty of nature, and why it should be protected. The series 'Secrets of Our Living Planet' brought 'ecology' and 'biodiversity' to BBC Two, allowing a prime time audience to discover the incredible connections between species that make an ecosystem work. 'Wonders of the Monsoon' explored the rich and colourful nature of South East Asia, and how through the influence of human culture, from eastern religion to western commercialism, we are all connected to the natural world.

A future for cheetahs: How biofuels and goat cheese can save wildlife and lead to sustainable development in Namibia

Laurie Marker

Responding to the dramatic decline of the world's most specialised cat species, the Cheetah Conservation Fund (CCF), a Namibian non-profit organisation dedicated to the long term survival of the cheetah and its ecosystems, has reversed this decline. CCF's headquarters is in Namibia, the country with the largest wild cheetah population (one third of the remaining 10,000), and conducts research, conservation and education.

CCF conflict research examines tensions between humans and cheetahs and seeks to understand farmers' perceptions, practices and interests, and to identify livestock and wildlife management practices that benefit both farmer and cheetahs. This has led to pioneering experimentation with non-lethal predator control techniques, e.g. use of livestock guarding dogs which CCF breeds. Anatolian shepherd and Kangal dogs are bred and donated to farmers to protect livestock. Over 600 dogs have been placed throughout Nambia and an 80% decline in livestock losses recorded.

CCF has developed extensive training programmes educating rural and subsistence farmers and conservation professionals in integrated conservation and livestock management techniques, "Future farmers of Africa", teaching profitable, predator-friendly livestock farming techniques. Ecological research focuses on the cheetah's ecosystem and includes habitat studies, in particular bush encroachment, caused by overgrazing in arid environments. CCF has developed a habitat restoration program and produces a low emission eco-fuel log called "Bushblok" from thorn bush which is Forest Stewardship Council (FSC) certified. This project provides local jobs in harvesting, processing and shipping the fuel briquettes to Africa and Europe.

Through the Namibian Conservancy initiative farmers manage thousands of contiguous acres of integrated livestock and wildlife landscape that is home to cheetahs and other predators. Working with rural communities to develop benefits in a wildlife-based economy that benefits cheetahs and the subsistence livestock farming community, CCF has also developed an eco-label for free-range, predator-friendly ranching that rewards ranchers financially for sound stewardship of the land and wildlife.

CCF has demonstrated that predators, people and livestock can peacefully co-exist. Namibian livestock farmers' attitudes toward the cheetah have changed and the country's wild cheetah population is poised to regenerate. CCFs research efforts extend beyond Namibia with programmes in Kenya and works closely with partners in other cheetah countries such as Botswana, South Africa, Zimbabwe, Iran, Niger and Algeria.

Poster Abstracts

Battitude: An assessment of human attitude and behaviour towards the critically endangered *Pteropus rodricensis* (Rodrigues fruit bat).

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The aim of the research was to identify and assess the attitudes and behaviours of people towards the critically endangered Rodrigues fruit bat on the Island of Rodrigues in the West Indian Ocean, in particular to explore whether underlying social factors had a significant influence or if attitudes were predominantly related to the loss of fruit crops. This study follows a period of nearly 40 years of dedicated conservation action that has brought the bat population back from only 70 individuals in 1974, when the species was classified as the rarest bat in the world. Today, with the human and bat populations higher than at any time in history, the likelihood of increasing conflict between people and bats has the potential to not only threaten the persistence of this vulnerable species into the future, but also undermine 40 years of conservation funding and hard work. The study's objectives were to: understand how people perceive bats on the island; identify if knowledge about bats had an effect on

attitude; identify where people obtain information about bats; identify cultural myths and beliefs about bats; identify people's exposure to and willingness to carry out conservation related activities; and to determine people's specific attitudes and behaviours in relation to conservation (helping on a bat count), mitigation (using deterrents to protect fruit) and persecution (killing bats to protect fruit).

The research was carried out using focus groups, structured questionnaires, semi-structured interviews and simplified questionnaires and games for young children, with over 350 respondents of all ages across the entire island. In depth attitudinal analysis was carried out on a 40-item Likert scale, which revealed a number of attitude dimensions that could be analysed independently. The results showed that 90% of respondents held neutral to positive attitudes overall. Despite this, there were significant numbers of respondents who now believe that bat numbers, roosting locations and feeding patterns should be controlled by humans despite having overall positive attitudes. Both the perceived knowledge and actual knowledge of the respondent were found to have significant relationships with all the attitude dimensions tested. Related to this, there was a large disconnect between respondents perceived and actual knowledge, suggesting that although people are very knowledgeable about bats they have low confidence in their ability. Taking part in conservation activities was related to a higher perceived knowledge and more positive attitudes but there are significant perceived and actual behavioural controls preventing respondents (more so for women) from taking part on bat counts. In addition there was high social pressure to carry out mitigation (using deterrents to protect fruit) and persecution (killing bats to protect fruit) and nearly half of all respondents intend to use deterrents in future. The research has resulted in unique insights into the effectiveness of the sensitisation and education conservation work to date and the results will be used as evidence for the continued protection of the species and also to alter the conservation strategy to improve efficiency.

Keywords: Human-wildlife conflict; crop raiding; attitude; knowledge

Jaguar (*Panthera onca*) conservation across agricultural landscapes with oil-palm cultivation in the Magdalena river valley of Colombia

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Given current human population growth, reconciling oil-palm (*Elaeis guineensis*) cultivation expansion and biodiversity conservation is an ever increasing challenge in the tropics. Habitat loss is considered the main threat to biodiversity worldwide and especially for large carnivores like jaguars (*Panthera onca*), due to their slow reproduction rate and large-area requirements. Colombia, where this project took place, is a megadiverse country and it is also regarded as a crucial area for jaguar connectivity due to its position between Central and South America, however it is also the 4th largest palm oil producer and the sector is heavily supported by national policies. We used camera trapping (50 stations, 1.7-2.3 km apart, 120 survey-days) and classic and spatially explicit capture-recapture models to estimate jaguar density across an agricultural area with oil-palm plantations in the Magdalena river valley of Colombia, as jaguar-population estimates are crucially needed in Colombia. In addition to jaguar and associated biodiversity ecology in these landscapes it is also necessary to investigate how to actually foster their conservation through adequate policies and management actions. Therefore I also interviewed 42 stakeholders and reviewed Colombia's agricultural policy to define relevant sustainability objectives for the area and policy scenarios benefiting jaguars, biodiversity, and people. Interview questions dealt with main drivers of landscape change and particularly of oil palm cultivation expansion in the area; their impact; objectives that would be important to achieve in the area; and potential solutions to reconcile agricultural and especially oil palm cultivation expansion with biodiversity conservation. We photo-captured 12 individual jaguars (143 independent capture events) giving a density of 3.06-5.45 jaguars/100 km^2 depending on the analysis used. Interview findings are that oil-palm plantations impact goes far beyond biodiversity since this crop also affects water resources and dynamics, and has had severe socio-economic consequences. The former is because fertilizers, pesticides and waste from palm oil extraction plants decrease water quality; while deforestation, soil erosion, excessive sediments, and

suppression of streams to gain further cultivation areas have altered water dynamics affecting aquatic biodiversity, local communities, and even fishermen. Regarding socio-economic consequences, oil palm cultivation has caused violation of human rights, loss of cultural heritage, traditional farming practices and local food security, forced displacements, murders, land concentration, and land abandonment. Sustainability objectives included conserving species, habitats, and natural resources (especially water); promoting rural and social development; strengthen institutions'' capacity. Potential solutions (alternative scenarios) that could deliver several objectives in the area and benefitting jaguars and biodiversity as well as people are: incentives for multi-crop farms and agroforestry, mandatory investments by large producers in small farmers alliances/projects, development and enforcement of land use plans, and tax breaks conditional to establishing conservation areas and respecting environmental laws. We suggest that jaguar can co-exists with oil-palm plantations in mixed landscapes if natural habitats persist. It is therefore key to manage ever-increasing agricultural landscapes for conservation, as well as people, as it emerged with the sustainability objectives. The scenarios will inform key stakeholders on how to achieve it.

Keywords: Felids; camera traps; oil-palm plantations; rural development; neotropics.

A review of the conservation status of the Yunnan snub-nosed monkey (*Rhinopithecus bieti)* and implications for future conservation efforts.

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The Yunnan snub-nosed monkey (*Rhinopithecus bieti*) is one of few temperate primates; surviving in harsher climates than any other non-human primate in the world. However, it is also one of the most endangered primates with an estimated total population of less than 2,000 individuals (Long 2006). Climate change, habitat reduction and hunting have had the largest impacts on the decline of *Rhinopithecus bieti* populations (Wen 2003). With little knowledge of this endangered species, local people have been encroaching further and further into *Rhinopithecus bieti*'s habitat as more land is converted to farmland or logged. Up to date information on *Rhinopithecus bieti* is lacking, making it difficult to establish education and conservation plans. The largest obstacle in obtaining accurate census data on the species as a whole has been their evasive nature as well as the harsh montane habitat. Therefore, a review was conducted of all surveys completed on populations of *Rhinopithecus bieti* since 1981 in order to create a cohesive report on their current conservation status. Data were compiled comparing known groups' locations, populations and altitudinal ranges throughout the last 32 years as well reported ranges for the species as a whole in order to assess if any major changes have occurred. Results showed that since the first major survey in 1981, the population of *Rhinopithecus bieti* has been found to have remained constant. However, aerial surveys show increasing fragmentation of their habitat. The supergroups that have been noted in recent studies may be a response to this fragmentation, but will likely result in higher competition for decreasing food sources in the near future if conservation issues are not addressed for this endangered primate. The establishment of a conservation action plan as well as the incorporation of local people, as not only shareholders but resources, is necessary to prevent the possible extinction of *Rhinopithecus bieti*.

Keywords: China, conservation, habitat degradation, *Rhinopithecus bieti*,

The Importance of Sapo Conservation Centre to the People and Biodiversity of the Sapo National Park, Liberia

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Protected Areas can be an effective tool for conservation of important species and habitats. However, gazetting of such areas for protection often causes conflict with the people dependent on these areas for their livelihoods. Recent conservation initiatives attempt to marry the protectionist and community-based conservation models to enable more effective conservation of key species through increased community support for biodiversity conservation. Against this backdrop, in 2013, Fauna & Flora International (FFI), in partnership with local and international partners, established the Sapo Conservation Centre (SCC) as a hub for ecological and social research and community conservation of biodiversity in Liberia's only National Park, Sapo (SNP). Situated in south-east of Liberia, SNP holds one of the three most intact remaining blocks of the Upper Guinea Rainforest. SNP is known to harbour four endangered species, including the West African chimpanzee and pygmy hippopotamus, and a number of other threatened globally important species. The SCC is founded on the vision '*Positive collaborative management of the Sapo NP to the benefit of biodiversity with the support of community*', and aims to address the lack of capacity for effective community-integrated and supported conservation in Liberia through the following approach: 1) formation of a steering committee (comprising local, national and international stakeholders), which serves as a forum for stakeholders to address conflicts and other issues relevant to the protection of biodiversity and human interests – a vital link between park management and local communities, 2) establishment of a conservation training field course where forestry undergraduate students and professionals are locally trained and can experience ecological research and applied conservation, 3) coordination of a long-term biomonitoring project that monitors the status of SNP's biodiversity and ecosystems, and 4) establishment of a research programme that incorporates biological and human dimensions. The project approach has led to several interesting discoveries. It was found that community members and park staff are uninformed of the park boundary and legal use of the SNP buffer zone, resulting in increasing land-use activities within the buffer. The project also revealed the existence of human-wildlife

conflicts (HWC) that may be emerging due to community encroachment into the buffer zone. Hunting pressures, initially assumed to have ceased, were found still on-going within the park. These issues threaten the survival of important species and if not managed may affect the cordial relationship between communities and park management. Future research and conservation action is now focused on exploring HWC issues, incorporating a park management training course and developing a collaborative buffer zone management plan. Here we share details of the project, our challenges and hopes for the future in this important landscape.

Keywords: Sapo National Park, Liberia, biomonitoring, biodiversity conservation, tropical forests, Upper Guinea Rainforest, community engagement

Faecal testosterone metabolites as indicator of testicular activity in male cheetahs (*Acinonyx jubatus*)

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In mammals, the sex steroid testosterone is the major endocrine variable used to measure testicular activity and thus reproductive function in males, as it is involved in the development and function of male reproductive physiology and sex-related behaviour. However, taking blood samples to evaluate the endocrine status of an animal is often restricted by limited accessibility to study animals, particularly in wildlife species. Furthermore circulating hormone concentrations might be affected by handling procedures such as capture, restraint and anaesthesia. Non-invasive methods, such as measuring faecal hormone metabolites using enzyme immunoassays (EIAs), represent alternatives to avoid these effects. Endocrine research to monitor hormone metabolites non-invasively are often carried out with commercially available EIA kits that have been designed to measure blood samples. However, in media such as faeces or urine, hormone metabolite concentrations may differ considerably in absolute terms and relative to concentrations of structurally related compounds. To ensure both the ability of the assay to measure the hormone or hormone-related metabolites and that measured changes in concentrations are in relation to physiological responses, methodological and biological validation are necessary and highly recommended. Nevertheless, non-invasive studies are usually done without both these validation procedures due to their technically demanding and time consuming nature. Another major challenge to the development of a reliable androgen EIA is to investigate and exclude possible cross-reactivities with structurally similar hormone metabolites which are not derived from gonadal origins.

In contrast to free-ranging cheetahs, where reproductive performance is high, captive individuals have a high prevalence of unusual diseases, infant mortality and low reproductive success. Reproductive failure is characterised by low concentrations of circulating testosterone and poor ejaculate quality as indicated by abnormal spermatozoa morphologies. These are often associated with suboptimal housing and

husbandry management. Comparative analyses of adrenocortical and testicular activity would enhance the understanding of the reproductive biology in male cheetahs and thus provide essential information for husbandry management and captive breeding. In contrast to adrenocortical activity, as indicated by faecal glucocorticoid metabolites, testicular function cannot as yet be measured non-invasively.

Thus the overall goal of our study was to develop and validate a reliable non-invasive method using an epiandrosterone EIA to monitor testicular function in male cheetahs. The captive cheetahs, one male and one female, in this study were housed in the German Zoo Wuppertal. To our knowledge we present the first study combining the necessary validation procedures: methodological validation was performed by a testosterone radiometabolism study carried out in one captive male cheetah followed by HPLC analyses in faecal extracts of one captive as well as two free-ranging cheetahs from Namibia. We were also able to exclude possible cross-reactivities of our epiandrosterone EIA with metabolites which are not derived from testosterone metabolism. Therefore, we compared faecal testosterone and glucocorticoid metabolite levels in faeces from ACTH challenges in one male and female cheetah, respectively. Biological validation was performed by detecting artificial induced increases in faecal testosterone metabolite levels followed by stimulation experiments carried out in one captive cheetah male.

Key words: Non-invasive, enzyme-immunoassay, cheetah, radiometabolism study, testosterone

Visitors impact on the behaviour and enclosure use of different species of birds in a mixed exhibit

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Despite the growing literature on visitor effect on animals in captivity, studies focus largely on visitor density and primate behaviour. Effects vary from negative responses towards visitors' presence to no response to the visitors' presence being enriching for the animals. Studies of how animals use their enclosures to assess welfare or on visitors' behaviour describe a range in interactions or influences on each other. However, few studies have been conducted on mixed species exhibits.

The aim of this study was to assess how visitors can affect the birds in a walk-through mixed-species bird enclosure in terms of the bird's behaviour and the areas they used. Five different bird species were observed: Victoria crowned pigeon, *Goura victoria* (3 individuals), white-naped pheasant pigeon, *Otidiphas nobilis aruensis* (2), Nicobar pigeon *Caloenas nicobarica nicobariac* (8), Mindanao bleeding heart dove, *Gallicolumba crinigera* (2) and roul-roul partridge, *Rollulus rouloul* (17). The location and behaviour of the birds was recorded using a scan sampling technique, every 20 minutes for 1 hour at 3 different times of day for a total of 30 days. Behaviours were grouped into active, still, maintenance activities, social interactions and out of sight. The number of children and adult, an impression of the noise levels and the route they took were also recorded.

The results showed that visitor's density, young people's presence and noise affected all the bird species except the Mindanao Bleeding Heart doves. Many of the birds used areas where they were less visible, out of reach or out of sight in the presence of higher densities of visitors. The larger birds, Victoria crowned pigeons and white-naped pheasant pigeons remained visible but their activity levels decreased with visitors, young people or noise.

The results have informed some decisions about the layout of pathways in the enclosure to provide more areas for the birds away from the pathways.

Key words: Behaviour, birds, captivity, mixed-species, visitor effects,

Community Voice Method - a contemporary approach to engaging stakeholders in development of conservation policy.

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The political ecology of endangered species conservation policy traditionally favours 'experts', who have more influence over international agreements and national legislation formulation, than the stakeholders dependent on the use of these species and their habitats. Consequently, the implementation of species conservation policies can lead to confusion, conflict, distrust and ultimately non-compliance amongst local stakeholder groups if they have not been included in the decision-making process. The Turks and Caicos Islands (TCI) Turtle Project is a multidisciplinary initiative that used biological and social data to inform the development of a contemporary management policy for the islands' traditional marine turtle fishery which targets green and hawksbill turtles. In 2010, the project employed the 'Community Voice Method (CVM)', a novel research methodology that sought to overcome barriers to meaningful stakeholder engagement in resource management decision-making and policy development present in the Turks and Caicos Islands. Thirty three detailed interviews were conducted with community members representing a broad demographic in South Caicos, the 'fishing capital' of the TCI. All interviews were filmed and responses analysed. A documentary film, with a narrative entirely led by this analysis, was the primary research output from these interviews. The film was then screened to public audiences throughout the TCI (n=22) and followed by semi-structured discussions that captured over 270 participants' views about the development of a turtle fishery management plan. These discussions were recorded, analysed and combined with the results of the biological research to formulate specific policy recommendations, which were subjected to further consultation with TCI turtle fishers (n=75) in 2011. The final recommendations were approved by the TCI government in 2013, and came in to force in July 2014. CVM thus provided an engaging opportunity for hundreds of stakeholders to influence local conservation policy development. The challenges and benefits of CVM are assessed and ways in which it could be adapted to contribute to conservation policy in other contexts suggested.

Key words: Stakeholder engagement, documentary film-making, participatory research, community-based conservation, interdisciplinary research

Bird-Habitat Relationships and Anthropogenic Threats in and around Sapo National Park, Liberia

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Sapo National Park is the only national park in Liberia and contains the second-largest area of primary tropical rain forest in West Africa after Tai National Park in neighboring Ivory Coast. However, very little is known about the population, distribution and composition of birds of the Park and its surrounding buffer. This study assessed and compared the population densities, distribution, community composition, species richness and diversity of birds between the Park and its buffer with specific emphasis on species of global conservation concern. Birds were surveyed using Distance Sampling with line transects of 2km each. A total of 183 bird species belonging to 55 families were recorded. Sixteen of the 21 species of global conservation concern in Liberia were recorded including the 'Endangered' Gola malimbe *Malimbus ballmanni* and 'Vulnerable' yellow-bearded greenbul *Criniger Olivaceous.* Two near-threatened species (copper-tailed glossy starling *Lamprotornis cupreocauda* and blue-headed bee-eater *Merops mentalis*) were new records for Sapo National Park. Overall mean density of species and Pielou's evenness index were significantly higher in the Park than the buffer, while species richness and diversity were higher in the buffer compared to the Park. The high density and evenness of birds in the Park maybe attributed to the intactness and homogeneity of the forest inside the Park. This is demonstrated in the composition of species recorded in the Park which were mostly mid-level forest specialist insectivores compared to the buffer with mostly forest generalist frugivores. On the other hand, the high species richness and slightly higher diversity in the buffer could be attributed to the heterogeneity in the buffer habitats and the observed availability of food resources (several fruiting trees and farmlands) in the buffer as compared to the Park during the time of this study. The presence of 16 species of global conservation concern and other species in both Sapo National Park and the buffer areas suggest the conservation importance of not only the Park but also the buffer in the conservation of these species. Thus, to effectively conserve biodiversity in Sapo National Park, conservation planning and active management efforts should explicitly include a well-defined buffer zone around the Park.

Keywords: Liberia, Sapo National Park, birds, tropical forest, buffer zone, anthropogenic threats

Social factors affecting the success and recruitment onto a Livestock Guarding dog (LGD) programme in South Africa.

Rosie Wilkes

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Livestock guarding dogs (LGDs) have been used globally as a successful conservation tool for mitigating conflict with predators and reducing the use of lethal control methods by farmers. Previous research has investigated the efficacy of this method, as well as a range of social drivers that facilitate participation in conservation schemes in general. This study investigated what social factors affected recruitment of livestock farmers onto an LGD programme run by non-governmental organisation (NGO) Cheetah Outreach in South Africa. Motivation to join, method of first awareness, information sources and prior participant knowledge were recorded to test any effect on recruitment. The target species of this NGO is the cheetah *Acinonyx jubatus*. The free-roaming populations in South Africa survive along the northern border but other carnivores likely to benefit from LGDs in this area include hunting dogs *Lycaon pictus* and leopard *Panthera pardus*. The majority of interviews were conducted telephonically (n = 79), whilst twenty nine were completed face-to-face, achieving a response rate of 84% of all participants recruited.

Key findings include 71% of participants discovered the programme for themselves and approached the NGO. There was an increasing role of this passive recruitment over time. There was a significant association ($\chi^2 = 8.088$, df = 1, p = 0.004, n = 98) between passive recruitment and prior knowledge of dogs as livestock guardians, emphasising the role of information sources. The primary motivation for most of respondents (75%) was to protect livestock or prevent predation. At 58%, the most frequently cited method of discovering this LGD programme was through word of mouth. The most common information sources cited were farming magazines and the Internet. The majority of respondents were “very” or “completely” satisfied with the outcome, would use another LGD in the future; 98% that responded would recommend to another farmer. Promotion of the use of LGDs through the Internet and printed media could improve uptake rates, especially in new areas, but the importance of information-sharing through trusted social sources, particularly representatives of the programme itself, was highlighted. Livestock farmers are very pragmatic and the primary motivation for the majority of respondents was economics based which supports previous findings that participation depends on the stakeholder expecting to achieve their goals. Prospective conflict mitigation strategies must be relevant and applicable to the people affected. That farmers were achieving the desired result and were willing to recommend and use LDGs again is very encouraging and demonstrates success beyond purely biological or economic measures. This study emphasises the importance of understanding the target demographic of a conservation programme and how social research can help to define and improve success.

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