



## Rufford Small Grants Conferences

### Rufford Foundation's Namibian Conservation Conference

27 – 28 November 2017

Organised by Rachael Cooper-Bohannon, **Bats** without Borders



## **Introduction**

Following a call from the Rufford Small Grants (RSG) conservation conference to be held in Namibia, The Rufford Foundation, together in partnership with co-organisers Bats without Borders, invited 137 Rufford Foundation grantees from across southern Africa (Botswana, Lesotho, Malawi, Namibia, South Africa, Swaziland, Zambia and Zimbabwe). The initial target focus was on researchers and/or conservationists working in Namibia, Botswana and Zambia due to their being a large conference held in South Africa in 2015, but the invitation was extended to grantees working across southern Africa.

The conference was held at a conference facility between Windhoek city and the airport. We were delighted to welcome The Rufford Foundation grantees, working on a variety of research and conservation projects across Malawi, Namibia, South Africa and Zimbabwe. The conference attendees came together to share their work, including conservation challenges and highlights, and an important part of the conference was the opportunity to network with other share advice and knowledge and potentially foster new collaborations.

This conference would not have been possible without the generous funding provided by The Rufford Foundation, which has supported all our conservation and research efforts and provided additional funds to bring grantees together in this conference.

## **Main objectives of the Namibian RSG Conference?**

The Namibian RSG Conference had three primary objectives:

1. the conference offered a rare opportunity for the grantees working across southern Africa to come together to present the findings of their research and/or conservation projects;
2. the conference served as a platform to facilitate discussions (e.g. data mobilisation and developing education programmes) and networking between the grantees, Josh Cole from The Rufford Foundation and experienced conservationist from across the region; and
3. support early career (often new grantees), provide grantees with an opportunity to meet each other to promote a future support network and best case scenario partnership development.

## What was the impact of the Namibian RSG Conference?

Thanks to the dedicated funding by The Rufford Foundation to invite a plenary speaker, we were incredibly lucky to have Martin Taylor of BirdLife South Africa open the conference programme and attend all conference talks and workshops. BirdLife South Africa strives to conserve birds, their habitats and biodiversity through scientifically-based programmes.



Across southern Africa Birdlife South Africa is held in high regard for their research, capacity building and outreach work. Martin is responsible for managing the Special Projects Programme, primarily building capacity within and assisting conservation efforts of BirdLife partners and bird orientated conservation organisations across southern Africa. As well as grantees benefiting from his inspirational talk on 'Conservation in a modern world – staying relevant', attendees were also given a better understanding of the key elements of a holistic approach taken by a large and internationally renowned conservation organisation.

The conference support enabled grantees, government bodies and NGO delegates to come together to share knowledge, discuss challenges and successes, disseminate information but also develop capacity (presenting in front of peers), network and in some cases attendees discussed ways of collaborating in the future or even provide support to others. Throughout the conference it was clear what a large role The Rufford Foundation has contributed, and continues to contribute, towards supporting applied research and conservation projects at a local, national and international level. In most cases The Rufford Foundation provided the vast majority of funding for fieldwork and in-country support costs for attendees, including early careers but also ongoing support for others as part of their ongoing professional development.

The Rufford Foundation's role was particularly evident for people working in difficult to fund topics. For example, out of the talks we had three bat presentations; bats are a very understudied and misunderstood group, despite there being over 120 bat species in southern Africa funding can be extremely difficult to get, particularly in Africa. On the bat team we had Angela Curtis, an invited speaker who benefited from intensive bat training through AfricanBats, a project run by Ernest Seamark that has received ongoing supported by The Rufford Foundation. AfricanBats provides much needed, in-depth training in bat identification and handling techniques to delegates at a training facility in South Africa as well as providing an open access report called the African Chiroptera Report, which lists species distributions, provides GIS data and taxonomic updates – an important resource for bat researchers and conservationists across Africa. Rachael Cooper-Bohannon works across southern Africa and The Rufford Foundation were the main funder for her fieldwork throughout her PhD working in South Africa, Namibia and Botswana on cave-dwelling bats.

Throughout Rachael's PhD she realised how many bats were being killed and together with her PhD supervisor Kirsty Park they registered a Scottish registered NGO (Bats without Borders) dedicated to conserving bat populations across southern Africa. Rachael now lives in Malawi and works on projects in Namibia, Zambia, Malawi and Rwanda. Her PhD would not have been possible without The Rufford Foundation funding and as a result of her PhD and ongoing work she now sits on the IUCN Bat Specialist Group and Bat Conservation Africa steering committee. Lina Mushabati is an early career Namibian Masters student and The Rufford Foundation are funding her fieldwork on bats. Other grantees who also face funding challenges for their target species were Kerri Wolter, who works on vultures and runs VulPro an NGO dedicated to saving southern Africa's vulture populations through an integrated, multidisciplinary approach – research, rehabilitation, breeding and education.

Tadenda Dalu also presented his work on crabs and sustainable livelihoods, crabs have also been incredibly understudied and with little knowledge on even distributions it is impossible to assess the conservation of little known species. Albert Chakona gave us insights into hidden diversity of understudied stream fishes.

There was also evidence during conference of The Rufford Foundation grantees developing pioneering techniques in South Africa that could be used across the region. Juan Scheun, who recently completed his PhD has been developing methods for new less-invasive hormone monitoring to assist amphibian conservation globally. Antoine Marchal presented his PhD research developing software inspired by the incredible tracking skills of the San people and set up Wildlife 3D Tracking. As well as being non-invasive and cost effective this technology can be utilised for citizen science projects providing vital distribution data on species that could then be used by researchers and conservation practitioners.

Morris Gosling presented an overview of the important teamwork carried out in order to assess IUCN/SSC status of Hartmann's mountain zebra. We also heard from a number of speakers about the role of communities in conservation and wildlife protection: Felemont Banda (indigenous knowledge in wetland conservation), Steven Matema (community-based conservation) and Basilia Shivute (attitudes and perceptions) working in Malawi, Zimbabwe and Namibia. Jess Comley (working on complex interactions of multi-carnivore communities) and Emma Stone (working on African wild dogs) presented work on carnivore research and conservation in South Africa and Malawi.

In summary, there was clear evidence that The Rufford Foundation funding have significantly contributed towards the delivery of large and tangible conservation impacts, while at the same time providing vital support to grantees (from early career to more experienced people) that have all benefited from this support to further their careers whatever stage career they were currently at. In some cases, such as in the case of VulPro and Bats without Borders, funding has gone as far as to provide much needed support for small organisations working on species that undergo constant persecuted where government, conservation bodies and other stakeholders. Through this support, The Rufford Foundation is having a very tangible and direct impact on helping to inform and support on the ground, grassroots conservation in southern Africa.



## **Issues raised and any recommendations made**

As part of the conference programme there was a workshop on education and outreach, with a particular focus on communicating science and outreach focused on human-wildlife conflict. This topic was highlighted as an area many researchers do not feel they have the adequate skills to develop and disseminate resources and activities. The workshop was an opportunity for any attendees who take part in education activities to share their experience of working to young learners or community group and for all attendees to ask questions and ideas. Before the workshop all delegates were invited to provide samples of educational materials and during the workshop attendees discussed challenges and shared experiences/ideas, including different ways of engaging people (e.g. talks, activities or displays) and the importance of monitoring and evaluation to better understand the impact of any education project. This session was kindly led by Angela Curtis, Kerri Wolter, Emma Stone and Rachael Cooper-Bohannon.

During the conference there was also some talks dedicated to sharing (mobilising) biodiversity information and research outcomes. Speakers discussed different citizen science platforms, where researchers can share their distribution data and also verify records sent in by the general public. The group discussed issues with publishing data and it was explained that these platforms only want distribution, which would not necessarily affect getting published depending on the paper topic but also there is an option to delay the release of records to the general public. We had invited speakers from Namibian Environment and Tourism and other members of the Namibian team taking part in the GBIF big data challenge, where four African countries are competing to mobilise the largest amount of biodiversity data within one year. As well as government officials the team also includes from JARCO Consultancy and the Namibian Biodiversity Database. We'd like to thank the team members for giving talks and facilitating discussions on open access biodiversity data.

## **List of participants, conference schedule and abstracts**

Please find a list of conference participants, conference programme and talk abstracts at the end of this report (Appendix 1).

## **Budget**

Please find the budget summary with information on how funds were used at the end of this report (Appendix 2).



## **Namibian RSG Conference**

### **Appendix 1: Conference programme**

# NAMIBIAN RUFFORD FOUNDATION CONSERVATION CONFERENCE



WINDHOEK  
NAMIBIA



## CONFERENCE PROGRAMME

#RuffordFoundationNamibia2017



## Day 1

Monday 27<sup>th</sup> November 2017

08H00	Registration and tea/coffee
09H00	Welcome and announcements
09H05	<b>Plenary – Martin Taylor (BirdLife South Africa)</b> Conservation in a modern world – staying relevant
Chair: Emma Stone	
10H00	<b>Rachael Cooper-Bohannon</b> The distribution, ecology and conservation of bats in southern Africa
10H20	<b>Lina Mushabati</b> Changes in bat activity over an altitudinal gradient in the Kunene region, Namibia
10H40	<b>Angela Curtis</b> Seasonal selection of roost microclimate by Egyptian slit-faced bats ( <i>Nycteris thebaica</i> ) in the Namib Desert
11H00	<i>Team photo</i>
11H05	BREAK – tea/coffee
Chair: Angela Curtis	
11H40	<b>Juan Scheun</b> Taking the leap: the development of a new non-invasive hormone monitoring technique to assist amphibian conservation globally
12H00	<b>Tatenda Dalu</b> Ecological assessment of Potamonautid freshwater crabs from the Eastern Highlands of Zimbabwe: Identifying opportunities and challenges related to community sustainable livelihoods
12H20	<b>Albert Chakona</b> A biodiversity hotspot heats up: uncovering hidden diversity in endemic stream fishes from the Cape Fold Ecoregion in South Africa
12H40	LUNCH
Chair: Rachael CooperWBohannon	
14H00	<b>Alice Jarvis</b> Citizen Science in Namibia
14H20	<b>John Irish</b> The Namibian Biodiversity Database
14H40	Discussion on data mobilisation
15H00	BREAK – tea/coffee
15H40	<b>Kerri Wolter</b> Saving southern Africa's vultures
16H00	<b>Morris Gosling</b> IUCN/SSC assessment of Hartmann's mountain zebra conservation status in 2017
16H20	<i>End of day 1 talks</i>
19H00	DINNER

## Presentation abstracts

### PLENARY SPEAKER

#### ***Conservation in a modern world – staying relevant***

Martin Taylor<sup>1</sup>

<sup>1</sup>BirdLife South Africa

Bird populations in South Africa, Lesotho and Swaziland are in trouble. The recent results of the Regional Red List of Birds which details the conservation status of South Africa, Lesotho and Swaziland's avifauna as well as the Red List Index, which has tracked the fate of the region's birds over three decades, indicates that bird communities have declined drastically with a concomitant increase in extinction risk. We examine the threats responsible and chronicle the conservation interventions applied by BirdLife South Africa, a bird focused conservation organisation based in Johannesburg, South Africa, to attempt to ameliorate these threats. To a large extent these actions have been scientifically based and focus on dealing with specific threats facing birds as well as the habitats that they depend upon.

There have been some notable successes but bird populations continue to decline. The Red List Index indicates that these actions may not be sufficient and a review of conservation actions taken by BirdLife partners on a global scale gives a clue as to why these actions have to this point failed to halt the decline in bird populations. Conservation is about people. In order for conservationists to remain relevant in modern society it is critical to ensure that our message is communicated as effectively as possible to different spheres of society.

Different methods designed to bring people closer to conservation are reviewed with a focus on inclusion, engagement and communication.

#### ***The distribution, ecology and conservation of bats in southern Africa***

Rachael Cooper-Bohannon<sup>1,2,3,4</sup>; Jones, G.<sup>3</sup>; Rebelo, H.<sup>3,4</sup>; Kasaona, M.<sup>5</sup>; Cotterill, F.<sup>6</sup>; Monadjem, A.<sup>7</sup>; Schoeman, M.C.<sup>7</sup>; Taylor, P.<sup>8</sup>; Razgour, O.<sup>9</sup>; Fuentes, E.<sup>1</sup> and Park, K.J.<sup>1,2</sup>

<sup>1</sup>University of Stirling; <sup>2</sup>Bats without Borders; <sup>3</sup>University of Bristol; <sup>4</sup>CIBIO, University of Porto; <sup>5</sup>Namibian Ministry of Environment and Tourism; <sup>6</sup>University of Stellenbosch; <sup>7</sup>University of Swaziland; <sup>8</sup>University of KwaZulu Natal; <sup>9</sup>University of Venda; <sup>10</sup>University of Southampton

Despite bats being a major taxonomic group in southern Africa, data on distribution and population status is limited. This means we lack the ability to monitor changes to bat populations, hampering effective conservation action. This presentation gives an overview of using species distribution modelling as a tool to examine current species distributions, and potential range shifts of endemic species in light of climate change predictions. Our results highlight priority areas for monitoring programmes that would enable us to target species likely to be affected by major range contractions, and therefore at potential risk to regional extinctions. We also present a framework to design such a multi species monitoring network. This framework combines species distribution models and conservation planning software (Marxan) to optimise the location of monitoring stations for 58 bat species across southern Africa. This study is the first stage to design a large scale bat monitoring network in southern Africa for the surveillance of population trends, enabling species' range shifts to be tracked

using driven transects as a survey method.

### ***Changes in bat activity over an altitudinal gradient in the Kunene region, Namibia***

Lina Mushabati<sup>1</sup>

<sup>1</sup>University of Namibia

Bat activity is an important factor that can help to identify where bat conservation efforts should be concentrated. I examined bat activity at different altitudes in the semi-desert, Kunene region, Namibia. Data was collected at 3 sites: Etendeka, Kuidas and Hoanib, using a combination of mist nets and Wildlife acoustic SM2 detectors for acoustic monitoring over an altitudinal gradient from 238 – 970 m. Bat activity was greater at all sites just after sunset (19h00) indicating that foraging just after sunset is adaptive., a total of six families were recorded. Two families Vespertilionidae and Molossididae appeared to be present and dominant at all sites. Hoanib, the intermediate altitude (238m) had the highest bat activity during sampling period, whereas community composition was not related to altitude and no endemics to either low or high altitude detected. A total of Different levels of activity between elevations could be the result of differences in insect availability, weather conditions and water availability. Such information may be useful in recognizing conservation priorities of bats in the Kunene region. Further monitoring of bat activity in the Kunene region is important to understand the impact of environmental conditions, which are often extreme and variable.

### ***Seasonal selection of roost microclimate by Egyptian slit@faced bats (*Nycteris thebaica*) in the Namib Desert***

Angela Curtis<sup>1</sup>

<sup>1</sup>UNISA

The Namib Desert in Namibia is a harsh hyper-arid region with very little surface water and high daily temperatures. Egyptian slit-faced bats (*Nycteris thebaica*) survive and in this environment even though they have been shown to be vulnerable to hyperthermia and dehydration. Hope Mine is a vertical mine shaft which is occupied by *N.thebaica* throughout the year. Bats were identified by acoustic echolocation recordings and visual observation. Temperature and relative humidity were monitored at different depths within the mine shaft over the course of one year using suspended i-button hygrometers at selected depths. For ten months of the year the bats were observed roosting at a depth of approximately 20 m where conditions are very stable with lower temperatures and higher relative humidity during the course of the day. For the remaining two months of the year lactating females carrying pups were observed moving to a more exposed position at the entrance, with variable high daytime temperatures and low relative humidity.

### ***Taking the leap: the development of a new non@invasive hormone monitoring technique to assist amphibian conservation globally***

Juan Scheun<sup>1</sup> and Ganswindt, A.<sup>2</sup>

<sup>1</sup>Research and Scientific Services Department, National Zoological Gardens of South Africa

<sup>2</sup>Endocrine Research Laboratory, Department of Anatomy & Physiology, Faculty of Veterinary Science, University of Pretoria, Onderstepoort, South Africa

Anthropogenic changes to the environment have resulted in the drastic decline of several amphibian species over the last 40 years. In this regard, non-invasive endocrine monitoring techniques have become an important component of amphibian conservation practices globally. However, the collection of urine, faeces and saliva, as non-invasive hormone monitoring matrices, from small-bodied frog species can be difficult and as such a new monitoring matrix is required. As a result of the ease of collection, mucus may be the ideal matrix for monitoring reproductive, stress and thyroid hormone patterns in both small and large bodied amphibian species. However, prior to the use of mucus as a non-invasive hormone monitoring matrix the appropriate technique validation is required. The objective of this study is to validate the use of mucus as an effective means of measuring glucocorticoids and reproductive hormones in frog and toad species. We used the edible bullfrog (*Pyxicephalus edulis*) as a pilot species for this validation at the National Zoological Gardens of South Africa. Sixteen of thirty-two frogs used in this experiment were injected with adrenocorticotrophic hormone (ACTH) in order to activate the hypothalamic-pituitary- adrenal (HPA) axis, increasing the stress hormone production without the need for a biological stressor. The remaining individuals were injected with an amphibian ringer solution. The back and stomach of each individual were swabbed daily during a two week acclimatisation period, every three hours during an intense period for 2 days (beginning 45 minutes after ACTH injection), and then daily again for 6 days post injection. Urine, faeces and mucus were collected during the sampling period in order to obtain multiple materials for comparison. Preliminary results indicate that mucus may well be a robust matrix for monitoring stress hormone concentrations in frog species. Further analyses of collected samples are required to confirm this.

***Ecological assessment of Potamonautid freshwater crabs from the Eastern Highlands of Zimbabwe: Identifying opportunities and challenges related to community sustainable livelihoods***

Tatenda Dalu<sup>1</sup>; Dalu M.T.B.<sup>2</sup> and Wasserman, R.J.<sup>3</sup>

<sup>1</sup>Zoology and Entomology, Rhodes University, South Africa; <sup>2</sup>Environmental Science, Rhodes University, South Africa; <sup>3</sup>School of Science, Monash University Malaysia

The spatial ecology of freshwater crabs and their conservation status is largely understudied in Africa. An ecological assessment was conducted at 104 localities in 51 rivers and/or streams in the Eastern Highlands of Zimbabwe whereby the distribution and abundances of freshwater crab species were mapped and the possible drivers of the observed trends in population structure explored. We further assessed direct or indirect community livelihoods impacts on the preservation of *Potamonautes* spp. and attempted to identify opportunities and constraints to conservation of crabs within the pre-existing livelihoods of community households. Only two crab species *Potamonautes mutareensis* and *Potamonautes unispinus* were recorded within the region of study. *Potamonautes mutareensis* was largely restricted to less impacted environments in the high mountainous river system, whereas *P. unispinus* was found in low laying areas. In stretches of river where both species were found to co-occur, the species were never sampled from the same site, with *P. mutareensis* occurring in shallower, faster flowing environments and *P. unispinus* in deeper, slow flowing sites.

Interview results revealed that the local communities, particularly in the southern part of the Eastern Highlands around the Chipinge area, had a considerable level of utilisation (55% of households) on the harvesting of crabs for household consumption during the non-agricultural season (May to September). We found that increasing human populations, poverty, crab

consumption, and illegal mining (i.e. resulting in water pollution, degradation of habitats) are threatening freshwater crabs in the Eastern Highlands. The combined and interacting influences of the above highlighted anthropogenic factors have resulted in *Potamonautes* crab population declines in populated areas. Patterns of spatial overlap of rural population, higher poverty prevalence and crab abundance revealed in this study indicate priority areas of possible conflicts of interest, but also areas where benefits to both conservation and livelihoods can potentially be realised. The current study provides important information and insight towards the possible development of a freshwater crab conservation action plan within the region.

### ***A biodiversity hotspot heats up: uncovering hidden diversity in endemic stream fishes from the Cape Fold Ecoregion in South Africa***

Albert Chakona<sup>1</sup>; Swartz, E. <sup>1</sup> and Gouws, G. <sup>1</sup>

<sup>1</sup>South African Institute for Aquatic Biodiversity, Grahamstown 6140, South Africa

This study used phylogenetic analyses of mitochondrial cytochrome b sequences to investigate genetic diversity within three broadly co-distributed freshwater fish genera (*Galaxias*, *Pseudobarbus* and *Sandelia*) to shed some light on the processes that promoted lineage diversification and shaped geographical distribution patterns. A total of 205 sequences of *Galaxias*, 177 sequences of *Pseudobarbus* and 98 sequences of *Sandelia* from 146 localities across nine river systems in the south-western Cape Fold Ecoregion (South Africa) were used. The data were analysed using phylogenetic and haplotype network methods and divergence times for the clades retrieved were estimated using \*BEAST. Nine extremely divergent (3.5–25.3%) lineages were found within *Galaxias*. Similarly, deep phylogeographic divergence was evident within *Pseudobarbus*, with four markedly distinct (3.8–10.0%) phylogroups identified. *Sandelia* had two deeply divergent (5.5–5.9%) lineages, but seven minor lineages with strong geographical congruence were also identified. The Miocene-Pliocene major sea level transgression and the resultant isolation of populations in upland refugia appear to have driven widespread allopatric divergence within the three genera. Subsequent coalescence of rivers during the Pleistocene major sea level regression as well as intermittent drainage connections during wet periods are proposed to have facilitated range expansion of lineages that currently occur across isolated river systems.

The high degree of genetic differentiation recovered from the present and previous studies suggest that freshwater fish diversity within the south-western CFR may be vastly underestimated, and taxonomic revisions are required.

### ***Citizen Science in Namibia***

Alice Jarvis<sup>1</sup>

<sup>1</sup>JARCO Consultancy

The Atlasing in Namibia website ([www.theWeis.com/atlas](http://www.theWeis.com/atlas)) is Namibia's citizen science portal, with options for recording mammals, reptiles, alien plants, amphibians, breeding birds. As well as the ongoing addition of citizen science records through the website and through the Atlasing in Namibia app, significant historical datasets have been imported into the system. By bringing Namibia's biodiversity data together, we can enhance their value and usefulness. Comparisons become possible across space and time, between and across species. Functions of the site include data collection, baseline distribution data, education & awareness,

monitoring.

### ***The Namibian Biodiversity Database***

John Irish<sup>1</sup>

<sup>1</sup>Namibian Biodiversity Database

The NBD ([biodiversity.org.na](http://biodiversity.org.na)), in various iterations, has been online since 2003. An introduction and summary of current status, content and capabilities will be given.

### ***Saving southern Africa's vultures***

Kerri Wolter<sup>1</sup>

<sup>1</sup>VulPro

Vultures are an essential part of the ecosystem, serving to minimise disease and vermin outbreaks by removing carcasses from the environment. This in turn keeps our wildlife, livestock and human populations healthy, the ecosystem balanced and provides benefits to farming and local communities. Africa's vultures have declined by a catastrophic 90% over the last three decades. They face a variety of threats, from accidental death through collisions with electricity infrastructure, electrocutions and secondary poisoning to deliberate poaching for the traditional medicine trade or for food. Despite their vital role in human health, vultures are often underappreciated and misunderstood. VulPro approaches vulture conservation in a multi-disciplinary fashion encompassing rehabilitation, conservation, science, research and conservation breeding and education. Our mission is to save Africa's vultures incorporating a

Multi-disciplinary approach unlike any other vulture conservation organisation on the continent.

### ***IUCN/SSC assessment of Hartmann's mountain zebra conservation status in 2017***

Morris Gosling<sup>1,2</sup>

Newcastle University, UK<sup>1</sup> and Namibia Nature Foundation, Windhoek, Namibia<sup>2</sup>

An IUCN/SSC reassessment of Hartmann's mountain zebra (*Equus zebra hartmannae*) status has been conducted recently by a working group using all available data across Namibia on population status in protected areas and other types of land holding. This assessment will be published this year. This talk outlines the results of this assessment, the new category of threat, and recommendations about conservation management, research and monitoring in the future.

## DAY 2

Tuesday 28<sup>th</sup> December 2017

08H00	Tea/coffee
09H00	Welcome and announcements
Chair: Juan Scheun	
09H05	<b>Felemont Kayulayula Banda</b> The Role of Indigenous Knowledge in Wetland Conservation: Lessons from Preliminary Data in Lake Chirwa Wetland
09H25	<b>Steven Matema</b> Can wildlife pay for its survival? Evidence from a community based conservation initiative in Zimbabwe
09H45	<b>Vuyisile Thabethe</b> Widespread supplementary feeding of African woolly necked storks in suburban areas of KwaZulu-Natal, South Africa
10H05	<b>Basilia Shivute</b> From Habitat assessments to Human Attitudes and Perceptions
10H25	<i>Team photo</i>
10h30	TEA/COFFEE BREAK
Facilitators: Angela Curtis, Kerri Wolter and Rachael CooperWBohannon	
11H00	<i>Education workshop</i>
12H20	LUNCH
Chair: Rachael CooperWBohannon	
13H40	<b>Antoine Marchal</b> Wildlife 3D Tracking
14H00	<b>Jessica Comley</b> Carnivore intra-guild competition in Selati Game Reserve, Limpopo
14H20	<b>Emma Stone</b> Assessing the status of African wild dogs in Malawi – building a long term conservation strategy
14H40	<b>Final wrap-up</b>
14H45	TEA/COFFEE BREAK

## **Presentation abstracts**

### ***The Role of Indigenous Knowledge in Wetland Conservation: Lessons from Preliminary Data in Lake Chirwa Wetland***

Felemont Kayulayula Banda<sup>1</sup>

<sup>1</sup>University of Malawi-Polytechnic

The purpose of the presentation will be to share observation made from the preliminary analysis of The Rufford project data so far collected. The presentation will give insight based on the data obtained during the ongoing data collection process for the project on Conservation Effects of Spatial Variations in Land Use Patterns on the Littoral Zone Vegetation of Lake Chilwa Wetland: Case of Typha Vegetation. Qualitative data which has been collected so far has revealed that indigenous knowledge has unique implication on the conservation of wetland environments. The data so far collected has revealed that certain practices in the study area which are based on indigenous knowledge are detrimental to the conservation of the littoral zone vegetation. For example, the belief that Typha vegetation in the littoral zone needs to be cut in order to harvest fish that hide therein has resulted in the depletion of Typha vegetation which forms part of the spawning habitat for a diversity of fish species found in the wetland. On the other hand, there are certain practices based on the indigenous knowledge which are beneficial to the conservation of wetland environmental resources. The presentation will therefore highlight the beneficial effects of indigenous knowledge and their negative effects on the conservation of the Wetland environmental resources. The presentation will further high challenges being faced during the data collection process.

### ***Can wildlife pay for its survival? Evidence from a community@based conservation initiative in Zimbabwe***

Steven Matema<sup>1</sup>

<sup>1</sup>African Conservation Trust, KwaZulu-Natal, South Africa

The underlying philosophy for community based conservation (CBC) is that wildlife can pay for its survival through controlled consumptive utilisation. Zimbabwe's CAMPFIRE (Communal Areas Management Programme for Indigenous Resource) exemplifies this philosophy; revenue from safari hunting and tourism is invested in conservation activities and part of it is used to fund local development activities as a means to engender a conservation ethic among local people. This paper questions the CBC philosophy by drawing evidence from records of human-wildlife interactions, hunting and income distribution in a CAMPFIRE area in northern Zimbabwe. A socio-economic survey was used to gather local opinion on the performance of CAMPFIRE and, track counts were conducted to detect presence of wildlife on communal land. Findings show that in areas of high human population densities, wildlife was displaced from the landscape except for river animals such as crocodile and hippo. Human-wildlife conflict occurs: crop damage, threat to humans, killing of livestock, human death, human injury, retaliatory killing and illegal hunting.

Wildlife species that were mainly involved were elephant, hippo, crocodile, buffalo, lion and hyena. The Parks and Wildlife Management Authority did not compensate for losses due to wildlife and responded to only 29.5 % of reported cases of human-wildlife conflict. On the contrary, the Rural District Council offered limited compensation but only for human injury and death. Over the years, the local community received about 29.7 % of the annual income from



hunting under CAMPFIRE with the rest going to concessionaires, local wildlife management costs and the Rural District Council. Consequently, human-wildlife conflict and human-human conflict over wildlife have caused local discontent with CAMPFIRE. Data from 2000 to 2016 show that setting of hunting quotas is not informed by species population dynamics. There was a general decrease in the average horn size of trophy buffalo and elephant for the period 2005 to 2015. The findings of the study suggest that commodification of wildlife has not improved conservation outcomes as well as local support for wildlife conservation.

### ***Widespread supplementary feeding of African woolly-necked storks in suburban areas of KwaZulu-Natal, South Africa***

Vuyisile Thabethe<sup>1</sup>

<sup>1</sup>University of KwaZulu Natal

African woolly-necked storks (*Ciconia microscelis*) generally depend on wetland habitats for foraging and nesting in natural environments. Recently, they have started colonizing urban environments in KwaZulu-Natal, South Africa, and are now a common sight in suburban areas in particular. It is, however, not currently understood why African woolly-necked storks are colonising urbanised habitats. Using a questionnaire survey, we therefore investigated what foraging opportunities are available in these areas that might be responsible for the recent expansion of this species in urban areas of KwaZulu-Natal. Our study revealed that 71% (165 households) provided food for African woolly-necked storks in their gardens. A significant number of feeding respondents fed on a daily basis (62%) throughout the year (88%) with some feeding respondents feeding more than once a day (39%). The majority of African woolly-necked stork feeding respondents (63%) provided meat while others provided inappropriate food such as bread. Feeding respondents were most often motivated to feed for personal pleasure. Our results showed that this species is successfully utilizing and exploiting anthropogenic food – a novel behaviour. The presence of guaranteed, year-round supplementary food has had a significant influence on the biology of this species as they now have established resident populations in KwaZulu-Natal whereas in the past this species was migratory during winter. Based on the results obtained in this study, supplementary feeding of African woolly-necked stork by householders is the primary factor explaining their year round abundance in suburban areas of KwaZulu-Natal, South Africa. Our study further indicated that urban residents in South Africa appreciate African woolly-necked storks and will continue to feed them in their gardens, and therefore it is important to understand how can they do so with maximum benefits and minimise risks. We suggest that appropriate feeding guidelines should be made available for the public.

### ***From Habitat assessments to Human Attitudes and Perceptions***

Basilia Shivute<sup>1,2,3,4</sup>

<sup>1</sup>Integrated Rural Development and Nature Conservation (IRDNC); <sup>2</sup>Wilderness Safaris Namibia;

<sup>3</sup>University of Namibia; <sup>4</sup>Humboldt University zu Berlin

Namibia is home to one third of the global black rhino population. Beginning in 2005, under increasing demand from local communities to receive black rhino back on their land, the Ministry of Environment embarked upon an ambitious rhino re-introduction programme.

Therefore, in 2006, with support from Rufford Small Grants Programme, I undertook a research project to examine black rhino habitat requirements. We sampled browse availability and other vegetation characteristics in three key rhino areas at a small-scale and conducted a landscape-level analysis to identify factors that influence rhino distribution.

The results helped inform re-introduction site selection while also identifying key ecological factors that may be limiting rhino distribution. More recently, to address the emergence of the new poaching threat, focus has shifted from ecological studies (i.e. habitat) to sharpening our understanding of social dimensions (i.e. human attitudes and perceptions) of rhino conservation. In 2016/17 we designed and delivered surveys with 82 local farmers and 94 unemployed youth across the rhino range to improve pro-rhino behaviour. Survey results have directly informed our outreach interventions.

### ***Wildlife 3D Tracking***

Antoine Marchal<sup>1</sup>

<sup>1</sup>University of Pretoria

In the past, running was essential to our survival. About 2 million years ago, humans' ancestors practised persistence hunting, which consists of running down preys to exhaustion. The ability to run over long distances may have been crucial to the evolution of our anatomy. Beyond the running performance, persistence hunting also involves the ability to read animal tracks. The most advanced form of tracking implies cognitive thinking and the use of hypothetico-deductive reasoning that may well be the origin of all sciences.

Modern-day hunter-gatherers such as the San People of southern Africa still practise persistence hunting. Their tracking skills are exceptional in terms of recognising and following tracks. Because of these abilities, San trackers were involved in behavioural studies of various large carnivores. Another study showed that a group of four San trackers were 98% correct in interpreting the species, age, sex, individual, and activity from tracks. This information is crucial in terms of wildlife monitoring, which assesses the distributions and status of animal populations over space and time. Furthermore, using tracks represents a non-invasive, cost- and time-effective way of gaining data on species that are difficult to observe. In order to reach more practicality and quantification, the ancestral tracking skill was slowly substituted by track measurements. Tracks are either measured directly in the field or on their replicates. Unfortunately, many wildlife studies involving the use of tracks are controversial due to: unreliable recording techniques limited to two dimensions (2D), manipulator bias and substrate variation, misidentification of the foot that produces each track, and subjective identification of the individuals. To overcome these challenges, we introduced the use of a three dimensional (3D) recording technique linked to morphometrics and multivariate analysis. We created two Non-Profit Organisations, both named Wildlife 3D Tracking that share a common vision: 'to revive the ancestral art of tracking using current technologies for the benefit of nature and indigenous trackers'.

### ***Carnivore intra@guild competition in Selati Game Reserve, Limpopo***

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Terrestrial ecosystems generally contain multiple carnivore species which not only compete for shared resources, but also pose a threat to one another. Although the only intact guild of large carnivores can be found in Africa, our understanding of the extent of intra-guild competition is heavily biased towards canids in the northern hemisphere. Previous research has mainly focused on the role of direct killing and interactions between pairs of carnivores, completely overlooking the interactions occurring among subordinate carnivores. The ways in which large carnivores interact or compete for space and resources in small, fenced-off (enclosed) reserves in South Africa is currently poorly understood. This is significant because worldwide carnivores are increasingly being restricted by human activities and fenced reserves present a potential conservation tool for carnivores. Understanding how multiple carnivores utilize available resources within small, enclosed reserves is vital for their conservation, as it provides insight into the ecological needs of these species and can aid the development of management plans for enclosed reserves. My research project aims to gain a better understanding of the complex interactions of a multi-carnivore community in a small, enclosed reserve in South Africa (Selati Game Reserve) through intensive camera trapping, diet assessments and spatial data. Interestingly our preliminary results indicate that the large carnivores on the reserve could potentially be influencing the spatial dynamics of the smaller carnivores through intra-guild competition. Increased data and statistical analyses are needed in order to determine how space and resources are being utilised and partitioned on the reserve.

***Assessing the status of African wild dogs in Malawi – building a long term conservation strategy***

Emma Stone<sup>1</sup>

<sup>1</sup>Conservation Research Africa

The African wild dog is endangered and viable populations are believed to be limited to only six of 34 previous range countries. Despite regular sightings in Kasungu National Park (KNP), no studies have been conducted on wild dogs in Malawi. With funding from The Rufford Foundation Carnivore Research Malawi (CRM) conducted a status assessment of wild dogs in Kasungu National Park Malawi. We conducted competing carnivore surveys using camera trapping, spotlighting and acoustic playbacks to assess density and distribution of competing predators (Lion, leopard and hyaena) and prey density assessments to assess abundance and distribution of wild dog prey. Spatially explicit capture mark recapture models in R produced leopard density estimates of 3.44 ( $\pm$  SE 1.16) adults per 100km<sup>2</sup> (0.034/km) from 1292 trap nights, yielding a park population estimate of 79 animals. Hyaena population density was estimated to be 0.03/km<sup>2</sup>, (n = 12 playback sites, survey area 382km<sup>2</sup>) yielding a population estimate of 78 for the park. Two separate packs of wild dogs have been identified within the park (n = 9 and n = 12 individuals) but they are not thought to be resident. Next stages include surveys of the remaining range of wild dog in Nyika NP and development of a population reinforcement programme across the country in collaboration with EWT.

## **OTHER GREAT WORK BEING DONE BY OTHER RUFFORD COLLEAGUES WHO WERE UNFORTUNATELY UNABLE TO ATTEND THIS CONFERENCE**

### ***Distribution and conservation status of black-footed cats in Namibia and the spatial ecology and habitat use on farmland in the Karoo, South Africa***

Martina Küsters

The black-footed cat *Felis nigripes* is the rarest and smallest of the African wild cats and endemic to southern Africa. It occurs mainly in South Africa and Namibia, but also Botswana and possibly marginally in southern Angola and Zimbabwe. *Felis nigripes* is of conservation concern because of limited data on status and health of populations, life history, ecology and survival. It occurs at low densities, has high conservation threats and most of its geographical range falls outside protected areas.

In 2012, a project was started in Namibia to collect distributional data and determine the conservation threats to the black-footed cat (bfc). The conservation status of the species in Namibia can be classified as 'vulnerable'. Location records are few and evidence suggests that population densities are low and may be vulnerable to local extinction. Species conservation should be focused on farmland, as most of the species' range falls within private commercial farmland.

Through a study by the Black-footed Cat Working Group (BFCWG) on farmland in the upper Karoo, Northern Cape, more data on the species' ecological requirements (i.e. home range size, habitat use and prey density) is collected as well as aspects of survival, life expectancy, cause specific mortality and disease. These parameters are important for accurate estimates of population densities and conservation assessments (e.g. IUCN Redlist Assessment).

With this study, both efforts in Namibia and South Africa have shown that landowner assistance, support and co-operation is vital for the conservation of the Black-footed Cat regionally. Arguably, this species should be seen as a flagship species for the conservation of biodiversity in the arid regions of the Nama-Karoo biome.

### ***Conservation genetics of the Sungazer***

Shivan Parusnath

The Sungazer (*Smaug giganteus*) is a Threatened dragon lizard, endemic to the Highveld grasslands of South Africa. These grasslands have been extensively modified for the purposes of agriculture, urbanization, and mining, with conservation measures virtually non-existent for this biome and its inhabitants. These processes, along with widespread poaching for the pet and traditional medicine trade, have resulted in a population decline of ~1% per year. Many aspects of the life history of the Sungazer are still largely unknown, making conservation action difficult to direct. This study aims to use genetic techniques to investigate the population ecology of the Sungazer, in order to further understand the species, and make rational conservation decisions to preserve populations and genetic level diversity. We used a panel of species-specific microsatellite markers and mitochondrial gene regions to investigate the broad-scale genetic structure of the species, and how the current species distribution has been shaped by historical phylogeographic processes. Mitochondrial gene sequences (12s, 16s) did not show clear structuring across the population. However microsatellite results indicated two strongly differentiated populations in the Free State and Mpumalanga provinces, with no

recent evidence of gene flow between them. These populations are 40 km apart at their closest points, and are constrained on either side by water systems and mountains. Sungazers have not been recorded in the intervening area between these populations. The discordance between mitochondrial sequences and more rapidly evolving microsatellites suggests that the two populations have only recently been separated, potentially due to human land transformation.

***Conservation assessment and action plan for a single site endemic and endangered Orchid, the *Aeranthus Africana****

Vuyisile Precious Moyo

Zimbabwe boasts of two single site and endemic *Aeranthus* orchids, the endangered *Aeranthus Africana* and the critically endangered *Aeranthus parkesii* both from the Zimbabwean Afromontane Biodiversity Hotspot. *Aeranthus Africana* wild populations endemic to the montane mist belt of the Vumba Mountains are being threatened by orchid collectors and continuously dwindling natural habitats. Due to extreme budgetary constraints, the national herbarium is currently unable to consistently embark on timely post research monitoring focusing on this plant. There is need for a follow up study to come up with updated knowledge on the conservation status of the orchid to avoid wild extinction. This research is a follow up to studies done by Golding, J.S. (ed.) (2002), Mapaura, A. (2002), Kimberley, M.J. (2003), Mapaura, A. & Timberlake, J. (eds) (2004) and other local independent conservationist like Weiner Fibeck and Butt Wilson. In sum these researchers have gone to the extent of population surveys and identifying the major threats to the wild populations. Details gathered from Anthony Mapaura, a senior researcher at the national herbarium confirm that there has been no species action plan drafted for conservation of this species. Since researches related to the *Aeranthus Africana* conservation have been far in between and sporadic there is need for more and constant research to continuously update on the Population size, distribution, ecology and Monitoring specifically focusing on population trends. The project is taking place in the Eastern Afromontane Biodiversity Hotspot which covers five Key Biodiversity Areas (KBA) on the Eastern side of Zimbabwe's border. Specifically, the project will take place in the Vumba Mountains priority corridor in Zimbabwe. It is partially protected with a small area protected as a Botanical Reserve, but most of it is unprotected privately owned properties. Threats to biodiversity in the Vumba Highlands include encroachment by humans, alien species and wild fires.

***Conflict to coexistence: Defining the thresholds of human@elephant coexistence in a landscape mosaic of eastern KAZA***

Malvern Karidozo

Elephants are the major driver for wildlife conflict and biodiversity changes in African ecosystems where they persist. Seventy-five percent of Africa's elephants now live in the Kavango-Zambezi Transfrontier Conservation Area (KAZAWTFCA) in southern Africa, along with more than two million people. Finding ways to coexist with the elephants is essential to secure the future of Africa's elephants and improve the futures of the people of the ecosystem. Elephant bulls are the primary raiders of human crops in this region. They annually cause hundreds of thousands of dollars' worth of damage to crops in the region, as well as harming local opinion towards conservation in general, and elephants in particular.

The long-term goal of this project is to increase knowledge and improve co-existence between people and elephants in this ecosystem. The project seeks to influence and advocate for developments that keep settlements out of wildlife movement corridors, feeding and shelter areas to reduce the said conflicts. It also seeks to make an impact where growth and development takes place on the landscape to advise land use planning. The project appreciates that the prognosis for conservation of wildlife, their movement corridors and habitats seems exceedingly grim if land use changes remain unchecked and not investigated thus calls for a participatory and integrated landscape level approach to solving the issues of human wildlife conflict thereby fostering wildlife conservation and community livelihoods.

***Pickersgill's Reed Frog monitoring and community engagement in response to conservation interventions at coastal wetlands in eThekweni***

Jiba Magwaza

Pickersgill's Reed Frog, *Hyperolius pickersgilli*, is an Endangered species known only from a very limited and fragmented range of coastal wetland habitat in the Province of KwaZulu-Natal, South Africa, an area high in biodiversity but also subject to high levels of anthropogenic transformation. Most of its sites occur outside of protected areas and proactive conservation measures and management of the remaining unprotected sites, including through extensive community engagement, is critical. We have monitored both the species and wetland health to gauge responses to management interventions (primarily focused on alien plant removal) at four sites in the greater Durban area. Automated acoustic recording over the past two breeding seasons will be used to analyse calling behaviour and give preliminary population density estimates at four sites; three at relatively degraded, unprotected sites and one benchmark site that is well managed. Annual wetland health monitoring to measure change in the condition of the wetland systems will be used to assess improvements associated with rehabilitation interventions and supplement the long-term monitoring of the *H. pickersgilli* populations at each wetland site using the Level 2 WETW Health assessment tool. Concomitant to this, we have worked extensively with local communities to highlight the importance of the conservation of wetland habitat and are assessing land use practices of the communities surrounding the sites, including waste issues. Through this, we aim to assess the effectiveness of implementing suitable green livelihood alternatives that reduce impacts on wetlands. Lastly, we are conducting surveys with community members to find out stories or superstitions that people have about frogs in order to develop a booklet on indigenous knowledge and folklore around frogs.



## Namibian RSG Conference

### Appendix 2: Budget

The following table outlines the conference costs, which was under budget and the remaining balance has been reimbursed back to The Rufford Foundation.

Description	Cost (£)
Conference venue (accommodation for delegates, conference room and equipment hire, airport transfers, food and subsistence)	2474.65
Contribution towards travel for attendees and travel costs for Keynote speaker	2776.36
Conference bags and lanyards (bought from an upcycling, social enterprise supporting sustainable livelihoods in South Africa)	369.87
Conference support costs (e.g. bank charges, printing of conference programme and badges, contribution towards communications)	350.00
<b>TOTAL</b>	<b>5,970.95</b>