



The 14th African Small Mammal Symposium



SCIENTIFIC PROGRAMME & ABSTRACTS

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31 August 2023

Dear Conference Participants,

The Local Organising Committee (LOC) has great pleasure in welcoming you to the 14th African Small Mammal Symposium (14th ASMS) held at the Swakopmund Plaza Hotel, Namibia.

We would like to thank you, the participants, for making the effort to attend this conference. Without your presentations and stimulating after-hour discussions this conference would not exist. We are also grateful to several institutions that have provided support, resources or funds that have been channelled into making this conference better for you. We would like to thank the Namibian Chamber of Environment (NCE) for providing funds to cover expenses for the logistic arrangements; the Oppenheimer Generations Research and Conservation (OGRC) for sponsoring scientists from Africa, Europe, and South/North America.

Finally, thanks to the University of Namibia, the National Museum of Namibia, and the Directorate of Scientific Services (Ministry of Environment, Forestry & Tourism) for the institutional support that was given to the 14th ASMS, without which we would not have been able to successfully host this conference.

We hope that you enjoy your stay here and take some time to explore the beautiful Namib Desert and the rest of Namibia, during and after the conference.

Yours sincerely,

Dr. Seth J. Eiseb & Dr. Sacharian P. Muteka
On behalf of the Local Organizing Committee

Local Organizing Committee

- Dr. Seth J. Eiseb, *Dept. of Environmental Science, UNAM, Private Bag 13301, Windhoek, Namibia (Co-chair)*
- Dr. Sacharian P. Muteka, *Dept. of Animal Production, Agribusiness & Economics, UNAM, Private Bag 13188, Windhoek, Namibia (Co-chair)*
- Ms. Salmi Kapala, *Dept. of Environmental Science, UNAM, Private Bag 13301, Windhoek, Namibia*
- Ms. Ester Kayala, *Dept. of Environmental Science, UNAM, Private Bag 13301, Windhoek, Namibia*
- Ms. Laina Abiatar, *Dept. of Environmental Science, UNAM, Private Bag 13301, Windhoek, Namibia*
- Ms. Lina Mushabati, *Dept. of Wildlife Management & Tourism, UNAM, Private Bag 1096, Katima Mulilo, Namibia*
- Ms. Lavinia Haikukutu, *Dept. of Animal Production, Agribusiness & Economics, UNAM, Private Bag 13188, Windhoek, Windhoek, Namibia*
- Dr. Francois Becker, *National Museum of Namibia, Ministry of Education, Arts and Culture, P O Box 1203, Windhoek, Namibia*
- Mrs. Apollonia Dirks, *National Museum of Namibia, Ministry of Education, Arts and Culture, P O Box 1203, Windhoek, Namibia*
- Mr. Kenneth /Uiseb, *Wildlife Monitoring & Research, Directorate of Scientific Services, Ministry of Environment, Forestry & Tourism, Private Bag 13306, Windhoek, Namibia*
- Ms. Novald Iiyambo, *Wildlife Monitoring & Research, Directorate of Scientific Services, Ministry of Environment, Forestry & Tourism, Private Bag 13306, Windhoek, Namibia*

Scientific Committee

- Dr. Seth J. Eiseb, *Dept. of Environmental Science, School of Science, University of Namibia, Namibia*
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- Prof. Apia W. Massawe, *Pest Management Centre, Sokoine University of Agriculture, Morogoro, Tanzania*
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- Dr. Nico Avenant, *Dept. of Mammalogy, National Museum, Bloemfontein, South Africa*
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- Dr. Laurent Granjon, *Institut de Recherches pour le Développement, Montpellier, France*
- Prof. Herwig Leirs, *University of Antwerp, Antwerp, Belgium*
- Dr. Victor Rambau, *Stellenbosch University, South Africa*

for some areas. A total of 132 species from 37 genera and 8 families were recorded. Family Vespertilionidae had the highest species richness ($n = 49$). In terms of relative abundance, more fruit bats were captured. Of the species recorded, two were Albertine rift endemics and two are endangered. We confirmed the presence of *Hipposideros ruber*, *H. caffer*, *Macronycteris gigas*, *Megaloglossus woermanni*, *Miniopterus fraterculus*, *M. inflatus*, *Rhinolophus eloquens*, *R. landeri*, *R. ruwenzori* and *R. kahuzi*. These results may be an underestimate because many sites have never been assessed, and ground mist nets under-represent many highfliers and many insectivorous bat species adept at avoiding them. More work is needed to get complete lists of species for efficiency of conservation actions.

Bats as the focus for research and conservation across Africa

Mandl, I.^{1,2*}, Bakwo, E.³, Doulton, H.⁴, Frick, W.², Nsengimana, O.⁵, Webala, P.⁶, and Flanders, J.²
¹Department of Botany and Biodiversity, Faculty of Life Sciences, University of Vienna, Vienna, Austria; ²Bat Conservation International, Austin, Texas, USA ; ³Department of Biological Sciences, Faculty of Sciences, University of Maroua, Maroua, Cameroon; ⁴NGO Dahari, Mutsamudu, Anjouan Comoros; ⁵Rwanda Wildlife Conservation Association, Kigali, Rwanda; ⁶Maasai Mara University, Narok, Kenya

*E-mail: isabella.mandl@univie.ac.at

One of the greatest challenges for conservation practitioners is knowing where to focus time, effort, and resources to make the greatest impact on preventing species extinction. Bat conservation is no different, and while Africa and its neighboring islands are home to almost a quarter (ca. 23%) of the world's bat species, a third of which is classified as threatened or 'Data Deficient' in the IUCN Red List, there are still major knowledge gaps hindering conservation efforts. Bat Conservation International (BCI) has initiated, supported, and co-led several projects targeting African bat species with the goal of setting the basis for long-term protective measures to preserve bat diversity. Recent projects led to the rediscovery of the Hill's horseshoe bat (*Rhinolophus hilli*) and its roosts in Rwanda, the description of a new dichromatic species of *Myotis* (*Myotis nimbaensis*) from the Nimba Mountains in Guinea, and in Comoros Livingstone's fruit bats (*Pteropus livingstonii*), were tracked using GPS loggers, to understand their habitat use on the island Anjouan. Information gained through these projects greatly improves our understanding of the habitat needs of these critically endangered species while also generating new information about lesser-known species. All the information obtained can now be used by park managers and conservationists to design effective and timely conservation actions. For all these projects, BCI works closely with local partners, with the aim to provide technical and financial support, and to build local capacity to ensure species' protection for the future.

Forest loss alters bat diversity, trophic interactions and natural pest consumption in adjacent agricultural land.

Montauban, CM.^{1*}, Devenish, AJM.¹, Budinski, I.², Annorbah, NND.³, Chibesa, M.⁴, Welch, AJ.⁵, and Tobias, JA.¹

¹Department of Life Sciences, Faculty of Natural Sciences, Imperial College London, Ascot, UK; ²Department of Genetic Research, Institute for Biological Research Siniša Stanković, Belgrade, Serbia; ³Department of Biological Sciences, University of Environment and Sustainable Development, Somanya, Ghana; ⁴Department of Zoology and Aquatic Sciences, School of Natural Resources, Copperbelt University, Kitwe, Zambia; ⁵Department of Biosciences, Faculty of Science, Durham University, Durham, UK

*E-mail: cecilia.montauban19@imperial.ac.uk

Increasing agricultural production to meet rapidly growing demand for food is driving widespread conversion of natural habitats to arable land. Safeguarding biodiversity while improving food security of local communities remains a key global challenge, especially in regions such as Sub-Saharan Africa, where the population is expected to double by 2050. To develop sustainable solutions to this trade-off, we need to better understand natural regulation processes. Bats are widely regarded as a major predator

of crop pests, yet little is known about them in African agroecosystems. We investigated the role of bats as natural pest consumers across land-use gradients from intact forest to cropland in two contrasting Afrotropical systems of Zambia and Ghana. Between 2021 and 2022, 2151 bats of 61 species were captured across four field seasons. From these, metabarcoding dietary analyses of 895 faecal samples of insectivorous bats were performed. Bats were found to consume detrimental agricultural pests in both systems, with differing proportions and prevalence of pests in their diets across localities and agroecosystem types (e.g., maize and cacao). We find a shift in bat taxonomic and functional diversity, with some forest-dependent species absent from agricultural areas, particularly on the clear-cut edges of tropical evergreen rainforests of Ghana. Intraspecific dietary analyses of bat species present along the gradient show alteration of trophic interactions, with reduced dietary breadth and nestedness with increasing distance from the forest. Our study highlights the degradation of ecological interactions in changing landscapes, with important implications for conserving their function and stability.

Protecting critical forests from wildfires for the endangered *Hipposideros curtus* in Nigeria

Udokang, IE.^{1*}, Tanshi, I.^{1,2}, and Obitte, BC.^{1,3}

¹*Small Mammal Conservation Organization, Benin City Nigeria;* ²*Department of Biology, School of Arts and Sciences, University of Washington, Seattle, USA;* ³*Department of Biological Sciences, School of Arts and Sciences, Texas Tech University, Lubbock, Texas, USA*

*E-mail: inieke.udokang@smacon-africa.org

The Endangered forest-dependent Short-tailed Roundleaf bat (*Hipposideros curtus*) is threatened by cave disturbance and habitat loss from dry season forest fires in Afi Mountain Wildlife Sanctuary (WS), Nigeria driving population decline in the species. Wildfires are human caused, originating on farmlands, yet behavioral drivers of wildfires remain poorly understood. To identify the causes of wildfires and local perceptions on measures to prevent fire spread from farmlands to the forest, we conducted sociological surveys in five flashpoint communities (Boje, Buanchor, Irruan, Katabang, Olum) around Afi Mountain WS between June 2021 – January 2022. The primary drivers of wildfires are farm-fire abandonment and hard-to-follow non-dynamic fire bans. The most frequently identified fire reduction measures included remote firefighting gear and training to support local firefighting attempts. The sociological results informed a four-step Early-warning intervention program that quantifies, communicates, and enforces wildfire risk, and responds to wildfires. To quantify wildfire risk, we installed weather stations in five flashpoint communities. Weather data were used to predict a three (low, medium, and high) stage wildfire risk, which were communicated through colour-coded signposts strategically placed around each community, signaling the appropriate days to burn farmland (low risk). Forest Guardians – trained community-based personnel, patrol farms around the sanctuary on high-risk days. 10 Forest Guardians per community were employed, trained, and equipped as first responders to fire outbreaks. Between January and March 2023, Forest Guardians conducted farm patrols and firefighting for >35 days, including responding to 31 wildfire outbreaks on farmlands. No forest wildfires were reported in the 2023 dry season.

Rediscovered but disappearing: Range-wide action for the endangered *Hipposideros curtus*

Tanshi, I.^{1,2*}, Ibenyenwa, CP.^{1,3}, Udokang, IE.¹, Labiran, J.¹, and Obitte, BC.^{1,4}

¹*Small Mammal Conservation Organization, Benin City, Nigeria;* ²*Department of Biology, School of Arts and Sciences, University of Washington, Seattle, USA;* ³*Wildlife Conservation Society, Calabar, Nigeria;* ⁴*Department of Biological Sciences, School of Arts and Sciences, Texas Tech University, Lubbock, USA*

*Email: iroro.tanshi@smacon-africa.org

The rare, range-restricted, endangered Short-tailed Roundleaf bat (*Hipposideros curtus*), recently rediscovered 45 years since last sighting, is protected only in Nigeria – Afi Mountain Wildlife