

Monograph on
**Endemism in the
Highlands and Escarpments
of Angola and Namibia**



Angola Cave-Chat *Xenocopsychus ansorgei*
Photo: M Mills

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Preface to the monograph on endemism in the highlands and escarpments of Angola and Namibia

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A TRIBUTE

This monograph brings together knowledge on plants and animals that live specifically, often only, on the highlands and escarpments of Angola and Namibia. Much of the information is based on specimens and observations collected decades ago by intrepid, mostly self-trained naturalists whose tenacity led them across Africa in search of new ants, birds, euphorbias, grasses and much more. Their work laid the groundwork to this monograph.

Nowadays, most biologists are trained and paid professionals. But there remain a few unpaid naturalists who doggedly continue to build important foundational knowledge about the animals and plants of southwestern Africa. We dedicate this monograph to two of them who died recently: Mark Williams and Rogério Ferreira. Their presence is to be found on many of the pages ahead.

Rogério used his enthusiasm, energy, sharp eyes and camera skills to record hundreds of different animal species in Angola. His images were often the first ever taken. Many led to the recognition of new species or distribution records. He also travelled widely, seeking out places that were poorly known. Angola is worse off for his loss. Young people will do well to follow Rogério's example, paying special attention to the values of passion, modesty and hard work.

Mark Williams dedicated his life to the study of butterflies in Africa, a moderate part of which is to be found in the paper on butterflies in this monograph (Gardiner & Williams 2023). First published in 2006, *Butterflies and Skippers of the Afrotropical Region* (Williams 2022) was one of his most important contributions. He also added more than 700 species and subspecies to the monumental catalogue published as *Carcasson's African Butterflies* (Ackery *et al.* 1995). Mark's valuable contributions to the knowledge of Afrotropical butterflies will be missed.

The Great Escarpment of southern Africa, and its associated mountains, plateaus and inselbergs, includes representative areas of over half of the subcontinent's centres of plant diversity (Clark *et al.* 2011). It also hosts a rich vertebrate and invertebrate fauna, including many endemics. Despite this biological wealth, the Great Escarpment has attracted few focused studies on the evolution and diversification of its biota, the patterns and relationships of speciation and endemism, and the

ecological services and conservation needs of its landscapes. The paucity of biological research across the Great Escarpment is nowhere more evident than along the highlands and escarpments of southwestern Africa, especially of Angola.

The need for a synthesis of what is known – and not known – about the highland biota of southwestern Africa recently triggered discussions between colleagues from Angola, Portugal, Namibia and South

Africa towards developing an interdisciplinary research programme to fill identified knowledge gaps. The project would focus on the highlands and escarpments of Angola and Namibia (HEAN). The original, and ambitious, objectives of this project were to:

- Document the occurrence of endemic species and the patterns of endemism on highlands in Angola and Namibia.
- Refine the taxonomy of potential endemics, understand their evolutionary histories and relationships and identify likely refugia.
- Record and understand the land uses and socio-economic conditions on and around highlands in Namibia and Angola to identify threats and opportunities for improved conservation.
- Develop conservation priorities to safeguard biota endemic to the highlands of Namibia and Angola.

While the initiation of a new, collaborative programme of research on the biota of the HEAN has yet to find funding, the first steps towards synthesising available knowledge has advanced, providing the content of the present volume. What is evident is that the information base is very uneven, both in terms of geographical coverage and of taxonomic groups studied. Levels of information range from tentative inventories of species distribution, to detailed revisions of selected genera based on molecular phylogenies. The information base differs markedly between Namibia and Angola.

Namibia has a rich history of biological research, with a major focus on the ecosystems and biota of the Namib Desert, backed by detailed studies on the vegetation, flora and fauna and the abiotic environment that determines these at national scale, synthesised in such volumes as Barnard (1998) and the latest edition of the Atlas of Namibia (Atlas of Namibia Team 2022). Angola is less endowed in terms of biological surveys. Following the termination of civil war in 2002, however, a resurgence of interest in its ecosystems and biota has been witnessed, and the results documented in synthesis volumes such as the present and in Marques *et al.* (2018), Huntley *et al.* (2019) and Huntley (2023).

An exception to the lack of focused study of the biota of the highlands and escarpments of southwestern Africa is a paper published over sixty years ago. In 1957, Patricia Hall of the Natural History Museum, London, collected material of 250 species of passerine birds along the Angolan escarpment and adjoining landscapes. Based on her field knowledge and on thousands of specimens housed in the museums of Europe and North America, she proposed a set of hypotheses to explain regional

patterns of speciation, diversity and endemism: The Faunistic Importance of the Scarp of Angola (Hall 1960). Her work stimulated conservation proposals (Huntley 1974) and more recently, an acceleration of ornithological research across Angola (Dean *et al.* 2019, Mills & Melo 2023). Hall's seminal paper provides a theoretical framework on the evolution of the highland biota, concepts that the current phase of research and the availability of modern technologies will be able to test.

What is immediately clear is that there is no distinctive escarpment or highland 'centre of endemism' unique to the HEAN. The steep climatic and habitat gradients from the tropical rainforests of the low escarpment of Cabinda, through the cooler montane forests and grasslands of the Angolan highlands, the mix of moist and arid savannas along the spine of the HEAN, ending in the arid mountains of southwestern Angola and across Namibia, reflect a continuum of change in the physiognomic structure and genetic composition of the vegetation, flora and fauna across 2,700 km of latitude. Dotted across this landscape are a great many inselbergs, some of them supporting high numbers of endemics.

The present state of knowledge suggests that species richness and endemism relate to habitat, rather than to any 'centre of endemism' or biological 'hotspot'. This does not preclude the identification of such centres once phylogenies of more taxa, and more georeferenced distribution data become available. What is evident is that the dramatic topography of the HEAN provides habitats that favour narrowly endemic species and subspecies, and frequent disjunct distribution patterns between closely related taxa, separated over short distances to thousands of kilometres. The finer definition and explanation of such patterns remains a work in progress.

WITH THANKS

A synthesis such as this would not be possible without the commitment of many dozens of collaborators and specialists, 60 of whom are identified as authors of the papers. This product is a tribute to their dedication and patience through the two years absorbed in compiling the volume. The Ongava Research Centre initiated the project and together with the Namibian Chamber of Environment and the Centre for Research in Biodiversity and Genetic Resources (CIBIO), University of Porto, funded aspects of the work. Alice Jarvis was responsible for the page layout while her meticulous editing and that of Carole Roberts greatly enhanced the product. Additional support was provided by Chris Brown, Tony Cunningham, Nuno Ferrand, John Irish, Jasper Knight, António Martins, Andy Moore, Tony Robertson, Elizabeth Shangano, Ken Stratford and William Versfeld.

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