



## BOOK REVIEW

## A Much-needed Tonic for African Snakes

*Snakes of Central and Western Africa*. 2019. Jean-Philippe Chippaux and Kate Jackson. Johns Hopkins University Press, Baltimore, Maryland. x + 429 pp. Hardcover — ISBN: 978-1-4214-2719-5. \$84.95.

I am a field guide junkie. The one that began this addiction was the expanded edition of Roger Conant and Joseph Collins's *Reptiles and Amphibians of Eastern and Central North America* published in 1998. Fair or not, that guide is the standard to which I compare all other guides. I firmly believe that a proper field guide comes down to good pictures, great maps, and accurate illustrations. Reference books, on the other hand, should emphasize comprehensive summaries of what is known about each species and outlines that are densely cited with the relevant literature. Jean-Philippe Chippaux and Kate Jackson's *Snakes of Central and Western Africa* seamlessly blends these two herpetological genres in such a way that both field-guide and reference-book connoisseurs will be satisfied. Presented as a guide to snake identification, this synoptic and scholarly book is still light enough to be carried into the field and will be invaluable to anyone attempting to identify the panoply of poorly characterized snakes in the region. The book is densely populated with numerous photographs of rare species, remarkably accurate head scalation drawings, and dot-based range maps for almost all of the more than 250 species of snakes in the region.

The part of this book that really takes it over the top are the drawings of snake morphology and scalation, which are essential for correctly identifying African species. Many of these were drawn by hand from real specimens (a rare occurrence today) or redrawn from long-forgotten literature sources. Chapter 1, for example, covers "The Identification of African Snakes" and is one of the best introductions to diagnostic morphological characters for snakes I have ever seen. The chapter includes well-labelled drawings of head scalation, many of which are color-coded for easy cross-species comparisons, pictures of live animals with labels differentiating important differences in scalation, and a scientific text describing anatomical terminology. This chapter is a master class in using external morphology for African snake taxonomy and includes some of the book's most informative figures (e.g., Figures 1.13, 1.15, and 1.17), which are drawings



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JEAN-PHILIPPE CHIPPAUX and KATE JACKSON

of lateral, dorsal, and ventral views showing color-coded head scales of six African species of snakes that highlight variation in head-scalation diversity. These images show how head scales vary in shape and size across taxa and would make excellent posters in any herpetology classroom. In addition to the many excellent snake illustrations in the introduction, including the anatomical renderings in chapter 2, the over 120 line-drawings throughout the book display head scalation in three different anatomical views. Almost all of these renderings were drawn by Tuhin Giri, and this major artistic contribution really makes this book stand out among other guides. Most importantly, each drawing of head scalation includes the specimen's museum collection number. Rarely do synoptic guides include this level of detail for images — and herpetology is the worse for it. With museum numbers in the captions, these drawings can now be linked (forever) to the specimens they represent. This aspect of

the book should be an example for future guides and should be extended to photographs of live animals when they are collected. If done properly, all of these data sources could be linked to the physical specimens, a minor undertaking that would increase the value of natural history specimens in a digitized world.

As someone who is always seeking new places and species, I obsess over range maps. I spend most of my time preparing for field expeditions by looking over species distribution maps and tracking down type localities for species, subspecies, and synonymized species that I want to collect. For biodiversity expeditions and taxonomic revisions, topotypic material (i.e., specimens and tissues collected from the type locality) is essential, and this book provides a basic description of the type locality for each species covered, something that is often missing from guides. For more detailed information on type localities and those beyond the species level, the reader must look elsewhere, but that should not be a problem with Peter Uetz's Reptile Database bookmarked. The range maps themselves are dot-based, which I prefer over the style of many guides where the species range is more art than science and usually takes the form of colorful paint swatches over large swaths of areas where the species does not occur. Ranges portrayed as dots on a map — which are best when based on collected specimens stored in museums — give the reader a more accurate (albeit still incomplete) view of where and in what macrohabitats a species has been found. Unfortunately, the maps in this book do not explicitly provide the sources from which the dots originated, so the reader cannot track down the specimens to determine the accuracy of the identification. The reader also is left wondering if the dots represent specimens from formal institutions with online metadata, personal collections unlikely to be shared openly, snakes that were observed but not collected, or some other potentially unverifiable source. With a work of this magnitude, it is unfortunate that this important detail was omitted. Perhaps, an online companion should have been rolled out with this book so that other researchers can leverage the locality data to better understand this region's poorly documented ophidiofauna. Source-material quibbles aside, the maps themselves are aesthetically pleasing, located near the species in the text, and some broad habitat details are discernable. Interestingly, all of the maps are the same size throughout the book, even when only one dot represents a species (e.g., Figure 8.2) or when more than 50 dots represent three species (e.g., Figure 10.62), and this makes some maps appear ill-sized (mostly too large). Furthermore, the maps could have been more efficiently constructed to remove unmappable space (e.g., maps show large swaths of ocean beyond the African continent) to give more room for enlarging snake pictures and drawings. I also would have preferred that the African reference maps with country names (Figures 3.1 and 3.2) covered entire pages either in the front or back of the book, rather than be limited to half a page

buried in the introduction on page 40. While not a problem for everyone, the species maps do not include country names, so some readers will need to go back-and-forth from the reference maps and the species maps.

Typesetting and quality issues will exist in almost any 429-page book that covers such an immense diversity of species, and I refer readers to the review by Pauwels and Brecko (2020) for a detailed description of those and other inconsistencies that occur in this book. For example, some of the hand-drawn images are cut-off, and a handful of the live-snake pictures are inconsistent in quality and highly variable in size (mostly too small). Photographic descriptions do not go beyond the country level, which masks the potential geographical variation in these species, many of which were rectified by Pauwels and Brecko (2020). The text describing each species is heavy on diagnostic characters and scale counts at the expense of other information. The genus-level treatments include some natural history data, but the general lack of ecological and demographic information is understandable given the paucity of such data for African snakes (Shine and Spawls 2020). An example of this deficiency starts on page 105 when discussing the mambas (genus *Dendroaspis*). The authors state that Africa's most well-known snake, the Black Mamba (*D. polylepis*), is a terrestrial species, but this is at best a gross oversimplification. While on a museum-collecting expedition in 2016 to the White Nile Region of northern Uganda, I encountered a large male *D. polylepis* at the top of a mountain. As this was my first Black Mamba, I had two thoughts: (1) I have to catch this snake; and (2) I know nothing about this species beyond its reputation as Africa's deadliest serpent. I first spotted this elapid around 1400 h apparently sleeping in a tree well over 8 m above the ground (not quite terrestrial) and it remained motionless in the branches of this large acacia for hours. I decided to wait until the evening for the snake to venture down to the ground to hunt (I assumed it was nocturnal), at which time I would snag it with my tongs. Ignorance, this time, was not bliss. Night came and the snake never moved. After turning down my colleagues' proposals to shoot it or burn the tree, I decided to climb, headlamp and tongs in tow. What ensued was a heart-pounding series of events: a timid ascent up the acacia, an intense grapple with a 6-ft mamba high in the canopy, a rapid decent (I fell and slammed my arm on a rock), a regathering, and an eventual capture of the snake in the tree's lower branches. I quickly double-bagged the mamba, tied the bags to a long stick, and proudly walked down the mountain at midnight carrying my bindle while smiling from ear to ear. I survived by sheer luck, but this story highlights how immensely useful basic natural history information can be in the field because catching a Black Mamba in a tree during the dark of night has a much lower probability of success than if done during the daytime. But then again, it was a Black Mamba, so maybe not.

The book is also a cache of obscure herpetological knowledge that may even be unfamiliar to herpetologists. To behold the hemipenial length of shovel-snouted snakes (genus *Prosymna*) — first described by the famous herpetologist Karl Schmidt — via a modern rendering by Kate Jackson on page 292 (Figure 11.77) is worth the price of admission. *Prosymna ambigua* apparently has a hemipenis that was 10-mm longer than its 48-mm tail (Schmidt 1923). During a 2015 expedition in the Karamoja Region of eastern Uganda, I flipped a *Prosymna* from under a large rock in wooded-grassland habitat. These snakes were so poorly known that I could not identify it to species at the time. After sequencing its DNA, it turned out to be most closely related to *P. greigerti*, a species that also occurs in the region covered by this book. After seeing Jackson's redrawing, I was immediately curious as to what could possibly have been the evolutionary sequence and ecological scenario that led to the fear-inducing length of *P. ambigua*'s hemipenis, which might be the longest relative to its size among all snakes. Schmidt (1923) suggested that the length was an adaptation to its fossorial lifestyle, and this was echoed in the book, but other African burrowing snakes (e.g., subfamilies Atractaspidinae and Aparallactinae) do not possess an organ of such renown. They may not be on par with barnacles, but perhaps it is time for Jim Knowlton to revise his famous “Penises of the Animal Kingdom” and give shovel-snouted snakes the recognition that they deserve (Dickey 2018).

Those up to date with African snake systematics may be disappointed, as almost none of the changes published during the last five years were included in the book (see Pauwels and Brecko 2020), but almost everyone else will not even notice. The book has many other great features not described above, including dichotomous keys and a dense literature-cited section. The authors have truly set the bar high for African snake guides and this opus will endure as a useful reference for years to come. The price is likely prohibitive to those from the region it covers, but anyone with an interest in African snakes will be rewarded by investing in such a well-illustrated and scholarly guide.

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