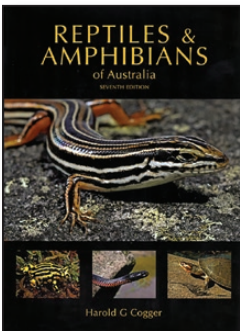


BOOK REVIEWS

Herpetological Review, 2014, 45(3), 523–524.
© 2014 by Society for the Study of Amphibians and Reptiles

Reptiles and Amphibians of Australia, 7th Edition

Harold G. Cogger. 2014. CSIRO Publishing, Collingwood, Melbourne, Australia (www.publish.csiro.au). xxx + 1033 pp. Hardcover. AU\$150.00 (approx. US \$140.00). ISBN 9780643100350.



BRETT A. GOODMAN

School of Earth & Environmental Sciences,
University of Adelaide, Adelaide,
South Australia, Australia 5005
e-mail: brett.goodman@adelaide.edu.au

The herpetofauna of Australia is one of the most diverse anywhere in the world. As such, a reference work that provides descriptions and dichotomous keys of all known reptile and frog species represents a significant contribution. The most recent edition of Hal Cogger's long awaited *Reptiles and Amphibians of Australia* updates Australia's longest standing, one-stop reference for all currently described herpetofauna. So well known and regarded is Hal Cogger's book that it is often referred to simply as "Cogger" or even "The Bible." Now in its 7th edition, the latest version represents a substantial increase in content since the release of the 6th edition (2000) 14 years ago. Indeed, so long is the interval between editions that used copies of the 6th edition frequently command high prices online (e.g., eBay US \$500–800).

There is a significant increase in the number of new species included in the 7th edition, with 168 new reptile and frog species, in addition to a number of useful format changes. In the almost 40 years since the first edition, the documented diversity of Australia's reptile and frog species has almost doubled, growing steadily from 664 species (Cogger 1975) to 703 species (Cogger 1979) to 830 species (Cogger 1983) to 865 species (Cogger 1986) to 951 species (Cogger 1992) to 990 species (Cogger 1994) to 1004 species (Cogger 1996) to 1050 species (Cogger 2000) and finally to 1218 species (Cogger 2014). A new feature of the introduction is a table of all described species of reptiles and frogs by state/territory and bioregion (a total of 15 bioregions) within the Australian continent, including major island provinces (Lord Howe, Norfolk, Cocos [Keeling], and Christmas islands). A page number provides quick access to each species description and corresponding distribution map, facilitating the inclusion or exclusion of candidate species on the basis of geography. An additional change is the shift to a single text column for the species descriptions, bringing the format in line with that of the introduction and generic descriptions. Also new and appropriate to both the "biblical" status and size of

the book is the inclusion of a ribbon place mark. An index of species common names in addition to one of solely scientific names is also very handy.

The introduction moves away from the task of the identification of reptile and frog species and includes discussion and maps highlighting biodiversity and conservation "hotspots" for herpetofauna across Australia. Areas with high species diversity are clearly indicated via a color-coded scale for all taxa. Individual biodiversity maps are provided for frogs, lizards and snakes. Hylid frogs and southern frogs (Leptodactylidae) are also mapped separately, highlighting differences in the hotspots of the two groups. There is also a philosophical discussion on conserving phylogenetic biodiversity and the value of one species over another—the fundamental issue of whether conservation efforts should be focused on the preservation of a single taxon of a speciose lineage as opposed to the single representative of a monotypic lineage (e.g., *Ctenotus* with approximately 103 species vs. the monotypic *Gnypetoscincus*).

A consistent feature in all editions of *Reptiles and Amphibians of Australia* is a section on how to locate specimens for photography and/or collection and research. This section provides detailed approaches and equipment for collection and sampling, with a brief section on transportation of live specimens and the correct methods for euthanasia and the preservation and fixation of specimens. There is also a section on introduced reptile and frog species and their impact on species on the mainland and island territories. Fittingly, the final part of the introduction deals with the most recent snakebite and first aid treatment.

As in previous editions, the identification keys for each genus are supported by line drawings illustrating the scales, scutes, and shields that are most relevant to the distinguishing features of each group. A helpful addition to the 7th edition is the use of colored keys to define those features most likely to distinguish a species. Each species is accompanied by its own species description and distribution map. Although subspecies are not defined *per se*, it is nice to see they are at least listed with a description of their known distribution. There has been considerable effort to include most new taxonomic references (through December 2012), with some of the more recent ones included in the addenda.

Species distribution maps often receive critical attention given the influence they can have on reliably identifying species. As Cogger points out (pp. 5–7) the informed user of this book needs to understand how to interpret the range maps provided. There are many approaches available for delineating species distributions. The most commonly used is the convex polygon, which uses the peripheral points in a set of records to estimate species boundaries. This approach does not consider discontinuities within the range and may overestimate distributional areas, particularly where there are large areas of unsuitable habitat or where there are isolated records outside the main distributional

range. Minimum polygon methods, on the other hand, work well when there are many distribution records, but may underestimate ranges when data are insufficient. The maps provided reflect the author's integration of a huge number of museum and literature records and a lifetime of familiarity with the Australian herpetofauna.

For any identification guide photographs of typical examples of species often provide the quickest way to successfully determine a specimen's identity. Unfortunately, the latest edition of *Reptiles and Amphibians of Australia* provides fewer color illustrations than the previous editions. The members of the genus *Ctenotus*—Australia's most diverse vertebrate genus—are provided with a color image in fewer than 60% of cases. While some may argue that this is a minor issue due to the morphological similarity of species within genera such as *Ctenotus*, it is always helpful having more photographic examples to work from. While most images included are of reasonable quality, many appear somewhat over-exposed, particularly those reproduced from previous editions. The use of poor quality photos seems avoidable given the number of competent herpetological and wild-life photographers who would have freely provided high quality images. More than likely, the judicious use of color images appears to have been an effort to maintain a reasonable price and size of the work given its scope. The images provided have been selected to demonstrate the range of color patterns and forms within a particular group and the type of habitats they occupy, with emphasis on the use of images depicting animals in their natural surroundings.

Casually thumbing through a work may not be especially informative—the real test of how well it performs under field conditions. To this end, my first real opportunity to test the latest edition of “Cogger” was on a recent field trip targeting skinks in the Shark Bay area of Western Australia. This location is known for its high scincid diversity, with a particularly high diversity of cryptozoic fossorial species of the genus *Lerista*, in addition to a large suite of surface active species. Here *Reptiles and Amphibians of Australia* really came into its own, with the keys for *Lerista* proving invaluable for distinguishing among the several quite-similar co-occurring congeners, and amply justifying the effort to bring this 3 kg field guide as carry-on luggage!

For any volume of this size, obtaining suitable proofing at the review stage is critical to eliminate obvious errors that can detract from the reader's confidence in the material presented. Unfortunately, the latest issue of the *Reptiles and Amphibians of Australia* has a fair number of obvious and annoying errors. While unproductive to list here, some typical errors include incorrectly labeled source localities for the photographs of specimens (e.g., *Anepischetosia maccoyi*; p. 414) and distribution maps that clearly differ from the in-text description of the species' distribution (e.g., *Lerista edwardsae*; p. 602).

The 14 years since the release of the 6th edition have seen the publication of several useful field guide-sized volumes for reptile and frog identification, which effectively filled the void left by the absence of an up-to-date edition of “Cogger.” Most notable has been *A Complete Guide to Reptiles of Australia* (Wilson and Swan 2003). This work provides descriptions and high quality photographic plates, without dichotomous keys, and is now in its 4th revised edition (Wilson and Swan 2013). The identification of Australia's frog fauna has been given a significant boost with the recent release of *Tadpoles and Frogs of Australia* (Anstis 2013), which provides a comprehensive treatment of all known species and their larvae. In addition, several reptile and frog

identification apps for both iPhone and Android (e.g., *Frogs Field Guide* by the Australia Museum) have been released. If and when *Reptiles and Amphibians of Australia* will become available in this format is currently unknown.

There is little doubt that producing the 7th edition of *Reptiles and Amphibians of Australia* has been a monumental challenge. Since the publication of the 6th edition there has been a change of publisher (from Reed publishing to CSIRO) and presumably, the associated copyright issues. Hal Cogger's initial motivation for the book was to provide the kind of work he would have liked to have had access to when in high school or at university. In the preface to the current edition he notes that over time the increasing size and cost of the book has tended to limit its access to the general reader and to people with a more general interest in natural history. Although its size may exclude it as an easily portable field guide, there is little doubt that *Reptiles and Amphibians of Australia* continues to promote awareness and appreciation of the national and global significance of Australia's herpetofauna and that it meets or exceeds the author's primary aim “to provide the means to identify the majority of the reptiles and frogs found in continental Australia and Tasmania” (p. xxvii). Now, more than ever, *Reptiles and Amphibians of Australia* represents a worthy addition to the library of anyone interested in Australian herpetology.

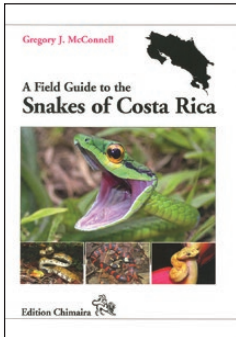
LITERATURE CITED

- ANSTIS, M. 2013. *Tadpoles and Frogs of Australia*. New Holland Publishers, Sydney, New South Wales, Australia. 829 pp.
- COGGER, H. G. 1975. *Reptiles and Amphibians of Australia*. A. H. & A. W. Reed Pty., Ltd., Sydney, New South Wales, Australia. 584 pp.
- . 1979. *Reptiles and Amphibians of Australia*, 2nd edition. A. H. & A. W. Reed Pty., Ltd., Sydney, New South Wales, Australia. 608 pp.
- . 1983. *Reptiles and Amphibians of Australia*, 3rd edition. A. H. & A. W. Reed Pty., Ltd., Frenchs Forest, New South Wales, Australia. 660 pp.
- . 1986. *Reptiles and Amphibians of Australia*, 4th edition. Reed Books Pty. Ltd., Frenchs Forest, New South Wales, Australia. xxi + 688 pp.
- . 1992. *Reptiles and Amphibians of Australia*, 5th edition. Reed Books, Chatswood, New South Wales, Australia. 775 pp.
- . 1994. *Reptiles and Amphibians of Australia*, 5th edition, revised. Reed Books, Chatswood, New South Wales, Australia. 788 pp.
- . 1996. *Reptiles and Amphibians of Australia*, 5th edition, second revision. Reed Books, Port Melbourne, Victoria, Australia. 796 pp.
- . 2000. *Reptiles and Amphibians of Australia*, 6th edition. Reed New Holland, Sydney, New South Wales, Australia. 808 pp.
- WILSON, S., AND G. SWAN. 2003. *A Complete Guide to Reptiles of Australia*. Reed New Holland, Sydney, New South Wales, Australia. 480 pp.
- , AND ———. 2013. *A Complete Guide to Reptiles of Australia*, 4th edition, revised. New Holland Publishers, Sydney, New South Wales, Australia. 592 pp.

Herpetological Review, 2014, 45(3), 525–528.
© 2014 by Society for the Study of Amphibians and Reptiles

A Field Guide to the Snakes of Costa Rica

Gregory J. McConnell. 2014. Edition Chimaira, Frankfurt am Main, Germany (www.chimaira.de). Hardcover. 233 pp. 39.80 Euro (approximately US \$53.40). ISBN 978-3-89973-431-7.



CESAR L. BARRIO-AMORÓS

Instituto de Biodiversidad Tropical (IBT),
Apartado Postal 220-8000,
Pérez Zeledón, San Isidro del General, 11901,
Costa Rica
e-mail: cesarlba@yahoo.com

After being in touch with the editor and providing several photographs for use in this book, I was very curious to see how a new book on Costa Rican snakes would stack-up against the masterworks on the topic by Jay Savage (2002) and Alejandro Solórzano

(2004). My expectations were probably too high, but the final result left me disappointed.

The book starts with acknowledgments and a short introduction by the author explaining the gestation of the book. There is no preface or back cover comments by noted herpetologists, as are often seen in books such as this. Unfortunately, there is also almost no introduction to the country, only a political map and no more than two paragraphs about the complex geography of Costa Rica, which is so important for understanding patterns of distribution. Fortunately, Savage (2002) in his encyclopedic volume provides this information, as does Solórzano (2004), although in a more limited way. The introduction about snakes is more in-depth, and covers the general biology and morphology of ophidians. There are five taxonomic chapters, one about Anomalepididae [sic], Typhlopidae and Leptotyphlopidae, another about Boidae, Loxocemidae and Ungaliophiidae, one more about Colubridae (sensu lato), another about Elapidae, and a last one about Viperidae. The final chapter is about snakebite and its treatment. The book continues with the distribution map section, with small schematic but clear maps, and a list of species with “original identifications” (i.e., current names with relevant authorship given) and allocations to subfamily. A far too short literature section closes the volume.

The strength of the book is that it has a great collection of photographs and can certainly be used as a visual catalogue. Herp fanatics and herpetologists, as well as naturalists in general, are always appreciative of good pictures, and this book has them. I also enjoyed the small collection of drawings by Claudia Hahn (see those of *Ninia celata*, p.101, *Rhadinaea pulveriventris*, p. 112, *Thammophis marcianus*, p. 126, *Trimetopon gracile*, p. 127, and *T. simile*, p. 128), some of which remind me of the classic plates of the pre-photographic age. I welcome such a beautiful set of images, and will consult them often.

What I will not consult is the text, which contributes nothing new relative to Savage (2002) and Solórzano (2004). The maps and text summarize the information in these two volumes and do not seem to reflect any new or interesting findings, or if such data are present they are not noted as such. There are a good number of mistakes and much misleading information in McConnell’s book. I document some instances below, but also take

the opportunity to comment on Savage’s (2002) and Solórzano’s (2004) works when relevant, and add some new information derived from recent papers not treated by McConnell.

To say that Costa Rica is in the southern part of North America (p. 12) is incorrect; along with Panama, Nicaragua, Honduras, El Salvador, Guatemala, Belize, and Mexico as far north as the Isthmus of Tehuantepec, it is in Mesoamerica, a macro-region that is widely recognized geographically, ecologically, and anthropologically. The reference to taxonomists as either “splitters” and “lumpers” (p. 13) is an outmoded notion that has been superseded as modern workers adopt an integrative taxonomy approach that combine as many possible methods and data sources to make more objective decisions (see Padial et al. 2010). McConnell states that “studies of the structures of the reproductive organs of male snakes (hemipenis) have further contributed to snake taxonomy, but this author [McConnell] questions the validity of the adornments of these as taxonomic features for obvious reasons (consider the differences among the human penis).” Such a view seems misguided in light of the extensive works by Dowling and Savage (1960), Zaher (1999), and Myers (2011), just to name a few.

The author makes the statement that “many venomous snakes of both families (referring to Elapidae and Viperidae), possess dark heads or dark stripes over the venom glands, possibly to prevent the denaturation of the numerous proteins and enzymes from exposure to the sun’s ultraviolet rays” (p. 19). Although this theory was proposed long ago (Pough et al. 1978), this key reference is not cited and in Costa Rica, most venomous species have mostly light brown to gray heads (black only in *Lachesis melanocephala* and *Hydrophis platurus*, and generally dark gray in *Porthidium nasutum*, like the rest of the body), or are green, with very thin dark stripes. There is even one species (*Porthidium volcanicum*) that has white stripes over the gland area. Furthermore, in the case of elapids (coral snakes), the black ring on the rear of the head often does not cover the venom glands.

McConnell refers to and bemoans the “trash can” concept of the family Colubridae (p. 18), which was true until recently, but modern molecular methods have partitioned the Colubroidea to yield monophyletic families within the old Colubridae (e.g., Hedges et al. 2009; Zaher et al. 2009). These papers support the recognition of the subfamilies Xenodontinae and Dipsadinae within the family Dipsadidae Bonaparte, 1838, which currently includes many more species than the reduced Colubridae now recognized. Additional new interpretations on the family Dipsadidae have been published by Vidal et al (2010) and Grazziotin et al. (2012), and the phylogeny of all Squamata was recently published by Pyron et al. (2013). Although McConnell cites both Zaher et al. (2009) and Vidal et al. (2010) he does not embrace the new taxonomy that challenges the “trash can” concept.

Neither is the current taxonomy of anurans employed. Two species named in the introduction (p. 19) are both outdated. *Bufo marinus* changed to *Chaunus* based on Frost et al. (2006), and is now referred to *Rhinella* (after Chaparro et al. 2007). *Leptodactylus pentadactylus* is a South American species. The Costa Rican species in the *pentadactylus* group is *L. savagei* (Heyer 2005).

Other issues involving problems with names include the mention of Texan leptotyphlopids as *Typhlops* (p. 23), extremely limited information on certain taxa, including *Leptodymus pulcherrimus*, *Nothopsis rugosus*, and the genus *Geophis*, and numerous out-of-date or incorrect applications of names.

Chironius carinatus is no longer a Costa Rican species; the subspecies *C. c. flavopictus* was raised to specific level by Hollis (2006). *Dendrophidion vinitor* is no longer considered to occur in Costa Rica, rather the Caribbean former *vinitor* is now known as *D. apharocybe*, and the Pacific “*vinitor*” is now *D. crybellum* Cadle (2012). The “*D. vinitor*” that appears in figures 114 and 116 is *D. crybellum* (based on biogeography), and the “*vinitor*” from Rio San Juan, Nicaragua in figure 113 is *D. apharocybe*. In this case the author probably had no time to add the new data, but he did comment on an observation of *Ungaliophis* made in 2012 and I was in touch with the editor (regarding photographs), who was open to changes as late as the last quarter of 2013.

The discussion of *Dipsas* is confusing. First the author notes three species, then only two, but in the photographic section and distribution map section, there are again three species depicted. Savage and Bolaños (2009) consider three species, *D. articulata*, *D. bicolor*, and *D. tenuissima*. Regarding *Drymarchon*, McConnell states that “*D. corais* was formerly known as the subspecies *D. melanurus corais*” (actually it was *D. corais melanurus*), and the correct name for the *Drymarchon* inhabiting Costa Rica is *D. melanurus* (Savage and Bolaños 2009). He also notes that many authors split the genus into four species (e.g., Wüster et al. 2001), but does not follow this himself. Regarding *Enuliophis*, McConnell follows Savage’s (2002) point of view that *sclateri* is not *Enuliophis* (after McCranie and Villa 1993), and that the genus has two species in Costa Rica. Solórzano (2004) on the other hand, believes the description of the new genus is convincing and uses *Enuliophis*. This is a matter of opinion, but McConnell is in error in stating that it was *E. flavitorques* rather than *E. sclateri* that had been considered *Enuliophis*.

Erythrolamprus epinephelus has been treated incorrectly by several authors as “*epinephalus*” (including Savage [2002] and Solórzano [2004], and consequently McConnell, but not Köhler [2003]). Savage and Bolaños (2009) explain this error.

Imantodes is a genus represented by three species in Costa Rica. While *I. cenchoa* is generally the most common species and is widespread within the country (except in the drier parts), *I. gemnistratus* is very similar but occurs in more xeric areas and is mostly parapatric with respect to the previous species. In cases of such similarity among close species, a better explanation of their differences would be appreciated. In the case of *I. inornatus* the author states that it is “limited to the Caribbean slope,” however, figure 15 depicts a specimen from Quepos (Central Pacific), and even though the locality data were not solicited from the photographer (myself), if one is familiar with the color pattern of Caribbean and Pacific *Agalychnis callidryas* (also in the photo), one can verify that the picture was taken on the Pacific slope. The distribution map of *I. inornatus* fails to reveal its presence (documented by Savage [2002] and Solórzano [2004]) in the southwestern Pacific area (only one place on the Osa Peninsula is plotted).

Though the information would not have arrived in time for the author to incorporate, a recent paper by Ruane et al. (2014) has changed the whole scenario for milksnakes. In Costa Rica, two subspecies of *Lampropeltis triangulum* were known, *L. t. gaigeae*, the black milksnake, and *L. t. stuarti*, a tricolor banded milksnake. Now, two species are known, *L. abnorma* (the old *stuarti*), and *L. micropholis* (the old *gaigeae*).

Leptodeira is a genus with four species in Costa Rica. *L. nigrofasciata* and *L. rubricata* are quite well defined (Savage 2002), but *L. annulata* (one of the most widespread species in the Neotropics) needs further study. Earlier authors made the

attempt to distinguish this species from the extremely similar *L. septentrionalis*, but unconvincingly: Solórzano reported a lower ventral count in *annulata*, whereas Savage cited differences in head color pattern, which I have found to be inconsistent, as in my experience *L. annulata* is one of the most variable species known. McConnell does not even attempt to differentiate the two species, but I did find his mention of a bite he suffered from *L. septentrionalis* interesting. Such cases deserve publication in specialized journals. An important paper about evolution in *Leptodeira* is missing in the reference section. Daza et al. (2009) showed that the recognized taxa do not represent natural groupings. The most striking results are that *L. nigrofasciata* should be recognized as a different genus, that *L. rubricata* may be a synonym of *L. annulata rhombifera*, and that the *annulata-septentrionalis* complex is polyphyletic.

Regarding *Leptophis*, five species are known to occur in Costa Rica, of which only four are mentioned by McConnell (the missing one is *L. riveti*, although two pictures of the species appear in the plate section). It is strange that Savage (2002) does not compare *Leptophis nebulosus* with *L. riveti*, which to me seem to be potentially synonymous. The only differences are the longer postocular stripe in *riveti*, and a higher count of ventrals in *nebulosus*. This is not enough for me to distinguish among species alone, and can be due to intraspecific variation.

The genus *Pseustes* is no longer valid, and the Central American representative, *P. poecilonotus* is now in the genus *Phrynonax* (Jadin et al. 2013). The genus *Trimorphodon* is represented in Costa Rica by one species, *T. quadruplex*, not *T. biscutatus*, as reported by McConnell (Devitt et al. 2008). *Tripanurgos compressus* has been placed in *Siphlophis* for some time (Zaher and Prudente 1999), based on hemipenial morphology, and in molecular studies *S. compressus* is embedded with *S. cervinus* (an Amazonian species; Vidal et al. 2010; Grazziotin et al. 2012; Pyron et al. 2013).

The only recent taxonomic change of which I was not aware and that this book brought to my attention, was the split of *Rhadinaea* and the resurrection of the genus *Rhadinella* Smith, 1941 for several species in the former genus, two of them in Costa Rica: *R. godmani* and *R. serperaster*. Unfortunately there is no mention of the source of this action in the book and I needed to dig (with the help of Victor Acosta) to find the relevant reference (Myers 2011).

Pelamis platurus is no longer in the genus *Pelamis*, but rather is embedded in *Hydrophis* (Sanders et al. 2012). McConnell states that a few specimens have been found in the Atlantic Ocean (in the Caribbean Sea near the Panama Canal Zone). Although *H. platurus* is present in the Caribbean, to my knowledge it has not yet been cited in Panama, but only in Colombia (Hernandez-Camacho et al. 2006). Further, recent studies (Solórzano 2011; Sheehy et al. 2012) have identified a pygmy yellow population in the Golfo Dulce. This is one of the most interesting recent discoveries about Costa Rican snakes, but is overlooked entirely in this book.

McConnell incorrectly states that *Agkistrodon* occurs as far south as southern South America! In fact it reaches its southern distribution in northwestern Costa Rica. The species in Costa Rica and neighboring countries (Nicaragua, Honduras), is now referred to as *A. howardgloydi*, having recently been raised from subspecific level under *A. bilineatus* (Porrás et al. 2013). The author regards both *Porthidium nasutum* and *P. porrasii* as inhabiting the same area of the Peninsula de Osa. Actually, the “*nasutum*” from southwestern Costa Rica was subsequently described

as *P. porrasi*, and in Costa Rica *nasutum* is recognized only from the Caribbean (Lamar and Sasa 2003; Campbell and Lamar 2004).

As previously noted, the photographs are unquestionably the best part of the book, and credit for this must be given to the editor, Gerold Schipper, who searched for the best pictures of each species over a long period. I did not see a single photograph by the author himself. Figure 9 identifies *Mastigodryas melanolomus* as a *Dryadophis*. While some authors do use *Dryadophis* for this species, the most recent genetic data (Pyron et al. 2013) support the use *Mastigodryas*, as *melanolomus* is embedded within this genus. Indeed, McConnell confusingly uses *Mastigodryas* in the text and other photos. Also in the photographic section, *Ungaliophis panamensis* (correct in the text), is misspelled as *U. panamansis*.

In several places, when referring to the feeding biology of some species, like *Pliocercus* (p. 43), the author states that it feeds on leptodactylid frogs. This use is no longer appropriate unless he means *Leptodactylus* to the exclusion of other so-called rainfrogs (genus *Craugastor* and *Pristimantis*; see Barrio-Amorós et al. [2013] for the rationale of using “landfrogs” rather than “rainfrogs”), now included in the family Craugastoridae or Strabomantidae (depending upon the authority followed).

After carefully reading the text, it appears that the author has not made much effort to modernize his information, but rather followed Savage (2002), Solórzano (2004), and a few others, with no real attempt to incorporate data from other recent sources, or even some more classic papers.

Perhaps most importantly, if this is a field guide to identify species, how are we supposed to identify them? Photographs can certainly help, but in many instances one needs a dichotomous key (like those in Köhler [2003] or Solórzano [2004]), especially if the guide is to be used in the field, and categorically one requires a description of the species, preferably as detailed as possible. Further, regardless of its utility, I do not really believe that the book can actually be considered a field guide; it is neither waterproof, nor does it have the flexible covers and convenient shape of typical field guides.

Even though the book is impeccably edited, as are all volumes published by Chimaira, I am surprised by the quality of the contents. I can enjoy the collection of photos, and can conveniently consult the distribution section but if I need to go deeper into any species I will always need the two classic “bibles” of Costa Rican snakes (plus a third for venomous snakes—Campbell and Lamar 2004). A better solution than a field guide would have been a Terralog volume (another Chimaira book series with photos and maps but virtually no text!).

LITERATURE CITED

- BARRIO-AMORÓS, C. L., M. HEINICKE, AND S. B. HEDGES. 2013. A new tuberculated *Pristimantis* (Anura, Terrarana, Strabomantidae) from the Venezuelan Andes, redescription of *Pristimantis pleurostriatus* and variation within *Pristimantis vanadisae*. *Zootaxa* 3647:43–62.
- CAMPBELL, J. A., AND W. W. LAMAR. 2004. The Venomous Reptiles of the Western Hemisphere, 2 vols. Cornell University Press, Ithaca. xviii + 1–476 pp., xiv + 477–774 pp.
- CHAPARRO, J. C., J. B. PRAMUK, AND A. G. GLUESENKAMP. 2007. A new species of arboreal *Rhinella* (Anura: Bufonidae) from cloud forest of southeastern Peru. *Herpetologica* 63:204–212.
- DAZA, J. M., E. N. SMITH, V. P. PÁEZ, AND C. L. PARKINSON. 2009. Complex evolution in the Neotropics: The origin and diversification of the widespread genus *Leptodeira* (Serpentes: Colubridae). *Mol. Phylogenet. Evol.* 53:653–667.
- DEVITT, T. J., T. J. LADUC, AND J. A. MCGUIRE. 2008. The *Trimorphodon biscutatus* (Serpentes: Colubridae) species complex revisited: a multivariate statistical analysis of geographic variation. *Copeia* 2008:370–387.
- DOWLING, H. G., AND J. M. SAVAGE. 1960. A guide to the snakes hemipenis: a survey of basic structure and systematic characteristics. *Zoologica* 45:17–27.
- FROST, D., T. GRANT, J. FAIVOVICH, R. H. BAIN, A. HAAS, C. F. B. HADDAD, R. O. DE SÁ, A. CHANNING, M. WILKINSON, S. C. DONNELLAN, C. J. RAXWORTHY, J. A. CAMPBELL, B. L. BLOTTO, P. MOLER, R. C. DREWES, R. A. NUSSBAUM, J. D. LYNCH, D. M. GREEN, AND W. C. WHEELER. 2006. The amphibian tree of life. *Bull. Amer. Mus. Nat. Hist.* 297:1–370.
- GRAZZIOTIN, F. G., H. ZAHER, R. W. MURPHY, G. SCROCCHI, M. A. BENAVIDES, Y-P. ZHANG, AND S. L. BONATTO, S. 2012. Molecular phylogeny of the New World Dipsadidae (Serpentes: Colubroidea): a reappraisal. *Cladistics* 28:437–459.
- HEDGES, S. B., A. COULOUX, AND N. VIDAL. 2009. Molecular phylogeny, classification, and biogeography of West Indian racer snakes of the tribe Alsophiini (Squamata, Dipsadidae, Xenodontinae). *Zootaxa* 2067:1–28.
- HERNÁNDEZ-CAMACHO, J. I., R. ALVAREZ-LEON, AND J. M. RENJIFO-REY. 2006. Pelagic snake *Pelamis platurus* (Linnaeus, 1766) (Reptilia: Serpentes: Hydrophiidae) is found in the Caribbean Coast of Colombia. *Mem. Fund. La Salle Cien. Nat.* 164:143–152.
- HEYER, W. R. 2005. Variation and taxonomic clarification of the large species of the *Leptodactylus pentadactylus* species group (Amphibia: Leptodactylidae) from Middle America, northern South America and Amazonia. *Arquiv. Zool.* 37:269–348.
- HOLLIS, J. L. 2006. Phylogenetics of the genus *Chironius* Fitzinger, 1826 (Serpentes: Colubridae) based on morphology. *Herpetologica* 62:435–453.
- JADIN, R. C., F. T. BURBRINK, G. A. RIVAS, L. J. VITT, C. L. BARRIO-AMORÓS, AND R. P. GURALNICK. 2013. Finding arboreal snakes in an evolutionary tree: phylogenetic placement and systematic revision of the Neotropical birdsnakes. *J. Zool. Syst. Evol. Res.* 52:257–264.
- KÖHLER, G. 2003. Reptiles de Centroamérica. Herpeton, Offenbach. 367 pp.
- LAMAR, W. W., AND M. SASA. 2003. A new species of hognose viper, genus *Porthidium*, from the southwestern Pacific of Costa Rica. *Rev. Biol. Trop.* 51:797–804.
- MCCRANIE, J. R., AND J. VILLA. 1993. A new genus for the snake *Enulius sclateri* (Colubridae: Xenodontinae). *Amphibia-Reptilia* 14:261–267.
- MYERS, C. W. 2011. A new genus and new tribe for *Enicognathus malanauchen* Jan, 1863, a neglected South American snake (Colubridae: Xenodontinae), with taxonomic notes on some Dipsadinae. *Amer. Mus. Novit.* 3715:1–33.
- PADIAL, J. M., A. MIRALLES, I. DE LA RIVA, AND M. VENCES. 2010. The integrative future of taxonomy. *Front. Zool.* 7:1–14.
- PORRAS, L. W., L. D. WILSON, G. W. SCHUETT, AND R. S. REISERER. 2013. A taxonomic reevaluation and conservation assessment of the common cantil, *Agkistrodon bilineatus* (Squamata: Viperidae): a race against time. *Amph. Rept. Conserv.* 7:48–73.
- POUGH, F. H., G. KWIECINSKI, AND W. BEMIS. 1978. Melanin deposits associated with the venom glands of snakes. *J. Morphol.* 155:63–71.
- PYRON, R. A., F. T. BURBRINK, AND J. J. WIENS. 2013. A phylogeny and revised classification of Squamata, including 4161 species of lizards and snakes. *BMC Evol. Biol.* 13:93.
- RUANE, S., R. W. BRYSON, R. A. PYRON, AND F. T. BURBRINK. 2013. Coalescent species delimitation in milksnakes (genus *Lampropeltis*) and impacts on phylogenetic comparative analyses. *Syst. Biol.* 63:231–250.
- SANDERS, K. L., M. S. Y. LEE, MUMPUNI, T. BERTTOZZI, AND A. R. RASMUSSEN. 2013. Multilocus phylogeny and recent rapid radiation of the viviparous sea snakes (Elapidae: Hydrophiinae). *Mol. Phylogenet. Evol.* 66:575–591.
- SAVAGE, J. M. 2002. The Amphibians and Reptiles of Costa Rica: A Herpetofauna between Two Continents, between Two Seas. University of Chicago Press, Chicago, Illinois. 934 pp.

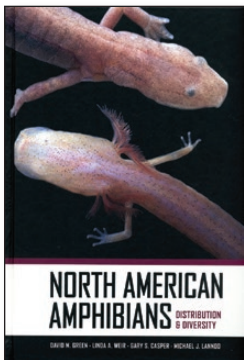
- , AND F. BOLAÑOS. 2009. A checklist of the amphibians and reptiles of Costa Rica: additions and nomenclatural revisions. *Zootaxa* 2005:1–23.
- SHEEHY, C. M., A. SOLÓRZANO, J. B. PFALLER, AND H. B. LILLYWHITE. 2012. Preliminary insights into the phylogeography of the yellow-bellied sea snake *Pelamis platura*. *Integr. Comp. Biol.* 52:321–330.
- SOLÓRZANO, A. 2004. Serpientes de Costa Rica. Instituto Nacional de Biodiversidad, Santo Domingo de Heredia, Costa Rica. 791 pp.
- . 2011. Variación de color de la serpiente marina *Pelamis platura* (Serpentes: Elapidae) en el Golfo Dulce, Puntarenas, Costa Rica. *Cuad. Invest. UNED* 3:89–96.
- VIDAL, N., M. DEWYNTER, AND D. J. GOWER. 2010. Dissecting the major American snake radiation: a molecular phylogeny of the Disadidae Bonaparte (Serpentes, Caenophidia). *Compt. Rend. Biol.* 333:48–55.
- WÜSTER, W., J. L. YRAUSQUIN, AND A. MIJARES-URRUTIA. 2001. A new species of indigo snake from north-western Venezuela (Serpentes; Colubridae: *Drymarchon*). *Herpetol. J.* 11:157–165.
- ZAHER, H. 1999. Hemipenial morphology of the South American xenodontine snakes, with a proposal for a monophyletic Xenodontinae and a reappraisal of colubrid hemipenis. *Bull. Amer. Mus. Nat. Hist.* 240:1–168.
- , AND L. C. PRUDENTE. 1999. Intraspecific variation of the hemipenis in *Siphlophis* and *Tripanurgos*. *J. Herpetol.* 33:698–708.
- , F. G. GRAZZIOTIN, J. E. CADLE, R. W. MURPHY, J. C. MOURA-LEITE, AND S. L. BONATTO. 2009. Molecular phylogeny of advanced snakes (Serpentes, Caenophidia) with an emphasis on South America xenodontines: a revised classification and description of new taxa. *Pap. Avul. Zool.* 49:115–153.

Herpetological Review, 2014, 45(3), 528–529.

© 2014 by Society for the Study of Amphibians and Reptiles

North American Amphibians. Distribution and Diversity

David M. Green, Linda A. Weir, Gary S. Casper, and Michael J. Lannoo. 2013. University of California Press, Berkeley, California (www.ucpress.edu). x + 340 pp. Hardcover. US \$75.00. ISBN 978-0-520-26672-8.



STANLEY K. SESSIONS

Department of Biology, Hartwick College
Oneonta, New York 13820, USA
e-mail: sessions@hartwick.edu

Amphibians ought to be of special concern to everyone. Not only are they of interest in terms of biodiversity and conservation, given water or moisture-dependent life cycles and vulnerability to environmental degradation, but they are also one of the best-known groups of vertebrates thanks to extensive studies at multiple levels of biological organization. Some species of

amphibians are in decline or have possibly gone extinct due to recent human activity, and yet new species are being discovered every year, and molecular phylogenetic studies continue to reveal cryptic species in which single species are found to actually represent two or more distinct species. Continued resolution of phylogenetic relationships also means that scientific names are constantly changing. A critical component of our knowledge of amphibians is their precise biogeographical distribution. Field guides are very useful in this regard, as are official summaries and inventories, especially for professional herpetologists and other scientists. Also needed, however, are ways to emphasize

the beauty and richness of amphibian biodiversity to general audiences as well as to specialists. The book reviewed here, edited by David M. Green and colleagues, fills this niche nicely.

It is a pretty book. The book contains excellent color photographs of every currently recognized species of North American amphibian (with only a single exception of a very rare salamander). Only one of the species (a frog) is represented by a pickled specimen rather than a photograph of the living animal. Another species is represented by a dish containing mere lumps of tissue and a museum tag, the best existing documentation of a very rare species of salamander. The book also includes a distribution map for each species, showing high resolution plots on topographic background maps—yellow dots on different shades of green and brown. The amount of verbal description for each species is kept to the essential minimum—brief, but authoritative, most of it from Lannoo (2005) with original authors listed.

It is a clever book. The book manages to cover the entire range of North American amphibian diversity without getting bogged down in taxonomy and classification. Instead, the taxonomy is treated intuitively (for want of a better word); it is implicit, and it is elegant. So, to begin with, the anurans (frogs and toads) and the caudates (salamanders and newts) are covered in separate sections named, simply, “Frogs of North America” and “Salamanders of North America.” It took me a few moments to understand how the species were organized as there are no explicit written guidelines, and there are no blaring titles or subtitles. The families are treated alphabetically (subtly indicated by an inconspicuous footer at the bottom of each page), and then the genera are dealt with alphabetically within each family. Finally, the species are described alphabetically within each genus.

It is a useful book. The authors have taken great care to use up-to-date data on taxonomy and distribution, and the book is rich with resources including primary literature and web sites. It essentially combines the information from two previous reports to the Global Declining Amphibian Populations Task Force (Green 1997; Lannoo 2005). But instead of the usual blob maps seen in most field guides, they have used high-resolution plots on topographic maps, representing distribution data painstakingly gathered from a variety of reliable sources. This allows the reader to relate species distributions to topography in a way that is not possible in most blob maps. The maps also include simple political boundaries with the plots representing “centroids” of counties or equivalent. The only criticism I have of the species distribution maps is that because the dots are placed on “centroids” of various kinds, they are often shown more-or-less evenly spaced in an artificial-looking grid-like fashion making me think that perhaps a more “organic” shading (e.g., translucent yellow) might have been better (but then we would be back to the blob maps).

The book begins with an introduction to amphibians and their distribution, including an interesting map showing the relative densities of amphibian species in North America. For this the dot-plots are very effective. My one problem with this map is that it is so small, and some of the colors are so similar, that I had to use a magnifying glass to distinguish them. The authors include a special section at the end where they explain how the maps were made, and are careful to point out that the book covers only North America north of Mexico. But it deals with this part of North America as a whole continent, with a necessary and interesting northward-shifted perspective that emphasizes more of Canada than most Americans (i.e., U.S. citizens) are used to. I count this healthy shift of perspective as a useful aspect of the

book for understanding amphibian distribution, and no doubt reflects the fact that it is a collaborative effort between researchers from both Canada and the United States.

This is a wonderful book to have on your coffee table, as well as in your office or even in your backpack. It is a useful compendium of information on North American amphibians that manages to be esthetically pleasing as well.

LITERATURE CITED

- GREEN D. M. (ed.). 1997. *Amphibians in Decline*. Canadian Studies of a Global Problem. Society for the Study of Amphibians and Reptiles, St. Louis, Missouri. xiii + 338 pp.
- LANNOO M. J. (ed.). 2005. *Amphibian Declines: The Conservation Status of United States Species*. University of California Press, Berkeley, California. xxi + 1094 pp.

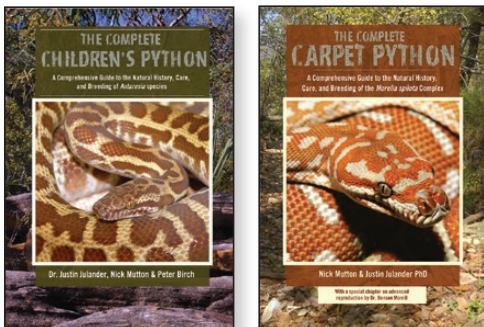
Herpetological Review, 2014, 45(3), 529–530.
© 2014 by Society for the Study of Amphibians and Reptiles

The Complete Children's Python: A Comprehensive Guide to the Natural History, Care, and Breeding of *Antaresia* Species

Justin Julander, Nick Mutton, and Peter Birch. 2013. ECO Herpetological Publishing and Distribution, Rodeo, New Mexico (www.ecouniverse.com). Hardcover. vii + 256 pp. US \$49.95. ISBN 978-1-938850-05-9.

The Complete Carpet Python: A Comprehensive Guide to the Natural History, Care, and Breeding of the *Morelia spilota* Complex

Nick Mutton and Justin Julander. 2011. ECO Herpetological Publishing and Distribution, Rodeo, New Mexico (www.ecouniverse.com). Hardcover. ix + 339 pp. US \$53.95. ISBN 978-0-9832789-2-4.



RYAN J. ELLIS

Department of Terrestrial Zoology, Western Australian Museum
49 Kew Street, Welshpool, Western Australia, 6106, Australia
e-mail: Ryan.Ellis@museum.wa.gov.au

Species belonging to the Children's python (*Antaresia*) and carpet python (*Morelia*) groups are among the most sought-after species in Australian herpetoculture and their popularity is growing rapidly in the international market. Their ease of care in captivity and ready availability (in Australia) makes them among the most desirable snakes to keep—comparable, for example, to Ball Pythons in the USA. In particular, the small

size of *Antaresia* species (less than 1.8 m, and 60 cm or smaller in *A. perthensis*, the pygmy python), their ease of breeding, and overall adaptability to captivity, combined with a large variety of captive-bred morphs mean that these snakes have something for everyone.

Every now and again a book is published that becomes a “must have” highly valued reference for its target audience. For Australian python herpetoculture these have included *Pythons of the World. Volume 1, Australia* by Barker and Barker (1994), which remains one of the most comprehensive Australian python books, and the more recently published and herpetoculturally-focused *Keeping and Breeding Australian Pythons* edited by Mike Swan (2007). *The Complete Children's Python* and *The Complete Carpet Python* represent the next generation in this tradition. These two books are “must haves” for any *Antaresia* or *Morelia* keeper and breeder, or anyone with a general interest in pythons. The authors are well known Australian python breeders in the US (Justin Julander and Nick Mutton) and Australia (Peter Birch) and all have been enthusiasts from a young age. All three have extensive experience keeping and breeding various species from each group and have a wealth of experience and information to offer the reader. The effort and dedication expended by the authors is inspiring; just a few page flips and it is evident how much they have put into these books. The *Morelia* book has a foreword by Australian python and captive breeding expert John Weigel who states that the authors have “presented a well-researched and fascinating summary of just about everything that is presently known about carpet pythons.” He couldn't be more correct, and the same applies for the *Antaresia* book.

Each book offers a smorgasbord of information for the species it discusses as well as a wealth of photos representing one of the best available image collections for the taxa treated. The books are produced using quality materials and will no doubt withstand years or decades of wear and tear. The data presented in the books are accurate for all species and give a good representation of existing knowledge. Spelling or grammatical errors are minor and infrequent.

Both books follow a similar format, although topics do not necessarily parallel one another exactly between the two. Section I of each book contains an introduction that gives a brief general overview of the book and the species discussed therein. In addition, the *Morelia* book has a small subsection in the introduction on Myths and Misconceptions. This is also where those not already confused by the “*Morelia spilota* complex” will be when they see that the authors have made some nomenclatural changes—recognizing some subspecies, but not others, as full species. While some of these changes may be warranted, no clear justification is presented. To confuse matters further, the Rough-scaled Python (*Morelia carinata*) is included in the *M. spilota* book, but other species of *Morelia* (e.g., *kinghorni*, *oenpelliensis*, *viridis*) are absent.

Section II (*Morelia*) or chapters 1 through 5 (*Antaresia*) present species accounts providing a natural history overview of the species including information on natural distribution, size, coloration, habitat and natural history, and reproduction. Each species profile is accompanied by many photographs displaying various natural habitats and morphs. Many herpetocultural publications are deficient when it comes to providing background information on behavior and natural history but these two books are an exception. The species profiles provide a wealth of background information that is useful when dealing with captive specimens. However, if you are pulling the book off the shelf and

planning to read a few or all of the species profiles at one sitting you may find the text a bit repetitive for a few profiles.

Of note is the section within the *Antaresia maculosa* species profile “Notes on the recently discovered population of *Antaresia* from New Guinea,” which deals with the incredible discovery of an *Antaresia* species with affinities to *A. maculosa* from the Western Province of Papua New Guinea (O’Shea et al. 2004). This is the first record of the genus outside of Australia and provides further evidence of the historic connection between Australia and New Guinea.

Chapter 5—“Pygmy Banded Python *Antaresia* sp.”—provides a profile of a suspected new species of *Antaresia*. The species profile does everything but formally describe this putative new species. While it may, in fact, be a new species there is no justification provided to support this and with the limited information presented there is no way to exclude the possibility that these specimens may be hybrids within a zone of sympatry of *A. maculosa* and *A. stimsoni*. Although a new species of *Antaresia* would be wonderful for Australian herpetology, I believe the chapter could have been omitted until such time as the issue has been resolved and more information available.

Following the species profiles are chapters on evolution and taxonomy—“The Evolutionary History of Carpet Pythons” (section III in the *Morelia* book) and “The Evolutionary and Taxonomic History of the Genus *Antaresia*” (Chapter 6 in the *Antaresia* book)—that discuss the origins of snakes, their evolutionary history, relationships within and between the focal genera, and taxonomic history (for *Antaresia*). The subject of evolutionary history can be complex for those new to the subject but the authors do an excellent job in breaking it down so that it is easily digested and the key points are retained. Treatment of the nomenclature is largely lacking in the *Morelia* book and would have been useful, especially in providing justification for the changes in taxonomic rank made by the authors.

Section IV—“Carpet Pythons in Captivity” in the *Morelia* book (chapters 7–9 in the *Antaresia* book)—cover all the key elements for the keeper or breeder, with extensive information provided on all aspects of captive husbandry, including housing, heating and humidity, feeding, and reproduction. Readers will find the sections on reproduction of particular interest; keepers seem to have different results and varying levels of success so it is always good to have detailed records and observations as the basis for comparison. Based on the sheer quantity of information on every page it is clear that the authors are in their element in this section.

All keepers hate to deal with diseases, disorders, and most of all, parasites. The section of each book covering these not-so-enjoyable aspects of the hobby provide great information to prevent, and if necessary, manage these issues. Many new keepers are easily panicked and often jump to conclusions, assuming a major problem when something out of the ordinary (but still normal) occurs. At the end of the day, if in doubt, get it checked out.

The final section of each book deals with morphs. It is one of the largest sections and profiles the natural and captive morphs of species of *Antaresia* and *Morelia* discussed in the book. New morphs will continue to be developed, but this section provides a brilliant display of the possibilities. Whether you are a beginner looking for your first snake or a dedicated breeder looking for ideas for the next big project, this section will be useful. It acts almost as a shopping list; one can only imagine the corresponding price tags. If anything, this section shows how productive the

herpetocultural industry is and confirms that whether it be size, color, or pattern, these pythons have something for everyone.

The photos represented in these two volumes cover nearly all species and natural and captive variants and must be one of the most comprehensive published image collections of these pythons. The photos are by a diversity of photographers—a nice change to the monotony of nearly identical poses that can result when images are drawn from a single source. If one is not interested in reading these books, the photos alone will make a purchase worthwhile.

On the other hand, with a photo, or sometimes two, displayed on nearly every page, the reader is sometimes left wanting more text. The quality of some photos makes one wonder if all are really necessary. It is a little annoying to find photos that almost completely crowd out the text. For example, in *The Complete Children’s Python*, p. 28 has 17 lines of text, each with a maximum of two words, whereas p. 42 has 35 lines text, none with more than three words, seven of which have been split across two lines.

Reading the book and admiring the numerous photos leads the reader to wonder: if these animals are not easily exported out of Australia, how have so many found their way to other countries. Illegal exportation or smuggling of reptiles is a well-known threat to reptiles across the world, especially in Australia. One could argue that good herpetoculture books can almost act as “smugglers’ catalogues” providing a comprehensive summary of all of the amazing snakes that are available. Regardless of the ultimate origin of these reptiles, books like these highlight the impressive scale of captive breeding in the herpetocultural industry, particularly in the United States.

While they may not take pride of place on the bookshelves of naturalists or researchers, both books are essential for any keeper or prospective keeper of these species. Those who purchase pythons, especially beginner or intermediate keepers, will find the book an extremely valuable resource. For the more experienced keeper and breeder, the books will still be worth the purchase, if not for the information then for the vast collection of photos. Especially for the first time keeper, these books should be at the top of your priority list! Don’t let the cost deter you, they are worth it.

LITERATURE CITED

- BARKER, D. G., AND T. M. BARKER. 1994. *Pythons of the World. Volume 1, Australia*. Advanced Vivarium Systems, Lakeside, California. xviii + 171 pp.
- O’SHEA, M., R. G. SPRACKLAND, AND I. H. BIGLALE. 2004. First record for the genus *Antaresia* (Squamata: Pythonidae) from Papua New Guinea. *Herpetol. Rev.* 35(3):225–227.
- SWAN, M. (ED.). 2007. *Keeping and Breeding Australian Pythons*. Mike Swan Herp Books, Lilydale, Australia. 337 pp.