

reference tool, and cited work, as the Indonesian herpetofauna remains one of the more poorly understood communities of amphibians and reptiles on our planet.

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Cameron D. Siler, *Sam Noble Oklahoma Museum of Natural History and Department of Biology, The University of Oklahoma, Norman, Oklahoma 73072-7029; E-mail: camsiler@ou.edu.*

The Map Turtle and Sawback Atlas: Ecology, Evolution, Distribution, and Conservation. P. V. Lindeman. 2013. Oklahoma University Press, ISBN 978080614406. 460 p. \$45.00 (hardcover).—*Graptemys* (map turtles and sawbacks) is the most diverse genus of turtles in North America and ranks third worldwide (Fritz and Havaš, 2007). However, there is relatively little known about this genus compared to other chelonian groups (e.g., *Gopherus*) or even some species (i.e., *Trachemys scripta*; Lovich and Ennen, 2013). For almost two decades, Peter Lindeman has worked to fill informational gaps, which has brought *Graptemys* to the forefront with his studies of their ecology, evolution, and conservation. Along with the data he has collected from across the country, Lindeman has spent more than a decade collecting and summarizing seemingly all known data on *Graptemys* into this volume.

The *Atlas* is a treatise on all things *Graptemys* and the first of its kind for this interesting group of turtles. It seems as though the author visited every river or bridge crossing

throughout the range of the genus, and he put his hands on every available museum specimen. Further, this book is full of personal data and observations, which also indicate that Lindeman has “put in his time” observing all *Graptemys* in their natural habitat. The writing style in many of the early chapters has a personal touch that is reminiscent of the old Archie Carr turtle guides (e.g., Carr, 1952). Lindeman also weaves together anecdotes and recollections of former researchers of *Graptemys*, as well as river locals, indicating the depth of his investigation for this book. The photography offers a unique perspective because all images are of individuals in natural environments and conditions. By contrast, most turtle guides have posed animals with perfectly groomed shells; this book sets a realistic precedent for future volumes.

One of the more impressive chapters is Chapter 2, “History of Studies of Map Turtle and Sawback Biology.” Lindeman traces the original steps of some of the earliest *Graptemys* researchers, including Charles Alexandre Lesueur, who described the first member of the genus (*G. geographica*, Lesueur, 1817), to George Baur's taxonomic work in the late 1800s. For the latter, the author includes original correspondence and drawings related to several species of *Graptemys*. This sort of detail is often omitted from similar taxonomically focused guides, but provides an interesting historical perspective. Lindeman rightly focuses a good portion of this chapter on studies conducted by Fred Cagle and the Tulane field crew from the 1940s and 50s. Cagle's work was instrumental in the “rediscovery” of *Graptemys* and initiated the contemporary ecological and taxonomic work on the group. Cagle set the stage for a number of researchers who followed him, including Dick Vogt and Jim Bull, both of whom were instrumental in the study of *Graptemys* and resolution of temperature-dependent sex determination in turtles. Lindeman then goes on to describe his own studies and the rationale behind many of his research topics. For example, he saw that *G. versa* had the shortest species account in Ernst et al. (1994), so he decided to study it. The old photographs and stories that accompany the text in this chapter are also a valuable addition.

For Chapter 3, Evolutionary History, Lindeman provides a detailed account of nearly every taxonomic change and hypothesis proposed, accepted, or rejected for the genus and species within. He presents multiple hypotheses concerning inter- and intrageneric relationships, as well as the techniques used to generate and analyze such data. The information in this chapter is probably too technical for most readers, but a solid entry for trained scientists and taxonomists.

Chapter 4 (Ecology) provides comprehensive information on basic ecological and natural history information on species of *Graptemys*. Lindeman presents information on similar topics for multiple species rather than including such information in each species account (e.g., movements for *G. geographica* and *G. flavimaculata* are described together). I personally like this arrangement, which makes for easy comparisons across species, but it is very different from comparable volumes (e.g., Ernst and Lovich, 2009). Lindeman also has extensive sections dedicated to diet/feeding ecology and growth/body size, both of which the author has extensive research experience.

In the middle of the book (and within the Ecology section) are the color plates and distribution maps for each species. The species are organized based upon a “consensus phylogeny” with *G. geographica* presented first (basal species), followed by the megacephalic members of the *Graptemys pulchra* clade, the mesocephalic *Graptemys*, and

lastly, the sawbacks. A detailed range map with distribution dots (both specimen and reliable visual observations) is included for each species, along with a quick summary of river drainages inhabited. Opposite of the map are several color photographs of each species basking in the wild and pictures of typical habitat for each species.

In Chapters 5, 6, and 7, the author covers the conservation status, conservation biology, and additional studies, respectively. First, Chapter 5 discusses the Endangered Species Act status of the two federally threatened species (*G. flavimaculata* and *G. oculifera*), while also outlining the state or provincial conservation status of each species. I found this section broadly applicable to other turtle biologists given the amount of information the author presents on general and specific threats to chelonians. Second, Chapter 6 is relatively short owing to the lack of prior active management that has been specifically directed at species of *Graptemys*. However, there is a good discussion of the importance of riverine habitat and the management of captive populations. Last, Chapter 7 is a “catch-all” chapter with a diverse array of other topics not covered in prior chapters. Such topics include physiology, morphology (including tropic morphology), and population genetics.

For Chapter 8 (Species Accounts), Lindeman begins by addressing some of the more controversial topics in the genus, including the validity of *G. sabinensis* as a full species and the acceptable use of the term “sawback” in describing *G. flavimaculata*, *G. nigrinoda*, and *G. oculifera*. Both of these assertions are well supported by the author, as well as supporting the continued use of Common Map Turtle, rather than the recent “official” change to Northern Map Turtle (Iverson et al., 2012). As the author points out (p. 256), the change to the latter likely has “not been warmly embraced in southern range states such as Virginia, Alabama, and Arkansas.” Controversial topics aside, each species account provides sections that are taxon specific (i.e., alternative common names, species description, range, etc.), as well as additional black and white photographs for each species. The author has also validated questionable localities for each species, as well as documented specimens from collections that hold considerable scientific value (e.g., the only remaining syntype of *G. kohnii* [Tulane University 16409], designated by Lindeman as the lectotype, which was recently transferred to the Louisiana State University Natural History Museum). However, one of the best sections that I found in each account is the “Future Research Needed,” where Lindeman suggests interesting studies for future researchers. I find this refreshing because this strategy is not common among authors; many attempt to “hoard” their ideas for future funding or glory. However, Lindeman understands that there is so much work needed on *Graptemys* that there is plenty of research to go around!

In the Future Perspectives chapters (Chapter 9, ecology; Chapter 10, evolutionary biology and phylogeny; Chapter 11, conservation biology), the author sets the stage by indicating how little is known about the genus and particular species. He continues to lay out the future studies that researchers should focus on, particularly the need for long-term studies, life-history work (especially comparisons within and across species), construction of a consensus phylogeny, a better understanding of phylogeography of *Graptemys*, and work on diet, particularly members of the megacephalic *G. pulchra* group. Lindeman also provides suggestions for standardizing survey methodology, actively pursuing species in new localities and drainages, regulating the pet trade, and active management that may prove fruitful in the future (e.g., adding deadwood snags to river stretches).

The intended audience for this book is trained scientists. Therefore, the only shortcoming that I can find is that the vocabulary is difficult for untrained readers, including new students of *Graptemys*, hobbyists, and those generally interested in turtles. A glossary would have been a handy addition to the book, as well as references in parts of the book that relate to larger ecological or evolutionary concepts. With that being said, I find that Peter Lindeman left no stone unturned in his pursuit of every tidbit of knowledge of *Graptemys*; if he omitted something in the book, it wasn't for a lack of effort. At \$45, this book is a must have for any herpetological bookshelf. Further, all of the proceeds of the book go to the Chelonian Research Foundation. I personally hope that some of these funds will go toward the many research topics that Peter proposed within the book!

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Will Selman, *Louisiana Department of Wildlife and Fisheries, Rockefeller Wildlife Refuge, Grand Chenier, Louisiana 70643; E-mail: wselman@wlf.la.gov.*

Australian Lizards: A Natural History. S. K. Wilson. 2012. CSIRO Publishing (US and Canada distribution by Stylus Publishing), ISBN 9780643106406. x + 196 p. AU\$49.95 (approximately \$46.00) (softcover).—In his preface, author Steve Wilson confesses to being “completely enraptured by the charm of lizards” (p. viii) and admits that this may well be a minority view. He has set out to convert the doubters in a book that combines easily accessible and accurate natural history information with over 400 photographs. The result is bound to win new believers to his cause and to reassure those of us who have already seen the light that we were not mistaken.

New books on Australian herpetology have been appearing regularly over the last three decades, helping to correct a previous scarcity of reference material on the outstanding