

Book Review: *Turtles of the United States and Canada* (Second edition) by Carl H. Ernst and Jeffrey E. Lovich. 2009. 827 pp. Johns Hopkins University Press, Baltimore. ISBN 13: 978-0-8018-9121-2. Hardcover \$95.00*

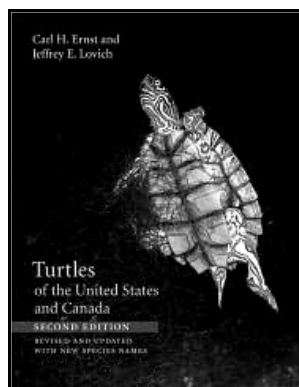
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My shelves sag under the weight of turtle books. Just the ones discussing North American turtles do justice to the term "volumes" when describing the amount of available literature one can accumulate. There are state and regional guides and others addressing single species, literary books, children's books, and ones on turtle conservation. And let's not forget all the journals, monographs and newsletters of the various turtle and tortoise clubs and societies. But except for field guides, there have been surprisingly few attempts to provide accounts of all the turtles of North America. Pope's 1939 *Turtles of the United States and Canada*, Carr's classic 1952 *Handbook of Turtles*, Ernst and Barbour's 1972 *Turtles of the United States*, and Ernst, Lovich, and Barbour's (1994) earlier landmark edition of the title being reviewed, are all that come to mind. *Turtles of the World* (Bonin et al., 2006) also includes all of the North American species, but the coverage is not at all comprehensive and their accounts of many of our North American turtles are quite flawed and not referenced. I am certainly not about to dispose of my library because I now have the new edition of this book, though its size will require some rearranging of a few shelves, but if I did for some reason need to limit my turtle library to a single volume this book would be the one.

Both authors are widely recognized authorities and respected for their streams of contributions to our knowledge of turtles. The resulting book is not only comprehensive, but compiled by individuals with personal knowledge of many of the species they write about. Too many biological reference books are written by people with scientific backgrounds and good organizational skills, but only marginal familiarity with their chosen topic. This publication clearly benefits from both authors' first-hand experiences. Compared to the earlier edition the topics are covered in considerably more depth. There are additionally recognized species, and updated names of familiar ones. And not only is the page format larger, the second edition is about 250 pages longer. This is a testament to the tremendous increase in the interest and contributions of knowledge regarding our native turtles over the last several decades.

It is as complete and up-to-date as books can get. A few key facts that have only recently come to light, such as diamondback



terrapins being native to Bermuda, did not appear until after the book was about to go to press and are not included. The lengths of the various species accounts alone give a rather good understanding of both the depth of coverage and variation in the amount of study that has gone into a given species (for example: painted turtle account, 27 pages long; green turtle, 26 pages; wood turtle, 11 pages, Pascagoula map turtle, 4 pages).

The 58 species accounts are arranged alphabetically; first by family, then by genus and then species. Straightforward keys to genera and species are provided. Each species account is covered with subheadings addressing identification, genetics, fossil record, distribution, geographic variation, confusing species, habitat, behavior, reproduction, growth and longevity, diet and feeding behavior, populations and predators, and remarks. There are photos of various aspects of each turtle and distribution maps for all but the marine species. In fact there are more than two hundred color photographs, a number of which are from the late Roger Barbour's collection of excellent images that appeared in the 1994 version of this book.

While the bulk of the volume is devoted to individual species accounts other components of the book include a preface (mostly acknowledgments), a list of abbreviations, an introductory chapter, chapters on conservation and identification, a glossary of scientific names, an index to common and scientific names, and an expansive 169-page, 5,200+ citation, bibliography.

While this is clearly one of the best single-volume biological references produced to date, and is packed from cover to cover with pertinent information, I must admit I miss the style, personal insights, and the asides found in the published works of the previous generation. Archie Carr's *Handbook of Turtles* remains a classic. One annoying aspect of modern science is the increased use of abbreviations and acronyms in the text. These have worked their way into this volume en masse. While some such as ORV, GIS and USFWS are standard and probably understood by most, inclusion of IP (incubation period), CT (cloacal temperature, not just for turtles living in Connecticut), or IGF-I (insulinlike growth factor I) subtracts from readability and from helping the general public acquire an understanding of turtles and their conservation needs. On page 32 the authors state that one of the major purposes of their book is to make people more interested in the protection of turtles through awareness of the many fascinating aspects of turtle biology. We are already asking readers of our scientific output to deal with metric units, taxonomic keys, unexplained sex ratio notations (1.7-1.84), telegraphic statements, statistical proof that the big ones are significantly larger than the little ones, and sentences continu-

ally interrupted with scientific names and literature citations. Why the added burden of miscellaneous abbreviations (MA)? What's next, following the lead of the ornithological community in their renaming of birds with species codes?

The 52 species distribution maps are without doubt the most accurate and up-to-date assemblage published. That said, the base maps only show state borders, so they are not as detailed as they might be. For riverine species with restricted or disjunct distributions, such as map turtles and some of the cooters, it would have been informative to use base maps similar to the ones in ichthyological publications that also show major drainage basins. The map showing the distribution of the bog turtle is certainly the most accurate one to date in a book of this type but the scale of the map does not depict how limited the current range actually is. Along similar lines the distribution map for the diamondback terrapin illustrates the extent of the linear coastal distribution, but the scale of the map prevents depiction of what a narrow coastal zone the species occupies; in many areas it is less than a mile in width. Despite the extremely rich diversity of turtles in the southeastern United States and the interesting distributions of species complexes like map turtles, there is little discussion regarding the zoogeography of our turtles.

Similarly, even with all of our regional historic cultural ties to native turtles, most of which were at the expense of the turtles' populations, there is little coverage of this in this book. One page in the introduction briefly addresses this, but mainly deals with commercial exploitation. The turtle crawls at Key West, 4th of July box turtle races, gopher pulling, Suwannee chicken, Seminole Indian softshell turtle farms, and the rich cultural history of terrapin fisheries on the Chesapeake Bay, to name a few, when mentioned at all are only briefly alluded to. These past and current cultural uses bridge biological and human interest and help in understanding the many connections between people and turtles.

One chapter in the book is devoted to turtle conservation needs. Conservation is also addressed under "Populations:" where the authors outline various conservation issues regarding the individual species being discussed. Yet in the individual species write-ups the reader is often simply directed to a list of references regarding conservation. The conservation chapter itself summarizes general reasons for decline: habitat loss, introduced species, pollution, disease, unsustainable use and climate change. Other topics include status and determinants of endangerment, and what can be done to save our turtles. While I am pleased to see that the conservation concerns for various turtles are included, as readers, and concerned citizens, we are given little specific guidance as to what we can do. Yet considering that at least 63% of our turtles are in need of conservation, this aspect of the book seems somewhat superficial. Regulations alone do not necessarily save species. How can we empower an

army of volunteers and citizen scientists to help? Based on the inspirations of Archie Carr and his followers, the sea turtle folks are doing this on a number of important levels. Agencies need to recruit the public sector and encourage their involvement in meaningful conservation and management programs. This book could have been a pro-active source of ideas for agencies in need of building stronger conservation programs.

It would be impossible to have consistency in a book of this type; not only are the conflicting opinions of various researchers across time represented in the text, but the authors themselves are certainly entitled to their points of view. For example, it is interesting that the authors continue to use growth annuli in their discussions of age determination for various species, but include references in their bibliography that clearly state that this method of ageing is more often than not unreliable. In their conservation chapter Ernst and Lovich continue to support their beliefs that head-starting and other manipulative practices are unlikely to become sound conservation tools. While the conservation chapter's text at first reads as a rather neutral explanation of the topic, it fails to present information on any of the head-starting programs that have proven to be successful, and downplay the potential for such efforts. Then in the Kemp's ridley account they describe the success of the head-starting program for that species, but go on to nitpick its actual merits. Well, of course there are setbacks and screw-ups; these are pioneering programs where people are learning as they go. Despite this, many of these programs have by now been shown to be successful. And what of all the individual turtles that are actually helped, or the resulting increase in public education and awareness of the issues regarding their plight? Are experimental and sound management practices to remain forever trumped by the rigors of academics? Good conservation strategy requires not only that all options remain open, but that new approaches are tried and that we ask for more involvement from the public sector.

This volume replaces the former edition as the standard reference for all levels of interest, from professional herpetologists to amateur naturalists, and for libraries of universities, museums and nature centers this is now THE turtle reference for North America. The authors have captured, organized, and explained the biology of our continent's extremely diverse chelonian fauna. This book is not a summary or haphazard overview of what is known about each species, it is a species-by-species series of comprehensive accounts. It will be the first book you pick up when you need the answer as to what is currently known about any biological aspect of our native turtles. The former edition served as our standard "go to" reference for 15 years; I suspect this one should be good for at least a quarter of a century. How many ways can one say this is an important, must-have, monumental, definitive, reference? I give it five *Clemmys*, well, depending on the species, maybe $4\frac{1}{2}$ – $4\frac{3}{4}$ *Glyptemys*!

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