

Preston ends with a brief glossary, a list of all literature cited in the text, and a list of other general books for the beginning herpetologist. He also includes a list of hypothetical species whose ranges approach Manitoba and might therefore be recorded there sometime in the future. I was also pleased to see a description of how to preserve specimens, a list of French common names, and separate keys for the identification of living and of preserved tadpoles.

The major problem with this book is that it is *too* short. This has two undesirable effects. First, the individual sections are so short as to make for very jumpy reading in places. Second, several important topics are given too brief a treatment or left out entirely. For example, the section on amphibian biology makes no mention of anuran vocalizations or paedogenesis (neoteny) in salamanders. Both are mentioned in individual species accounts but seem to me to be of such a basic nature that they warrant more general treatment. Similarly, the discussion of ectothermy and thermoregulation omits consideration of costs, benefits, and adaptive significance of these phenomena; this is unfortunate, especially in view of the general misunderstanding of these concepts by lay people. Most noteworthy, however, is that there is no section dealing with factors limiting abundance and distribution of north temperate amphibians and reptiles, and physiological and ecological responses made to these factors. Surely this is one of the most important areas of research that Canadian herpetology should address.

I discovered few errors in reading this book. The only factual one concerns excretory products of amphibians and reptiles. According to Packard (1966, *American Naturalist* 100: 667–682), reptile embryos and adult amphibians both excrete mainly urea. Preston, however, indicates that the former excrete uric

acid (actually the main excretory product of adult squamates) and that the latter excrete ammonia (which is actually excreted only by aquatic amphibian larvae). A very minor error (possibly typographical) is the word “hemipene”, instead of hemipenis, among terms defined in the glossary. Preston also refers to the spadefoot as *Scaphiopus* and to Australian hyliid frogs as *Hyla*, rather than *Spea* and *Litoria* respectively as is currently the fashion. However, this is really more a matter of systematic opinion than an error.

My remaining quibbles with this book are mainly matters of style. Preston frequently switches from first to third person when referring to himself. Descriptions of full species ranges outside Manitoba are not consistently given in the individual species accounts; sometimes only the particular subspecies distribution is given. Standardized common names do not always correspond exactly to the subspecies names given. For instance, the section introducing colubrid snakes pairs standardized common names of species with scientific names of full species. I question the need for standardized common names, at least for subspecies, but if they are to be used, they should be used consistently.

Overall, I think this book serves an important function. It represents the first popular summary of modern information on Manitoba's amphibians and reptiles. If it spurs interest in these two groups and encourages people to be more concerned about conserving them and adding to our knowledge of their natural history and distribution, it will play a valuable role. Bill Preston is to be congratulated for making this first step.

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Aquatic Insects and Oligochaetes of North and South Carolina

Edited by A. R. Brigham, W. U. Brigham, and A. Gniska. 1982. Midwest Aquatic Enterprises, Mahomet, Illinois. 837 pp., illus. U.S. \$39.50.

Close on the heels of many a worthy predecessor comes this latest addition to a library of information on aquatic insects. With so many texts now available it is becoming increasingly difficult for students and professionals alike to choose the best and most appropriate one for their needs. In a somewhat negative way this new book helps to narrow down the choice.

Originally conceived as a guide for pollution biologists, at the Duke Power Company, the book is still very much an in-house publication. This is primarily

the result of two major restrictions that have apparently been designed into the book. First, as the title states, this is a study of aquatic insects of the Carolinas, and the relevance of much of the descriptive sections and most of the keys is restricted to this region. In fact much of the fauna of the northeastern U.S. and certainly most of eastern Canada lies beyond the scope of this work.

The other major restriction arises as a result of the unidirectional orientation of the book to pollution biologists. One can only assume that pollution biologists do not deal with anything other than the larval stages since, except for the Coleoptera and Hemiptera, only the larvae are considered. It is interesting

to speculate what these biologists do with pupal stages encountered in their studies.

The inclusion of the oligochaetes in this work, considering the above orientation is easy to comprehend. However, by the same rationale one would also expect inclusion of other groups commonly encountered in the course of pollution studies, such as molluscs, crustaceans, amphipods, and isopods. None of these appear and as a result the treatment of the groups is neither a complete account of the aquatic insects nor a comprehensive treatment of organisms encountered in pollution studies. Rather, the book falls somewhere in between, fulfilling neither consideration completely.

Within the area it does cover, the book treats its subject matter in considerable detail. Each chapter has a general description and diagnosis of the families in the order, as well as an extensive treatment of their life histories, though the latter may dwell at length upon only one, often well researched, genus. This is followed by a discussion of taxonomic problems within the family, including histories of synonymies and a discussion of the more useful taxonomic characters. Some chapters, though by no means all, include detailed tables of ecological and habitat data, information that can often be invaluable when used in conjunction with the keys.

A short checklist of species in the Carolinas preceeds the main part of each chapter — the keys to genera, and, where applicable, to species. Unfortunately in compiling these keys no real consistency occurs from chapter to chapter. As a result, in some orders keys are provided to all the genera of eastern North America, while in others, only genera occurring

in the Carolinas are considered. Keys to species (not all genera are keyed to species level) are much more consistent and in virtually all cases are only for those found in the Carolinas. In most cases these are a synthesis of existing keys, often merely a contraction of more regional treatments to include only the local species. The only major addition is that taxonomic changes that have occurred since these keys were first published (in some cases nearly 40 years ago) have been incorporated, thus reducing confusion, particularly for those unfamiliar with the groups. The keys are on the whole well illustrated though occasionally those redrawn from other sources have suffered. Finally, a few mistakes, such as mislabelled illustrations are in evidence though these are no more frequent than in most books of this kind.

Perhaps the most noteworthy point about the book, and that which distinguishes it from others of its kind, is in its design. Bound in an easily disassembled loose-leaf format, it provides for easy addition of future revisions and changes (purchased at extra cost) thus keeping the book up-to-date.

For those working on the fauna of the Carolinas and their immediate surroundings, this book will no doubt serve as a more than adequate guide to the fauna. However, for those outside this area, and in particular in eastern Canada, the use of this book as a single source is not recommended. At most, it should be used only in addition to other sources, where applicable, to round out the information already available.

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Falcons of the World

By T. J. Cade. 1982. Comstock/Cornell University Press. Ithaca, New York. 192 pp., illus. U.S. \$38.50.

No one should be surprised that Tom Cade, a man with a lifelong fascination for birds of prey, especially falcons, has written a book on his favourite subject. However, as an apprentice in the study of falcon biology who can only benefit from Cade's rich experiences, I am particularly pleased that he has produced more than just a coffee-table book.

The book is divided into two sections. The first consists of ten chapters describing the special characteristics of the genus *Falco*, classification, distribution and migration, feeding adaptations, size and flying performance, hunting success, reversed size dimorphism, social behaviour and reproduction, and finally, the falcon's relationship with man. The second section provides us with descriptions of 39 species, perhaps only 38 if Cade's conclusion about *Falco*

kreyenborgi is correct, and maybe even less if his desire for further taxonomic research on African species, in particular, is fulfilled.

In fact, this latter point really reveals what I liked about the book. Using it as a forum to present ideas to stimulate new research, Cade has provided in his book a fresh approach to each chapter. For example, what is the real purpose of bony tubercles in the nares? Does the nasal secretion serve in some nutritional capacity? Does range aid in the removal of the koilin?

I was especially interested in Cade's explanation of the long-standing controversy, reversed size dimorphism in birds of prey, which I believe can only stand as yet another untested hypothesis. The author seems convinced that the "big mother" hypothesis, i.e. big mothers . . . big offspring . . . better survival. (K. Ralls. 1976. Quarterly Review of Biology 51: 245-276) is applicable to raptors. As far as I know, there is no



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