

The Amphibians and Reptiles of Michigan: A Quaternary and Recent Faunal Adventure

By J. Alan Holman. 2012. Wayne State University Press, The Leonard N. Simons Building, 4809 Woodward Avenue, Detroit, Michigan 48201-1309 USA. 291 pages. 49.60 CAD. Cloth.

Modern herpetology in Michigan was given an early start by Alexander Ruthven who's 1908 Ph.D. thesis was a comprehensive analysis of garter snakes (*Thamnophis*). This model monograph on the most abundant and widespread snakes in North America is still re-

ferred to the present day. It was followed by *The Herpetology of Michigan* by Ruthven C. Thompson, and H. Thompson in 1912 and by a revision by Ruthven C. Thompson, and H. Gaige in 1928. Ruthven became director of the Museum of Zoology, University of

Michigan and, eventually, president of the University. Remarkably, these guides were the last comprehensive account of all the amphibians and reptiles of Michigan until the present volume by J. Alan Holman. The glaring hiatus is astonishing as the state has long been one of the leading training grounds in North America for herpetologists, primarily at The University of Michigan, Ann Arbor, but also at Michigan State University, and Wayne State University. Neighbouring states have been covered by individual guides since the second World War (Illinois 1961, Wisconsin 1981, Indiana 2001; and for adjacent Canada, Ontario in 2002).

J. Alan Holman (1931–2006) had a distinguished teaching and research career which largely emphasized Quaternary fossils but included studies of present forms as well. He died of a heart attack just a few days after turning the manuscript for this volume in to the publisher. It was (according to an introductory publisher's note page ix) "finished but not perfected" but colleagues, James Harding, James Gillingham, and David Mifsud provided additional photographs, updated references, and other information to complete the book.

It opens with a preface [pages xv–xvi], which, after commenting on the number of studies presented on Michigan amphibians and reptiles at meetings of the Michigan Academy of Science, Arts, and Letters, follows with this disturbing observation: "All is not happy banter when Michigan herpetologists get together, as we all fidget and fret about the diminishing populations of amphibians and reptiles in the state. The most frightening thing is that not only are the officially threatened and endangered species of concern but also the many species that were very common throughout the large portions as recently as the early 1980s. They too are becoming rare and exist only as fragmented populations".

Brief acknowledgments [pages xv–xvi] and a note on the species range maps follow [page xix]. The maps plot county occurrences rather than exact localities. This gives an adequate depiction of overall state distribution because of the subdivision of the state into relatively small counties. This approach was used in some earlier state field guides to give an overall impression of range when records, even for common species, were still sparse in many areas. Now that ranges are vastly better documented not using this detailed information is justified here because the state's herpetofauna "has already been targeted by illegal collectors in the pet trade (J. H. Harding personal communication) and such dots on state maps can be used by these individuals to find local herpetological 'hot spots' "[However, overlooked and not discussed here is that the omission of exact locations also denies easy access to this knowledge to people who might attempt to block developers planned destruction if they only knew locations critical in their area for a rare a species. Most data bases allow access to such detailed data only for proven conservation use and approval is dependent on the arbitrary

judgment of the inquirer's intent by those maintaining the database. The application process is daunting to many who may consequently not bother to apply for relevant data for their area].

Part 1 [pages 1–26] opens the book with an introduction to Michigan as herpetological habitat, covering topography and vegetation with text, photographs, and maps.

Part 2 contains the dominant content in 223 pages (27 to 249) of comprehensive species accounts covering 54 species, an increase of 10 recorded for the state since 1928. Although nomenclature changes since the days of Ruthvan are numerous, modern combinations are followed except in the long traditional *Bufo* and *Rana*, where recent change to *Anaxyrus* and *Lithobates* (except for the Wood Frogs), respectively, has been adopted because of disagreement raised by certain herpetologists. However, these changes are increasingly being used by most other current researchers.

Headings within each account are scientific and common names, identification, general distribution, Michigan distribution, geographic variation, habitats and habits, reproduction and growth, diet, predation and defence, interaction with humans, behavioural characteristics, population health, and general remarks. All are well-referenced and many Canadian studies are included along with the impressive number of Michigan ones. As well, the accounts contain many gems of author experience which make even long-standard information fresh.

"The call of *Bufo americanus americanus* is extended – up to 30 seconds – musical trill [page 68] The call of *Bufo fowleri* is an eerie, mournful 'waaaaaaaaaaa' that lasts from two to seven seconds and sounds as if it was emanating from a misty swamp in Transylvania. Most people I know subjectively consider the Eastern American Toad sweet and the Fowler's Toad call annoying. But I prefer the call of *Bufo fowleri* as it brings back nostalgic memories of warm, sweet-smelling, early summer evenings in the country, gazing at a yard lighted only by glowworms and fireflies" [page 72].

"I have only been bitten once by an Eastern Snapping Turtle, and the bite happened completely by surprise. Years ago while in the service near Memphis, Tennessee, I was fishing in a farm pond. Sitting happily on top of a galvanized minnow bucket hoping to catch a catfish. I felt a sharp pain in my rear and discovered an eight-inch snapper hanging from my blue jeans and a 'pinch' of skin just beneath. As I stood, the snapper dropped off and continued straight to the water amidst a hail of four-letter words that I had acquired in the Navy. It was late May and the attacker must have been a female returning from her nesting site. My only guess for the reason of the attack was that I was blocking her straight-line route back to the water" [page 109].

“Painted Turtles need tussocks, logs, lily pads, mats of vegetation, or even junk to bask upon” [page 113].

“Milkshakes get their common name from the belief that they suck milk from the udders of cows, perhaps because they are frequently found in or around barns. This is false folklore. A Milkshake’s teeth and jaws are not constructed to do such sucking, and besides, any cow that I have ever met would not stand for such toothy abuse.” [page 171].

“When confronted this snake [Eastern Hognose] inflates its body with air. This behaviour causes its pattern to stand out boldly. Its head and neck then spread out in a ‘cobra-like’ fashion, and it expels the air in its body, causing a very loud and long hiss. For this reason it is often known as ‘puff-adder’ or ‘spreading adder’. Its mouth then gapes widely, and the snake may or may not make fake strikes at the would-be predator or other tormentor. If these behaviours do not work, the snake puts on the most exaggerated death-feigning act in the animal kingdom. All of a sudden its movements become uncoordinated as it writhes and rubs its open mouth on the ground and often expels the contents of its stomach and cloaca. Also, it sometimes bleeds from the mouth. The last and final act occurs when the snake rolls over on its back, belly up, often with its tongue lolling out. If one backs off from the dead-looking snake and stays still a few minutes, the snake’s head turns up and the air is tested slowly with the tongue. If the information the snake receives from this registers favourably, the reptile will right itself and crawl away as fast as its chubby body allows. If the snake is caught again and placed upright, it will go belly up again giving away the stereotyped nature of the performance “[page 167].

Part 3 discusses Quaternary remains of Michigan’s amphibians and reptiles. This is most remarkable for a state field guide in its detail on sites and specimens. It expands consideration of the herpetofauna back

beyond the present. It is amply illustrated covering, in three separate sections, Michigan’s Pleistocene Herpetofauna, Herpetofauna of Michigan Archaeological Sites and the Pleistocene. The last discusses this epoch in general and the adjustments made to its changing conditions by the North American herpetofauna. Here it is pointed out that “In spite of all the Pleistocene stresses undergone by amphibians and reptiles in North America, no amphibians or reptiles became extinct during this epoch except for some large tortoises”. This is contrasted to the extinction of 8 families, 46 genera, and about 191 species of mammals over the same epoch and area. Humans, in contrast to their impact on other vertebrate groups, have had little effect on amphibians and reptiles during Pleistocene with the only documented disappearance being the easily obtained giant tortoises of the genus *Hesperotestudo* which were eaten in Florida. In addition “Many Michigan archaeological sites have yielded large turtles but very few have yielded small amphibians and reptiles. Apparently, sometimes it is important to be small and slimy” [page 238].

There is a 23-page section (253–275) of references that emphasizes Michigan studies and is dominated by 18 references by Holman as sole author and an additional 9 as senior author.

This may be the best state herpetology yet, and will be widely used as a reference by naturalists and professional herpetologists in Michigan and beyond. Both discussions of present occurrence and of past remains are well-illustrated with colour photographs of the first and sharply executed line drawings of the second. It is very relevant for eastern Canada as only 8 species (2 salamanders, 2 turtles, 1 lizard, and 3 snakes) which occur in Michigan do not also reach Canada naturally and the two turtles have been recorded (from escaped or abandoned individuals) in a number of localities here where they might eventually become established.

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