

## Fishes of Wisconsin

By George C. Becker. 1983. The University of Wisconsin Press, Madison. xii + 1052 pp., illus. U.S. \$75.00.

State and provincial books on fishes vary from the deridable to the definitive. *Fishes of Wisconsin* falls in the latter category. It is an immense compendium of data on the 157 species found in this northern American state and is the product of 25 years of field work and an extensive review of the literature. Canadian waters share 126 of these species and the book is a valuable resource for Canadian ichthyologists.

Brief sections occupying 60 pages cover such topics as glacial history, water resources and uses, pollution, management, parasites, extirpated, endangered and exotic fishes, a glossary, abbreviations, and metric conversions. The index works well and is detailed. The references occupy 38 pages and number over 1700. About 35% of these date from the 1970s but the last year thoroughly surveyed for literature is 1977 and the number cited declines rapidly thereafter to only five in 1980. Identification keys occupy 108 pages and there are 24 pages of colour plates comprising 175 illustrations. The plates are rather disappointing in that some are photographs of live or freshly-caught fishes while others are of preserved material which has lost its colour.

The bulk of the text (783 pages) is species accounts comprising common and scientific names, a black and white photograph of each species, a description, systematic notes for about half the species, distribution, status and habitat, an account of the biology, and an importance and management section. Each species has a spot distribution map for Wisconsin and a general, shaded distribution map for North America. The Wisconsin maps summarise both Becker's modern collections and those prior to 1935 made by C. W. Greene, thus providing insight into changes in the state ichthyofauna. The biology section draws extensively on Becker's first-hand knowledge of Wisconsin fishes and is abundantly supplemented with citations from the literature and from personal communications encompassing all aspects of life history, behaviour, and ecology of the fishes. This is a valuable contribution which extends the utility of the work beyond the borders of Wisconsin. The photograph heading each species account is small and not always a good guide to the characters which distinguish that particular species. Line drawings would have served better in this capacity. There is no list of species and so no easy means of assessing the diversity of Wisconsin fishes.

Rather than nitpick at random through this tome, we have selected the family Petromyzontidae for critical comment. This family is not as familiar to most

ichthyologists as the more diverse families which comprise the bulk of the text; arguably the job done here will reflect the quality of the rest of the book.

The section dealing with lampreys is 20 pages long, with an introduction to the family of two pages, and a 3-5 page coverage for each of the five species accounts. The species, in order of their appearance in the book, are: *Ichthyomyzon unicuspis*, *I. fossor*, *I. castaneus*, *Petromyzon marinus*, and *Lampetra appendix*. A more logical and appropriate order would have been an alphabetical arrangement of the species within a family. The key to lampreys is six pages long and is supplemented with drawings which are a great help in identification.

There are several inaccuracies in the key to the species which limit its usefulness. Both line drawings of ammocoetes on p. 77 do not show an eye although the outline of the eye is always clearly visible in an ammocoete even though it is covered with a more or less thick layer of skin. Lead 'a' of couplet 2 and the drawing below it call the larval oral hood a sucking disc which is a fallacy. The ammocoete filter feeds and does not suck. A hood-like sucking disk is therefore a misnomer. At metamorphosis, the oral hood becomes the dorsal and lateral parts of the sucking disc. The line drawing accompanying lead 'b' of couplet 2 is mislabelled. The "papillary fringe" is, in fact, the leathery appendages (also called oral fimbriae) which lie inside the oral papillae fringe. When Becker refers to the tongue precursor pigmentation and shape (pp. 78-79), he alludes only to the pigmentation and shape of the middle prong or bulb, which is only a part of the tongue precursor. In lead 'b' of couplet 3 and in the drawing above it, Becker writes that the base of the *P. marinus* "tongue precursor" is tapered. However, as is clearly shown in his drawing and in Vladykov (1950: figure 13), the base of the bulb flares out. There are three or four lateral rows of teeth in the line drawing of *I. castaneus* (p. 82), yet lead 'b' of couplet 7 states that the range is 6-10. The inclusion of ammocoetes in the key is an excellent idea as these are very difficult to identify. *Ichthyomyzon* ammocoetes were omitted but these can now be separated using the works of Vladykov and Kott (1980) and Lanteigne (1981).

The introduction to the family is excellent. Descriptive data on the fishes are mostly presented as ranges and it is not clear if the data are original or based on literature sources. If the counts and measurements are original, brief statistical information would have been useful for comparative purposes with populations elsewhere. The species descriptions introduce a new morphometric character "branchial diameter". Becker's ratio of branchial diameter to length of suck-

ing disc is innovative and useful in segregating the parasitic and nonparasitic species. Branchial diameter is poorly defined in the glossary (p. 52). It should be taken transversely as indicated in the diagram (p. 59) and not laterally. Becker cites for the maximum total length of *P. marinus* a report of a specimen of 915 mm and 1.36 kg (De Sylva, 1964). Oliva (1953), however, recorded a specimen of 1200 mm and 2.3 kg. On p. 206, "horizontal lingual lamina(e)" should read correctly "longitudinal lingual laminae". This type of unique character is not generally familiar to most biologists and is particularly susceptible to error, to the confusion of the reader. Vladykov (1960) is not credited with the description of peritoneal pigmentation in *P. marinus* and in *L. appendix* on pp. 211 and 216. The etymology for *L. appendix* on p. 216 is incomplete. The decline in Sea Lamprey numbers on p. 215 is given as 86% (from 71,081 to 9,992) but surely this should be a decline of 711%? Ammocoete lengths and weights should be included under the Description section of each species account as they are valuable diagnostic characters rather than under various other headings. Several other comments of this nature can be made on the species accounts. However these are all relatively minor and the accounts are very good.

These are 65 references on lampreys, the earliest in 1916 and the most recent in 1979. The reader is directed to Vladykov and Kott (1982) for an alternate view of the scientific name of the American Brook Lamprey (*Lethenteron wilderi* rather than *Lampetra appendix* as used by Becker).

The cost of this volume puts it beyond the reach of

all but institutions and avid professionals although the price is reasonable for its size.

### References

- De Sylva, D. P. 1964. Sea lamprey, *Petromyzon marinus*. Pp. 778–779 in Standard Fishing Encyclopedia. Edited by A. J. McClane. Holt, Rinehart & Winston, New York.
- Lanteigne, J. 1981. The taxonomy and distribution of the North American lamprey genus *Ichthyomyzon*. M.Sc. thesis, Department of Biology, University of Ottawa, Ontario. xi + 150 pp.
- Oliva, O. 1953. Príspevek k prehledu nasich mihuli (*Petromyzones* Berg 1940). Vestník Kralovské české společnosti nauk — Trida matematicko-prirodovedecká 9: 1–19, 2 plates.
- Vladykov, V. D. 1950. Larvae of eastern American lampreys (*Petromyzonidae*) I. Species with two dorsal fins. Le Naturaliste canadien 77(3–4): 73–95.
- Vladykov, V. D. 1960. Description of young ammocoetes belonging to two species of lampreys: *Petromyzon marinus* and *Entosphenus lamottenii*. Journal of the Fisheries Research Board of Canada 17(2): 267–288.
- Vladykov, V. D., and E. Kott. 1980. Description and key to metamorphosed specimens and ammocoetes of *Petromyzonidae* found in the Great Lakes region. Canadian Journal of Fisheries and Aquatic Sciences 37(11): 1616–1625.
- Vladykov, V. D., and E. Kott. 1982. Correct scientific names for the least brook lamprey and the American brook lamprey (*Petromyzontidae*). Canadian Journal of Zoology 60(5): 856–864.

CLAUDE B. RENAUD and BRIAN W. COAD

Ichthyology Section, National Museum of Natural Sciences, Ottawa, Ontario K1A 0M8

## A Dictionary of Ecology, Evolution, and Systematics

By R. J. Lincoln, G. A. Boxshall, and P. F. Clark. 1983. Cambridge University Press, New York, New Rochelle, Melbourne, Sydney. vii + 298 pp. cloth U.S. \$52.50; paper U.S. \$19.95.

There are more than half a dozen dictionaries of biology or zoology on my book shelves. None treat in any depth the fields of ecology, evolution and systematics (as I know from being the author of a manuscript dictionary of ichthyology of some 2000 terms), and most are outdated, omitting the neologisms of numerical and cladistic systematics. Inclusion of ecology, evolution and systematics together in one volume seems to me, as a systematist, to be natural; it is difficult to be a specialist in one of these fields without also having a knowledge of the other two.

The authors' goal has been to provide short working definitions of those terms that come within the routine reading matter of ecologists, taxonomists, and the like. They aim also to cover the application of statistics to ecology but have deliberately omitted

basic anatomical terms. They opt for modern usage of terms except where usage has differed, in which case they chose the definition closest to the original or to the etymological derivation of the word or give divergent definitions. I estimate that about 11 000 terms are defined.

The short introduction is followed by 267 pages of definitions, alphabetically arranged. The remainder of the last page of entries for each letter of the alphabet is left blank. Following the dictionary are 21 appendices on the geological time scale, quaternary ice-age chronology (with European and North American periods), Wallace's zoogeographical regions (which will make some vicariance biogeographers spin on their plates), phytogeographical regions (from R. Good 1974), terrestrial biomes, major oceanic surface currents, marine and lacustrine depth zones, plankton size categories, taxonomic hierarchy, sediment particle size categories, soil profile and horizon nomenclature, SI units with some conversions to the



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