Book Reviews

ZOOLOGY

Trout and Salmon of North America

By Robert J. Behnke, illustrated by Joseph R. Tomelleri. 2002. The Free Press, Simon and Schuster Inc., New York. viii + 360 pp., illus. U.S. $44.10.

This book describes the trouts and salmons of North America, comprising the genus *Oncorhynchus* with 9 species and 25 subspecies, the genus *Salmo* with 2 species (one, the Brown Trout, introduced), and the genus *Salvelinus* with 5 species and perhaps 5 subspecies. It also includes the Arctic Grayling and Mountain Whitefish as "other salmonids". The latter two species are not the sum total of other salmonids in North America so their inclusion seems a little arbitrary.

The book begins with introductory sections on origins and evolution, classification and taxonomy, life history and biology, and morphology and anatomy. There is an epilogue (about the author's life and the genesis and track of his interest in salmonid fishes), an artist's note (about methods used in drawing the fishes for the book), acknowledgements, a species list, a selected bibliography, a glossary, and an index. However 329 pages are devoted to the fish in a book with dimensions of 25.5 cm wide by 23.5 cm high, ideally suited to displaying the fish drawings in a full page spread. Several drawings showing spawning and non-spawning individuals, and sea-run and resident fish are depicted for some species. The colour pencil drawings were made from nature, based on a preserved specimen after photographing it freshly caught and taking colour notes. These drawings are a very attractive feature of the book and were made into a 2003 calendar sold separately and doubtless to be sold in subsequent years as demand from anglers and naturalists will most probably be high.

Each species account comprises one to several colour illustrations, a colour distribution map, a short introductory section, a description of the species, a sidebar with the scientific, common and other names, habitat, length and weight (American and metric units), life span and diet, and sections on biology, distribution, evolution and classification, and conservation. The text is interesting and easy to read. Occasionally there are sections within each species account devoted to a particular problem or point of interest. A Canadian example is the giant Gerrard Kamloops Trout (*Oncorhynchus mykiss*) one of which attained 24 kg when stocked in Jewel Lake, British Columbia, where forage fish were an abundant food resource. Giants like this are no longer seen.

The maps comprise colour-shaded ranges. They are easy to understand and for the localized subspecies are narrowly defined. Spot distributions are not given and would perhaps have been revealing of literature and museum specimen records in light of deduced maximum ranges and in assessing rarity of modern captures if a time element had been incorporated.

The taxa described in this book are a mix of generally accepted species, long established, and the author's own interpretations based on a lifetime's study of these fishes. In the latter category in particular, he recognizes 3 North American subspecies for the Arctic Char, 11 subspecies for the Rainbow Trout, and 14 subspecies for the Cutthroat Trout, some or all of which may be open to different interpretations by other authors. Not all have been named scientifically and many are endangered by habitat loss and genetic swamping by introductions of related stocks or species and a few are now extinct. Authors and dates for the species are not given anywhere in the book, a curious omission for a taxonomic based study but perhaps a recognition of Eschmeyer's *Catalog of Fishes*, so readily available on-line.

The author notes that his studies on salmon and trout began in 1957 and, without wishing to belabour the point, this will soon be a 50-year stretch of time. Despite the internet, published papers are still the original source for information on ichthyofaunas and on taxa. It takes time and money to accumulate these and, in taxonomic studies, none can be ignored if hard to find or in other languages. The cost of accumulating such material and, if necessary translating it, is very high and is often spread over many years. A full understanding of North American trout and salmon cannot be undertaken without considering the literature on Russian populations, for example. With this in mind authors who produce career-summarising works such as this, need to state that their collection of papers, data and specimens have been or will be deposited at an institution or at least provide a bibliography on-line or as a CD with the book. The bibliography in the book is short and meant only as an entry point to the literature.

The book lacks habitat photographs which could usefully have shown the diverse range of environments that these fishes are found in. There are no identification keys in the classic sense although for species these are available in other works and subspecies and unnamed taxa are mostly defined by distribution in iso-

lated drainage basins. Identification is by means of a small colour drawing of a fish, sometimes of only a spawning adult, sometimes of both sea-run and stream-resident forms, with enlarged details of key colour features. This does not allow all life stages to be identified and obviously would not work on preserved material. Tabulated comparisons of characters for the numerous subspecies would have been a useful addition to the book.

The Index is somewhat incomplete in that scientific names occur only in full – to find *aguabonita* you would have to be aware that it occurs under *Oncorhynchus mykiss* (in older literature it was known as *Salmo aguabonita*).

This book is a fascinating read and an indictment of management practices for native fishes. It should be of great interest to naturalists, anglers, and conservationists. For scientists studying these or any other fishes it is an examplar of a particular taxonomic point of view and well worth consideration.

BRIAN W. COAD

Canadian Museum of Nature, P. O. Box 3443, Station D, Ottawa, Ontario K1P 6P4 Canada

Bigelow and Schroeder's Fishes of the Gulf of Maine

Edited by Bruce B. Collette and Grace Klein-MacPhee. 2002. Smithsonian Institution Press, Washington and London. Third Edition. xxxiv + 748 pp., illus. U.S. $75.

This volume is a revised edition of an earlier work, originally published in 1925 and re-worked in 1953. The latter has long been a standard reference work, as recognized in this new edition by the authors' names in the title, and of great value to Canadians on the Atlantic coast interested in fish and fisheries. The new edition was 13 years in the making and has 38 contributors, including the editors, an indication of the volume of knowledge and the consequent increasing specialisation of scientists.

The layout follows the pattern of other books on fishes, with a Foreword, Preface, Acknowledgements, Acronyms and Abbreviations (useful for the neophyte and the forgetful), Contributors, and a 7-page History of the Fishes (actually the fisheries). The species accounts follow, arranged by families in systematic order, then there are 39 distribution maps, a comprehensive 107 pages of Literature Cited, and Indices of scientific and common names. The species accounts are preceded by a general description of the family, of varying length and depth of treatment. The area of coverage includes parts of New Brunswick and Nova Scotia.

The Contents serves as a checklist for the 252 species in 118 families covered by this book, 33 species more than the 1953 version.

Species accounts comprise common and scientific names, other common names, page of the account in Bigelow and Schroeder (1953), and an illustration. Text headings may vary within each account but can include Description, Meristics, Color, Size, Distinctions, Habits, Food, Feeding by Larval and Juvenile Stages, Feeding Behavior, Predators, Parasites, Reproduction, Spawning Season, Spawning Behavior, Early Life History, Age and Growth, Larval and Juvenile Distribution, Larval and Juvenile Habits, General Range, Occurrence in the Gulf of Maine, Migrations and Movements, Importance, Stocks, and Management, among others. Not all species have entries under all these headings as some, for example, do not migrate or do not have commercially important stocks. Some accounts are quite short, less than a page, while the Atlantic Herring, for example, runs to 16 pages.

Common names are capitalized above the illustration at the beginning of each species account but not in the text. Traditionally fish common names are not capitalized, unlike those of birds and certain other groups, but arguments have been advanced to start this (Nelson et al., 2002). Certainly Atlantic Cods would clearly mean more than one individual *Gadus morhua* while Atlantic cods could mean several different cod species found together in the Atlantic Ocean.

Minor errors are inevitable in a work of this length with numerous authors, e.g. Labrador is misspelled on page 665, but the most serious one is the orientation of illustrations of right-eyed flatfishes. Convention has it that fish illustrations have the head on the left but this does not work with these flatfishes. Their left eye "migrates" during development so that both eyes are on the right side of the fish. Their "belly", bottom or blind side is actually their left side, not the ventral surface. To view the uppermost, pigmented and eyed side of these fishes, the head must be on the right. The illustrations have been mirror-imaged in this book and represent a body form that does not exist (note that the families of left-eyed flatfishes correctly have images with their heads on the left; and that some right-eyed species very rarely have left-eyed individuals).

There is no key to families, often a useful way of narrowing down possibilities for those new to an ichthyofauna. There is a key to Percoidei, the largest suborder of perch-like fishes but this again presupposes some knowledge of fish classification. The keys to species within families do not give the page number of the description so a lot of page turning is needed to locate the species account in speciose families; luckily most families have relatively few species. In addition the keys give the common name and the species are arranged alphabetically by scientific