

strength. The volume gives a sense of the development of scientific understanding and it provides a surprisingly readable potted history of CCAMLR, which throws light on the reasons for its ponderous progress in regulating the krill fishery. The tragedy includes the story of Alan, the Methuselah of the krill world, whose long life (exceeding nine years) came to an abrupt end when he was inadvertently poured down a sink. It also includes the author's doomed attempt to "forgo the alphabet soup" (p. 128) of acronyms when discussing CCAMLR.

An important issue is that the environment is changing and krill catches are increasing, but knowledge of krill population size and how it changes over time remains uncertain. The chapter on population size provides a clear catalog of the limitations of the available sampling and estimation methods. We learn that all methods have issues and that rapid advances in echosounder technology have not resolved key uncertainties, but have made it impossible to compare data collected a few decades apart. Unfortunately, the prescription is underwhelming: we should "discard Victorian tools like the plankton net" (pp. 170–171) that informed the still-relevant insights of the "great krill biologist" James Marr (p. 54) and hope that "technology will come to the rescue" (p. 58). Even the slow-moving CCAMLR recognizes the urgent need to improve management of the fishery, a task that cannot wait for the fog of uncertainty to completely clear. Meanwhile, Nicol shrugs off reports that krill populations have changed, arguing that the evidence is not unequivocal. This looks like a gift to those who, in his words, "hide behind the defense that because of a lack of scientific certainty there is no requirement to act" (p. 136).

In the preface, the author sets himself the unenviable task of providing both a personal opinion and a neutral overview. The book achieves the former but not the latter. It is, then, an informative, sometimes entertaining, and thoroughly personal introduction to one of the world's most important species.

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**MANAGING CENTRARCHID FISHERIES IN RIVERS AND STREAMS.** *Based on a symposium held in Kansas City, Missouri, 23–25 August 2016. American Fisheries Society Symposium, Volume 87.*

*Edited by Michael J. Siepkner and Jeffrey W. Quinn. Bethesda (Maryland): American Fisheries Society. \$79.00 (paper). x + 270 p.; ill.; no index. ISBN: 978-1-934874-52-3. 2019.*

Centrarchids include freshwater bass, sunfish, and crappie native to the eastern half of North America. They are an important, often dominant, component of fish communities in this region as well as a primary target of anglers. Most often thought of

as a lentic group, the editors note that nearly one-half of all angling for these fish occurs in rivers and streams. As such, management of this group in lotic systems is clearly a neglected subject, hence this book. The papers are derived from two symposia of the American Fisheries Society, one in 2016 and the other in 2017. Beyond a two-page preface the editors provide little to tie these papers together. Given the diversity of themes, these 14 papers read like case studies for fish management. Case studies are useful when illustrating general points, but in isolation are useful only to others working with the same species in the same location. As such, I will try to draw out some major themes.

Despite the book title referencing Centrarchids, only black bass (genus *Micropterus*) are studied as these are the most important for anglers in rivers. The first seven chapters deal with smallmouth bass, *M. dolomieu*, and its subspecies Neosho bass (*M. dolomieu velox*). Siepkner and Quinn take an agnostic view toward taxonomy leaving it to authors to decide whether their subjects are subspecies or species. The next seven chapters deal with relatives of largemouth bass (*M. salmoides*), often contrasting them with largemouth bass. The major themes include abiotic requirements of a species, either relating to recruitment (Chapters 1, 2, and 10), presence-absence (Chapter 3), or simply habitat use (Chapters 2, 8, 9, and 11). A few deal with how environmental factors might influence diet (Chapters 4–6 and 14). The remainder deal with management issues, including whether or not raising minimum catch size would improve local yield (Chapter 7), effectiveness of repatriating local Guadalupe bass (*M. treculii*) after drought to allow removal of introduced smallmouth bass (Chapter 12), and the role of man-made barriers to smallmouth migration in maintaining stocks of the same (Chapter 13).

The authors are sometimes explicit about how their results might inform management but not always. Habitat use, diet, and barriers to migration can all be used to maintain suitable waterways, help explain why a species might be absent when it is predicted to be present (e.g., Chapter 3), and provide guidance to limiting hybridization, a common problem for many of the more restricted species (Chapters 8, 9, 12, and 13). In addition, it is clear that the habitat and diet requirements of many black bass species are distinct and the common practice of using the well-known requirements of smallmouth and largemouth bass as stand-ins simply will not work. As such, this volume fills an important gap in our basic knowledge of many bass species. It provides useful information for anyone managing river fisheries as well as students of *Micropterus* in general.

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