

Unfortunately, the taxonomic section (nearly two-thirds of the book) is a considerable disappointment. It is essentially a rehash of the author's earlier work, *Larvae of the North American Caddisfly Genera (Trichoptera)* (1996. Second Edition. Toronto (Canada): University of Toronto Press), at the family level, and includes many of the identical illustrations and text. Furthermore, there are only sparse treatments of non-North American families, and virtually no illustrations of them. Readers would have been better served by including all of the known families, or else limiting the book to ecology and phylogeny.

Despite its shortcomings, *Caddisflies: The Underwater Architects* is a valuable addition to Wiggins's body of work and will likely excite future cohorts of North American aquatic biologists. If you purchase only a single book on caddisflies, this probably should be the one.

DAVID C HOUGHTON, *Natural Sciences, Hillsdale College, Hillsdale, Michigan*

THE LAKES HANDBOOK VOLUME 2: LAKE RESTORATION AND REHABILITATION.

Edited by P E O'Sullivan and C S Reynolds. Malden (Massachusetts): Blackwell Publishing. \$195.00. viii + 560 p; ill.; index. ISBN: 0-632-04795-X. 2005.

This volume contains 22 articles grouped into five parts: General Issues; Regional Studies; Human Impact on Specific Lake Types; Lake and Catchment Models; and Legal Frameworks. Information on more than 350 lakes (natural and reservoirs) in 40 countries is included. Specific information is presented for 51 lakes. Limited material is presented for the remaining lakes. Only one lake in China is included and none for Japan.

The lakes are impacted by increasing human population leading to land use changes, especially agriculture, urbanization, industrialization, and forest harvest. These changes in land use result in eutrophication, pollution, and changes in hydrology, especially water withdrawal and diversion. Other impacts are invasive species, overfishing, and atmospheric pollution resulting in acidification. The consequences of climate change are as yet unknown.

Several articles question what restoration and rehabilitation mean. A reasonable question to ask is to restore to what? There is agreement that all lakes are threatened by anthropogenic activities globally, but what is the natural state of a given body of water? If we cannot define the natural state necessary for restoration, then we must identify desired end use of the lake (i.e., rehabilitation). Ecosystem restoration may be impossible, since we will never be able to determine the original state.

A lake and its watershed are an ecosystem and must be treated as such for remedial measures, including reduction of phosphorous loading through waste treatment, diversion of sewage, and reduction of land use impacts of agriculture, forestry, urbanization, and industry. Changes in hydrology are important to maintain the integrity of the lake-watershed ecosystem. Biomaniipulation of fish populations that affect phytoplankton and macrophyte dynamics has been successful. Other approaches include sediment removal, bioharvest, chemical stabilization of sediments, and aeration. Lining is used to control acidification in thousands of lakes. In developing countries, the greatest need is information and expertise.

Models of lakes and catchments are mandatory for understanding how the lakes and their catchments respond to impacts and remedial measures. The Vollenweider-OECD model has been especially useful. Jørgensen's article provides a good overview of a variety of models.

The section on legal frameworks provides useful information on Nordic and African lakes. The article for the U.S. is incomplete, as it does not deal with important international agreements such as the Great Lakes Water Quality Agreement. The book would be more helpful had it included an article on international environmental legislation and agreements.

This volume will be especially useful to policy-makers, resource managers, teachers, and nongovernmental organizations.

ALFRED M BEETON, *Great Lakes Environmental Research Laboratory, National Oceanic & Atmospheric Administration, Ann Arbor, Michigan*

MARINE ECOSYSTEMS AND CLIMATE VARIATION: THE NORTH ATLANTIC: A COMPARATIVE PERSPECTIVE.

Edited by Nils Chr. Stenseth and Geir Ottersen in collaboration with James W Hurrell and Andrea Belgrano. Oxford and New York: Oxford University Press. \$124.50. xiii + 252 p + 7 pl; ill.; author and subject indexes. ISBN: 0-19-850748-8. 2004.

The effects of environmental variability on marine plankton, fish, and bird populations has been a focus of marine research for decades, but the big picture of links between climate and the variability of ecosystems has been explored systematically only since the 1990s. This book is a well-organized collection of papers by European and American scientists, most of whom are working on North Atlantic marine and terrestrial ecosystems. Four parts focus on the North Atlantic review the dominant patterns of climate variation, population effects on phytoplankton and zooplankton, and

THE
QUARTERLY
REVIEW
OF
BIOLOGY



VOLUME 80 NUMBER 3

SEPTEMBER 2005

Published by The University of Chicago Press for
Stony Brook University