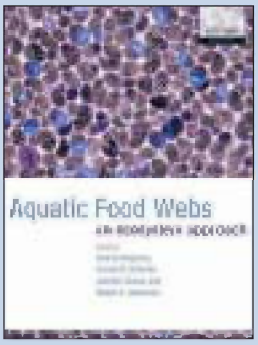

Aquatic Food Webs: An Ecosystem Approach
Edited by Andrea Belgrano, Ursula M. Scharler, Jennifer Dunne & Robert E. Ulanowicz
Oxford University Press Inc, New York (May 2005)
262pp, 8pp colour plates, numerous line figures
Price: €58 ISBN: 0 19 8564 83 X

By Marleen De Troch

In *Aquatic Food Webs: An Ecosystem Approach*, the authors provide an up-to-date overview of our current knowledge about foodwebs and present this information in a global ecosystem perspective. Although the work focuses on aquatic environments (with several recent advances in foodweb knowledge), a multi-disciplinary approach illustrates the broader interests of the authors. The book contains theoretical as well as practical studies about foodwebs.

The book is organised around three major research topics: (1) structure and function of foodwebs, (2) foodweb theories and (3) stability and diversity in foodwebs. The first chapter gives an overview of the evolution of knowledge of foodweb structure and is a plea for biosimplicity via stoichiometry. The book further documents the spatial structure and dynamics in foodwebs in marine environment, estuaries, lakes and running waters. A marine example discusses the Caribbean fish community in the geographic area of Puerto Rico-Virgin, the estuarine case-study. The second part of the book discusses statistical issues that arise in the analysis of foodweb data and the construction of foodweb models. The interest for ecoinformatics of at least one of the authors is illustrated by the inclusion of a detailed chapter on randomly constructed foodweb models by means of information theoretic metrics. A more biological approach is found in size-based analyses of aquatic foodwebs, where body size rather than species identity is the principle descriptor of an individual's role in the foodweb. A case study on North Sea fishes (and invertebrates, zooplankton, phytoplankton) is presented with emphasis on the relationship between maximum body mass and relative trophic level (expressed as _15N). Finally, an overview of the development of ecological theory concerning the patterns exhibited by marine foodwebs, and the underlying processes, is given as an in-depth literature study – though it is concluded that there is still much work to be done in marine foodweb research.

The third part of the book links foodweb stability and species diversity in aquatic systems to underlying trophic dynamics across different habitats, spatio-temporal scales and levels of organisation. Approaches (e.g. modelling, ecological network analysis), driving forces (including external forcing, e.g. climate) and applications (e.g. conservation) of food-webs are covered. In the afterword, a prospectus for future aquatic foodweb studies is discussed.

In the same way that foodwebs provide a framework for integrating diverse types of studies, this book successfully integrates the different attempts and approaches made so far to unravel aquatic foodwebs. It is therefore of great interest for a wide audience and may be used as an advanced textbook for graduate level students, as well as a useful reference for professional researchers working in the fields of community, ecosystem and theoretical ecology, aquatic ecology and conservation biology.

● *Dr. Marleen De Troch, Ghent University, Marine Biology Section*

Respiration in Aquatic Ecosystems
Edited by Paul del Giorgio & Peter J. le B. Williams
Oxford University Press (2007)
326pp, 1 halftone, 75 line illustrations
Price €61 ISBN: 978-0-19-852709-8

By Tom Moens

On a Monday afternoon in June 2000, I attended a session on "The significance and control of water column respiration in aquatic systems" during the ASLO summer meeting in Copenhagen. Little did I know then that this session would provide the impetus to bring together more than 20 leading scientists in an initiative that has, in a few years, culminated in an invaluable reference work dealing with the questions of what is respiration and what does it represent from the aquatic ecosystem point of view. Respiration has been well-studied at the cellular and organismal level, but much less so at the ecosystem level, particularly in pelagic/water column habitats. At the ecosystem level, respiration represents the largest sink of organic matter in the biosphere. Yet, in spite of its ecological and biogeochemical importance, most oceano-graphic and limnological textbooks invariably deal with respiration only as an extension of production and other processes. Respiration thus still represents the major gap in our understanding of the global carbon cycle. With this book, the authors aim to fill this gap and to assess the contemporary theoretical and empirical understanding of respiration in the major aquatic systems of the biosphere.

The book consists of 14 chapters, starting with an introductory chapter on the history and background of research on respiration in aquatic ecosystems. This chapter provides both framework and major questions for the rest of the book, and it is nice to see most of these questions revisited in several topical chapters, and more systematically also in a comprehensive final chapter which makes a laudable effort at integrating information from cellular to biosphere level. One of the theses of this book is that respiration is perhaps the best index of the flow of organic matter in and between aquatic ecosystems, because it integrates the whole range of organic carbon sources, as well as the temporal variability in organic carbon supply. The structure of the book is very logical in that, following the introductory chapter, it follows with four chapters dealing with respiration within key biological components of aquatic systems: bacteria, algae, heterotrophic protists and zooplankton. As such, it also tacitly makes the transition from cellular to metazoan organismal level, while at the same time constantly coupling back to the ecosystem level. These chapters provide the backbone for the analysis and interpretation, in the next seven chapters, of ecosystem-level respiration in a range of major aquatic ecosystems: wetlands, lakes, estuaries, surface marine waters, meso- and bathypelagic ocean zones, suboxic oceanic environments and coastal benthic communities. For each major ecosystem, the corresponding chapter provides a synthesis of methods and state-of-the-art data, discusses factors that regulate respiration, and provides estimates of the magnitude of respiration at different scales. The remaining chapter provides clues, concepts and approaches to allow incorporation of planktonic respiration in models of aquatic ecosystem functioning. The final chapter attempts to place respiration in aquatic systems in the context of global productivity and carbon cycling, and as such provides essential reading for anyone dealing with issues of global change effects on aquatic ecosystem functioning.

As a benthic biologist, I would have been interested to see an additional chapter dealing with respiration of major groups of benthic metazoans (benthic bacteria admittedly having been aptly covered in the work of Fenchel *et al.* (1998)). A second edition of this work would benefit from some editorial corrections, particularly on the introductory and final chapter. However, these minor issues do not bear on the value of this book, which will be *the* reference work on the topic of respiration in aquatic ecosystems for years to come.

● *Dr. Tom Moens*