



Respiration represents the major area of ignorance in our understanding of the global carbon cycle. In spite of its obvious ecological and biogeochemical importance, most oceanographic and limnological textbooks deal with respiration only superficially and as an extension of production and other processes. The objective of this book is to fill this gap and to provide the first comprehensive review of respiration in the major aquatic systems of the biosphere. The introductory chapters review the general importance of respiration in aquatic systems, and deal with respiration within four key biological components of aquatic systems: bacteria, algae, heterotrophic protists, and zooplankton. The central chapters of the book review respiration in major aquatic ecosystems: freshwater wetlands, lakes and rivers, estuaries, coastal and open ocean and pelagic ecosystems, as well as respiration in suboxic environments. For each major ecosystem, the corresponding chapter provides a synthesis of methods used to assess respiration, outlines the existing information and data on respiration, discusses its regulation and links to biotic and abiotic factors, and provides regional and global estimates of the magnitude of respiration. This is followed by a chapter on the modeling of respiration for various components of the plankton. The final chapter provides a general synthesis of the information and data provided throughout the book, and places aquatic respiration within the context of the global carbon budget.

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