

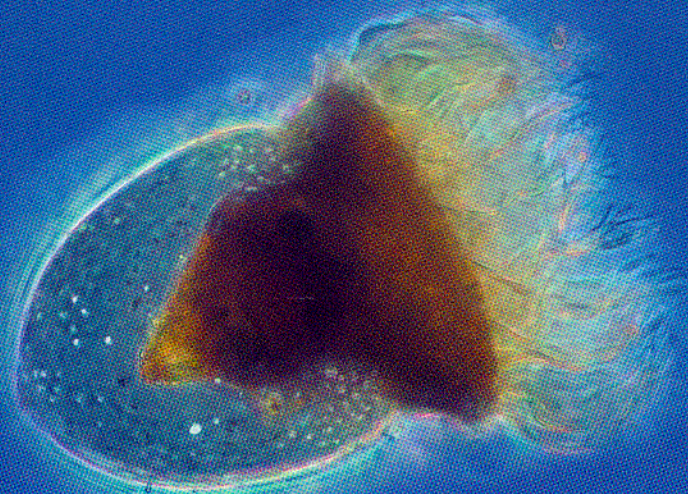
Microbial ecology is the study of interactions among microbes in natural environments and their roles in biogeochemical cycles, food web dynamics, and the evolution of life. Microbes are the most numerous organisms in the biosphere and mediate many critical reactions in elemental cycles and biogeochemical reactions. Because microbes are essential players in the carbon cycle and related processes, microbial ecology is a vital science for understanding the role of the biosphere in global warming and the response of natural ecosystems to climate change.

This novel textbook discusses the major processes carried out by viruses, bacteria, fungi, protozoa and other protists—the microbes—in freshwater, marine, and terrestrial ecosystems. It focuses on biogeochemical processes, starting with primary production and the initial fixation of carbon into cellular biomass, before exploring how that carbon is degraded in both oxygen-rich (oxic) and oxygen-deficient (anoxic) environments. These biogeochemical processes are affected by ecological interactions, including competition for limiting nutrients, viral lysis, and predation by various protists in soils and aquatic habitats. The book neatly connects processes occurring at the micron scale to events happening at the global scale, including the carbon cycle and its connection to climate change issues. A final chapter is devoted to symbiosis and other relationships between microbes and larger organisms. Microbes have huge impacts not only on biogeochemical cycles, but also on the ecology and evolution of more complex forms of life, including *Homo sapiens*.

This accessible textbook is primarily aimed at advanced undergraduates and graduate students taking courses in microbial ecology and environmental microbiology. The book will also serve as a resource for researchers in related fields, including ecology, oceanography, limnology, soil sciences, geochemistry, and general microbiology.

'I think this book should be on the shelf of everyone who performs teaching or research with any connection to the role of microorganisms in nature.' *Limnology and Oceanography Bulletin*

Front cover: SEM of soil bacteria © David Scharf/Science Photo Library. Back cover: A marine ciliate, *Cyrtocylis encaryphalus* © John Dolan.



OXFORD
UNIVERSITY PRESS

www.oup.com

ISBN 978-0-19-958692-9



9 780199 586929