



Microbial Ecology of the Oceans

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552 pages

Microbial ecology is now recognized to be fundamental for understanding the natural world around us and is essential for examining life in the oceans. For the first time, this book brings together international experts to explore the incredibly diverse collection of microbes (and viruses) found in the oceans and to dissect many of the processes mediated by these microbes in aquatic environments. Although the oceans are emphasized, the organisms and processes discussed in the book occur in nearly all natural

environments, including rivers and lakes.

« Microbial Ecology of the Oceans » reviews some basics of marine microbiology and provides a foundation for researchers and students new to the field while also examining several questions currently being discussed in modern microbial ecology. The book brings together concepts from autoecological studies of individual bacterial groups and from ecological studies of microbial assemblages in the oceans. In addition to drawing on the rich history of microbiology, Microbial Ecology of the Oceans uses the latest advances in biological and chemical oceanography and limnology to examine the role of marine microbes and viruses in the oceans.

« Microbial Ecology of the Oceans » elucidates the role of microbes in food web dynamics and biogeochemical cycles in the ocean. It will prove to be an indispensable resource for students and researchers in biological and chemical oceanography, geochemistry, marine chemistry, freshwater ecology, and microbiology.

Some of the topics covered by this informative book include:

- * Microbial evolution, as revealed by molecular techniques
- * Microbes in carbon budgets and cycles
- * Viruses and grazers of bacteria
- * Competition between bacteria and phytoplankton for limited nutrients
- * Marine symbiosis

Introduction (D. Kirchman & P. Williams).

Marine Microbes: An Overview (E. Sherr & B. Sherr).

Evolution, Diversity, and Molecular Ecology of Marine Prokaryotes (S. Giovannoni & M. Rappé).

Bacterial Production and Biomass in the Oceans (H. Ducklow).

Production Mechanisms of Dissolved Organic Matter (T. Nagata).

Heterotrophic Bacteria and the Dynamics of Dissolved Organic Material (P. Williams).

UV Radiation Effects on Microbes and Microbial Processes (M. Moran & R. Zepp).

Control of Bacterial Growth in Idealized Food Webs (T. Thingstad).

Uptake and Regeneration of Inorganic Nutrients by Marine Heterotrophic Bacteria (D. Kirchman).

Bacterial Energetics and Growth Efficiency (P. del Giorgio & J. Cole).

Impact of Viruses on Bacterial Processes (J. Fuhrman).

Bacterivory: Interactions between Bacteria and their Grazers (S. Strom).

Marine Nitrogen Fixation (H. Paerl & J. Zehr).

Nitrification and the Marine Nitrogen Cycle (B. Ward).

The Marine Microbial Nitrogen Cycle (D. Capone).

Symbiosis and Mixotrophy Among Pelagic Microorganisms (D. Carson).