

Preface

Microbiology—the study of miniscule organisms is an exceptionally diverse discipline including many branches like food microbiology, industrial microbiology, soil microbiology, freshwater microbiology, environmental microbiology, and microbial ecology. Microbial ecology—the study of microorganisms in relation to their biotic and abiotic environments is a link between all the branches of microbiology. Although the study of freshwater microbiology involves all the major disciplines within biology including taxonomy, molecular biology, biochemistry, and structural biology, this book has been compiled as a systematic and comprehensive guide of microbial ecology in lakes with particular reference to the dynamics of bacteria in freshwater lakes. It is designed to cater to the needs of the students and researchers in the related fields, who otherwise find themselves in a chaotic situation due to lack of concentrated literature in this growing and all important field of science. It has been designed as an effective research tool, as it is easy for the researchers to use because of its enhanced readability due to the use of simple, organized, and direct outline formatting. The content of the book is arranged in a logical progression from the fundamental to the more advanced concepts. It provides a detailed overview of the bacterial diversity, its ecological interactions, spatiotemporal dynamics in relation to the various water quality parameters, and metagenomic insights into the diversity and functions of microbial assemblages in lakes. It provides the basic information on how well the bacterial community composition varies vis-à-vis the changing seasons and the anthropogenic activities taking place in the catchment of the lakes along with the evaluation of the bioindicator species of bacteria. It identifies the factors of potential importance in structuring the bacterial communities in the lakes. Although lots of books are available on the different microbiological themes, none of them gives a detailed compilation of the bacterial diversity of aquatic ecosystems, especially freshwater lakes. The book contains many illustrations in the form of tables, diagrams, and case studies to better understand the basic facts about microbes and factors affecting them without drowning the student in unexplained jargons and impenetrable details. The book provides a detailed description of the methods involved for exploring the bacterial diversity from freshwater ecosystems and the students and researchers will find it useful in further evaluating the diversity of bacteria in the lake ecosystems. We hope this book proves useful for researchers and students.

Suhaib A. Bandh