

Preface

In the wake of the alarming decline in the vitality of coral reefs worldwide, and its resulting catastrophic effects on the biodiversity of associated biota, it is timely and topical to revisit, revise and refresh our views of the main processes related to corals, reefs, and their myriads of associated denizens. Global warming, ocean acidification, increasing UV doses, raising sea level, anthropogenic eutrophication, pollution, overfishing, and shoreline development all lead to increase in the spread of coral disease, the frequency and intensity of devastating bleaching events, and the irreversible decline of some 70% of the world's reefs. Coral reefs are one of the peaks of life on Earth, unmatched in diversity and beauty for us to admire, understand, cherish, and make sure to preserve them for generations to come as a precious part of Mankind's heritage.

Leading authorities, established and young, have contributed their up-to-date summaries and evaluations of developments in their respective fields of expertise. The resulting book covers and integrates in one volume materials scattered in hundreds of research articles, in most cases focusing on narrow and specialized aspects of coral science. Besides the latest developments in coral evolution and physiology, chapters are devoted to novel frontiers in coral reef research such as the molecular biology of corals and their symbiotic algae, remote sensing of reef systems, ecology of coral disease spread, effects of various scenarios of global climate change, ocean acidification effects of increasing CO₂ levels on coral calcification, and damaged coral reef remediation. In addition to the extensive coverage of the above, key issues regarding the coral organism and the reef ecosystem, such as calcification, reproduction, modeling, algae, reef invertebrates, competition, and fish, are reevaluated in the light of new research tools and emerging new insights.

In all chapters novel theories as well as challenges to established paradigms are raised, evaluated, and discussed. Chapters are offering attempts of synthesis among aspects and organizational levels.

The volume is an essential asset in any marine laboratory and in all university libraries where there is a biology program.

This volume is humbly dedicated to the memory of Len Muscatine, friend and mentor, from whom we all learned so much about corals and excellence in science.

Zvy Dubinsky and Noga Stambler

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