

## PREFACE

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I write this preface almost precisely 10 years after I co-penned the preface for the 1st edition. The *Encyclopedia of Ecology* second edition is an updated and revised edition of the successful first edition major reference work. The first edition, published in 2008, was a useful reference work for students, scientists, and practitioners in the ecological fields; however, the field has changed rapidly over the past decade. This second edition accomplishes three objectives. The first is to update the articles in the first edition in need of revision. These updated articles reflect new advances and literature in the field. Second, the new edition has added new topics that were not present in the first edition, thus remains at the cutting edge of the field. Third, the new edition includes new authors who are international leading experts in ecology. One strength of the work is that it is an objective voice bringing together many topics, authors, and perspectives into one collection. The encyclopedia aims at effectively representing and linking both theory and application.

Ecology, as the study of the interactions of living systems and their environments, covers all scales of biological organization from organisms to population to communities to ecosystems. It utilizes laboratory, field, simulation modeling, and theoretical approaches to understand how living systems sustain structure and function in space and time. As such, ecology is an integrative science, and a common thread that weaves through the encyclopedia is the emphasis on the holistic range along the continuum of holism-reductionism in science. More and more, ecological principles are applied to inform human, social, and even economic problems. Ecological science underpins our knowledge of sustainability and has immediate and relevant impacts for the ecological and environmental issues confronting humanity today. We cannot solve the environmental crises such as climate change, soil degradation, biodiversity loss, or land cover change without a strong understanding of the ecological principles that steer nature toward its own sustainable solutions. This work covers the broad field of ecology in a comprehensive way. Although the coverage is broad and comprehensive, there is a thread of systems thinking as well as application of these principles that carries through the various chapters.

As a break from the alphabetized approach in the first edition, the second edition is arranged thematically to highlight more fully the interconnections between articles within topics. This edition has more emphasis on behavioral and evolutionary ecology, as well as new sections dealing with aquatic ecology, terrestrial and landscape ecology, ecological complexity and informatics, and human and urban ecology. The complete list of sections is as follow:

- *Aquatic Ecology*
- *Behavioral Ecology*
- *Conservation Ecology*
- *Ecological Complexity*
- *Ecological Data Analysis and Modeling*
- *Ecological Processes*
- *Ecosystems*
- *Evolutionary Ecology*
- *General Ecology*
- *Global Change Ecology*
- *Human Ecology and Sustainability*
- *Terrestrial and Landscape Ecology*

The completion of the work is only possible due to the contributions of the authors, the hard work of my colleagues who served as section editors, and the organization and logistical support from dedicated Elsevier Major Reference Works staff. The first edition was dedicated to the memory of Yuri Svirezhev who was a section editor on that edition and passed before its completion. While his daughter, Anastasia Svirejeva-Hopkins, took over the editing duties in the first edition and continued to do so in the second, even more special is that his grand-daughter, Lana, has supplied original art work for the covers of these volumes. Lastly, I would be remiss also not to recognize the great legacy impact that Sven Erik Jørgensen has on this work. He was the Editor in Chief for the first edition, and invited me to be a part of that production. Unfortunately, Sven passed away in March 2016 and was not able to participate in this project, but his shadow spans over the field and these volumes, which are dedicated in his memory.

We expect that this major reference work would be a first-stop, go-to reference for an accurate and reliable report on all topics in the field of ecology. It is designed for reader usability with highlights and further readings lists, as well as cross-references for other topics in the encyclopedia. The encyclopedia has a comprehensive index allowing the reader to search quickly the wide range of topics herein. Ecology is an important science that lays at the intersection of the biological, physical, and social dimensions. We hope you find great utility in the comprehensive treatment of this field currently in your hands.

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