

## BOOK REVIEWS

**Encyclopedia of Biological Invasions.** Edited by Daniel Simberloff and Marcel Rejmánek. 2011. University of California Press, Berkeley and Los Angeles, California, USA. 792 pages. \$95.00 (hardcover). ISBN: 9780520264212.

Species introductions and consequent biotic invasions and homogenization are major components of global change that are drawing increasing concern and various levels of actions and reactions around the world. Invasion ecology has advanced rapidly during the last few decades, and the discipline is now increasingly integrated with the social and economic sciences. A better understanding of the invasion process and its effects is thus clearly needed. For basic research, invasion biology offers fascinating and sometimes unique opportunities for testing certain ecological or evolutionary theories and principles because species invasions are so dynamic and because the expansion of invasive species (and thus contraction of native species) and their impacts can be observed over a relatively short time period. On the applied side, invasion biology is strongly tied to human social-economic activities and management policies that affect everyone's daily life. Following a series of new books on the general topic of invasion biology (or ecology), this timely and important volume edited by Simberloff and Rejmánek represents the most comprehensive and updated information.

This nearly 800-page volume, by name ("encyclopedia"), is aimed at a very broad audience, including students and the general public. It is written by 197 authors, including many well-known experts who have been studying invasive species and biotic invasions, with a well-balanced representation from throughout the world, especially from locations where biotic invasions are seen as major ecological or environmental problems (e.g., North America, Europe, and Australia). The book is structured around the key subjects in invasion ecology with 153 topics and 600 terms in nine major categories. It includes the most up-to-date and comprehensive aspects of invasion ecology. The *Encyclopedia of Biological Invasions* provides detailed descriptions of some of the most dominant and representative invasives, either as individual species (e.g., kudzu) or as broader taxonomic groups (e.g., ants, fishes, forest insects). The authors explain some common ecological terms, such as "disturbance," "succession," and "lag time," that are most pertinent to species invasions, and also other technical terms that are not usually associated with general ecology but are commonly used in invasion biology. Most of these latter terms, such as "ballast" and "trade," are strongly related to social-economic activities. The broadness of the book's subject matter is perfectly reflected in the "Contents by Subject Area" in the beginning of the book. The book is aided by a glossary, a list of the

world's top 100 invasive species, key references, and an index at the end of the book that I find very helpful. Many topics are illustrated and accompanied by bright photos, tables, and figures.

I find it difficult to describe specific topics (e.g., chapters) from this book in detail because of the book's extensive content and because of the generally limited space for book reviews. Given the countless terminologies involving species invasions and their consequences, it is impossible to include all related terminologies in a single volume as the editors acknowledged; thus, a balanced approach was needed during the selection process. The first major task that the editors faced during this massive undertaking was obviously to select which topics or items that should be included in a single volume. The next step was to gather enough qualified experts, who can provide accurate descriptions and timely updates for their respective chapters, and then to offer basic writing guidelines. These are by no means easy tasks, but the results have proved highly fruitful. The individual authors clearly enjoyed some 'freedom' in writing style, partly due to the amount and quality of information available and partly due to the need to write for a general audience. For many topics, future challenges are outlined to offer some hint regarding research needs and directions.

Readers are encouraged to read the "Guide to the Encyclopedia" and the "Preface" before proceeding. Naturally, readers with different backgrounds and experiences will find that certain topics are easier to understand than others. Links to in-depth reference sources are provided at the end of each chapter for those with interests in specific topics or biological invasion in general. As the editors have acknowledged, choosing the topics for the volume was difficult, mostly because invasion ecology covers all biological, ecological, evolutionary, and social-economical areas. With increasing pressure of species introductions across local and regional areas, as well as globally, due to growing human activities, invasion biology will undoubtedly continue to be a growing field with unlimited opportunities for both basic and applied research. With the drastic progression of this discipline and the recognition that many patterns of invasions are still unfolding, future editions with updates will be warranted.

Like most encyclopedic books, readers naturally will hope that they can easily find their item of interest. For this volume, readers can determine if certain critical concepts or terms should be added to the book in a future edition. Given this volume's already large size and the fact that many more ecological topics related to biotic invasions could be added, the editors' challenge in future editions will be how to better balance between the number of new items and the length of the text. If more topics or items are to be added in a future edition, perhaps shorter chapters are

warranted. Also, new concepts and terminologies constantly emerge, especially in a dynamic discipline like invasion biology. There are some changes that the editors can implement to improve the current version. For example, it would have been convenient for the readers to have page numbers included in the "Content by Subject Area." For some well-known invasive species, distribution maps would have been informative. The general public also would have benefitted from information about the successful control of specific invasive species and about why these cases were successful.

Overall, *Encyclopedia of Biological Invasions* is an excellent, much needed, and easy-to-read addition to the current literature on biological invasions. This collective

effort testifies to this discipline's strong links to other disciplines, its progression, and further challenges lying ahead. I am confident that both ecologists and land managers will find this a very useful tool and quick reference in their future work.—*Qinfeng Guo, U.S. Department of Agriculture, Forest Service, Eastern Forest Environmental Threat Assessment Center, 200 WT Weaver Blvd., Asheville, NC 28804, USA.*

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