

Bioinvasions and Globalization: Ecology, Economics, Management, and Policy

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the time between 535 million and 510 million years ago when animals radiated rapidly in the sea; one on mass extinctions with a focus on the most recent one, 65 million years ago when the dinosaurs died out; and one on the geological timeline with a “story-board” sequence of all 100 paintings in a single spread.

The incorporation of such a huge amount of work by author and artist is astonishing. This book is up to date and includes an outline of current paleontological and systematic knowledge, all of it accurate and correct so far as I can see. I’m sure it will sell in large numbers, but I’m not sure that it will *captivate* its readers. This is not entirely the fault of the author; the problem is driven by the tyranny of the two-page spread, where the artwork is key and the text has to fit into small spaces in the periphery. Trade books such as this one are designed and managed closely by the publisher, and the author has to write an exact number of words to fill each panel. (The other kind of book, the old-fashioned narrative, allows the author to lead and to tell a story, and the artwork is secondary and used only when necessary and in the appropriate style to qualify and explain the text.)

The outcome of the two-page spread can be a book that is beautiful to behold but not engaging to read. In normal writing mode, an author may dash off a wonderful explanation of the debates about whether the Burgess Shale animals belong to modern groups or represent an explosion of “experimental” body plans, as Steve Gould argued. Or the account of the Jehol Biota in China might be enhanced by a word picture of the landscape today—enormous expanses of rolling hills on which every inch has been brought into cultivation, and where millions of farmers till the fields, and plow up exquisite fossils every day. However, if the word limit is exceeded in the double-page-spread mode, the text is edited back to basics and much color is lost.

Much current work in paleobiology is ingenious and smart—working out

how ancient organisms lived, discerning patterns of evolution, interpreting ancient environments and ecosystems from subtle clues in the rocks, and investigating the origins of evolutionary novelties that drive diversification. It would have been wonderful to read more about *how* we know what we know. That is what grips the reader, and these are the details of human endeavor and ingenuity that turned most people onto science when they were young.

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BIOLOGICAL INVASIONS AND SOCIETY’S RESPONSE

Bioinvasions and Globalization: Ecology, Economics, Management, and Policy. Charles Perrings, Harold Mooney, and Mark Williamson, eds. Oxford University Press, 2010. 288 pp., illus. \$70.00 (ISBN 9780199560165 paper).

B*ioinvasions and Globalization: Ecology, Economics, Management, and Policy*, edited by Charles Perrings, Harold Mooney, and Mark Williamson (three of the most prominent researchers, authors, and leaders in the field of invasion science over the past 25 years), sets out an ambitious agenda, proposing to “explore the current state-of-the-art in the social and ecological science of invasive species and draw out the implications for the national and international regulation of the problem.” The book targets graduate students and professionals in the fields of ecology, invasion biology, conservation biology, and environmental economics. It consists of 16 chapters written by a total of

36 authors, representing nine countries and five continents. Examples and case studies from diverse regions of the world constitute one of the strengths of the book.

There are many other aspects of this book that I liked as well. One is the book’s emphasis on invasive pathogens, particularly human pathogens and pathogens affecting food production (livestock and crops). During the past 30 years, invasion science has focused considerable attention on the ecological effects of invasive species. This is consistent with some of the early definitions of invasive species that emphasized habitat and biodiversity impacts; for example, the definition of invasive species by the Convention on Biological Diversity: “those alien species which threaten ecosystems, habitats, or species.” Although humans, farm animals, and crops are species too, invasion biologists have focused mostly on the effects of invasive species on wild native species. Clearly, invasive pathogens



are not the only nonnative species causing serious harm, but as a group, they do pose the greatest threat to human well-being, and it is time that this be generally acknowledged. By highlighting this point, *Bioinvasions and Globalization* makes a very important contribution to the field of invasion science.

As exhibited by several of the book’s chapters, the field of invasion science has matured considerably over

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the past 30 years. More researchers are aware of the limitations and arbitrariness associated with the binary paradigms that have traditionally defined the field. In this respect, I particularly liked the chapter by Chris Thomas and Ralf Ohlemüller, who staked out a very pragmatic approach in their discussion of the role that climate change will play in species distributions, emphasizing that “biodiversity is on the move and...distinguishing between species on the basis of how long they have been in a particular location is not sensible.” R. Uma Shaanker and four coauthors took a similarly pragmatic approach in their discussion of the need for an inclusive management strategy for invasive tropical plants. While emphasizing that people living in poverty often experience the most harm from invasive species, the authors also presented several examples of how local peoples have learned how to exploit some invasive plant species to their economic advantage.

Two other chapters that particularly stand out include one written by R. David Simpson and one by David Finnoff, Alexei Potapov, and Mark Lewis. Simpson showed how a simple economic model developed to deal with pollution could be used to guide policy and management decisions involving invasive species. Finnoff and coauthors presented a fascinating argument that the adoption of second-best strategies that do not change over time can often use economic resources more effectively in the long run than the adoption of dynamically optimal policies.

As an edited volume, *Bioinvasions and Globalization* has much to offer the reader, and I strongly recommend it as a useful resource because of the quality of many of its chapters. However, the book also left me frustrated. Like most edited volumes, it consists of a series of mostly disconnected chapters, a few of which were mainly revisions of previously published papers. The editors tried to impose some organization onto the contributions by distributing the chapters

into three sections, one focusing on the drivers of invasions, one focusing on economics, and one focusing on management and policy. However, this scheme seemed to have been created after the individual chapters were written, as opposed to being the organizing structure that guided the authors. In some instances, the assignment of a chapter to a particular section did not make sense to me. For example, I could not figure out why a chapter titled “Second Best Policies in Invasive Species Management” was not included in the management and policy section. And why were impacts of invasive species described after the section on economics? Wouldn't it make more sense to present the impacts before getting into the economic, management, and policy chapters? Adding to the lack of continuity is the fact that different authors used different terminologies. Some used the acronym NIS (nonindigenous species), some used IAS (invasive alien species), and some did not use acronyms at all. Each chapter also had its own bibliography, a common practice in edited volumes, but a device I do not believe is used with the reader in mind. This practice definitely contributes to the sense of discontinuity exhibited by many edited volumes.

I think edited volumes served a very important service during the early days of the modern field of invasion science (e.g., the SCOPE volumes during the 1980s), when there was a comparative paucity of primary literature. However, the invasion field definitely does not lack primary literature today. Edited volumes, unfortunately, often do not do much more than provide the field with more chapters and articles, and thus I do not believe they contribute as much to the invasion field as they once did. Frequently lacking coherency, consistency, and continuity, edited books often fail to provide much added value, being not much more than the sum of their independent chapters. Given that the field has grown so much during the past 10 years, both in extent and com-

plexity, what is more valuable now, in my view, are single or multiauthored books that provide the reader with a coherent and consistent perspective (e.g., Lockwood et al. 2007, Blackburn et al. 2009).

As described above, the editors have attempted to integrate the social and natural science of biological invasions, specifically by connecting the ecology of invasions with the economics, management, and policymaking of the field. I question whether a goal of this magnitude can be achieved through an edited volume. Edited volumes are good at providing a collection of related chapters, but are not usually very good at synthesis and integration. I think the best chance to produce a coherent perspective on a topic this complex and extensive is through a book written entirely by a single or a few authors. The final chapter, written by the editors (and two of the chapter authors) gave me a tantalizing glimpse of what might have been. It would be difficult, perhaps impossible, to find three authors more qualified to write a book connecting policy, economics, and management with the ecology of invasive species than the distinguished editors of this volume. Had Perrings, Mooney, and Williamson chosen to write this book themselves, as opposed to editing another volume, I believe there is a good chance they would have produced one of the signature invasion books since the inauguration of the modern field 30 years ago—one that would have shaped invasion management and policymaking for years to come.

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