

grasslands, because they provide a system which is predominately annual in nature and thus a model system for studying whole-ecosystem responses to interannual climate variability, as well as human-driven environmental changes such as nitrogen deposition. Every year a new scramble occurs among annual species in the grassland, resulting in new population configurations and interactions. Revealing experiments can be made in thesis time frames because every year, for the annual dominants, the system structure starts anew. An added attraction of this system is the presence of low-fertility serpentine soils that occur throughout central and northern California which, at least until recently, have offered refugia for native species of forbs.

The book *California Grasslands. Ecology and Management* abundantly shows the vast amount of new knowledge that has accumulated on this ecosystem since the last synthesis of information in 1989 [1]. In fact, over a thousand new papers have been added to our knowledge since that time. This volume is comprehensive and deals with topics ranging from systematics, paleohistory and community and ecosystem ecology to resource management. It is all there, packaged in a handsome volume that is very well edited with cross-references among chapters.

Many of the chapters bring important new information about the dynamics of Californian grasslands that have been revealed not only by individual studies but also by fitting together new pieces to address long-standing puzzles about this system (or more appropriately system complex, because it extends over a wide climatic and topographic range of variation). Many new insights on this system are contained within this broad sweep of information, including the use and management of grasslands by native Californians, the results of which can still be seen today. The book provides additional clues on the nature of

the pre-settlement grasslands and on the complexities of the nitrogen cycle in this water- and nutrient-limited system. It also describes the lasting legacies of land-use patterns of the past few hundred years, the new successes in restoring native grasslands and even the emerging understanding of the benefits of utilizing cattle grazing in many situations to maintain native species diversity against the overtopping dominant alien grasses.

The challenges for land managers will multiply in the decades ahead as the systems are increasingly affected by global changes. For example, it is likely that increasing atmospheric nitrogen deposition, which favors alien species in this system, will have a large impact. Other global changes are yet to come, including the addition of new alien species. As described in this volume, the short life span of the grassland species has made this system unusually well suited for experiments on the impacts of global changes on species, community and ecosystem responses. The experiments suggest that the future will bring changes in species diversity and composition, but not necessarily on productivity.

In sum, this volume is a marvelous contribution to a holistic understanding of the California grassland ecosystem. However, despite its focus on a single ecosystem, the messages conveyed should be of general interest to a wide audience of scientists and land-use managers because of the integrated information that is presented on ecosystem dynamics past, present and future.

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doi:10.1016/j.tree.2008.02.010 Available online 24 April 2008

Book Review

Warder Allee's escape from obscurity

Allee Effects in Ecology and Conservation by Franck Courchamp and Luděk Berec and Joanna Gascoigne, Oxford University Press, 2008. £44.95, hbk (272 pages) ISBN 13 978-0-19-857030-1

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Most exciting concepts in ecology are often those that are long neglected but upon rediscovery have profound implications for a variety of problems. Such is the case with the Allee effect, which refers to decreasing per capita growth with decreasing density. The phenomenon was named after Warder Allee, who was fascinated by cooperative behavior in animals, and his work, dating back to the

1930s, is credited as the first examination of the population-level consequences of cooperation. In particular, Allee

noticed that at low densities, survival and reproduction was often limited by the lack of conspecifics and this could lead to population decline.

For many years, Allee's concept was mentioned as a minor topic in most ecology textbooks but never given very much importance. Over the last two decades, however, Allee's concepts began to surface from obscurity with emerging interest in conservation biology and biological invasions. Ecologists started to ponder the dynamics of low-density populations and found that Allee effects can create thresholds below which populations decline toward extinction [1,2]. It became apparent that Allee effects are prevalent in low-density populations, arising from a multitude of causes such as mate-location failure, lack of

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predator satiation and inability to engage in group feeding. We now know that Allee effects are critical to understanding the dynamics and persistence of both endangered and invading populations [2–4].

The publication of the first book devoted entirely to Allee effects, *Allee Effects in Ecology and Conservation*, thus represents a momentous occasion in the triumphant emergence of Warder Allee's theory from obscurity to the center of ecological research. It comes as no surprise that such a book is written by three population ecologists who have been at the cutting edge of explosive discoveries on the numerous causes and consequences of Allee effects [4,5].

This is an excellent book that provides a comprehensive exploration of both the causes and consequences of Allee effects. I found it remarkable that the authors were able to provide a high level of technical detail while maintaining a writing style that was lucid and even fun. Their extensive use of photos, charts and case histories was an excellent way of making the book interesting and appealing to students and other Allee effect neophytes. In particular, the chapter on modeling Allee effects provides a coherent exploration of an otherwise confusing body of literature; despite the inherent technical nature of this subject, their treatment is sure to be enjoyed, even by the most number-fearing students. I would recommend this book as an excellent resource for professors who teach population ecology, conservation biology or invasion biology, and for graduate students studying these subjects.

The authors should be commended for assembling a very thorough account of the diverse literature on the causes and consequences of Allee effects. The only aspect that I found slightly lacking was that there was relatively little material on the significance of Allee effects to applied problems in invasion biology and biological control. Given the title of the book, it is obvious that the authors chose to focus on conservation biology issues, which is understandable given that the literature on the role of

Allee effects in invasion biology is still slightly less well developed.

In the book, Courchamp *et al.* provide a review of Allee effects from a perspective that differentiates itself from previous attempts to synthesize this subject. For example, they devote an entire chapter to the role of Allee effects in evolution, a subject that somehow receives relatively little attention in most previous reviews. Also, throughout the book, the authors emphasize the distinction between “component” Allee effects (reduction in fitness with decreasing density contributed by a single mechanism) and “demographic” Allee effects (reduction in fitness with decreasing density as a result of the combined effects from all component Allee effects and expressed at the overall population level). This seemingly obscure point is important because the demographic Allee effect is not necessarily the sum of the component Allee effects arising from various mechanisms acting simultaneously. By emphasizing this point throughout the book, the authors make an important contribution that should be useful in pointing scientists in the right direction during future quests to understand the often unexpected causes and consequences of Allee effects.

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doi:10.1016/j.tree.2008.02.009 Available online 24 April 2008

Free journals for developing countries

The WHO and six medical journal publishers have launched the Health InterNetwork Access to Research Initiative, which enables nearly 70 of the world's poorest countries to gain free access to biomedical literature through the internet.

The science publishers, Blackwell, Elsevier, Harcourt Worldwide STM group, Wolters Kluwer International Health and Science, Springer-Verlag and John Wiley, were approached by the WHO and the *British Medical Journal* in 2001. Initially, more than 1500 journals were made available for free or at significantly reduced prices to universities, medical schools, and research and public institutions in developing countries. In 2002, 22 additional publishers joined, and more than 2000 journals are now available. Currently more than 70 publishers are participating in the program.

Gro Harlem Brundtland, the former director-general of the WHO, said that this initiative was “perhaps the biggest step ever taken towards reducing the health information gap between rich and poor countries”.

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