

## **Insect Species Conservation**

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NEW, T. R. 2009. *Insect Species Conservation*. Cambridge University Press, Cambridge. 272 pp. ISBN 978-0-521-73276-5, paperback, \$69.00 and ISBN 978-0-521-51077-6, hardback, \$157.99.

Insects represent the most diverse animal component of terrestrial ecosystems. They occupy an enormous variety of ecological niches across a broad array of temporal and spatial scales and are essential to overall ecosystem function and sustainability. Yet, as worldwide environmental degradation continues to accelerate, most species-oriented conservation efforts have focused on vertebrates. Insects for the most part have remained outside mainstream conservation circles despite being key units of functional and compositional biodiversity.

*Insect Species Conservation* is the latest book in a series of exceptionally valuable publications targeting insect or invertebrate conservation by Tim New. What differentiates this book, though, is its manual-like utility providing direction for biologists and managers who are primarily experienced with organisms other than insects. Following a concise overview, each major topic area is richly illustrated with a variety of case studies from around the globe. Numerous flowcharts, protocols, detailed lists and other valuable resources are incorporated. The resulting synthesis significantly adds to the growing conservation literature and helps provide a very practical guide to enhance current species management practices or help better direct conservation planning.

*Insect Species Conservation* contains 10 chapters following a brief but insightful preface. In Chapter 1, New outlines the needs and priorities for insect conservation. He addresses criteria for assessing priority, categories of threat, and the great many challenges associated with making sound assessments for such a complex and speciose group. Chapter 2 addresses species recovery or management planning for insect conservation. The information provides a valuable template for document development and is particularly practical for readers with limited experience or entomological knowledge. It directly addresses the key topics of plan format and content, decision-making, scale and focus, management options, recovery criteria and assessment. In Chapter 3, New introduces the complex concept of habitat, particularly the notion of defining suitable habitat, and its relationship to population structure, species management, and as a central focus of recovery plans.

Recovery planning with regard to habitat is discussed in Chapter 4. New briefly talks about the short-term emphasis and limitations of current conservation efforts designed to help safeguard species by managing their current spatial considerations in the here and now. This is quickly followed by a broader and very timely discussion of the implications of climate change on species distributions, predictive models and possible mitigation strategies.

In Chapter 5, New briefly discusses additional threats to insects beyond habitat change including alien species, pesticides and overexploitation. I was a bit disappointed by the limited coverage of such paramount issues, especially as invasive species control and non-target impacts are increasingly becoming a main focus of field research efforts and are frequently incorporated into species management or recovery plans.

After laying firm groundwork in the previous chapters, New now moves into the larger realm of improving habitat for insect conservation (Chapter 6). What follows is an extremely well constructed overview of several restoration and management approaches including prescribed burning, mowing and grazing as well a brief discussion of the extreme case of habitat creation.

Various *ex situ* conservation measures are increasingly being used to help recover at-risk insect species. Chapter 7 provides an introduction to the aggressive and often highly controversial role of conservation breeding, organism reintroduction and organism translocation. The numerous tables, decision trees and strategies outlined have particular relevance for conservation stakeholders, practitioners and decision-makers. The use of monitoring to evaluate conservation programs is discussed in Chapter 8. New briefly covers monitoring criteria, basic approaches to monitoring and the importance of adaptive management in response to monitoring results but unfortunately fails to fully expand the conversation to include several current techniques.

In Chapter 9, New discusses the importance of improving the overall public image of insects, particularly through the use of high profile, charismatic flagship groups such as butterflies and dragonflies as ambassadors for conservation. He also emphasizes the importance that every new insect conservation campaign serves to not only add to the broader knowledge base but helps increase awareness of the overall role and importance of insects.

The final chapter moves beyond the issues and considerations raised earlier by presenting a concise guide for species management plan construction. The utility of this exercise exemplifies the strength of the entire book. Not meant as an exhaustive reference, *Insect Species Conservation* presents a wealth of practical information of benefit to a wide conservation audience and, more importantly, of significant value for the advancement of effective insect management and recovery planning.

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