

BOOK REVIEW

Plant Reintroduction in a Changing Climate: Promises and Perils. Edited by J. Maschinski & K. E. Haskins. Washington, DC: Island Press. 2012. 432 pp. ISBN 978 1 59726 831 8. £32.
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An increasing number of plant species are at risk of extinction due to anthropogenic habitat modification, the ongoing effects of climate change, and the spread of invasive species. Worldwide, reintroductions are being used to prevent the continued loss of biodiversity and restore natural habitats. This book reviews reintroduction practices and recent advances in the field and examines the potential role of reintroductions in preserving species threatened by climate change. The book is aimed at students, practitioners and conservation scientists and many sections are technical in nature, although the chapters reviewing past reintroductions and guidance on future reintroduction practices will be of more general interest.

Perhaps the most important contribution of this book is through the development of a set of best practice guidelines for rare plants. There are a total of 43 guidelines, which encompass the entire process from deciding whether to conduct a reintroduction, through the preparation, planning and implementation and, finally, the after-care and monitoring of reintroduced populations. The guidelines are well set out, clearly presented and easy to follow. They are complemented by a checklist in the form of a series of boxes which outline questions that should be asked as part of the process of planning a reintroduction programme. This step-by-step guide is essential reading for anyone involved in or considering a rare plant reintroduction. The book itself provides an excellent and timely review of reintroduction practices, with good use of case studies and chapter summaries, providing a solid background and evidence base for the guidelines described in the Appendix.

The first two chapters review past reintroduction projects, focusing on how these have been undertaken and their success rates, and highlighting knowledge gaps and areas which could be improved, such as the use of experimental designs and monitoring schemes, in order to inform future reintroduction programmes. This section includes a rigorous meta-analysis assessing the efficacy of reintroductions for establishing sustainable populations. The results of this analysis highlight some interesting and counter-intuitive outcomes of reintroductions in general. For instance, it appears that broad habitat needs at the species level may have lulled practitioners into a false sense of security with regard to site selection, leading to a higher rate of failure compared to species with highly specific habitat requirements. Later chapters further explore and elaborate on some of the more specific elements which require consideration in reintroduction programmes. These include genetics, microbial associations, public engagement, the problems of measuring success in long-lived species, and working with small threatened populations.

The ability of species to persist in the face of ongoing climate change is a key conservation concern. Throughout the book reintroductions are considered in light of the potential impact of changing climatic conditions on the successful establishment of self-sustaining populations. The potential impact of climate change on the success of traditional reintroductions (those within the known historic range of the species) is considered. Factors discussed include whether potential environmental changes may have occurred between extirpation and reintroduction and the importance of establishing genetically diverse populations which may cope with changing conditions. However, the book also tackles the more controversial aspect of reintroductions in the face of climate change, namely the use of managed relocations where species are moved outside their known range. This is considered in many chapters throughout the book, with Section III addressing the issue in detail. This section provides a good summary of the extensive debate in the scientific literature surrounding the efficacy of this highly controversial conservation tool, as well as clearly outlining some of the concerns from a practitioner's standpoint. One of the greatest concerns, the generation of invasive species, is further discussed in the following chapter. It is good to see that, based on this information, the authors attempt to stimulate discussion by addressing situations where this may be warranted and outline criteria for distinguishing between good and poor proposals for managed relocations.

Plant reintroduction may be an established technique for conserving rare and threatened plants. Yet in many respects it is still in its infancy, and this book will provide a good resource both as a summary of what is and isn't known and as a guide to future practices which must address the problems associated with climate change.

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