

Preface

This book was initiated following the 2009 conference 'Invasive species ecology and management: Linking research and practice' organized by the Invasive Species Special Interest Group of the British Ecological Society. Among the feedback from conference delegates was the observation that it was difficult to find up-to-date and comprehensive summaries of particularly notorious invasive species, especially for those who were not academics (and therefore with limited or no access to academic journals) but who were actively involved in controlling such species. It was noted that although very extensive and useful websites such as that of the Global Invasive Species Database of the Invasive Species Specialist Group of the International Union for Conservation of Nature (IUCN) exist, they sometimes have limitations in that the information provided in the various entries varies in quality, comprehensiveness and frequency of updates.

Consequently, the Handbook was proposed. The book is not intended to be a replacement for the invasive species databases that exist, but rather a comprehensive summary of selected species at time of publication, written by experts in the field. It should therefore provide a useful supplementary resource for researchers and managers of invasive species.

Why were freshwater species chosen in the first instance? As outlined in the introductory chapter (Chapter 1), many of the most invasive species are found in wetlands, and freshwater ecosystems are particularly vulnerable to invasion; this, alongside the importance of such systems for the direct and indirect ecosystem services and resources they provide to society, makes them a priority for the prevention and control of invasive species. In this book, freshwater ecosystems of all types and spatial scales are considered, from ponds to rivers and lakes, and riparian zones and estuaries are also included. Thirty three species were selected for inclusion in the volume based on their impact on biological diversity and/or human activities, and/or their illustration of important issues surrounding biological invasion. All are 'high profile' species that have been the focus of research and control efforts, and where possible species were selected from a broad range of taxa and geographical regions. There is much debate about what constitutes an 'invasive' species (e.g. as opposed to simply 'alien'), and two broad distinctions are made: those that are 'invasive' because of their detrimental impact on some aspect of their introduced location (whether ecological, economic or cultural), and those that spread (i.e. invade) rapidly when introduced. The two are sometimes related, but not always (see Ricciardi and Cohen, 2007, for discussion). Most of the species selections in this book are invasive in both senses, but some ally more with the former definition, and a few chapters (e.g. Chapter 13) with the latter, as in some cases impacts are not well understood. While a debate about the varying merits of 'invasive' terminology is interesting, it is not the focus of this volume. Instead, I hope that the contents of this book may inform the broader discipline of 'invasion ecology', whichever definition or interpretation is used.

Some people reading this book will be disappointed about the lack of inclusion of a species that they will consider essential to such a text. Much deliberation took place after the 2009 conference about what should be included in the volume, before the current line-up was decided upon. However, it is impossible to cover everything and some prominent species were naturally omitted. This does open the door to consideration of a second volume, though, and readers are encouraged to contact me (robert.francis@kcl.ac.uk) with suggestions of crucial species that were missed this time around.

For the case studies, each author was asked to discuss: (1) a summary of the history of the species and its introduction to host countries (including current distribution); (2) the ecological niche of the species, in both its native range and host range; (3) management efforts employed and how effective they have been in different situations; and (4) any challenges, controversies or differences of opinion that may exist regarding the presence or control of species in different countries. I did not wish to confine the chapters within a prescribed structure beyond this, as a structure appropriate for one species might not be for another, and I felt it was important to give chapter authors the creative freedom to construct their summaries as they saw fit. This was particularly the case for some of

the chapters that present case study material (e.g. Chapter 29) or where a particular aspect of a species is not known (e.g. impacts; see Chapter 14).

In each chapter I have also not tried to impose the use of specific 'native/non-native' terminology on the authors, such that terms such as 'introduced', 'alien', 'exotic', 'non-native' and 'non-indigenous' are generally used interchangeably (see Pyšek et al. 2008). I consider that the essence of these terms is the same, i.e. any species moved outside an area where it is not naturally found, by human agency, qualifies for all of these terms. There are of course varying further distinctions that can be made as to whether the species is established in the wild or not (naturalized) and so on, but these distinctions are made at the discretion of the individual authors.

Finally, all chapters were peer reviewed and I must thank all those who kindly gave of their time and expertise to critically comment on the chapters: Alvaro Alonso, Przemek Bajer, Simon Baker, Mark Benedict, Tim Bonner, Seth Britch, Michael Chadwick, John Clayton, Francesco Ficetola, Mark Freeman, Andre Gassmann, Bill Granath, Lauren Harrington, Steve Johnson, Claude Lavoie, Carol Lee, Marta Lizzaralde, Andrew Mitchell, Evangelina Natale, Stefan Nehring, Nuria Polo-Cavia, Petr Pyšek, Jian-Wen Qiu, Frank Rahel, Greg Sass, Hana Skalova, Peter Sorensen, Jan Thiele, Amy Marie Villamagna, Norman Yan, Dan Yu and Eva Zahorskae. Special thanks must also go to Tim Hardwick at Earthscan for regular advice and consideration throughout production of the book.

Robert A. Francis

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