on land within the EEZ and over 60 species can be found together within small pieces of forest. Only Barker's chapter contains more than a passing mention and even there typographical errors (e.g. *Onchidium nigrans* for *Onchidella nigricans*) will mean these snippets are hard to find. But maybe New Zealand ecologists should take this deficiency as a challenge, and investigate in detail Schilthuizen's (2002) claim that "snails and their kin are ideal subjects for a range of ecological and evolutionary research fields".

**Reference**

Schithuizen, M. 2002. Mollusca: an evolutionary cornucopia. *Trends in ecology and evolution 17:* 8-9.

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**Finding the botanical beasts lurking in suitcases and gardens**

Groves, R.H.; Panetta, F.D. and Virtue, J.G. (Editors) 2001. *Weed risk assessment.* CSIRO Publishing, Collingwood, Australia. x + 244 pp. Paper, ISBN 0-643-06561-X, AUS$80.00.

The world is no longer as big as it once was. Individuals of any species that can hitch or smuggle a ride via our extensive international trade networks can now disperse across vast previously insurmountable ocean barriers. This breakdown of natural dispersal barriers has occurred most frequently with plants, since numerous industries spread plant species around the world with great enthusiasm. As a consequence, rates of plant immigration are now tens of thousands of times greater than historical rates (Tye, Chapter 12).

Faced with this *tsunami* of plant species flooding into ecosystems, ecologists, conservationists and land managers around the world are struggling to determine where best to direct their limited resources. For example, which plant species should we attempt to block from importation (and exportation)? Which established weed species and cultivated potential weed species should we target for control or eradication?

If you want to know how far we have come with answering these difficult questions, *Weed risk assessment* is an excellent place to turn. This multi-authored volume explores the state-of-the-art in 'weed risk assessment' (WRA). Weed risk assessment encompasses the various approaches and models used both to set priorities for the control of established foreign weeds, and to assess the likely invasiveness (i.e. how well weeds will spread) and weediness (i.e. how detrimental their impacts will be) of proposed plant imports.

The book begins with several stimulating discussions of the enormous biological and statistical challenges to the accurate assessment of the likely invasiveness and weediness of plant species. Williamson (Chapter 3) and Lonsdale and Smith (Chapter 5) give particularly thorough reviews of these challenges. For example, plants in new environments can not be expected to behave as they do in their native ranges, since physical and especially biological conditions will differ greatly (Chapter 3). Kriticos and Randall (Chapter 6) inadvertently give an illustration of this, in their useful assessment of climate models for predicting potential weed distributions. They find that the climatic conditions within the native range of the Brazilian cactus *Cereus jamacaru* predict a dramatically smaller potential range for the species in Australia, than do the climatic conditions within the feral distribution of the same species in South Africa.

Such difficulties aside, the need for practical and accurate WRA systems is urgent. The many subsequent chapters supply examples of the development and implementation of WRA systems, both nationally and regionally, from Australasia and the Americas. These systems usually score species against a number of basic truths about most of today's weeds. Is the species a weed elsewhere, and does it have characteristics that predispose it to spread rapidly (e.g. fast growth, early maturation, many well-dispersing seeds, etc.), make control difficult (e.g. persistent seed banks, etc.), and have large detrimental impacts (e.g., poisonous, flammable, etc.)? [An exception is Hawai'i (Chapter 13), which still set priorities for existing weeds with a subjective "expert-based" selection process].

The quantitative WRA methods are simple enough for widespread application and objective enough to be defendable before bureaucrats and politicians. Initial indications are that they can also be surprisingly accurate (Reichard, Chapter 2), although there are some serious misgivings about current methods of evaluation (Chapters 3, 5). To quote Lonsdale and Smith (p. 59), 'the current screening systems are a creditable beginning, but we remain cautious... as to their explanatory power.' I am also concerned that many WRA methods may be overemphasising today's weeds — fast moving, disturbance-loving plants that readily reach problematic densities and distributions — at the expense of excluding/controlling tomorrow's weeds. It is the slow-maturing, shade-tolerant woody forest species, requiring several centuries to reach weed proportions, that may cause the most serious long-term alterations to native forest ecosystems.

Within these latter chapters are also some excellent accounts of the historical and ecological processes

influencing plant invasion in various counties. A highlight is Mulvaney's (Chapter 15) admirably thorough account of the historical factors controlling the naturalisation (i.e. becoming feral) of foreign ornamental woody plant species in south-eastern Australia. The highest naturalisation rates, close to 25%, are for the most commonly planted species and the species planted *c.* 200 years ago. These findings emphasise a critical need to think long-term when assessing likely invasiveness, and to apply WRA screening processes to species already cultivated in a country.

While this book is a gold mine of information and references, an adequate exploration of how field monitoring systems should be incorporated into WRAs is missing. Given the inaccuracies expected in current WRA systems, it is wise to expect the unexpected and monitor accordingly. How best to do this is an area of active research that is only touched on here.

This is undoubtedly an important volume, and a landmark for the beginning of a task that is certain to test the mettle of plant ecology. It is essential reading for ecologists and biosecurity staff working at the front lines of the weed invasion, and provides a practical introduction for ecologists considering joining the fight.

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**Competition: reviewing and scrutinizing the ecologist's toolbox**

Keddy, P.A. 2001. *Competition*. Second Edition. Population and Community Biology Series Volume 26. Kluwer Academic Publishers, Dordrecht, The Netherlands. 552 pages. Cloth, ISBN: 0-792-36064-8, £140.00.

Competition has long captured the attention of ecologists, perhaps because it is one of the fundamental ways in which species interact, or perhaps because of historical legacies. Don't let the book title steer you away from a supposed specialist topic however; the scope of this book is much wider than the title suggests. Rather than an exhaustive review of competition, Keddy uses the theme of competition to better understand the natural world, and also to expose the strengths and shortcomings of various approaches to understanding ecological questions.

Some major changes have been made from the first edition of the book: the second edition is much bigger (about twice as long as the first edition), it is printed by a new publisher, and the extent of human examples of competition has filled many of the new pages. This latter change may be unwelcome news for readers who disliked the material on human history and conflict among nations or civilizations in the first edition. It is unconventional, or at the very least unusual, to find so many references to the human condition in a book that is part of a series on population and community biology.

The book covers many topics in its 11 chapters, including the study of competition, the role of resources, several chapters on approaches and tools used to study competition, an expanded chapter on modelling, and two closing chapters that tie the material together and put it into a wider scientific framework. The text is clearly written and succinct. The referencing is extremely good, and many excellent examples and case studies are given to emphasize major points throughout the text. Each chapter ends with a set of questions for discussion; these are mostly designed to apply and extend key concepts in a broader framework rather than reiterate the contents of each chapter. Throughout the book, Keddy challenges us to ask clear questions in the first instance, and then to choose the appropriate tools to answer them.

Parts of the text are not ideal reading for the thin-skinned. Keddy voices strong opinions on a variety of topics, some of which do not bear directly on the theme of competition. For example: "Ordination is widely overused. Perhaps it is far easier to collect data than to ask clear questions, perhaps there is a false sense of sophistication from having a computer package simplify the data" (p. 161). Whether you agree with these opinions or not, reading this book will certainly elicit some strong responses! Personally, I like having someone challenge me on a topic; I don't think anyone reading *Competition* will come away indifferent to its contents.

*Competition* is a good read that will get you thinking in new ways about both competition in particular, and ecology as a discipline. I highly recommend reading this book for challenging ideas and opinions even if you don't have a strong interest in competition *per se*. One of the biggest drawbacks to the second edition is the price tag of £140.00 for a cloth edition of the book. As an unfortunate result, I suspect few individuals will be buying this book, and unless an inexpensive paperback version is released, it will also be prohibitively expensive for use in teaching advanced undergraduate or graduate classes.

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