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0521355168 - Ecology and Control of Introduced Plants
Judith H. Myers and Dawn Bazely
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Ecology and Control of Introduced Plants

The global spread of plant species by humans is both a fascinating large-scale experiment and, in many cases, a major perturbation to native plant communities. Many of the most destructive weeds today have been intentionally introduced to new environments where they have had unexpected and detrimental impacts. This book considers the problem of invasive introduced plants from historical, ecological, and sociological perspectives. We consider such questions as ‘What makes a community invasible?’ ‘What makes a plant an invader?’ and ‘Can we restore plant communities after invasion?’ Written with advanced students and land managers in mind, this book contains practical explanations, case studies and an introduction to basic techniques for evaluating the impacts of invasive plants. An underlying theme is that experimental and quantitative evaluation of potential problems is necessary, and solutions must consider the evolutionary and ecological constraints acting on species interactions in newly invaded communities.

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ECOLOGY, BIODIVERSITY, AND CONSERVATION

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The world's biological diversity faces unprecedented threats. The urgent challenge facing the concerned biologist is to understand ecological processes well enough to maintain their functioning in the face of the pressures resulting from human population growth. Those concerned with the conservation of biodiversity and with restoration also need to be acquainted with the political, social, historical, economic and legal frameworks within which ecological and conservation practice must be developed. This series will present balanced, comprehensive, up-to-date and critical reviews of selected topics within the sciences of ecology and conservation biology, both botanical and zoological, and both 'pure' and 'applied'. It is aimed at advanced final-year undergraduates, graduate students, researchers, and university teachers, as well as ecologists and conservationists in industry, government and the voluntary sectors. The series encompasses a wide range of approaches and scales (spatial, temporal, and taxonomic), including quantitative, theoretical, population, community, ecosystem, landscape, historical, experimental, behavioural, and evolutionary studies. The emphasis is on science related to the real world of plants and animals, rather than on purely theoretical abstractions and mathematical models. Books in this series will, wherever possible, consider issues from a broad perspective. Some books will challenge existing paradigms and present new ecological concepts, empirical or theoretical models, and testable hypotheses. Other books will explore new approaches and present syntheses on topics of ecological importance.

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[More information](#)

We dedicate this book to our families
Jamie, Isla and Iain
Peter, Madeleine, and Carolyn

Contents

<i>Preface</i>	<i>page</i> xiii
1 Introduction	1
Weeds and the value of native species	1
The socio-economic background of plant introduction	6
Turning back the clock – is restoration possible?	8
Biological control as an approach to introduced weeds	11
Promoting ecosystem management for native species	12
Conclusions	13
2 Planet of Weeds: exotic plants in the landscape	14
The scope of the problem: how many and how costly are non-native plant species?	17
What's in a name?	20
Patterns of plant introductions	23
The ecological theory of colonization and invasion	34
Landscape ecology and invasive species	36
Conclusions	50
3 Biological invasions in the context of plant communities	51
Part 1 – Characteristics of native plant communities that influence plant invasions	51
Disturbance and succession	53
Grime's C–S–R model of succession	54
Disturbance and the invasion of plant species	56
Herbivory and introduced plant species	60
Interspecific competition and plant invasion	64
Part 2 – The effects of invasive species on plant communities and ecosystems	79
Conclusions	88

x · Contents

4	Predicting invasiveness from life history characteristics	89
	What are life history traits?	89
	Seed germination and dispersal	96
	Disturbance and seed persistence	99
	Seed size and seed predation	103
	Vegetative reproduction	106
	Case study – <i>Phragmites australis</i> – a story of successful vegetative reproduction	110
	Do life history characteristics predict invasiveness?	111
	Predicting invasive species and the design of quarantine regulations	113
	Conclusions	118
5	Population ecology and introduced plants	120
	Why study plant populations?	120
	What determines plant population densities?	121
	Self-thinning and the 3/2 rule	126
	Are plants seed limited?	127
	Demographic parameters	129
	Monitoring populations	131
	Life tables and key factor analysis	132
	Population ecology of vegetatively reproducing plants	139
	Case study – Diffuse knapweed in British Columbia	140
	Conclusions	146
6	Introduced plant diseases	147
	Introduction	147
	Chestnut blight (<i>Cryphonectria parasitica</i>)	148
	Joint introductions – common barberry and wheat stem rust	149
	Sudden oak death and rhododendrons	151
	White pine blister rust, <i>Cronartium ribicola</i>	152
	Pandemics of Dutch elm disease, <i>Ophiostoma ulmi</i> and <i>O. novo-ulmi</i>	154
	Introduction of fungi for biological control of weeds	155
	<i>Uromykladium tepperianum</i> on <i>Acacia saligna</i> in South Africa	158
	<i>Puccinia chondrillina</i> on <i>Chondrilla juncea</i> in Australia	158
	The potential role of soil microbes in invasiveness	160

Cambridge University Press
 0521355168 - Ecology and Control of Introduced Plants
 Judith H. Myers and Dawn Bazely
 Frontmatter
[More information](#)

	Contents	· xi
Preventing the introductions of plant diseases	161	
Conclusions	162	
7 Biological control of introduced plants	164	
Introduction	164	
How successful is biological control?	165	
Can we predict successful agents and vulnerable plants?	179	
Can we predict what will be a successful biological control agent?	181	
Is biological control safe?	191	
Conclusions	193	
8 Modeling invasive plants and their control	195	
Introduction	195	
The history of modeling biological control	195	
Modeling the impact of seed predators	199	
Models of Scotch broom	203	
Combining population models and experiments	208	
The world is variable but models are not	212	
Modeling invasive plants – what have we learned?	212	
Modeling invasions as they spread across habitats and landscapes	214	
What models tell us about detecting invasions	219	
Invasion speed for structured populations	221	
Slowing the spread	222	
Conclusions	223	
9 Action against non-indigenous species	224	
Introduction	224	
Manuals and advice	226	
Physical control methods	227	
Chemical control of non-indigenous plant species	230	
Costs and benefits of control	231	
Assessing control of non-indigenous species	233	
Eradication as a goal	234	
Increasing the chances of successful control	237	
Who should take responsibility for introduced species?	239	
The uncertain status of some invasive species	241	
Conclusions	243	

Cambridge University Press
0521355168 - Ecology and Control of Introduced Plants
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Frontmatter
[More information](#)

xii · Contents

10	Genetically modified plants and final conclusions	244
	Genetically modified plants: another time bomb?	244
	Some concluding remarks	247
	Appendix	251
	<i>References</i>	271
	<i>Index</i>	301

Preface

The concept for this book goes back at least 15 years. In the meantime invasive plant species have become the ‘flavor of the month’ and the literature bursts with interesting new papers. Writing this book has been an exciting undertaking. We have written for a wide audience, and therefore take the chance that it falls between the interests of a variety of readers. Some may find sections to be too anecdotal. Others may find parts to be too technical. As we wrote we could not resist including some of the fascinating stories of the involvement of individuals in spreading plants. It is a scary thought that others may be introducing weeds of the future as we write. We hope that land managers who are charged with controlling invasive weeds and restoring habitats will find this book useful. We admire your efforts in tackling such complex problems. We value the great scientific and management contributions made by our colleagues in biological control, and are sorry we could not include all of the ideas and successes. For students, the experts of the future, we hope that invasion ecology and biological control stimulate your interest. There are many hypotheses to be tested and problems to be solved at this interface between basic and applied ecology. To all, we would be happy to get your feedback.

Many people helped in this project and two in particular deserve enormous thanks. First, Jamie Smith used up several red pens worth of ink editing the manuscript. His insights and suggestions have been invaluable. Second we thank Dawn’s mother who provided weeks of babysitting. We also thank Madeleine, Carolyn and Peter Ewins, for letting Dawn come west to work on the book. Jenny Cory, Anne Miller, and Diane Srivastava read sections of the manuscript and made many useful suggestions. Isla Myers-Smith read and commented on the total manuscript and also prepared several of the figures which was extremely helpful. Charley Krebs has been a valued mentor. He facilitated this project by writing useful books on ecology and ecological techniques and by providing the laptop on which the book was written. We also thank our graduate students who

Cambridge University Press
0521355168 - Ecology and Control of Introduced Plants
Judith H. Myers and Dawn Bazely
Frontmatter
[More information](#)

xiv · **Preface**

have suffered too long from inattentive advisors. Jill Sutcliffe and Keith Kirby of English Nature, and Norman Yan and Sohail Zaheer of York University provided useful information and Dawn's plant ecology class provided valuable feedback which we appreciated. Mansour Mesdaghi from University of Agricultural Sciences and Natural Resources, Iran, kindly shared his laboratory manual on vegetation measurement.

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We dedicate this book to our families
Jamie, Isla and Iain
Peter, Madeleine, and Carolyn