Preface

A great deal has changed in the world since the Second Edition of this book in 1997 and our approach to writing and structuring the book has changed as well. Most importantly, Martha Groom joined us in 2000 and took on the task of managing a major revision of the text. To guide the revision, Martha surveyed over 60 instructors on their needs for teaching conservation biology. Martha also conducted focus groups of graduate and undergraduate students at the University of Washington, who taught us much about their perceptions and concerns regarding conservation biology. This input made it clear that a major reorganization of the text was appropriate. We are grateful for all the suggestions we received—we only wish it were possible to integrate more of these insights.

In this edition, we increased our coverage of marine conservation issues by adding the chapters on overexploitation and species invasion, both of which are particularly large problems in the marine realm. We also increased our coverage of issues in countries other than the U.S., although the book has its primary focus on U.S. and global conservation issues. In response to our surveys, we increased representation of modeling approaches and discussion of models in conservation planning. We have incorporated a greater spectrum of guest essays and case studies, which are featured in every chapter. We worked to keep the flavor of multiple voices of experience and opinion that characterized the first two editions. Conservation is necessarily an enterprise of shared work, and we are fortunate to have many colleagues willing to describe their efforts openly to help others learn.

This book is structured to introduce essential concepts in conservation biology, beginning with an overview of the history of the field, biodiversity, and the major threats to biodiversity. We then explore ethical and economic constructs that affect our attitudes toward biodiversity and natural resources, and how these might be structured to better motivate conservation of biodiversity. With this background, we review in depth some of the most prominent drivers of biodiversity loss: habitat degradation and loss, habitat fragmentation, overexploitation, species invasion, and global climate change. After this grounding, we focus the rest of the book on mechanisms for conserving biodiversity. We begin with a transitional chapter on conservation genetics that describes both the problems of genetic losses and the promise of genetic tools for conservation. Our focus then increases in scale to encompass species and landscape-level approaches, and then ecosystem-level approaches to conservation in a broad sense. We explore how protected areas, restoration and reintroduction programs, and sustainable development serve as conservation tools. We conclude by discussing how conservation biologists can become better integrated into policy processes, and look toward the future of conservation biology as we search for means to protect biodiversity and improve human lives as our demands on this Earth grow.

Biodiversity conservation and an end to human suffering are entwined goals, on both ethical and pragmatic grounds. Unfortunately, they are not so entwined that solutions that will improve the status of each will also compliment each other. Indeed, we may best relieve human suffering at a much lower level of conservation than we might prefer, and we could conserve biodiversity in many areas without helping people escape poverty to a significant degree. Thus, the ethical dilemmas in biodiversity conservation are profound. How do we weigh the needs of poor people against those of nonhuman species? How do we protect the interests of future generations of wild nature and meet the needs of humanity now? Working through these issues to develop solutions that meet the needs of human populations and conserve the broadest spectrum of biodiversity is the challenge of our generation. We hope that each person chooses to make both personal and professional efforts to help us all find better solutions.

Supplements

Companion Website (www.sinauer.com/groom)

The *Principles of Conservation Biology*, Third Edition companion website contains a variety of study materials and supplemental resources to accompany the textbook. Study questions, suggested readings, and Web links for each chapter help the student to master the material presented in the textbook and provide direction for further

study. In addition, supplemental essays, case studies and boxes expand on the book's coverage of selected topics.

Instructor's Resource CD (ISBN 0-87893-295-X)

Available to qualified adopters, the Third Edition Instructor's Resource CD contains all of the illustrations and tables from the textbook, for use in lecture presentations and other course documents. All figures are provided as JPEG files and are also included in ready-to-use PowerPoint® presentations. In addition, the IRCD includes a set of suggested exercises—class, lab, computer, and field-based—for instructors to use with their classes.

Acknowledgements

Martha Groom

Typically, people acknowledge their intellectual roots first, and personal ties last. In this case, I'm blessed to be married to an inspirational mathematical ecologist and oceanographer, Danny Grünbaum, who is simultaneously a tremendous intellectual and emotional support. Not a day goes by when I do not love and appreciate him more than the day before. I would not have been able to complete this book without his direct support in caring for me and our children, and his thoughtfulness in discussing many issues that are covered in this book. I owe my greatest thanks to Danny for this, and much, much more.

Our parents, Anne and Len Groom and Zdenka and Branko Grünbaum have been fundamental supports. For their help in this effort, and all they have given us and our children throughout our lives—thank you! I also thank my sister, Lisa Firke, for her unflagging support.

Late in 2001 our sons Maks and Sam were born. They have affected how I have approached this book in several ways. Pragmatically, I slowed down the pace of my work, which delayed publication by years. But more importantly, Sam and Maks sharpened my focus on a major conundrum in conservation biology—how can we balance the needs of people and the needs of all the rest of biodiversity? As a conservationist, my guiding passion is to enhance protection of biodiversity. But now, as a mother too, the fierceness of my wish to protect my children from want and suffering is overpowering. Having children has intensified my set of motivating beliefs: that biodiversity has intrinsic value, and that we must protect it from undue harm as we provide for ourselves; that all people should have the ability to provide for their families, and that we have an obligation to make this a reality; and that education has the power to transform and inspire people. This has translated to a greater attention throughout this book to integrating human issues into conservation science, and to providing opportunities for students to wrestle with the moral, practical, and scientific issues of conservation.

Writing and editing a book gives one a welcome excuse to thank people who have poured their time and talent into helping you in the past. Peter Kareiva was my Ph.D. advisor and role model for critical thinking and the use of mathematical analysis to provide insight into applied conservation practice. A first-rate teacher, he inspired me to learn how to convey ideas simply and provocatively—a skill I still work on year after year. He offered the gifts of his mentorship with great dedication, and I continue to benefit from his many lessons and encouragement. Peter Feinsinger advised me in my M.S. work, and left his indelible mark in sparking my interest in plant-animal interactions and their role in conservation, as well as passing along his penchant for the muddle that is real-world conservation and the teaching of young children. I benefited greatly from being a part of the Tropical Conservation and Development group at University of Florida, and the mentorship of John Robinson and Kent Redford. Doug Schemske, Bob Paine, Dee Boersma, Jane Brockman, John Terborgh, and Hal Feiveson all sharpened my ecological and evolutionary understanding, and encouraged my interests in conservation and teaching. At each institution, the web of people with whom I've worked continues to be a source of great inspiration. Thank you all!

I was partially supported by the University of Washington, Bothell in Winter 2005, and my department chair, JoLynn Edwards, has been particularly helpful throughout. I worked on this book at the Helen R. Whitely Center in the summers of 2003 and 2005, and while on sabbatical at Princeton University in Autumn 2004.

Gary Meffe

As one ages, one tends to increasingly understand and appreciate the great and lasting influence that others have had upon their lives. Now some 15 years after inception of the First Edition, these influences, for me, are in clearer focus. So I gratefully thank those mentors instrumental in my development as an ecologist and conservation biologist, in particular Ted Stiles, Bob Vrijenhoek, Jim Collins, and the late W. L. Minckley. Each in his own way had profound influences on my life and my career, and for that I am in their debt. I hope that debt is partially repaid by passing on their wisdom and energies to the next generation of professionals. There is no more important gift in this life than good and solid parents to support you and send you off in the right direction, and Edward and Mary Meffe did that and more. I only wish they were still here to experience the rewards for their efforts. Finally, my wife Nancy Meffe continues to support, inspire, challenge, and to love me despite my

shortcomings. Others have shown me how to be a better scientist; she has shown me how to be a better person. I am still learning.

Ron Carroll

In the Second Edition I acknowledged the critically important, but generally unrecognized, contributions to conservation that are being made by small grassroots and regional organizations. The intervening years have only deepened my respect for these organizations. They are often the first to call attention to environmental problems and to engage the academic community in finding solutions. Of special importance now, these organizations work tirelessly to gain the support of local communities and to encourage good environmental legislation.

At a personal level, I want to acknowledge my mentor, Dan Janzen, for opening my eyes to the wonders of evolution and tropical ecology, my parents for encouraging my passion for studying decidedly non-charismatic organisms like bugs, my students who always impress me that the future of conservation biology is in good hands, and most importantly, my wife Carol for her constant support and for challenging my ecological pronouncements when the logic is faulty.

From all of us

A host of people participated in discussions about the book, and provided critiques of chapter drafts, including J. Ruesink, A. Edwards, J. Payne, T. Hass, J. Ginsburg, N. Dolšak, A Peterson, R. Irwin, K. Howe, S. Vignieri, F. Bonier, E. Holmes, L. Crozier, A. Solomon, W. Palen, U. Valdez, P. Townsend, C. Vynne, D. Froelich, E. Buhle, E. Skewes, S. Graham, P. Feinsinger, K. Almasi, N. Hahn, A. Clark, L. Addis, T. Billo, A. van Buren, F. Oryazun, F. Prado, K. Braun, E. Jones, C. Frey, L. Payne, D. Hahn, B. Semmens, and many undergraduate and graduate students from conservation courses at the University of Washington, Seattle and Bothell, and the University of Georgia. We owe special thanks to Michael Gillespie for his work in providing some new contexts and contributions to Chapter 4. Thank you for sharing your ideas—the book is certainly better for your work.

Finally, the entire staff at Sinauer has been remarkable in working with us through all the starts and stops of trying to do a major revision of a textbook while balancing families and full-time jobs. Andy Sinauer has been extremely supportive of this book in all its editions. Kathaleen Emerson helped manage production in the late stages, and Marie Scavotto organized the marketing aspects. David McIntryre did wonders in finding appropriate photos, Christopher Small oversaw all of the production, Joanne Delphia and The Format Group created beautiful figures, Joan Gemme did a lovely and meticulous job paging and designing elements of the book, and Jefferson Johnson did a fantastic job creating the overall design of the book. Jennifer Garrett and Mara Silver expertly copyedited the manuscript; a difficult task due to the many divergent writing styles of our contributors. But it is to Sydney Carroll, our production editor, that we owe the lion's share of our thanks. She has seen this book through all the intricacies of its production, was endlessly patient, and also kept Martha sane through to the end. This is a terrific group of people to work with, and we look forward to another edition in the future.