

PREFACE

Two views of the world dominate our thinking this century. This is a book about the Ecological World View, which contrasts sharply with the polar-opposite Economic World View to which many governments and business leaders subscribe. You are living in a century in which the Economic World View will be superseded by the Ecological World View—the signs of concern about climate change and sustainability have been reported widely in the media of 2007. As a citizen, you ought to learn something about the Ecological World View. There has been a revolution of human thinking in the last 40 years that has centered on the relationships between humans and their environment. The broader policy problems this revolution has brought about are the focus of the environment movement and the basic science behind it all is the science of ecology.

In a nutshell, ecology is concerned with the workings of the biological world within the framework of the world's environments. It is useful to learn something about ecology if you wish to understand the problems humans face in sustaining our environment and protecting the species with which we share the Earth. This textbook presents you with an outline of the science of ecology. If you understand how the natural world works, you will be better able to think with an ecological conscience.

This book presents the general principles of ecology without going into the details of ecological methods and mathematical arguments that are more essential in advanced ecology. I have strived to make this book both readable and topical—the greatest compliment any author can receive is that students think the book is readable and interesting.

Each chapter in this book raises a question about how populations and communities operate in nature, and provides examples and information for you to think about and analyse. If you would like more information on any topic, a list of suggested readings is provided as a starting point. Each chapter ends with a series of questions and problems to test your knowl-

edge. I have not provided answers. Indeed, for many questions, the answer is not yet known.

I have tried to emphasize the historical development of ecology by adding photos of famous ecologists in most of the chapters. Science is a human activity and those scientists who have developed the science of ecology—and are still building it today—are themselves interesting characters, more worthy of recognition than the sports stars that dominate our news. Ecology can sometimes seem too removed from everyday concerns, so I have used three chapters on applied ecology to illustrate some critical problems that need action. Conservation biology focuses on practical problems that demand ecological understanding. Fisheries management is another important issue that affects the entire world. Pest management hinges on concepts of population and community dynamics that need careful thought and analysis in case we cause more problems than we solve. I have included essays in many chapters to illustrate some of the kinds of problems and questions ecologists deal with in their attempt to understand nature.

This book is my own attempt to present modern ecology as an interesting and dynamic subject. This book is not an encyclopedia of ecology, but an introduction to its problems. If there is a message in this book, it is a simple one: we make the most progress in answering ecological questions when we use experimental techniques. The habit of asking, “What experiment could answer this question?” is the most basic aspect of scientific method that students should learn to cultivate. When there is controversy, answering this question leads us to the heart of the matter.

I thank many friends and colleagues who have contributed to formulating and clarifying the material presented here. In particular I thank my university colleagues Dennis Chitty, Judy Myers, the late Jamie Smith, Carl Walters, Jim Hone, and Tony Sinclair for their assistance, and Brian Walker and the many ecologists at CSIRO Sustainable Ecosystems in Canberra