

For Instructors

How Is This Book Organized?

This book is a brief introduction to basic ecological concepts. It consists of the first thirteen chapters of the fourteenth edition of my longer book, *Living in the Environment* (Wadsworth/Thomson Learning, 2005).

Essentials of Ecology, third edition, is divided into three major parts. The two chapters in Part I provide an overview of major environmental problems (Chapter 1) and environmental history (Chapter 2). Instructors could omit one or both of these chapters without affecting the student's ability to understand the chapters on basic ecology.

Part II consists of eight chapters covering basic science and principles of ecology.

Part III consists of three chapters on biodiversity. To get an overview of this book I urge you to look at the brief table of contents (p. vii).

In preparing this book, I have benefited from the more than 250 experts and teachers (a number of them ecologists) who have provided detailed reviews of my related books in environmental science.

What Are the Key Features of This Book?

Each chapter begins with a brief *case study* designed to capture interest and set the stage for the material that follows. In addition to these 13 case studies, 24 other case studies are found throughout the book.

The book's 248 illustrations are designed to present complex ideas in understandable ways and to relate learning to the real world.

I have not cited specific sources of information within the text. This is rarely done for an introductory level text in any field, and it would interrupt the flow of the material. Instead, on the website for each chapter you will find readings, Internet site references, and references to complete articles that can be accessed online on the InfoTrac® College Edition supplement available free to qualified users of this book. These sources back up most of the content of this book and serve as springboards to further information and

ideas. Placing these references on the website also allows me to update them regularly.

In-Text Study Aids

Each chapter begins with a few general questions to reveal how it is organized and what students will be learning. When a new term is introduced and defined, it is printed in boldface type. A glossary of all key terms is located at the end of the book.

Questions are used as titles for all subsections so readers know the focus of the material that follows. In effect, this is a built-in set of learning objectives. A brief attention-grabbing headline follows each subsection question to give students a general idea of the content of the subsection. This is followed by a single sentence that summarizes the key material in each subsection. In effect, this provides readers with a running summary of the material. I believe this is a more effective learning tool than providing a summary of the entire chapter at the end of each chapter.

Each chapter ends with a set of *Critical Thinking* questions and *Projects* to encourage students to think critically and apply what they have learned to their lives. The website for the book also contains a set of *Review Questions* covering all of the material in the chapter that can be used as a study guide for students. Some instructors download this off the website and give students a list of the particular questions they expect their students to answer.

Internet and Online Study Aids

Qualified users of this textbook have free access to the *Brooks/Cole Biology and Environmental Science Resource Center*. Access the online resource material for this book by logging on at

<http://brookscole.com/miller14>

Users then refer to the site material for Chapters 1 through 13 of my longer book, *Living in the Environment*,

fourteenth edition, which make up the content of this shorter basic ecology textbook.

At this website you will find the following material for each chapter:

- Flash Cards, which allow you to test your mastery of the Terms and Concepts to Remember for each chapter.
- Environmental Quizzes, which provide a multiple-choice practice quiz.
- Student Guide to InfoTrac[®] College Edition, which will lead you to Critical Thinking Projects that use this supplement as a research tool.
- References, which lists the major books and articles consulted in writing this chapter.
- A brief What You Can Do list addressing key environmental problems.
- Hypercontents, which takes you to an extensive list of websites with news, research, and images related to individual sections of the chapter.

Qualified adopters of this textbook also have free access to *WebTutor Toolbox on WebCT* and *Blackboard* at:

<http://e.thomsonlearning.com>

It provides access to a full array of study tools, including flashcards (with audio), practice quizzes, online tutorials, and web links.

Teachers and students using *new* copies of this textbook also have free and unlimited access to InfoTrac[®] College Edition. This fully searchable online library gives users access to complete environmental articles from several hundred periodicals dating back over the past four years.

Other student learning tools include:

- An interactive CD-ROM: *Student CD with Environmental Science, Now* that integrates concept summaries and almost 100 engaging animations and interactions based on figures from the text with flashcards and quizzing on the Web.
- *Essential Study Skills for Science Students* by Daniel D. Chiras. This book includes chapters on developing good study habits, sharpening memory, getting the most out of lectures, labs, and reading assignments, improving test-taking abilities, and becoming a critical thinker. Your instructor can have this book bundled FREE with your textbook.

- *Laboratory Manual* by C. Lee Rockett and Kenneth J. Van Dellen. This manual includes a variety of laboratory exercises, workbook exercises, and projects that require a minimum of sophisticated equipment.

What Supplementary Materials Are Available for Instructors?

The following supplementary materials are available to instructors adopting this book:

- *Multimedia Manager*. This CD-ROM, free to adopters, allows you to create custom lectures using over 2,000 pieces of high-resolution artwork, images, and Quick Time movies from the CD and the web, assemble database files, and create Microsoft[®] PowerPoint[®] lectures using text slides and figures from the textbook. This program's editing tools allow use of slides from other lectures, modification or removal of figure labels and leaders, insertion of your own slides, saving slides as JPEGs, and preparation of lectures for use on the Web.
- *Transparency Masters and Acetates*. Includes 100 color acetates of line art and nearly 450 black and white master sheets of key diagrams for making overhead transparencies. Free to qualified adopters.
- *CNN[®] Today CDs*. These videos, updated annually, contain short clips of news stories about environmental news. Adopters can receive one video free each year for 3 years. These videos are now available to professors electronically for classroom presentation as well as in videotape.
- Two videos, *In the Shadow of the Shuttle: Protecting Endangered Species*, and *Costa Rica: Science in the Rainforest*, are available to adopters.
- *Instructor's Manual with Test Bank*. Free to qualified adopters.
- *ExamView*. Allows you to easily create and customize tests, see them on the screen exactly as they will print, and print them out.

Acknowledgments

I wish to thank the many students, teachers, and reviewers who responded so favorably to the 13 previous editions of *Living in the Environment* (from which

this book is derived), the 10 editions of *Environmental Science*, and the 6 editions of *Sustaining the Earth* and the two editions of *Essentials of Ecology*, and who have corrected errors and offered many helpful suggestions for improvement. Any errors and deficiencies left are mine. Let me know how you think this book can be improved; if you find any errors, bias, or confusing explanations, please e-mail them to me at

mtg89@hotmail.com

I am particularly indebted to Scott Spoolman who served as a developmental editor for this new edition and who made numerous suggestions for improving this book. I am also indebted to Michael L. Cain, John Pichtel, and Jennifer Rivers who made detailed reviews of the previous edition of this book and provided many helpful suggestions.

My deepest thanks go to Jack Carey, biology publisher at Brooks/Cole, for his encouragement, help, 38 years of friendship, and superb reviewing system. It helps immensely to work with the best and most experienced editor in college textbook publishing.

I dedicate this book to the earth and to Kathleen Paul Miller, my wife and research associate.

G. Tyler Miller, Jr.

Guest Essayists

Guest Essays by the following authors are available online at the website for this book.

M. Kat Anderson, ethnobiologist with the National Plant Center of the USDA's Natural Resource Conservation Service; **Michael Cain**, Bowdoin College; **Garrett Hardin**, professor emeritus (now deceased) of human ecology, University of California, Santa Barbara; **Paul G. Hawken**, environmental author and business leader; **Jane Heinze-Fry**, author, teacher, and consultant in environmental education; **Norman Myers**, tropical ecologist and consultant in environment and development.