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Edited by Mike Calver, Alan Lymbery, Jen McComb and Mike Bamford

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## Environmental Biology

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*Environmental Biology* offers a fresh, problem-solving treatment of the topic for students requiring a biology background before further study in environmental science, sustainable development or environmental engineering.

The text begins with an environmental theme that carries throughout, using three major case studies with a regional focus. Key foundational knowledge in biology is introduced and developed as the text progresses, with students encouraged to integrate their accumulating learning to reach solutions. A comprehensive coverage of scientific method, including field experimentation and field techniques, is an important part of the approach. While emphasising the environmental theme, the book introduces all facets of the discipline of biology, including cell biology, evolution, ecology, conservation and restoration.

With over 500 line drawings, diagrams and photos throughout, including full-colour sections, each chapter includes:

- chapter summaries
- comprehension questions
- activities that reinforce learning and encourage scientific analysis
- topics for debate with other students
- lists of further reading.

An online Instructors' Resource offers multiple-choice questions, 'Test your knowledge' solutions, video footage, a full repository of text-based and supplementary photos, and a vast list of relevant journal articles.

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Environmental Biology

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## Preface

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There are many excellent introductory biology textbooks available, so why write another? The answer lies partly in the rapid expansion of modern biology and partly in the needs and aspirations of modern students.

The second half of the 20th century and the early 21st century have seen such major developments as the unravelling of the structure of DNA, the complete cataloguing of the genome of humans and other species, and the first successful cloning. These developments are reflected in university biology curricula, which offer new units and courses in subjects such as molecular genetics and biotechnology and a much greater prominence for molecular biology in introductory textbooks. Simultaneously, other biologists have noted with concern the impacts of climate change, increasing human populations and changing technologies on natural environments and other species. They note that the rate of extinction in species at present is well above the background extinction rate shown in the fossil record, suggesting that the world is in a period of human-caused mass extinction that is reducing our biological heritage. These realisations are reflected in the curricula too, with new courses and units in conservation biology and restoration biology, as well as chapters on conservation in introductory textbooks.

Students majoring in biology at university need a thorough grounding in all these new areas as well as the more traditional aspects of the discipline. They are well served by existing textbooks, but many non-majors lack the space in their crowded timetables to cover all the topics in such detail. Instead, they need to emphasise the biology of direct relevance to their major field of study. Unfortunately, for many students it may not be clear how basic biology is relevant to their varying majors. This has long been recognised in biomedical education, where biology textbooks for physicians, dentists and other health professionals take an explicit human emphasis in their examples. Similarly, we believe that there is a need for a text with an environmental emphasis for those students needing a semester of biology as background for their specialist studies in environmental science, conservation biology, sustainable development, environmental engineering and related fields.

*Environmental Biology* is our attempt to meet that need. It begins with an account of the human species and our impact on the environment, before developing the biological knowledge and skills necessary to solve environmental problems through a consideration of scientific method (including the major unifying theories of evolution and the cell), biodiversity and the interactions of organisms with each other and with the physical environment. The final chapters integrate this background material in the applied disciplines of conservation biology and environmental restoration. The specialist chapter authors are all experienced researchers and accomplished teachers, and they illustrate their points with theoretical and practical environmental examples. We hope that this approach will enable students with interests in environmental science or sustainable development to see immediately the relevance of biology to their major discipline and integrate biological knowledge and skills into solving pressing environmental problems.

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We wore out many people at Cambridge University Press with the demands and mistakes that only novice editors can make. Thuong Du, Zoe Hamilton, Jill Henry, Karen Hildebrandt, Jodie Howell, Debbie Lee and Joy Window all gave valued advice and encouragement. Finally, we thank our families, friends and colleagues for their boundless patience during the book's long gestation.

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