

PREFACE

The purpose of this book is to help students to learn about the principles of ecology by completing a series of problems. It is primarily intended for students at the end of their secondary education and those at the beginning of their tertiary education. It assumes little prior knowledge of the subject but requires users to be able to perform simple calculations (largely arithmetic) and draw graphs.

Most ecology textbooks provide a great deal of information in the form of text, diagrams, graphs, and tables of data, with, perhaps, a few exercises for the students to attempt at the end of each chapter. This book takes the opposite approach. Very little background text is provided and students are expected to build up their knowledge of ecology by completing exercises, many of which are based on the work of pioneering ecologists who built the foundations of the subject.

Each chapter begins with a brief account of general principles. This is followed by a list of the intended learning outcomes for the chapter and then a series of exercises. At the end of the book there is a series of multiple choice tests covering the material in the individual chapters. The exercises themselves vary in difficulty. Some consider very basic concepts, such as food chains, while others require some understanding of mathematics, for example, matrix algebra.

Ecology is a practical subject which should be taught, at least in part, by requiring students to engage in fieldwork. There is no substitute for this. However, financial and time constraints often preclude teachers and lecturers from engaging in extensive (and expensive) field trips. Some of the exercises presented here are intended to help students to understand field techniques without the need to spend time getting cold, wet, and tired. With the best will in the world, most young people who are required to study some ecology as part of their biological education do not intend to work as ecologists and may be much happier in a warm, dry laboratory.

Almost all of the exercises in this book are based on real studies. In some cases they require the user to reconstruct graphs produced by others from points generated by inspection of the original published graphs. In effect the user has to draw a graph from raw data in much the same way as the original researchers. Some exercises are based on simulated data that I have produced using various computer programs.

Many of the exercises presented here have been used to teach a very wide range of students in further and higher education colleges, at university, and mature students working in industry. My overall impression was that they preferred doing these exercises to listening to me talking about ecology. I hope you enjoy them and that they inspire you to go outside, get cold and wet (perhaps even very hot), and do some real ecology in the field.

Paul A. Rees