

Preface

This handbook is designed as a guide to planning and executing an ecological research project and is intended as a companion to preparing a dissertation, report, thesis or research paper. The idea for the book arose from many years spent in the field sampling animals and plants, as students ourselves or later when leading groups of undergraduate or postgraduate students. In so doing, it was clear that there was a need for a book to cover all aspects of planning, implementing and presenting an ecological research project. Much of the content of this text has been developed from teaching materials we have used over the years in one form or another, refined following discussions with colleagues and the students who used them. We have included those methods that should be accessible to an undergraduate or taught postgraduate student at a university or college. We have purposely tended to avoid devoting too much space to highly technical methods or those techniques that require the user to have a licence. However, we have mentioned some such techniques that generate data sets that may be made available for student projects.

Our experience is that many students develop an interest in a particular group of organisms, sometimes describing themselves as a birder, entomologist or badger watcher. Rarely, one finds a student principally interested in a particular habitat; this is normally secondary and is often defined by the group under study. Consequently, although we have ordered the sampling chapters by the mobility of the organisms, within the chapter on sampling mobile animals, we have dealt separately with each group of organism under study. We have attempted to take the reader through all the stages of conducting a research project starting from finding a topic on which to do a research project; turning the idea into a provisional title and research question (i.e. the aims); thinking about how to achieve the aims (these are the objectives); and then deciding on the methods to be used. The book then summarises key methodological approaches used by ecologists in the field. The intention has been to cover core, well-tested and robust methods relevant to sampling animals and plants in terrestrial and most aquatic habitats including sandy and rocky shores. Owing to additional health and safety requirements and the highly technical nature of off-shore sampling methods, we stopped short of including these techniques in the book.

This book is not just about the activities associated with field sampling. We felt that it was important to take researchers right through to the end of their project. Many of the more technical hurdles occur once the data have been collected. Ecological research frequently generates complex datasets that require statistical analysis to aid interpretation. There is a need for students to understand the range of methods available to

explore and analyse their data and to understand what types of data they need to collect in order to use particular techniques. Frequently, students ask us how they should go about finding and using key references, and how to interpret their own data in the light of current research. Consequently, we also give tips on presentation and writing style. Most research projects are completed in a fairly restricted time-scale, therefore we include guidelines for time management during the project. Several experts have generously provided insights into how they approach their own research. These case studies illustrate some of the diversity and complexity of even quite simple research questions. We hope that this text will both encourage and support students in engaging in the fascinating world of ecological research.