

Preface to Edition 1

This is not just a statistics textbook! Although there are plenty of statistical analyses here, this book is about the processes involved in looking at data. These processes involve planning what you want to do, writing down what you found and writing up what your analyses showed. The statistics part is also in there of course but this is not a course in statistics. By the end I hope that you will have learnt some statistics but in a practical way, i.e. what statistics can do for you. In order to learn about the methods of analysis, you'll use two main tools: a Microsoft Excel spreadsheet (although Open Office will work just as well) and a computer program called R. The spreadsheet will allow you to collect your data in a sensible layout and also do some basic analyses (as well as a few less basic ones). The R program will do much of the detailed statistical work (although you will also use Excel quite a bit). Both programs will be used to produce graphs. This book is not a course in computer programming; you'll learn just enough about the programs to get the job done.

It is important to recognise that there is a process involved. This is the scientific process and may be summarized by four main headings:

- Planning.
- Data recording.
- Data exploration.
- Reporting results.

The book is arranged into these four broad categories. The sections are rather uneven in size and tend to focus on the analysis. The section on reporting also covers presentation of analyses (e.g. graphs).

Although the emphasis is on ecological work and many of the data examples are of that sort, I hope that other scientists and students of other disciplines will see relevance to what they do.

Mark Gardener
2011

Preface to Edition 2

The first edition of *Statistics For Ecologists* was the first book-length work I had written since my PhD. The process was illuminating, and overall I am happy with what I achieved. However, I also recognize that there are many shortcomings and set out to produce a new edition that was a better textbook.

Although this is primarily a book about statistics it is important to realize that the whole scientific process is involved. If you plan correctly you will record and arrange your data most appropriately. This will allow you to carry out the appropriate data exploration more easily. I revised the chapter on graphics most heavily and essentially gathered the majority of the information about graphs into an earlier chapter than before. Visualizing your data is really important, so I thought that bringing the material about this topic into play sooner would be helpful.

I added chapter summaries to make the book more useful as a quick revision tool. I copied the tables of critical values to the Appendix so that you can find them more easily. There are also some self-assessment questions (and answers). I also added a lot more material to the support website. There were many topics that I would have liked to expand but I thought that they might make the book too unwieldy. There is a new chapter about community ecology. This is a large topic but I had a few requests to incorporate some of the more basic analyses, such as diversity and similarity.

There are many other tweaks and revisions. I hope that you will find the book useful as a learning tool and also as a resource to return to time and again. Try to remember that the data exploration part (the statistics) should be the exciting bit of your project, not just the dull number-crunching bit!

Mark Gardener
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