

Preface

There's more to this life than just living.

Frank Borman, Apollo 8 astronaut

The natural world is a place I escape to: a place that goes about its business regardless of everyday individual human concerns. It is a place of beauty, change, diversity, and endless fascination. Like many who share these sentiments, I was never content to just be in nature: I had to watch, name, learn, and understand. This book is about understanding how and why the natural world works, thereby to appreciate it more for what it really is. For me, that is one of the things that make life 'more than just living'.

For naturalists, two fields of science feel especially comfortable: ecology and evolution. Ecology is traditionally a science of the great outdoors, dealing with the interactions between organisms and their environment (including other organisms). Evolution is traditionally a science of museum specimens, dealing with how lineages of organisms arise, change, and eventually go extinct. Both ecologists and evolutionary biologists share a common goal: they want to understand the diversity of life; how it arises, how it is maintained, and why sometimes it is not. They should have a lot to say to each other. The field where ecologists and evolutionary biologists meet is called evolutionary ecology and, despite having 150-year-old roots, it has only recently matured into something that can fill books.

This book has one overriding aim: to synthesize the field of evolutionary ecology; that is, to explain what the field as a whole has discovered, rather than just all the little bits. Along the way there is some detail; the work of scientists. While the detail can exist without the synthesis, the synthesis gives the detail added value. While some of the detail may change, be lost, or added to, the synthesis I hope will remain.

I have written primarily for the students of biology whom I meet at undergraduate level. In 1998, as a new lecturer at the University of York, my colleague Richard Law invited me to take over his lectures on evolutionary ecology. However, I found no books that dealt with the field in the way I needed and decided to write my own. I have written the book that I would have wanted as a student: using a short, informal style, so some people might

get to the end. As a result this is not a compendium of evolutionary ecology knowledge. There is always more detail in the world, or indeed in any scientific field, than any one person can assimilate. From what little detail we do have, however, we mortals must formulate pictures of the world that we can apply to novel situations, of which the world is full. I hope this book has just enough to do that. The book may also be more widely accessible than I originally meant it to be. I hope that postgraduates and other researchers in the field, who tend to stay within the bounds of a single chapter, will find it useful to have an overall view that places their work in a broader context. The public at large should also have a fighting chance, and I have tried to make that more likely by including a glossary of the more technical terms. Terms included in the glossary appear in bold on first mention.

The precise content of the book was shaped by three secondary desires. First, I did not want to write yet another behavioural ecology book. But, because most evolutionary ecologists study behaviour, if I had devoted space in proportion to the amount of work carried out in the various subdisciplines of the field, that is pretty much what would have happened. However, a behavioural ecology book would not have achieved my broader aims. Instead, I have tried to cover a wide range of topics to do justice to the breadth of the field in ways that previous books have not. Each chapter serves merely as an introduction to each topic, about which others have written entire books. For those who feel like learning a bit more, I make a few recommendations for further reading at the end of each chapter. Some of the topics in the book are not normally considered to lie in evolutionary ecology, but more solidly in mainstream evolution or ecology. I have included them because I feel they should be here.

Second, I am aware that most biologists express a greater enthusiasm for some organisms than others. They spend a lot of time trying to persuade each other that their study organisms are the most interesting. I believe that to appreciate evolutionary ecology to the full, you must be prepared to discard taxonomic and functional prejudice. This does not mean that you should not feel a special affection for some taxa; rather you should not feel disaffection for other taxa. The reader should be prepared for a good mix of the botanical, microbial and zoological, aquatic and terrestrial. To emphasize this even more I have occasionally employed positive discrimination in my choice of material.

Third, I have not made a special effort to emphasize applied questions. Evolutionary ecology can help solve many problems that beset our planet and our species, but my desire here is to help people to love the subject, and not to plague them with worry or guilt. I have included applied questions simply where they provide a fascinating perspective that improves understanding. As it turns out, there should be enough applied biology to keep enthusiasts happy.

The chapters should preferably be read in sequence from start to finish since they build upon each other to provide the overall picture at the end. Because I still wanted this book to be scientific, factual statements are supported by citations from the primary scientific literature, though space and flow limited the extent to which I could do this. Space limitations also meant that I often had to reduce long complicated stories to a few salient points, leaving out alternative viewpoints. This makes it virtually certain that researchers in the field, and possibly other readers, will disagree with me at least once somewhere in the book. I hope that you all find such moments stimulating.

Many people helped in the creation of this book. Biology students at York made comments on my teaching that shaped the way the book was written. Several people, mostly anonymously, reviewed the initial proposal, and I am grateful to all of them. I particularly thank Brian Husband, who convinced me that speciation mechanisms had to be included. I am grateful to the following persons for commenting on draft chapters: Peter Bennett, Calvin Dytham, Ian Hardy, Richard Law, Geoff Oxford, Ole Seehausen, Jeremy Searle, and Mark Williamson.

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