

Deserts as laboratories of evolution

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The biology of deserts

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Review Title:
Deserts as laboratories of evolution

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For most of us the appeal of deserts lies in the barren, bleak, monotonous landscapes that characterise them. What we sometimes forget though, is that the harsh abiotic environment, and the resulting spatial and temporal variability in severely limiting resources, necessitates a suite of fascinating, and even bizarre, adaptations in the life forms which occupy them. David Ward uses this notion of deserts as evolutionary laboratories as the thread that ties together the wide range of topics he covers in his book, *The biology of deserts*. The book is part of The Biology of Habitats series from Oxford University Press, which endeavours to provide integrated overviews of many of the globe's habitats, focusing on the ecology and adaptations of the organisms which inhabit them. Ward's contribution achieves these objectives, presenting a broad overview of the (often underappreciated) desert habitat, and the fascinating strategies of the plants and animals that manage to survive there.

Deserts are extremely variable and difficult to define because they are scattered across the planet, encompass diverse geologies, differ dramatically in age, and the aridity which characterises them has quite different causes. The book adopts a broad concept of deserts and draws on research conducted in arid and semi-arid systems which are not grasslands or savannahs, and as such the book has relevance far beyond the sparsely vegetated rock and sand wastelands the word desert implies for most of us. Although the book covers research conducted in all of the world's deserts, the vast majority of case studies are drawn from the extensive research of the author and others in the Middle Eastern and southern African deserts. From the perspective of a South African reader, this focus of the book provides a welcome departure from previous books on desert ecology which largely focus on North American systems.

As per its mandate, the book covers an impressively wide array of topics, spanning desert history and formation, abiotic factors, details of organismal adaptations to desert life, the array of biotic interactions in deserts, desert food webs, desert diversity and biogeography, and finally human impacts and management of desert systems. As a result it is relevant to students of ecology, evolution, physiology, behaviour and many other disciplines as well as to desert users and managers. The book does a great job of balancing examples from plants and animals. The topics are presented logically, and each section is supported by numerous examples and figures from the primary literature. In a few instances the link



Stone-mimicking grasshopper on desert pavement in Namibia (photo: Allan Ellis).

between the text and the empirical examples is a bit obscure, which is not helped by some editorial errors, especially in the figure legends, but this does not detract from the overall presentation.

The breadth of coverage, as is invariably the case, comes at the cost of depth in some places, but overall David Ward has succeeded in producing a book which provides something for everyone, and represents a solid resource for diverse topics in desert biology. It provides a good feeling for what questions and issues are most relevant to deserts, and what kinds of research are possible there. Finally the book highlights some important and promising avenues for future research and many others are evident from what is left unsaid. I suspect that this book will stimulate continued research interest in this fascinating habitat.