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REVIEW

A natural history of the Sonoran Desert. Edited by S. J. Phillips and P. W. Comus. 2000. Arizona-Sonora Desert Museum Press, Tucson AZ, and University of California Press, Berkeley CA. 628 pp. Cloth $55.00 ISBN 0-520-22029-3 Paper $24.00 ISBN 0-520-21980-5.

The staff and associates of the Arizona-Sonora Desert Museum wrote this book as a compilation of their training courses, research, and personal experiences in the Sonoran Desert of Arizona, California, and Mexico. It evolved from the Museum's docent handbook, developed over 30 years as a training document for volunteer interpreters. It provides a summary of numerous biotic and abiotic patterns and processes, emphasizing adaptations of desert organisms and the interrelationships between nature and humans, both past and present. It answers in nontechnical prose typical questions of visitors to the Sonoran Desert. As such, this book covers a wide range of topics within its 628 pages.

The book begins by briefly describing what a desert is, and how the Sonoran Desert differs from other deserts of North America. The regional subdivisions and biomes are nicely summarized based on the original work of Forrest Shreve. The book then launches into two chapters describing a calendar of natural events and ten nature watching hotspots. Although these two chapters are informative and will undoubtedly be of great use to those planning trips to this region, they would make more sense if read after the other chapters and should have been placed at the end of the book, possibly as appendices.

A chapter on desert storms gets the book gets back on track. This is a key chapter appropriately placed near the beginning of the text. It introduces rainfall as a significant factor influencing the evolution of desert organisms and the limitations to human settlement in the Sonoran Desert. Most other chapters that follow presuppose some information contained in this chapter.

The next chapter on desert air and light breaks with the main theme of the book by presenting explanations couched in basic physics. Phenomena such as mirages, atmospheric shimmer, and dust devils are described using simple descriptions of light refraction and the influence of temperature on the behavior of air. Although it is not directly related to the other chapters, it presents an entertaining, effective, and succinct summary and does not significantly detract from the flow of the book.

Consecutive chapters on deep history, geologic origins, soils, human ecology, and biodiversity frame the current Sonoran Desert in the perspective of evolutionary and recent time scales, and set the stage for the meat of the book which is the ecology of plants and animals. The deep history chapter describes changes in flora and fauna over geologic time and discusses relationships between their past and current distributions. The geologic origins chapter describes the geomorphological development of major geologic features. The soils chapter describes the development and physical and biological properties of soils, and their implications for plants and animals. The human ecology chapter describes the influence of humans over the past 12,000 years, ranging from native American hunting, gathering, and farming, to Anglo-American agriculture, mining, and dam building. The chapter on biodiversity defines different indices and scales of biological diversity, describes natural centers of diversity, and explains how humans have reduced diversity by introducing invasive species and converting native plant communities to monoculture farms.

Plants are discussed in separate treatments of plant ecology, flowering plants and grasses. The chapter on plant ecology covers a wide range of topics in its brief 23 pages. Topics include rudimentary descriptions of flower anatomy and photosynthesis, and more detailed descriptions of drought adaptations, pollination, seed dispersal, and flowering seasons. The chapter on flowering plants includes a sampling of the most common and interesting angiosperms (other than grasses) in the Sonoran Desert. It is organized by taxonomic family, within which a few representative species are presented, covering their description, range, and comments on ethnobotany and natural history. The chapter on grasses includes a relatively detailed account of different grassland types and dominant species, including a few dominant aliens, and some original natural history accounts.

Animals are presented in separate sections covering invertebrates, birds, mammals, fishes, reptiles, and amphibians. Adaptations to life in the desert by these groups are summarized. Species accounts of the common or otherwise interesting taxa include descriptions of distinguishing characteristics, habitat, range, life history, and in some cases feeding behavior.

The glossary is very brief, but only includes terms which are not referenced in the extensive index which lists a wide variety of items including common and scientific names, geographic places, and descriptive terms.

This book provides a comprehensive introduction to the natural history of the Sonoran and Mojave deserts, because many examples presented and

species discussed are common to these two deserts. It would be an ideal text for a community college or undergraduate course on desert ecology. Upper division and graduate students would not find much new information in this book. The strength of the book lies in the natural history descriptions for individual species. This information is typically given very short treatment in the floras and field guides of the region, and all readers should find this information interesting and useful.

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