

## BOOK REVIEW

**Birds of Southern California's Deep Canyon.** Wesley W. Weathers, 1983. University of California Press. Berkeley. 266 + x pp., 60 line drawings, 28 color plates, 33 halftones, 45 tables. \$35.00.

This book is the fifth in a series of natural history volumes originating from the Philip L. Boyd Deep Canyon Desert Research Center near Palm Desert, California. On the one hand it is a work of narrow geographic scope, set along a transect from the floor of the Coachella Valley (elevation 9 m) to the highest portions of the Santa Rosa Mountains (which crest at Toro Peak, 2657 m). On the other hand, this book should enjoy wide appeal among birdwatchers and ornithologists over a vastly larger area.

One reason for such an appeal is that altitudinal transects which cover a gradient from harshly xeric desert to relatively mesic coniferous forest are repeatable over wide areas of western North America (and, indeed, elsewhere in northern Mediterranean and subtropical regions). Elevational gradients have enjoyed a special appeal among vertebrate ecologists, especially from the time of C. Hart Merriam to the present (the work of Terborgh and Weske et al. in the Andes, as just one example). Thus, Weathers' book describes patterns which are relevant far beyond Deep Canyon.

A second, and perhaps more important, reason why this book will be of wide interest is that the author employs a sophisticated yet intelligible ecological perspective throughout the work. Voluminous strip census data are interpreted for the reader vis a vis the ecology of competition, predation, and individual and community energy flux. In short, Weathers goes well beyond the basic "when" and "where" questions of standard distributional works. His attention to the "whys" (ecological/evolutionary causation) sets his work apart.

Introductory chapters discuss the physical setting of the Deep Canyon region and outline the census methodology. From 43 to 142 censuses were conducted in each of nine habitats. These censuses provide the raw data for subsequent analyses; also drawn upon was a wealth of unpublished observations in the files of the Research Center.

The bird census data are combined with data on the body mass of each species and with experimentally pre-derived formulas for daily energy expenditure to arrive at an estimate of community energy demand. Much of Weathers' analyses center around such considerations of avian energetics and inter-seasonal and inter-habitat comparisons thereof; such discussions prove to be enlightening and are never too technical for those lacking formal training in ecology.

A series of chapters discussing each habitat forms, along with the species accounts which follow, the bulk of the text. The habitats are described and the census data from each is interpreted season by season. Also included are specialized discussions of habitat modification by man and of fire succession in the chaparral.

The species accounts (128 pp.) cover all but the scarcest visitors to Deep Canyon. Additionally, all species are treated in an appendix which shows seasonal occurrence and habitat use in standard bar-chart format. Species accounts include body mass, appropriate synonyms, overall range, status in Deep Canyon, and a discussion (variable in length) of certain interesting aspects of the biology of the species. The publication schedule of the book required that the taxonomy employed be that of the fifth edition of the AOU Check-list (with supplements through 1973). By early 1984 this is already an annoying, yet unavoidable, drawback.

The reader will gain much from the potpourri of modern biological tidbits liberally spread through the species accounts. Much of this is borrowed (and duly cited) from other researchers; thus the book also serves as a welcome, if somewhat erratic, introduction to the literature of avian ecology (particularly physiological ecology).

Some of Weathers' interpretations may be open to alternative explanations, e.g. the assertion that different densities of Verdins (*Auriparus flaviceps*) and Black-tailed Gnatcatchers (*Polioptila melanura*) in the desert washes may be a result of differential predation by Loggerhead Shrikes (*Lanius ludovicianus*) on nestlings living in the

respective very different types of nest. But all such statements are exciting food for thought.

One must question the implication (p. 34) that Deep Canyon's wintering Savannah Sparrows (*Passerculus sandwichensis*) come north out of Baja California; the Colorado River delta race *rostratus* now only very rarely comes as far north as the Salton Sea (south of the study site), and breeding races of the interior such as *nevadensis* are common in winter in the Coachella Valley. Weathers' reference (pp. 96, 98) to breeding Tree Swallows (*Tachycineta bicolor*) in the coniferous forest of the Santa Rosa Mountains would seem to require confirmation. The statement (p. 153) that, among *Empidonax*, only the Western Flycatcher (*E. difficilis*) sings in migration is simply not true: Such singing is common, for example, in the Willow Flycatcher (*E. traillii*).

Whereas much of the data is apparently (hopefully) on file at the research center, many records of distributional interest are "lost" from easy access by being presented only in the format of the bar-charts in the appendix. Single records of Red-throated Loon, Western/Yellow-footed Gull, Black Tern (February), and Common Nighthawk (April) are without any more information than a month of occurrence. Rufous-crowned Sparrows (not in the index) are sparse, local residents on the desert slopes of southern California. A total of four dots from the valley floor, alluvial plain, and streamside habitats are from odd elevations and habitats. Any extralimital record of such a sedentary bird would be extremely interesting. All of the noteworthy records would have benefited from an assessment of their significance by the author and a definite date. As with the record of a migrating Bald Eagle from "March 1980," very little extra space would have been needed to present a precise, citable date. Such problems (or surprises?) are rare, and one feels confident that the data base is indeed very sound.

Also frustrating is the fact that the bar-charts do not attempt precision of greater than one month increments; surely it would not have been difficult to present more information in the bar-charts and the species accounts on arrival and departure dates and peak periods for some common migrants. It is entirely possible that the author has more experience with the arrival and departure of Gray Vireos than anyone else in California; more detail than "March" and "September" would certainly have been welcome. Still, there is much information for the student of distribution, and the lack of some detail does not change the fascinating description of the Deep Canyon transect.

The book's charts and figures are bountiful, attractive, and informative. The graphs of density by habitat along the elevational transect (e.g. p. 124) include a visually pleasing diagrammatic sketch of the habitat gradient.

Although the uncredited line drawings of birds scattered through the text vary from acceptable to poor, the numerous black-and-white and color photographs are uniformly stunning. These photographs, by the author and his wife Debra, show a representative sample of Deep Canyon birds and go a long way toward justifying the relatively high price of the book. Many of the photographs appear to be of birds in a photographic cage set-up, but I say this only because they are so stunning and close. The photograph of a Yellow-rumped Warbler (*Dendroica coronata*, p. 199) is a "Myrtle," not an "Audubon's," as implied in the text. A number of black-and-white photographs effectively show the tremendous range in elevation and the accompanying changes in vegetation.

In summary, Wesley Weathers, The University of California Press, and the Boyd Deep Canyon Desert Research Center are to be congratulated for producing a stimulating and informative work. The price, while a bit steep, is not out of line with current books containing superbly reproduced color photographs. I recommend it.

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