

ORNITHOLOGICAL LITERATURE

THE LIVES OF DESERT ANIMALS IN JOSHUA TREE NATIONAL MONUMENT. By Alden H. Miller and Robert C. Stebbins. University of California Press, Berkeley and Los Angeles, 1964: $7\frac{1}{4} \times 10\frac{5}{8}$ in., 452 pp., 7 col. pls. and 141 figs. (including maps, diagrams, drawings, and photos.). \$10.00.

The Joshua Tree National Monument is an extensive area administered by the National Park Service, situated in the desert of southern California just southeast of the high coastal San Bernardino Mountains. Its elevations range from slightly below 2,000 feet to about 5,500 feet, encompassing three major vegetative belts—creosote bush, yucca (including the Joshua tree), and pinyon.

“The Lives of Desert Animals in Joshua Tree National Monument” treats the birds, mammals, amphibians, and reptiles found in the Monument. There are accounts for each species, preceded by a discussion of problems of desert life, a survey of the environments of Joshua Tree Monument, the plan and scope of field study, and a faunal analysis.

The field studies were accomplished mostly during eight principal trips to the Monument from 1945 to 1960 by workers of the Museum of Vertebrate Zoology at the University of California. Observations of others not connected with the University were also used in preparing the species accounts. Areas formerly within the Monument were also covered, especially Little Morongo Canyon and Twentynine Palms. In a publication of this scope, one could wish that the supportive field work was more comprehensive. There were no trips during the winter, and only one during the summer season proper. The trips lasted from 5 to 25 days, averaging 12 days.

The vertebrate fauna of Joshua Tree Monument was found to be predominantly one of desert affinities, and to include in greatest proportion those species that occur in the Mohave Desert to the north, although the influence of the Colorado Desert to the south is also quite marked. The higher parts of the Monument permit the eastward extension and isolation of species and races characteristic of the coastal districts of southern California.

The species accounts contain a great deal of interesting information, and reflect the attention paid to note-taking in the field. Particular emphasis is placed on breeding and molting phenology, geographic variation, and the effects of desert conditions upon animals. The authors sometimes indulge in speculations that point the way to possible profitable future investigations.

A claim is made that migrant birds crossing western deserts are overcome at times from water and high temperature problems, with “resultant high mortality.” This claim is supported by the poor condition of 4 out of 17 Traill’s Flycatchers, 4 out of 13 Orange-crowned Warblers, 3 out of 11 Nashville Warblers, 2 out of 8 Black-throated Gray Warblers, and 5 out of 12 Wilson’s Warblers that were collected. These birds were taken in late August and early September, when temperatures are often at or near maximums for the year. From 25 to 40 per cent of such migrants, opine the authors, would not live to complete the desert crossing. This is a phenomenon of much interest, and leads to speculation over the wisdom of Nature in permitting these birds to follow such hazardous trails. I have observed birds in the even warmer desert of the lower Colorado Valley and southwestern Arizona for many years, but never realized that such mortality was present. Certainly one very rarely finds a dead or dying bird. I would feel more satisfied with the authors’ findings if they were supported by a larger sample of birds examined from several localities for several seasons.

A few items worthy of note: Mourning Dove going without drinking water for 4 or 5 days in an emergency (p. 12); Horned Larks "colonizing" in favorable years, "finding these places through vagrancy" (p. 15); mixed coveys of Gambel's and Mountain Quail (p. 62); nesting of Cassin's Kingbird at Twentynine Palms (p. 114); lack of Common Ravens (only five records; p. 141); adult Plain Titmice and Common Bushtits far outnumbering young in the fall, while the reverse is true in Bewick's Wrens! (pp. 149, 156, 161); and ignorance of two Mountain Sheep lambs in the caption under photograph (p. 348).

The many photographs and black and white drawings add greatly to the interest and value of the book. The drawings, as well as six color plates, are by Gene M. Christman. He is not a top-register artist, but his portrayals are interesting and accurate. He often shows his subjects behavioristically—a jack rabbit resting in the shade of a desert tree, a Loggerhead Shrike in a prey-glide, Cliff Swallows obtaining nest-mud, etc.—GALE MONSON.

THE INTEGRATION OF AGONISTIC BEHAVIOR IN STELLER'S JAY *CYANOCITTA STELLERI* (GMELIN). By Jerram L. Brown. University of California Publications in Zoology, Volume 60, Number 4, University of California Press, Berkeley and Los Angeles, 1964: 106 pages, 2 pls., 13 figs. \$2.00.

This is Jerram L. Brown's second and longer paper on the behavior of Steller's Jay. (For his first paper, see *Condor*, 65:460-484, 1963.) All data on which this work is based were apparently obtained by him during 730 hours spent observing wild jays in a public park adjacent to Berkeley, California, from March 1957 through April 1960.

The paper begins with a statement of two goals: (1) to provide information that will support or modify existing theories on agonistic behavior and (2) to be exploratory in the sense of attempting to identify and describe the agonistic behavior patterns of Steller's Jay. Only the second goal seems to have been achieved, although the coverage of behavior patterns is probably not exhaustive. While this paper could be used to support some existing theories on agonistic behavior, Brown attempts to modify existing theories, relating his findings to certain alternative propositions of his own, none of which appears to be supported by his data. Thus any attempt to support or modify existing theories concerning agonistic behavior based on evidence in this paper should be considered very tentative since, as Brown notes in the last sections of the paper, the agonistic behavior of Steller's Jay is impressively variable and cannot be reduced to a few stereotyped behaviors. The principal contribution of this paper is its basic information about agonistic displays in Steller's Jay.

The introduction includes a discussion of some theoretical constructs used in establishing Brown's terminology and point of view concerning agonistic behavior. Very likely many animal behaviorists will not entirely agree with Brown's use or interpretations of some terms and concepts as used in this study, since these terms and concepts already have evoked controversy among psychologists and ethologists. For example, Brown includes the term "motivation" in his "integration of behavior," defining the latter term as "the process which coordinates effector actions into behavior patterns." To me, it would seem at least reasonable to reverse the situation, including "integration of behavior" under "motivation." Also, Brown broadly defines "neurobehavioral mechanisms" as "the activity of a population of neurons common to a group of functionally related behavior patterns," but at various points in the text this term seems to be interchangeable with "motivation," although the definitions are not the same.

The main portion of the text is composed of descriptions of eight body or feather postures and of 15 vocalizations used in agonistic situations. Each description is immediately followed by a discussion of the relationship of the particular behavior to that of the other agonistic patterns. However, this organization—description of behavior followed by a discussion of its relationships—can be confusing to the reader since Brown frequently discusses one agonistic behavior in relation to another not yet described. This situation could have been remedied had Brown devoted an early section of the paper solely to the identification and description of the various behaviors, later discussing the interrelationships among these behaviors. Also confusing is his discussion of some agonistic behaviors in relation to non-agonistic behaviors which lack either adequate description or reference to other works. This creates the possibility of misinterpreting the nature of the behaviors and their interrelationships, unless the reader is already familiar with the behavioral repertoire of Steller's Jay or closely related species.

In his attempt to provide a complete repertoire of agonistic behavior in Steller's Jay, Brown includes several questionable cases. Of the eight body or feather postures mentioned, he includes two that, he implies, have no recognizable agonistic function. Similarly, six of the 15 described vocalizations are probably not agonistic (and four of these six were heard only once). He mentions four additional vocalizations as being heard in populations other than the one under study and considers them to be variations of the observed agonistic vocalizations, but he gives little evidence to support this conjecture. Both the difficulties in relating agonistic to non-agonistic behaviors and the inclusion of questionable agonistic behaviors could have been circumvented had this paper been preceded by an introductory ethogram on the Steller's Jay. The reader would then know with certainty which behaviors were agonistic or non-agonistic displays and could more readily interpret their relationships. Such a preliminary ethogram is particularly desirable in the case of an animal which is as variable in its behavioral repertoire as Brown reports for this jay.

Most of the quantitative data are presented both in tabular and verbal form, showing relationships between the various displays and vocalizations. The tables present the raw numerical data, giving the frequency of one observed display in relation to another, while the histograms usually present this frequency distribution in percentage form. In discussing this material, Brown makes frequent reference to significant differences between related displays or to correlations between behaviors, but he gives no reference to the statistic used to determine significance or correlation in most cases and no reference to a statistical source. He often used the mode to show relationships between displays, but this use seems inappropriate in many cases where the sample size was small. In general the discussion seems to be based on the tables, but at least one of the tables (Table 7) I could not decipher. Probably some information was omitted from the table since the discussion did not relate directly to material in this or in any other table. While behavioral studies such as this one benefit greatly from statistical analysis, greater care should be taken in such an analysis than is shown here. More discriminating use of statistical methods would have clarified the discussion, reduced its bulk, and also permitted the spot-lighting of the more important relationships between the various agonistic displays discovered.—A. R. WEISBROD

VIBRA EL LLANO. By Paul Schwartz. *Naturaleza Venezolana* 2 and 3. Instituto Neotropical, Apartado 4640 Chacao, Caracas, Venezuela. Two 33 $\frac{1}{3}$ rpm. records. Narration

in English. (Spanish version also available.) On sale in United States at Cornell Laboratory of Ornithology, Ithaca, New York. Each record \$7.75.

These are truly beautiful recordings of Venezuelan birds found in the Orinocan plains called El Llano—vast area of grassland, interrupted by lagoons, patches of woodland, and gallery forest. The first disk of two sides (marked "2" because Schwartz had earlier published another Venezuelan bird record) emphasizes chiefly the seasonal and habitat differences in the birds to be heard. This record contains brief comments naming each species, as it appears, and occasionally telling us something about it. The second disk (marked "3") is totally free of commentary, and lets the animal voices—chiefly birds, but also including howler monkeys, frogs, and insects—paint eight environmental sound pictures at varying times of day. Over 90 species of birds and a half dozen mammals are recorded.

To those who have listened to birds in the lowlands of Middle or South America these records will be evocative of the warm pungent fragrance of tropical days. Some of the species occur from Mexico to Argentina and hearing them rouses nostalgic memories. Many vocalizations are provided that, so far as I can recall, have not appeared in any published record. A good proportion of the species are not technically songbirds but that does not make their voices any the less interesting. We hear such species as the Hoatzin, the Sunbittern, and the Horned Screamer and several kinds of ibises, herons, owls, and hawks, including some of the tropical falcon allies. And of course there are the ubiquitous tyrannids, woodcreepers and their relatives—not to mention the tropical wrens of various kinds.

An informative leaflet, in both Spanish and English, gives a description of the habitats (with four helpful photographs on the jacket to sharpen the picture). The Spanish, English, and scientific names of each species are stated in order of appearance, on each disk, side, and band. The Spanish names are drawn from the Venezuelan Check-list of Phelps and Phelps, while the English names agree essentially with those of deSchaunsee's recent "Birds of Colombia," thus enabling the auditor to determine (without going to a museum) what the bird he is hearing looks like. Apart from the interest in hearing the voices of unfamiliar birds, I was curious to learn to what extent the notes of the Venezuelan population might differ from my recollection of the same species as heard in Panama or elsewhere. In some cases there was no difference obvious to my ear; in others I would certainly not have recognized the voice of the Venezuelan form. Records such as these cannot supply enough data for comparative studies, but they serve to suggest lines of inquiry that may be pursued through the facilities of the Cornell Laboratory of Ornithology, where Schwartz and other workers file copies of their tapes.

I must confess to some perplexity in regard to the second record, which avoids the interruptions of human commentary. While most of the species heard are those already identified on the first disk, there are 26 new ones introduced. To be sure, the program notes clearly indicate what these are and show their position on the side and band in relation to other species heard. Nevertheless, in a few cases when several new and unfamiliar species followed each other, I felt uncertain whether I was hearing two different vocalizations of one species or those of two species. If the second record is designed solely for atmospheric or musical effect, this criticism has no validity; but if intended also for some ornithological function, its usefulness is affected to the degree that identification is rendered difficult or uncertain. There is no doubt that poetically this record gains by letting the birds speak for themselves, but in this instance, as an ornithologist, I begrudge the sacrifice of the practical to the aesthetic.—E. EISENMANN.

PENNSYLVANIA BIRDS: AN ANNOTATED LIST. By Earl L. Poole. Livingston Publishing Company, Narberth, Pennsylvania [1965]: 6 × 9¼ in., x + 94 pp., 34 maps (2 on the endpapers) and many drawings by the author. \$4.00.

This little book is essentially a résumé of the past and present status of the birds of Pennsylvania and, we are told, an abridged version of a definitive work in preparation by the same author. Introductory material includes a brief history of local ornithological work from its beginning and a description of the state's physiography and faunal zones (= "life zones" of J. A. Allen and C. H. Merriam). The book's raison d'être, the annotated list, "treats 361 species for which records have been authenticated and 47 additional species whose status is hypothetical or questionable" (quoted from the flyleaf of the jacket). Concluding the book are 32 maps showing the "known and suspected breeding localities for certain species of limited or interrupted distribution in Pennsylvania"; a bibliography including "only the more extensive local, county, and regional lists that are cited most frequently in the text"; and an index to species. Scattered through the text are the author's skillful drawings, many of them used in other books. The front endpapers show a map of the life zones in Pennsylvania and the back endpapers the physiographic divisions of the state.

I have only the highest praise for the format, typography, and page-by-page layout of the book and for the care and precision with which Dr. Poole has prepared his text. Regrettably, in following the nomenclature of "The A.O.U. Check-List" (fifth edition, 1957), he has repeated certain errors that have since been corrected (see *Auk*, 79: 493-494, 1962). Thus Red-winged Blackbird is still "Redwinged Blackbird," *Bombycilla garrulus* still "*Bombycilla garrula*," etc. But this is a small matter.

The one serious fault I find is Dr. Poole's attempt to use life zones as one of the means of accounting for the distribution of birds. Ecologists have demonstrated convincingly that life zones, except in the more northerly latitudes and in high-mountain regions, defy satisfactory mapping and do not embrace the breeding ranges of any one bird species. This is certainly the case with the life zones in Pennsylvania, particularly the so-called Alleghanian and Carolinian. Glancing at the map of life zones in Dr. Poole's book, one would suppose that they are sharply demarked, but one has only to read the text to realize how hopelessly vague they are. Furthermore, one soon discovers how useless they are when he notes that only about 15 out of the 361 species in the annotated list are assigned to zones—usually two zones rather than one.

A more meaningful way of presenting distribution in a state such as Pennsylvania is to describe the principal physiographic regions (as Dr. Poole has done briefly), then note their climatic and vegetational characteristics and name the bird species that typify them. This method was admirably demonstrated by Robert A. Norris in writing an introductory section, "Physiographic & Biogeographic Regions of Georgia," in "Georgia Birds" (by Thomas D. Burleigh, University of Oklahoma Press, 1958), and I commend it to Dr. Poole as a model for his forthcoming definitive work and for other local and regional treatises on birds.—OLIN SEWALL PETTINGILL, JR.