

## REVIEWS

**A comparative study of some social communication patterns in the Pelecaniformes.**—Gerard Frederick van Tets. 1965. *Ornithological Monographs*, No. 2, American Ornithologists' Union. Pp. 1–88, 49 figs., 30 tables. Paper. \$2.00 (\$1.60 to A.O.U. members). Order from Burt L. Monroe, Sr., Treasurer, A.O.U., P.O. Box 23447, Anchorage, Kentucky 40223.—A significant contribution to the knowledge of behavior has been made by comparative ethology. Not only has insight been gained into problems of motivation, survival value, and origin and evolution, but ethological studies have also contributed greatly to the clarification of many problems in classification.

In recent years pelecaniform birds have been studied by a number of behaviorists: Snow (Shag and Flightless Cormorant); Nelson (gannet); Dorward (boobies); and many others. The time was ripe for broadly based behavioral studies of many species in different families by a single observer. In 1957, G. F. van Tets began comparative studies on three species of cormorants at Mandarte Island, British Columbia, Canada. Later, he expanded his field work so that comparisons would include additional families in the order.

The results of his work on four species of pelicans, one gannet, one booby, one anhinga, seven cormorants, and one frigatebird, as well as literature coverage on additional species, are contained in this detailed, excellent, and most useful monograph. After concise characterizations of the different pelecaniform families, the author devotes the bulk of the monograph to descriptions of the various displays and their derivatives, categorized as locomotion, fighting, nest building, and begging. This section is followed by detailed discussions of components of communication patterns, functions of communication patterns, phylogeny of communication patterns, and finally phylogeny of the order as a whole. There is no index. An extensive bibliography concludes the work. This is quite thorough and will be helpful to future students of the group, but I wondered why Barbara Snow's important paper on the behavior of the Shag (*Brit. Birds*, 56: 77–103, March, 1963) was not included, since van Tets cites at least one paper published in 1964. One of the most valuable features of the monograph is the large number of small but useful drawings of displays, mostly drawn from photographs taken by the author. An interesting device is a partial circle divided into nine 30-degree sectors to indicate tail elevations in different displays.

At the end of the monograph van Tets reviews the various pelecaniform families. Much useful information on this interesting group of birds is presented. For example, although they resemble one another closely in general appearance and feeding behavior, the gannets and boobies differ sharply in their social signalling systems. These are largely mutual in the gannets, but definitely one-sided in the boobies. In the latter, van Tets contrasts the behavior of the "in" bird (sitting on the nest) with that of the "out" bird (standing near the nest), regardless of sex. He makes a similar distinction for the aningas and cormorants. On the basis of such behavioral differences between gannets and boobies, the author feels that *Morus* and *Sula* should be retained as distinct genera. Furthermore, he feels that the behavior of aningas is sufficiently distinctive to warrant their placement in a separate family, not their union with the cormorants as some have proposed (e.g., Sibley). Cormorants are tentatively grouped into those with a continental distribution and those with a marine coastal distribution, and the author offers as support a number of interesting differences. The generic status of the micro-cormorants remains uncertain. Over-all, van Tets feels that the information gathered thus far is not sufficiently detailed, nor is species coverage broad enough, to warrant a revision of the order on the basis of

behavior, but he does feel that what is now known tends to support the phylogeny of the Pelecaniformes as proposed by Lanham (*Auk*, 64: 65-70, 1947).

As a student of the behavior and evolution of ciconiiforms, I was naturally interested to read how the behavior of the pelecaniforms agreed or not with that of herons, storks, and related forms. The number of parallels with heron behavior (at least those known in some detail) is most striking. In both groups the male selects the nest site and advertizes thereon for a female; the male accepts a female and "surrenders" the nest site to her; the female does the bulk of the building while the male acts primarily as a twig gatherer; copulation takes place on the nest or very close to it, usually correlated with a bout of twig-gathering and twig-passing; there are no special pre- and post-coital displays; etc., etc. Many of the details of reproductive behavior and biology are remarkably alike.

I found this monograph to be most rewarding reading, and I shall refer to it repeatedly in my own researches. It is "must reading" for all students of bird behavior, and it is a pleasure to note that in these times of overpriced publications here is an information-packed monograph selling for a very modest two dollars.—ANDREW J. MEYERIECKS.

**The giant Canada Goose.**—Harold C. Hanson. 1965. Carbondale, Illinois, Southern Illinois Univ. Press. Pp. i-xix + [5], 3-226, 74 figs., 31 tables, 5 maps, 2 graphs. Cloth. \$9.75.—Long before *Brania canadensis maxima* was formally described in 1951, the giant-sized prairie birds were believed to be extinct; in 1963, however, the population was estimated at about 55,000 individuals. Prior to Caucasian settlement, according to Hanson, their approximate breeding range extended from Ohio, Missouri, and Colorado to Manitoba and west-central Alberta. In 15 chapters, the present book focuses mainly on the history and biology of *maxima* as defined by Hanson, with comparative data for some other large Canadas—especially *moffitti*, to the westward (into which *maxima* blends), and *interior* (which the author has studied intensively).

Hanson (Arctic Inst. N. Amer., *Tech. Paper* no. 12, p. 40, 1962) stated that, in a "subsequent publication it will be shown that the distribution of the various races . . . in winter is inversely related to temperature . . . in accordance with Bergman's rule." And in the present work (p. 77): "cold tolerance of the various races and, consequently, the northward limits of their range in winter are related to body size." For summer (*loc. cit.*): "The size of the various races of Canada Geese appears to be directly related to the severity of the climate on their breeding grounds. . . ."

One gathers that, by working backward from ecological data, additional races of *canadensis* could be named. Hanson even points out characteristics of subpopulations within *maxima*; on the other hand, he gives an impression that sorting *moffitti* from *maxima* can be difficult. It may be relevant to recall that the Canada's Palearctic counterpart, the Bean Goose (*Anser fabalis*), was "split" too fine, resulting in confusion as to what trinomial was appropriate for many individuals; a reaction against this now prevails in Eurasian literature. Is the literature on the Canada Goose about to become, so to speak, the Nearctic counterpart of Bean Goose literature?

Unwariness is claimed to be a notable trait of *maxima*. This raises a query which seems not to be answered clearly: how many *maxima* now are conditioned to refuges and the like and how may this have influenced their unwariness? It is interesting that not all claimed *maxima* move southward for winter; some go to California. More interesting is the fact that molt migration gets adequate recognition at long last in American literature; prebreeding *maxima* fly northward and molt on tundra.—R. S. PALMER.

**The birds of Kentucky.**—Robert M. Mengel. 1965. *Ornithological Monographs*, No. 3, American Ornithologists' Union. Pp. i-xiv, 1-581, 4 col. pls., 43 figs., 1 map, 9 vignettes, cover and half-title fig. Cloth. \$10.00 prepaid (\$8.00 to A.O.U. members). Order from Burt L. Monroe, Sr., Treasurer, A.O.U., P.O. Box 23447, Anchorage, Kentucky 40223.—It is appropriate that this carefully prepared book has been published in the recently established series of monographs of the American Ornithologists' Union, where it may serve as a model for other similar studies.

Historically, Kentucky has been notable because of pioneer naturalists who made early contributions to ornithology. John James Audubon resided there in the early period of his studies; Alexander Wilson was in the state briefly; and Rafinesque, whose ornithological contributions are interesting mainly for their bizarre uncertainties, also was a figure in what Dr. Mengel appropriately terms the "Audubonian Period." The first formal paper devoted to the birds of the state was published by C. W. Beckham in 1883 as a list of the birds of Bardstown (with a revision in 1885 to cover all of Nelson County). Other studies followed at irregular intervals, until the formation of the Kentucky Ornithological Society in 1923; its journal, the *Kentucky Warbler*, was established two years later. Dr. Mengel's personal observations were initiated in 1934, with studies that continued, with various interruptions, until his formal field work ended in 1952. In addition to his own investigations, he examined most of the specimens collected by others, and the pertinent literature was reviewed to the end of 1960.

In the introductory section a detailed examination of environment in its relation to the avifauna; discussion of distribution considered in terms of life zones, biomes, and faunal areas; geographic variation; possible origin of the breeding species; and an account of the history of ornithology in Kentucky fill somewhat more than one-fourth of the pages of the book. We are told that in its physiography three main divisions are represented in the state: the Appalachian Plateau Province, a rugged, broken area of mountains and foothills in the geologically old eastern part; the Interior Low Plateau Province, diversified in its physiography, that covers the broad central section; and the Coastal Plain Province along the Mississippi River, which marks an ancient extension of the coastal lowlands of the eastern and southeastern United States.

In its primitive environment approximately 90 per cent of Kentucky was covered by the Deciduous Forest Formation that was common to much of the eastern United States. The remainder, perhaps 3,000 square miles scattered irregularly in the west, was in prairies that today are described as "only of historical interest . . . since they have been virtually obliterated." Permanent settlement in Kentucky, which began in 1774, spread rapidly, and with clearing of forest lands, destructive fires, and finally chestnut blight, early led to major changes in the original forest cover.

The list of birds accepted as valid without question includes 329 forms, of which 6 have become extinct within the historic period, and 153 are reported as nesting within the state. In the detailed account of the 296 separate species, discussion under each summarizes what is known of occurrence under subheadings of status, seasonal range, specimens examined, and geographic variation (status of subspecies). Other relevant data also are included. A "Hypothetical List" at the end includes 17 additional species that may be found, but that for the present do not meet the careful requirements of a specimen in hand, or other identification considered reliable without question. An additional list covers 31 kinds that have been mentioned in literature from the state, but for which the supporting evidence is indefinite or uncertain. A further category of "Dubious Species" includes 8 names for birds that

have not been accepted as scientifically valid. A few unsuccessful introductions of game birds are covered in a paragraph at the end. Finally, another species, the European Tree Sparrow, for which there are uncertain ancient records from Fulton County on the Mississippi River, is mentioned.

In a degree that has brought recognition of subspecific difference, geographic variation in birds that breed in Kentucky is limited. Three mountain races that are recognized from the Appalachian region—of the Solitary Vireo, Black-throated Blue Warbler, and Slate-colored Junco—nest locally in the comparatively low elevations along the eastern border. In addition to these, slight clinal variation, mainly in size, in a few other species leads the author to recognize two subspecies as occurring in the state. The most noteworthy of these species is the Eastern Meadowlark.

In examination of subspecies, where sufficient material was available, Dr. Mengel made statistical analyses (using wing length) with interesting results that are detailed under the several species considered. These data are assessed carefully as a basis for recognition of forms within the state boundaries.

While the bibliography at the end, which covers 35 pages, is said to be "selective," it includes reference to all publications that are important and that are cited in the work.

The versatility of the author is shown in the illustrations that accompany the text, which are from his own competent hand. Four plates in color show the Eastern Phoebe, the Veery, the Ovenbird, and the Hooded Warbler, all in company with their nests. A map of the state shows its division in counties, and series of text-figures give distribution of various kinds and other details, enlivened by an occasional black-and-white sketch of a bird, usually a nestling. Eight vignettes at the end of sections illustrate topographic features. The cover and title-page are decorated, appropriately in this volume, with a sketch of a male Kentucky Warbler.

The data are encyclopedic for the subject, and are presented by one who in his own writing exercises his proven skills as an editor of the work of others. The work is a competent assemblage of available information of occurrence, abundance, and distribution, coupled with skilful analysis of variation and other factors in the species treated. Where the author differs from opinion expressed by others he is careful to outline the basis for his decision. While readers may not all agree with some of his decisions on records or other details, there is no uncertainty as to his reasoning.

The book as a whole is a trustworthy contribution to its subject, and one that offers a firm and authoritative base for further studies on the avifauna of the state.—ALEXANDER WETMORE.

**Introductory ornithology.**—George E. Grube. 1964. Dubuque, Iowa, Wm. C. Brown. Pp. x + 294, illus.,  $6\frac{1}{4} \times 9$  in. \$4.75.—According to the author's introduction "This book is meant to be, as the title implies, an introduction to the field. It is not meant as a source book for the graduate or research ornithologist. Yet the text attempts to treat all major phases in the study of birds."

I take this to mean that the book is designed for undergraduate courses in ornithology. How well suited, then, is it for this stated purpose? In my opinion, not well at all.

The text has 15 chapters of about 10 or so pages each. There is a conventional division of subject matter into such chapter topics as Internal Anatomy, Migration, Life History (two chapters), and the like. Most chapters have a list of references and one or more suggested laboratory exercises at the end.

I find two major faults with the text. First, too much space is given to definitions of technical terms and too little to discussions of important topics such as behavior, physiology, etc. To be useful a text may either set forth problems for discussion and permit the instructor to provide details, or furnish details and allow the instructor freedom to elucidate problems, without having to recite facts. Most texts usually do some of both. This text presents neither data nor problems nearly as well as several others on the market (Welty, for instance). For example, less space is devoted to descriptions and analyses of pair formation than to definitions of nest types. About the same space is devoted to molts and plumages (separated in two chapters) as to definitions of toe arrangement and tarsal scaling. As much space is spent discussing Yeagley's unsuccessful experiments on orientation (magnetic lines of force, etc.) as is devoted to present day research on orientation. Only Kramer's work is mentioned briefly with reference to solar or celestial orientation.

Perhaps the most disturbing thing about the text is its generally low intellectual level. Any college freshman with a fair high school biology course would be discontented with the superficial approach of this text. Presumably, ornithology would be given to juniors and seniors, even more sophisticated, who would not appreciate a definition of genes as ". . . structures situated in the chromosomes of cells." The lack of depth may have been dictated partly by space limitations; of 294 pages only 177 are text, while 177 pages contain keys, laboratory exercises, and references. Space limitations cannot, however, account for the abundance of anthropomorphic and teleological statements, nor for ambiguous phrases. Here are a couple of examples of the general style: "Females of most species apparently select the territory which is to their liking, while the male that claims that territory is incidental (p. 110)." And: "Courtship begins after the female has selected her mate or her territory, or while she is in the process of doing so (p. 111)."

Most references given are pre-1955, and none is to foreign language literature.

Following the text is a 24-page key to families of birds, better than many, but still with the usual ambiguous terms. I think most keys are a waste of time because they do not emphasize true taxonomic or significant biological characteristics. If we must have a key, why not let the students make their own? They'll get much more out of it than keying out a specimen probably identified already via a field guide.

A good 75 pages consists of sheets for laboratory work. The student is asked to make a synopsis of characteristics and plot the distribution of each family listed, sheer busy work if, as in the key, the characters listed are not those of taxonomic value. As elsewhere, the student is not challenged to do more than copy work.

Another disappointment is an appendix suggesting topics for undergraduate research (the dust jacket features this as a novel aspect of the text). I admire the attempt to lead the undergraduate into individual research but I believe this part of the text does not lead him far enough. All but 2 of 22 suggested problems are descriptive. Why so few experimental investigations? Even challenging territorial males with taped playbacks would expose the student to more of the intellectual ferment of current research than counting singing males or determining the composition of phoebe nests. To his credit, the author does suggest a literature search before starting a problem, but if the student took the studies listed as representative of the kinds of questions being asked in research today, it would require some effort to correct him.

The illustrations (by W. C. Dilger) are well executed but, because of the demands of the text, are pictures of things rather than illustrations of processes.

In short, I think that as a teaching text this work lacks sufficient information to free the instructor from regurgitative lectures. Too much space is given to trivia, and the text is often ambiguous and misleading. Ornithology is not presented as a viable science contributing to modern biological theory.—JEFF SWINEBROAD.