

ORNITHOLOGICAL LITERATURE

IDENTIFICATION GUIDE TO EUROPEAN PASSERINES, 3rd revised and enlarged edition. By Lars Svensson. Published by the author, Stockholm, Sweden, 1984:312 pp., illus., 10.5 × 18.5 cm. Order from author (Sturegatan 60, S-114 36 Stockholm, Sweden, SCr. 120 or \$15.00 US [cash]) or from British Trust for Ornithology, Beech Grove, Tring, Herts HP23 5 NR, U.K., £9.00.—A short review of the 2nd (1975) edition of this book was published by Lloyd-Evans (Wilson Bull. 89:190–191, 1977); the 1st (1970) was never reviewed in this journal. The author himself states “The number of new species (29) and subspecies (about 20), as well as the numerous new characters, illustrated by about 150 new drawings [added to ca. 160 in the 2nd ed.], makes this third revised edition almost a new book.” With that in mind, and because there are comments applicable to both the 2nd and 3rd editions that were not made by Lloyd-Evans, I will review this work in somewhat greater detail than is usual for a new edition.

In addition to the revisions mentioned by the author (see above), a major change in this edition is the adoption of the classification, sequence, and nomenclature of Voous (List of Recent Holarctic Bird Species, 1977), replacing those of Vaurie (The Birds of the Palearctic Fauna, Vol. 1, 1959).

The book begins with a chapter on “Directions for use,” including sections on numbering of remiges, wing-formula, measurements, colors, and references (i.e., a short introduction to the bibliographies at the end of the book). Lloyd-Evans was critical of Svensson’s numbering of the primary feathers ascendantly (from the wing tip toward the body), pointing out that “most modern molt studies employ the descendant order, i.e., that in which the feathers are usually replaced.” An equally important argument for the descendant numbering of primaries is based on homology. The outermost primary of a nine-primaried bird is homologous with the second-outermost of a ten-primaried bird, and this is self-evident when their outermost primaries are numbered 9 and 10 using the descendant system; Svensson calls both of the non-homologous outermost primaries number 1.

In the section on measurements, the author describes three techniques for measuring wings: unflattened (chord), flattened, and maximum length (flattened and straightened). He used the second of these in his previous editions, but has now adopted the third, remeasuring practically all wing-lengths in the book. He reproduces a table showing pairwise comparisons, both in mm and percent, of measurements for the same series of birds, both living and specimens, taken by these three techniques. I have had students test techniques of wing measurement as a laboratory exercise, and invariably the maximum length method gives the most consistent and reproducible results using study skins. Svensson recommends this technique for banders handling live birds, stating that it has been adopted by the British Trust for Ornithology and other European ringing schemes. It is unfortunate that few, if any, of the North American banding stations employ this wing measurement technique, as such stations as Manomet and Powdermill have accumulated such tremendous numbers of measurements in their files as to make it impractical to change to another system, even though it is clearly more accurate.

In the discussion of bill measurements, Svensson fails to mention the now widely used distance from the bill tip to the anterior (i.e., distal) edge of the nostril, although he cites such measurements from the literature at least once (*Chersophilus duponti*, p. 45). He instructs the reader to avoid the use of dividers when measuring bills, although he does not say why, recommending slide calipers. I find slide calipers decidedly awkward to use, especially with small birds, and just as likely to injure a squirming bird as are dividers. (I assume this is the author’s reason for condemning dividers.)

The discussion of colors and color terminology is brief but useful; the author recommends Smithe's "Naturalist's Color Guide" (1975, 1981).

The chapter on "General techniques for ageing and sexing" is, in general, quite thorough, and could be read to advantage by most American banders, although it appears that some techniques may not be equally applicable to New and Old World passerines. I will comment here on some specific techniques.

I am skeptical about the value of the presence or absence of hooked bill-tips as an age character (adults with bill hooks, juveniles without). If the bird is young enough not to have a fully grown bill, there are virtually always other characters by which the juvenile age class can be recognized. Bill tips of adult birds are constantly subject to both wear and breakage, often just an inconspicuous mm or two, whereas the fully grown bill of a young bird is likely to show the species-specific hooked tip in its pristine state, thus giving the reverse of the aging character suggested by Svensson.

Rectrix shape, and especially width, is apparently more useful for ageing New World than Old World passerines. Svensson states that "In a few species of those which retain some or all juvenile rectrices in their first winter plumage, the difference in shape of the rectrices is helpful when ageing." Thumbing through the book's illustrations suggests that this technique can be used for more than just "a few" species, although the author cautions that "to be on the safe side the method should not be used alone." In some groups of New World birds, notably the Icterinae, the difference in rectrix shape between first-year and older birds can be downright dramatic.

Ageing birds using the pattern of growth bars ("fault bars") on the rectrices is probably more generally useful than Svensson indicates, although this technique, too, should be used in conjunction with other characters whenever possible. I doubt that any adult North American oscine normally molts the rectrices simultaneously (although the accelerated rectrix molt approaches simultaneity in a few, such as "*Cassidix*"). Svensson claims that the whole tail is molted "more or less simultaneously . . . normally or at least in many individuals" in 14 Palearctic species plus many *Locustella* and *Acrocephalus* species, and has "no doubt that it occurs in many other species." He lists *Calcarius lapponicus* and *Plectrophenax nivalis* among his 14 species, but in 13 specimens of the former and 6 of the latter in Carnegie Museum of Natural History (all adults in active tail molt) rectrix growth is clearly centrifugal. Although the replacement was accelerated in two of the Snow Buntings, any growth bars in the tails of these birds would *not* have been in identical positions across all rectrices.

Svensson does not mention iris color in his chapter on ageing techniques, although it is given in the text for *Prunella modularis*, *Sylvia curruca*, *Parus cristatus*, and perhaps a few others that I missed. Careful comparisons by bird banders in Europe would almost certainly reveal many more species in which iris color is a useful character, as it is in many American species.

It is hardly surprising that I quickly noted Svensson's failure to so much as mention the Humphrey-Parkes terminology for plumages and molts. Although he may prefer not to use it himself, his complete omission of this terminology from the text and of the Humphrey and Parkes papers from the molt bibliography was unwarranted, as the terminology has been so widely accepted on both sides of the Atlantic (and even translated into Dutch in the journal *Dutch Birding!*). For the two molts in the annual cycle of many passerines, Svensson selects the names "summer moult" and "winter moult," coded S and W in his elaborate system of abbreviations. This was an infelicitous choice, as many adult passerines molt in September or October (hardly "summer" in northern Europe!), and some species may be undergoing the prebasic molt as late as November; the author himself points this out for *Cisticola juncidis*, using quotation marks around "summer moult." Similarly, the "winter moult" of some species may extend into March or April.

In the individual accounts, diagnostic characters are given to separate each species, followed (where appropriate) by discussions of subspecies known or likely to occur in Europe. The types of molt or molts exhibited by adults and young follow, after which there is a variable, often extensive discussion of age and sex characters, usually by season. For many species there are admirably clear line drawings by the author illustrating the character states described. However, as already noted by Lloyd-Evans, the many symbols and abbreviations used in the drawings and the text will need careful study, although I suspect that with a few weeks of actual practice at a banding station, these, like so many initially alien and baffling devices, would become second nature.

As virtually admitted by the author himself, his referencing system is unnecessarily time-consuming to use. There are four separate bibliographies: General Works & Handbooks; Taxonomy, Morphology & Variation; Moulting; and General techniques for ageing and sexing: Methods. Unfortunately, the references at the end of the species accounts fail to direct the reader to the proper bibliography. Under *Sitta neumayer*, for example, the only reference is to Banks (1978), which turns out to be listed in the "Moulting" bibliography, whereas the reference at the end of the next species account, *Tichodroma muraria*, is found under "Taxonomy, Morphology & Variation."

Although I have been critical of a number of aspects of this publication, I am nevertheless fully appreciative of the tremendous amount of work involved in its compilation, both from the literature and from Svensson's own studies at museums and ringing stations. Although individuals such as Merrill Wood and institutions such as the Bird-Banding Office have produced or are producing partial guides to identifying, ageing, and sexing North American passerines in the hand, we have as yet nothing anywhere near comparable in both completeness and compactness to Svensson's book. The compactness, in fact, may be overdone. At banding stations of my acquaintance, birds are not processed in the field but in some sort of building, where equipment and a reference library are housed. Had Svensson used a larger page size instead of the pocket format of the present edition, he might well have been able to abandon some of his frustrating abbreviations. In any case, North American banders (whose identification problems with *Empidonax* pale in comparison to many of the Old World warblers) have good reason to be envious of their European colleagues.—KENNETH C. PARKES.

A CATALOGUE OF THE ELLIS COLLECTION OF ORNITHOLOGICAL BOOKS IN THE UNIVERSITY OF KANSAS LIBRARIES. Volume 2, C–D. Compiled by Robert M. Mengel, edited by Alexandra Mason and James Helyar. Univ. Kansas Publ. Library Ser., 48, Lawrence, Kansas, 1983: 176 pp. \$25.00.—The year 1972 saw the publication of the first volume of the catalogue of the Ellis Collection, perhaps the largest assemblage of ornithological books in North America. Here at last is the second installment. Because Volume 1 was not reviewed in these pages I shall comment on the entire undertaking (Volume 1 covers the letters A and B [xxix + 259 pp.] and is still available for \$10.00).

Ralph Ellis developed ornithological bibliomania to a level not yet surpassed. Between 1935 and 1945 he acquired ornithological books at the rate of nearly 2000 per year to add to the 5000 already in his library. Thus, the Ellis Collection contains over 25,000 volumes, almost completely on birds. Ellis collected mostly through dealers in Europe and the US, purchasing, where possible, entire libraries (such as those of E. C. Stuart Baker and C. Hart Merriam), but he also traded with a few select individuals. A discriminating as well as ardent collector, he missed very few important works (among them Audubon's double elephant "Birds of America") and would certainly have missed fewer had his collecting not been cut short by his untimely death in December 1945 at the age of 37.

Through the efforts of E. Raymond Hall, director of the Museum of Natural History, Ellis

had agreed to donate his library to the University of Kansas, and at his death the books were transferred to the University to await cataloguing and description. Fortunately, Robert M. Mengel, a trained ornithologist, was able to start the task; his persistence and scholarship are clearly evident in the pages of the catalogue.

The Ellis catalogue is the latest in a series of detailed bibliographical descriptions of important ornithological libraries (among the others are those of Zimmer, *Field Mus. Nat. Hist. Zool. Ser.*, Vol. 16, 1926; Wood, *An Introduction to the Literature of Vertebrate Zoology*, Oxford Univ. Press, London, England 1931; Anker, *Bird Books and Bird Art*, Levin and Munksgaard, Copenhagen, Denmark, 1938). Considerable duplication would be expected in these compendia, but the production of printed works was far less uniform in the past and many titles exist in a multiplicity of versions and collations (often being issued in pairs). Some are so complicated (e.g., Darwin's "Origin of the Species") as to require entire volumes to disentangle the bibliographic information. The result is that the catalogues tend to complement one another, each library having slightly (or considerably!) different versions of a given work. One strength of the Ellis Collection is the presence not only of multiple copies of many works but also of multipart works in original wrappers as issued. The latter are invaluable in establishing the actual publication date of each portion of the work, information of interest not only to bibliographers and historians but also to systematists.

The scope of the catalogue "includes all books with appreciable ornithological content which were acquired by Ralph Ellis as well as those bird books published before Ellis' death . . . which have been added to the collection by the University Libraries." The catalogue does not list serial or periodical titles nor most citations from the periodical literature. However, monographic works on geographic areas ". . . exceeding 75 pages, and complete in themselves" that were issued as volumes or parts of serials or periodicals have been included. Each title (single volume title or multivolume set) is numbered and listed separately. Entries are arranged alphabetically by first author (cross indexing will ultimately be provided in an index) and chronologically within author. Mengel has adhered strictly to the use of the actual author of the title being described (as opposed to an editor or the author of a larger work in which the ornithological part occurs) and thus occasionally differs in alphabetic sequence, from, for example, Zimmer (1926). For a few works lacking attributable authorship (e.g., dictionaries), the title is used for alphabetization. In cases of committee authorship (e.g., AOU check-lists) the name of the organization is used.

Each entry contains the following information: (1) Date (or range of dates) of publication. (2) Title: The text of the title page(s) is transcribed verbatim except for long lists of honors and the like, which are abbreviated in brackets. For multivolume treatises with complex titles, each title is described. (3) Collation: Included is the physical description of the book and its contents: dimensions, numbers of pages, and plates (including misprints and renumberings of plates, etc.), and technical descriptions of the signatures. Also included, where necessary, is a description (sometimes lengthy) of irregularities and variants, including comparisons with copies located elsewhere. (4) Content: Given here is a list of the basic divisions of the book (sometimes page by page, in complex cases) and an indication of the important ornithological material contained. (5) Discussion: This section is usually brief, clarifying the history of the publication, noting interesting peculiarities, and often citing further discussion elsewhere. An attempt is made to place the importance of the work in historical and ornithological perspective. (6) References: Supplementary bibliographic references as well as citations to reviews are listed.

The bibliographic detail included in this catalogue far surpasses earlier efforts. This is in part due to the greater quantity of material at hand and to the opportunity to build on past scholarship. But it is also a result of the erudition and herculean efforts of Robert Mengel.

We can only hope that the remaining volumes of the catalogue (only partially compiled by Mengel) will be "published without undue delay" as promised by the University of Kansas Libraries.

These volumes are essential reference materials for anyone with an interest in bibliography or in the history of ornithology; indeed, anyone using the literature covered in its pages would be aided by this work.—D. SCOTT WOOD.

SEXUAL SELECTION, LEK AND ARENA BEHAVIOR, AND SEXUAL SIZE DIMORPHISM IN BIRDS. By Robert B. Payne. Ornithological Monographs No. 33, American Ornithologists' Union, Washington, D.C., 1984:52 pp., 12 figs. \$8.00 (\$6.50, members).—Reading this monograph is a must for all students of sexual selection and avian size dimorphism, for its author has compiled and summarized an enormous amount of relevant information.

The monograph consists of three major parts: (1) "Intensity of sexual selection": prizes for the winners in different mating systems, (2) "Male competition and female choice of mates": modes of sexual selection and alternative mating strategies, and (3) "Sexual dimorphism and sexual selection." The final section comprises two-thirds of the monograph; the middle section is only three pages in length. The greatest strength of the monograph lies in section one, where the author moves through a useful and logical discussion of various ways to measure variance in reproductive success. This is followed by his adoption of an index in sexual selection intensity adopted from theoretical population genetics: $I_{m(f)}$ = the ratio of variance in the number of mates per male (female) to the square of the mean number of mates. He also uses the evenness statistic J .

These measures, and the variance itself, are applied to the following questions: (1) are males in lekking and other arena species subject to more intense sexual selection than are males in monogamous species, and (2) are males in lekking and polygynous species under more intense selection than are females? The data presented indicate that the answers are yes. Payne brings up many interesting subjects for future discussion, e.g., how does the intensity of sexual selection vary among years and populations, and what environmental and social factors bring about this variation? A much better data base for polygynous species is needed before anything definitive can be said relative to the intensity of sexual selection to which birds with this type of mating system are exposed, and data might have been presented for a greater variety of monogamous species (e.g., waterfowl).

Payne's lumping of all species with promiscuous mating systems is questionable. He, himself, points out that these species vary on a continuum with regard to the degree of clumping. They may well vary enormously in the intensity of sexual selection, and this question should be tested rigorously. In Table 4, which summarizes the intensity of sexual selection among females, there are four errors in the use of +/- signs comparing male and female variation in sexual selection pressure.

The second section is directed at answering the questions: (1) do males in the lekking and arena species compete among themselves by direct fighting, including both physical combat and aggressive displays, rather than by alternative mating strategies, and (2) does male competition explain the success of males in attracting females? The three pages allocated to this part of the paper are inadequate. In fact, the data available for addressing these questions are so weak that it is questionable whether this discussion should have been included in the monograph.

The third section is directed at the question: are the evolutionary results of sexual selection in sexual size dimorphism more pronounced in lekking birds than in their nonlekking relatives? In this section, 12 figures plot male/female size against female wing length; size dimorphism relative to mating system is presented in detailed tabular form for manakins. This compilation of information is extremely useful, and will serve as a ready reference for

years to come. In some cases, the usefulness of the figures might be enhanced by labeling of the species or genera concerned. The author should have been more careful in assigning species to various mating systems, e.g., on p. 20, he says "Polygynous mating systems are known for Temminck's Stint (*Calidris temminckii*), Little Stint (*C. minute*), Sanderling (*C. alba*), White-rumped Sandpiper (*C. fuscicollis*), Curlew Sandpiper (*C. ferruginea*) and Sharp-tailed Sandpiper (*C. acuminata*)." However, upon careful examination of the literature, one finds that two species, Curlew and Sharp-tailed Sandpipers, are probably polygynous but data are inadequate to allow a definitive statement to that effect. Of the three remaining species, none is polygynous. Temminck's Stints are truly *polygamous* (i.e., both sexes are polygamous in a single season); and this also is probably the case in Little Stint. The situation for Sanderlings is not clear: in one population monogamy prevailed, and in another there were indications that both males and females breed with two mates in a year, but data are inconclusive. It might also be noted here that these are calidridine sandpipers, not "calidrine."

In summary, Payne has done a great service in presenting a large variety of information on the intensity of sexual selection and its consequences on size in birds. Again, all students of sexual selection in birds and of avian social systems in general should read this monograph.—LEWIS W. ORING.

LIFE HISTORY STUDIES OF WOODPECKERS OF EASTERN NORTH AMERICA. By Lawrence Kilham, illus. by Jane Kilham. Nuttall Ornithological Club, Publication No. 20, 1983:240 pp., Frontispiece, 58 numbered text figs. \$19.00.—Larry Kilham has been recognized for several decades as an author of numerous articles on woodpecker biology and behavior. This recent book is a summarization, revision, and expansion of 51 articles and notes published in a variety of ornithological journals over the past 25 years. The book is a wealth of descriptive narration on the behavior of most eastern North American woodpeckers. The behaviors of Downy (*Picoides pubescens*), Hairy (*P. villosus*), Pileated (*Dryocopus pileatus*), Red-bellied (*Melanerpes carolinus*), and Red-headed (*M. erythrocephalus*) woodpeckers, as well as Yellow-bellied Sapsuckers (*Sphyrapicus varius*) and Northern Flickers (*Colaptes auratus*), are presented in greatest detail. Aspects of foraging behavior, behavior early in the breeding season, nesting, postnesting, and methods of communication are described and discussed to various degrees for each of the 7 species. Excellent narrations of selected behavioral patterns and intra- and interspecific interactions provide valuable behavioral information in an entertaining fashion. A short chapter in the book presents selected nesting behavior of Black-backed Woodpeckers (*Picoides arcticus*) and methods of communication. A chapter dealing with behavior of two Central American species of woodpeckers, the Crimson-crested (*Campephilus melanoleucos*) and Pale-billed (*C. guatemalensis*) woodpeckers, seemed slightly out of place in the book. The author includes this chapter, however, to provide behavioral descriptions of species similar to the Ivory-billed Woodpecker (*C. principalis*). No information is presented on the two other eastern North American woodpeckers, the Three-toed (*Picoides tridactylus*) and Red-cockaded (*P. borealis*) woodpeckers. Two final chapters in the book discuss selected aspects of behavior and morphology, and make general conclusions about woodpecker behavior.

Although overall organization in the book is good, one section on Pileated Woodpecker vocalizations (p. 90) probably should have been included under the general heading of vocalizations on p. 110. Also, the section on how Red-crowned Woodpeckers (*Melanerpes rubricapillus*) enter their nest holes seems a bit out of place in the chapter on the Red-bellied Woodpecker. The book does not approach woodpecker behavior from a quantitative point of view; however, sample sizes for many observations are presented. Not all recent literature is included in the book, but as the author states in the preface, his objective was to focus

mainly on his own observations rather than include everything known about the woodpeckers of eastern North America.

The book is an engaging narration rather than a formal scientific presentation. Much of Larry Kilham's humor and amiable disposition can be gleaned from the lines. The style is animated, and enables the reader to form easily a mental picture of the behavior, displays, and interactions of woodpeckers. As an amateur ornithologist, Larry Kilham has made more of a contribution to science and woodpecker biology than many professionals. This book provides an excellent, readable consolidation of his 25 years of observations in one monograph. I recommend the book to both amateur and professional ornithologists who are interested specifically in woodpeckers or avian behavior in general.—RICHARD N. CONNER.

KIRTLAND'S WARBLER: THE NATURAL HISTORY OF AN ENDANGERED SPECIES. By Lawrence H. Walkinshaw. Bulletin 58, Cranbrook Institute of Science, Bloomfield Hills, Michigan, 1983:207 pp., 45 numbered text figs., 55 tables. \$11.95.—Lawrence H. Walkinshaw's acquaintance with the Kirtland's Warbler (*Dendroica kirtlandii*) spans more than a half-century, beginning in 1931 when he found his first nest on the species' restricted breeding range in the north-central portion of Michigan's Lower Peninsula. Dr. Walkinshaw has drawn on this considerable personal experience and combined it with the published literature and data that he collected during the 1966–1977 breeding seasons to produce a book that details many features of the Kirtland's Warbler's breeding biology. Each chapter is devoted to one of the topics typically covered in life-history studies, and one chapter, written by Mark Bergland, presents a statistical analysis of the factors influencing nesting success.

The style of the book is that of straightforward presentation of data. Considerable attention is given to vegetation characteristics of territories and nest sites, within- and between-year movements of adults and returning young, and reproductive histories of banded birds. Descriptive statistics are employed, but statistical comparisons are rarely made.

Most of the data were collected after the publication of Harold Mayfield's book (*The Kirtland's Warbler*, Cranbrook Institute of Science, Bloomfield Hills, Michigan, 1960), so the results of the two studies are a store of valuable information on this endangered species. Because Dr. Walkinshaw's studies were conducted immediately before and during the time that thousands of Brown-headed Cowbirds (*Molothrus ater*) were removed from the warbler's breeding grounds, they record the warbler's response to this large-scale experiment. Cowbird removal has led to decreased parasitism and to increased reproductive success of Kirtland's Warbler, but not to an increased breeding population.

The central feature of this book is its presentation of detailed information about individual birds, information that others can analyze for their own purposes. The usefulness of these data are occasionally marred by inconsistencies. Table 1 (p. 7) lists four males banded as nestlings in 1974 as returning in subsequent years, but Table 13 (p. 44) lists five as returning to Michigan plus one as being recaptured in Quebec. Similarly, Table 1 has 16 females banded as nestlings returning as breeding birds, whereas Table 14 (p. 48) lists 20 as returning. Such discrepancies, as well as repetitive statements and unexpected placement of topics (e.g., a section on mortality of adults in the chapter on nesting success), suggest that chapters were sometimes written without due consideration for the organization of the whole. But the value of the data contained in this book outweighs such shortcomings. The ornithological community owes thanks to Dr. Walkinshaw for collecting, compiling, and making available these hard-to-obtain data on this rare species.—CHARLES F. THOMPSON.

POPULATION ECOLOGY OF THE BOBWHITE. By John L. Roseberry and William D. Klimstra. Southern Illinois Univ. Press, Carbondale, Illinois, 1984:282 pp., 23 photographic illustrations, 45 text figures, 26 tables. \$25.00.—The Northern Bobwhite (*Colinus virginianus*), one

of my favorite birds, is becoming increasingly rare in the northern and central United States, a victim of habitat deterioration and destruction. The bird has been the subject of intensive studies, and has been described in numerous state conservation department publications and innumerable papers, including monographs on southern populations by Herbert Stoddard (*The Bobwhite Quail: its Habits, Preservation, and Increase*, Charles Scribner's Sons, New York, New York, 1931) and W. Rosene (*The Bobwhite Quail: its Life and Management*, Rutgers Univ. Press, New Brunswick, New Jersey, 1969), and on northern populations at the periphery of the species' range by C. Kabat and D. R. Thompson (*Wisconsin Quail, 1834–1962—Population Dynamics and Habitat Management*, Wisconsin Conserv. Dept. Tech. Bull. 30, 1963) and by P. Errington (*Ecol. Monogr.* 15: 1–34, 1945). Thus I looked forward to this book on the bobwhite in the central part of its range, which would fill the gap between the studies of northern and southern birds.

The objective of this 27-year study was to investigate the ecology and population dynamics of a hunted but unmanaged bobwhite population in a changing agricultural environment. The study area was 627 ha of privately owned farmland 7 km northeast of Carbondale, Illinois, near the center of the species' geographic range.

Because the study produced a number of important papers on the bobwhite, I thought the book would be a definitive study on midwestern bobwhite. Instead, the book is not only on quail ecology but also on "broader questions relating to population regulation." The ecology and population dynamics of the bobwhite in southern Illinois are lost in its pages. Why did the authors choose such an approach? One of the reasons emerges between the lines of the Preface. The authors seem to apologize for spending so much time "plowing old ground" and go to some lengths to defend their study. So instead of presenting and integrating all of their findings, including those previously published, they opted for a more general book.

The book starts out well. Chapter 1 explains the background and approach of the study. Chapter 2 describes the study area. And Chapter 3 on habitat needs and utilization, augmented by 19 pages of photographs, tells the story of habitat changes and decline. But from this point on, the book begins to fall apart. The next four chapters discuss, in order, fall and winter losses, recruitment, abundance, and exploitation. The data, backed by graphs and tables, are there, but they are scattered within tedious discussions of the literature on both bobwhite and general population ecology. The only way one can follow the story of the bobwhite in southern Illinois is to make notes as one reads. The reader has to become much like a bobwhite, scratching among litter and chaff seeking grains of corn. The authors at least could have provided the reader with chapter summaries of their data, which would have improved the book immensely.

The book contains a lot of excellent data, valuable for students of population ecology. For example, one learns that the population density in southern Illinois is 62 birds per 100 ha, exceptionally high for an unmanaged population; and that annual rates of summer gain were strongly influenced by (1) the number of days of winter snow cover (especially in late winter) ≥ 2.5 cm; (2) the ratio of breeding density by K ; (3) the number of crop fields ≥ 4.5 ha present the previous autumn; and (4) the total rainfall in early spring. Over 27 years the population experienced fluctuations approximately every 3.5 years, fitting Palmgren's and Cole's (*J. Wildl. Manage.* 15:233–252, 1951) prediction for serially correlated but random oscillations in populations. There were two major peaks about 9 years apart, but the peaks were not that prominent compared to those of cyclic boreal species.

Chapter 8, which takes up 22% of the basic text, deals with population regulation. In this chapter the authors attempt to show that the quail in this study experienced density-dependent population regulation and cyclic fluctuations. They attribute population regulation to a rather ambiguous population momentum—the tendency of a population to overshoot

K on the upswing—and the damping effects of compensatory reproduction and mortality. They attempt to demonstrate that bobwhites in southern Illinois follow a 10-year cycle. (For some reason wildlife biologists have an unrequited love affair with cycles.) As a treatment of population regulation, Chapter 8 is badly flawed. The authors rely on theories and literature of the 1940s, 1950s, and 1960s, now largely historical. They obviously are unfamiliar with experimental and theoretical population ecology of the late 1970s and 1980s, which they could have used to advantage with their volume of data. Instead, they flirt with group selection and embrace extrinsic rather than intrinsic influences on population regulation. They spend well over half the chapter advancing their argument that quail populations in southern Illinois follow a 10-year cycle. They demonstrate that the two major peaks of roughly nine years fit the nodal lunar cycle index proposed by Archibald (Wildl. Soc. Bull. 5:126–129, 1977) to explain the 10-year cycles in boreal animals. Archibald based this index on the astronomical fact that the moon does not follow the path of the sun. It has a nodal cycle of 18.6 years and cuts across the elliptical arc of the sun once every 9.3 years. This nodal cycle causes apparent changes in the declination of the moon and an annual time lag in moonrise and moonset. The lag in moonrise, which is most pronounced around the vernal equinox, means that at regular intervals moonrise comes some time after sunset rather than at sunset, subjecting organisms to strong illumination by the moon after a period of darkness. The authors hint that perhaps this cyclic exposure to light in the bird's circadian rhythm would influence reproduction. With all the data at hand, the authors could have spent their time much more profitably investigating intrinsic mechanisms based on modern population theory which desperately needs to be tested on the kind of data they have accumulated.

Now that the authors have expressed their ideas on population regulation, they ought to write the book they should have written, a monograph on the long-term population study of Northern Bobwhite in the agricultural midwest and not worry about plowing old ground.—
ROBERT LEO SMITH.

THE SEASIDE SPARROW, ITS BIOLOGY AND MANAGEMENT. By Thomas L. Quay, John B. Funderburg Jr., David S. Lee, Eloise F. Potter, and Chandler S. Robbins (eds.). Occasional Papers of the North Carolina Biological Survey, Raleigh, North Carolina. 1983:174 pp., one colored plate, many maps and text figs., one 7-inch plastic record. \$15.00.—In October 1981 a symposium on the Seaside Sparrow (*Ammodramus maritimus*) was held at the North Carolina State Museum, and somewhat belatedly we have an interesting volume containing the proceedings of that meeting. On opening the book we are immediately confronted with an attractive color plate by John Henry Dick illustrating the nine races of the species, including those forms *mirabilis* and *nigrescens* formerly considered as distinct species. What follows is equally interesting.

Part I of the symposium, "The Seaside Sparrow: An Overview," contains a keynote speech by E. J. Hester, a discussion of The Salt-marsh Ecosystem by A. W. Cooper, a general discussion of the Seaside Sparrow assemblage by O. L. Austin Jr., and a very stimulating paper by J. B. Funderburg and T. L. Quay on The Distributional Evolution of the Seaside Sparrow. Part II, "The Biology of the Seaside Sparrow," contains 10 papers on a variety of topics. Of these, the detailed discussion of the Cape Sable Sparrow (*mirabilis*) by H. W. Werner and G. E. Woolfenden presents the most original information. Two papers by J. W. Hardy and M. V. McDonald on vocalizations are illustrated with a small plastic "floppy" record that is inserted in the book. The other papers in this section present some specific biological information. Part III, "Protection and Management of Seaside Sparrow Populations," discusses the habitat use of the Cape Sable Sparrow (by J. A. Kushlan and O. L. Bass Jr.), the use of fire in the management on the Cape Sable Sparrow (by D. L. Taylor),

the possibility of breeding Seaside Sparrows in captivity, and a summary paper by E. F. Potter.

The Seaside Sparrow, with its extensive but exceedingly narrow breeding range in the coastal salt marshes, is a fascinating species. All the authors emphasize that the salt marsh habitat is at peril throughout, and so all forms of *A. maritimus* are in some danger. As is well known, *nigrescens* is extinct in the wild and, at present, only a handful of (possibly senescent) males remain in captivity. The time lag in publishing this symposium results in giving a somewhat optimistic view of the possibility of preserving the Dusky Seaside by cross-breeding that conflicts with the rather gloomy results obtained so far. The race *pelonota* is extinct and both of these forms have been eliminated by habitat destruction and changes. On the other hand, the race *mirabilis* seems to be doing as well as can be expected, and Kushlan and Bass give an estimate of a population of 6000 in 1981.

There is some repetition in the symposium, as at least three authors recount the checkered history of *mirabilis*, but the level of the papers is above the general run of symposium volumes. The collection is well worth reading.—GEORGE A. HALL.

BEHAVIOR OF FLEDGLING PEREGRINES. By Steve K. Sherrod. The Peregrine Fund, Ithaca, New York, 1983:213 pp., 59 figures. \$17.00 paper.—This is a detailed study of the behavior of young *Falco peregrinus* from the last week of the nestling period through the time the birds depart the vicinity of the nest. Two broods in Greenland and two in Australia were watched for a total of 1040 h, and three hand-reared broods placed in the wild were watched for 1350 h in the U.S. All young were fitted with radio transmitters, which facilitated tracking of the birds once they began to range widely. The hand-reared birds were produced in the facilities of the Peregrine Fund and transported to the release site at an age of four weeks and allowed liberty at an age of six weeks. Food was provided at the artificial nest site through the twelfth week.

The book contains much valuable information and a few new interpretations of the development of behavior in young peregrines. The results are usually presented in tables or graphs, supplemented with drawings and selected excerpts from field notes. The drawings, by K. L. Allaben-Confer, are very attractive and informative. The graphs appear to be produced by a microcomputer with a program of low resolution; they are not only crude, but often are difficult to decipher and comprehend. Conclusions are generally well-supported by data or at least by several anecdotal accounts, but there are at least a few notable exceptions in which the documentation appears to be not much more than the author's opinion. Falconry terminology is used liberally, usually without explanation, and a few readers may not be able to "hack-it" and may "throw-up." (Hacking is a falconer's method of allowing young falcons, taken from the nest, to fly free after they fledge, returning to the hack-site to be fed by the falconer. Throwing-up is a sudden, upward swoop of a falcon in flight.) An example of the confusion that can result from the use of this terminology: (speaking of a trained falcon) ". . . it is allowed to eat as much as it wishes from the animal after the kill, even though the falcon will be too fat to fly for a day or two afterwards" (pp. 91–92). A single meal does not render a falcon flightless for a day or two; the bird simply has too much stored fat to be flown safely by the falconer. The bond between falcon and falconer is simply hunger: a bird that is not starved will not return to the falconer and will be lost to the wild.

I noticed only four typographical errors; three are extremely minor, but the fourth is a bit confusing: Parts A and B of Fig. 26 appear to be transposed, and since they happen to be printed on opposite sides of a page the mistake is not immediately obvious. Entomologists will be surprised that grasshoppers and crickets are in the order Odonata (p. 50). With these exceptions, the book is reasonably well organized and written with sufficient clarity.

Chapter 3, "Leaving the nest," illustrates both the strengths and weaknesses of this work, although probably more of the latter. Most of the chapter is devoted to age and other factors determining first flight. The variation in age at fledging (39–49 days post-hatch) is well documented in Table 1. The author indicates that the youngest bird in a brood usually is the last to fledge but the oldest is not always the first to fly. This is supported by the data in Table 4, but relative age (within a brood and sex) was determined by the length of the longest rectrix when the young were about four weeks old. Furthermore, observations at nests were made only every fourth day, raising some question as to whether or not the "first sustained flight" of a young was observed. The influence of brood size on age of fledging is supported only by the citation of an unpublished dissertation. The author believes that hunger can influence fledging but offers no direct evidence. The behavior of siblings is also said to influence fledging; this is supported by an observation of one young flying 10 m, escaping its siblings who were after the food it had just obtained from its parents. The author can "state with certainty" that larger geographic variants of the peregrine develop more slowly than smaller ones, although he admits he has no growth data. "Thus, . . . the larger geographic variants . . . do in fact first fly at a slightly older age." An examination of Table 1 reveals not even a suggestion of support for this statement. Perhaps larger races of peregrines do develop more slowly than smaller ones; this possibility of intraspecific variation is worth documentation. The last third of the chapter is an excellent and thorough presentation of data and arguments that I believe effectively disproves the hypothesis that adult peregrines lure their young into their first flight. This is a popular hypothesis for not only peregrines and other raptors but for many other kinds of birds as well. Sherrod's hypothesis is probably valid for all of these species: adults fly about in front of the nest with prey not to lure their young into flight but because they are reluctant to land among their large and aggressively hungry young. He describes several very aggressive "attacks" by young on their parents. In one case, a male delivering prey was footed in the wing by one of his offspring and grasped on the head by the beak of another; the young pulling in opposite directions on the complaining adult for seven seconds before he managed to give the food to one of them, resulting in both young releasing their parent.

I disagree with several of Sherrod's interpretations of his observations. He speculates that peregrine family units remain intact through at least part of migration. His evidence for this is very questionable. He notes that "sometimes" young peregrines sit "together or at least very closely on beaches of the Texas coast." "Often" these birds exhibited "similar color morphs." Sherrod and two other Texas trappers "think it possible that these groups are composed of siblings." The next bit of evidence comes from a falconer trapping birds on beaches on the east coast who observed that young birds begging in the vicinity of adults "was so commonplace [that] he made no particular note of it." In my considerable experience, the impressions and conclusions of falconers and other aviculturists are only rarely reliable scientific information. I should also note that no evidence is presented to suggest that an adult actually fed young. Sherrod's key evidence is from six days of incidental watching of over 30 "groups" of migrating American Kestrels (*Falco sparverius*) in Maryland. I quote: "the groups were comprised of one to five individuals. When I saw two young begging vocally and flying in a flutter-glide behind an adult female, I finally realized that at least some of the larger parties were in fact family groups. Later, I watched as an adult flying in front of another begging youngster, grabbed an insect out of the air and transferred it to her offspring." It is sufficiently difficult to determine the age of *F. sparverius* in the hand that I would be hesitant to guess the age of any kestrel observed in flight, even at short range and with the best optical aids available. Sherrod, however, has not only determined the age of the birds but has identified some as the offspring of a particular female. In more than 30 years of watching migrating hawks and falcons, I have never observed an incident that I

would begin to interpret as adults feeding young. I have observed many incidents of attempted piracy, piracy, and other interactions that, when identifiable, usually were between birds of the same age class. I hope that this is the only case where Sherrod's "facts" were the result of his preconceptions.

Sherrod describes a number of incidents in which satiated young aggressively drove off adults that were attempting to glean uneaten food items for themselves. Most of the attacks occurred well before the young were able to provide for themselves, and several appeared to be of sufficient violence to endanger the parent. In one incident, both parents made about 20 attempts over a 3-h period to retrieve a pigeon that their three satiated young were not eating. The parents were footed by the young six times, of which two cases involved a young grasping her mother's breast with both feet and remaining impaled until both birds fell off the ledge in the struggle. Sherrod interprets these observations as a "perfect example" of parent-offspring conflict (Trivers, *Am. Zool.* 14:249-264, 1974). Inflicting damage on one's parent which may impair or eliminate the parent's ability to provide one with sustenance that one cannot obtain alone is not selfish, it is pathological, and certainly does not increase one's inclusive fitness. The persistence of the parents in attempting to retrieve the pigeon suggests that this was a valuable resource to them, and I find Sherrod's explanation of the selfish, aggressive behavior of the young in depriving their parents of this food wanting.

Sherrod notes that the coefficient of relationship, r , between young and their parents is only 0.5 while r to themselves is 1. He fails to realize that r also is 0.5 between the young peregrine and the offspring it might produce in the future, which is exactly equal to the r between the young peregrine and siblings which might be produced by its parents in the future. Peregrines rarely breed until they are two years old and mortality of individuals is higher for birds in their first year than in subsequent years. The probability of a young peregrine's parents surviving to produce siblings of the young is thus greater than the young surviving to produce its own offspring. For example, Enderson (*In* J. J. Hickey, ed. *Peregrine Falcon Populations*. Univ. Wisconsin Press Madison, Wisconsin, 1969) gives the mortality of peregrines as 70% in the first year of life and 25% for subsequent years. The probability of a young peregrine surviving two years to reproduce is, thus, $0.30 \times 0.75 = 0.23$. In contrast, the probability of both of a young peregrine's parents surviving and reproducing during those two years is $0.75^2 + 0.75^4 = 0.88$. Thus, a young peregrine's parents have 3.9 times the potential to produce siblings of the young than it has to produce its own offspring during its first two years of life. This leads to the prediction that young peregrines should avoid conflict with their parents and demand no more than they need for their own survival.

Why, then, did Sherrod's young peregrines behave so aggressively to their parents? Almost all of the aggressive incidents occurred at the Australian nests, where food deliveries were relatively infrequent and consisted of larger prey than in Greenland. I suggest that infrequent deliveries of large prey produced the excessively aggressive behavior of the young to their parents: a full crop may not suffice to eliminate the "hunger drive" of a young animal subjected to frequent food deprivation. I am aware that this explanation deals only with proximate causes but it offers a reason for why an explanation based on ultimate, or evolutionary, causes fails to explain the behaviors. Parent-offspring conflict is a plausible explanation for some behavior in raptors (Mueller et al., *Wilson Bull.* 93:85-92, 1981), but it cannot be used where the possible benefits to young are smaller than the costs to the adults.

I find serious fault with essentially all of Sherrod's analyses of the development of behavior in young peregrines because he appears to be unaware of the concept of maturation. He allows that "young Peregrines do innately recognize flying prey as the potential target." But he then goes on: "The hundreds of pursuits which the young falcons make after prey furnish the trial-and-error learning necessary to recognize and capture the individual species. The

association which finally occurs between capture and feeding completes the predatory sequence" (p. 117). Sherrod notes that very young falcons are afraid of potential prey and suggests that they must become habituated to prey before they can kill and that reinforcement is necessary for a falcon to develop an association between "pursued prey and food" (p. 91). Sherrod's review of the literature on the development of predatory behavior is reasonably extensive, and it is thus surprising that he is apparently unaware of the one experimental study performed on *Falco*. I have shown (Mueller, *Behaviour* 49:313-324, 1974) that hand-reared, naive American Kestrels, at an age of 10 weeks or older, will recognize mice as prey and attack and kill mice in a manner indistinguishable from adults without prior experience, habituation, practice, or reinforcement. Sherman (*Auk* 30:406-418, 1913) has shown that nestling American Kestrels show either fear or no response to live prey. It is apparent that the essentials of prey recognition, capture, and killing are innate in *F. sparverius* but appear in a bird's behavioral repertoire only when it has matured to an age where those behaviors are appropriate. There is nothing in Sherrod's observations that is inconsistent with a similar development of predatory behavior in *F. peregrinus*.

I have severely criticized several of Sherrod's interpretations of his observations. I feel, however, his book is an invaluable contribution and belongs on the bookshelf of all biologists interested in raptors or in the development of behavior in birds.—HELMUT C. MUELLER

NATURE THROUGH TROPICAL WINDOWS. By Alexander F. Skutch, illus. by Dana Gardner. University of California Press, Berkeley, California, 1983:374 pp. \$19.95.—The ability to write gripping factual accounts of the everyday activities of animals and plants is one that few of us possess. Skutch's numerous treatises on tropical natural history are always beautifully and flawlessly crafted, and the present volume is no exception. Strictly speaking, however, they are not entirely factual. This is not to suggest that they contain misinformation, but rather that they present facts that are frequently interpreted through the heart rather than through the objective mind. But it is difficult to be objective all day long, and Skutch's gentle musings on Nature's mysteries provide a (usually) fairly palatable matrix through which the weary mind may rapidly soak up a tremendous amount of material.

Having said that, I suppose I have no right to claim that the weary mind requires the scientific names of all organisms in order to grasp the gist of the story, but I did find that this omission somewhat impeded my ability to file information. The chapters on botany are better in this regard. They are also less sentimental. I was especially struck with the following statement from a chapter called "A favorite food of birds": "Apparently, the kind of fruit that a plant produces depends largely upon its evolutionary history and the vagaries of mutation. Possibly, too, it is related to the chemistry of the edible tissues." This casual tribute to stochasticity is almost startling in the midst of the portrait of determinism that emerges from Skutch's book.

The book's 18 chapters include 8 that are expressly about birds, 4 on botany and the relationships of plants and animals, 2 on general natural history placed in an evolutionary milieu, and 4 rather personal treatises that might go under the heading of "religion without revelation." The modesty of the Bibliography reflects two things: first, that much of the information being presented is new; second, that the information is not always completely integrated with what is not new. For example, the interesting account of *Piper* biology ends with speculation about the possible pollinators of these plants. Much work has already been done on the pollination ecology of Costa Rican *Piper*, however, and it is known that bats play the dominant role in it (e.g., Fleming, T. H., et al., *Ecology* 58:619-627, 1977; Heithaus, E. R. and T. H. Fleming, *Ecol. Monogr.* 48:127-143, 1978). Neither of these works is mentioned. I was disturbed, too, by Skutch's attitude towards current evolutionary theory in the chapter entitled "Selfishness, altruism, and cooperation." He is uncomfortable with

the implications of the "selfish gene" doctrine and the possibility that there is no particular reason for the existence of life on Earth: "... evolution can occur only in populations, never in individuals, and unless the competing individuals also cooperate to perpetuate the species, it will vanish from the Earth." This is one baby that should have followed the bathwater.

My reactions to this book are, obviously, mixed. To label it as a book for nature lovers would be to dismiss it with unfair superficiality. To leave it for the intelligent layman would be to deny biologists access to a treasure trove of first-hand information available nowhere else. But it delves too deeply, for my taste, into realms far beyond that of the natural world. If you are a biologist seeking unadorned facts on tropical natural history, I highly recommend that you read this book. Do it selectively, however, and with a salt shaker by your side.—
MARY C. MCKITRICK.

FIRST VICE-PRESIDENTS OF THE WILSON ORNITHOLOGICAL SOCIETY

In anticipation of the 100th anniversary of The Wilson Ornithological Society, The Wilson Bulletin is publishing a series of lists compiled by John L. Zimmerman of the past and present officers and Council Members of the Society. Below is a list of the First Vice-Presidents of The Wilson Ornithological Society.

C. C. Maxfield, 1893	Maurice Brooks, 1948–1950
R. M. Strong, 1894	Walter J. Breckenridge, 1950–1952
Ned Hollister, 1895–1903	Burt L. Monroe, Sr., 1952–1954
W. L. Dawson, 1904–1905	Harold F. Mayfield, 1954–1955
R. L. Baird, 1906–1908	John T. Emlen, Jr., 1955–1956
W. E. Saunders, 1909–1911	Lawrence H. Walkinshaw, 1956–1958
B. H. Swales, 1912–1913	Harold F. Mayfield, 1958–1960
Geo. L. Fordyce, 1914–1919	Phillips B. Street, 1960–1962
Harry C. Oberholser, 1920–1921	Roger Tory Peterson, 1962–1964
Dayton Stoner, 1922–1923	Aaron M. Bagg, 1964–1966
Wm. I. Lyon, 1924	H. Lewis Batts, Jr., 1966–1968
Thos. H. Whitney, 1925–1928	William W. H. Gunn, 1968–1969
George Miksch Sutton, 1929–1931	Pershing B. Hofslund, 1969–1971
Edwin L. Mosely, 1932	Kenneth C. Parkes, 1971–1973
Josselyn Van Tyne, 1933–1934	Andrew J. Berger, 1973–1975
Alfred M. Bailey, 1935–1936	Douglas A. James, 1975–1977
Margaret Morse Nice, 1937	George A. Hall, 1977–1979
Lawrence E. Hicks, 1938–1939	Abbot S. Gaunt, 1979–1981
George Miksch Sutton, 1940–1941	Jerome A. Jackson, 1981–1983
S. Charles Kendeigh, 1942–1943	Clait E. Braun, 1983–
Olin Sewall Pettingill, Jr., 1944–1947	