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ORNITHOLOGICAL LITERATURE

BIRD CENSUS TECHNIQUES. By Colin J. Bibby, Neil D. Burgess, and David A. Hill. Academic Press, London, San Diego. 1992:257 pp., 116 boxed figures with commentary, 1 table. $39.95.—The purpose of this book is to familiarize the researcher with the commonly used methods for estimating relative abundance and trends in the size of bird populations and to warn users of the biases in each method. This is not an exhaustive review of bird-census literature but features specific examples to illustrate the methodologies, options, biases, and pitfalls. Although the introductory paragraph refers to two important American publications on bird-census methodology (Ralph and Scott 1981, Stud. Avian Biol. 6; Verner 1985, Current Ornithology 2:247–302), the book principally addresses a British audience; the most recent American references are from 1989. Most of the abundant examples in the boxed annotated illustrations are from the British literature, and the reference list includes only two foreign-language titles.

After an introductory chapter on purpose and design in counting birds and an eight-page table with examples of the uses of each major census method, there are separate chapters on census errors, territory mapping, transects, point counts, banding, individual species, colonial and flocking birds, distribution (atlas) of birds, and habitat description. Each chapter concludes with a helpful summary and list of points to be considered.

I encountered a problem in the first boxed illustration. Here the authors assume that the reader knows how to locate square 02 on a hypothetical county map of magpie distribution; not even the British breeding bird atlas (Sharrock 1976) described the peculiar vertical sequence in numbering the British atlas blocks. American readers will search the index in vain for references to the Breeding Bird Census, the MAPS program, migration sampling and winter studies. Reference to the "remarkably ill-standardised Christmas Bird Count" centers around Root's (1988) winter atlas, which is the only U.S. atlas mentioned in the book. "CBC" refers to the British Common Birds Census, not the Christmas Bird Count.

Emphasis is on helping the reader make sound selections of methodology for specific studies, avoid pitfalls, and recognize limitations on interpretation of the results. For the most part, the illustrations are well chosen for emphasizing the authors' points. One might profitably spend an hour or two just studying the boxed examples for an overview of the many problems in bird censusing.

Territory mapping is the only bird-survey method for which the methodology is internationally standardized (International Bird Census Committee 1969, 1970), and it has long been considered the standard against which other methods are judged. The authors believe this view is unjustified because some species are not strictly territorial. Mapping is unsatisfactory for semi-colonial, colonial, and wide-ranging species and for species with very brief song periods. The mapping method is also the most time-consuming. In spite of these criticisms, the authors do not recommend any other method as the standard. In fact, they mention the value of the mapping method if bird populations are to be related to habitats. I especially appreciate the emphasis on recording simultaneous registrations of birds, a feature of mapping censuses that is overlooked by many writers.

The authors consider transects particularly suitable in extensive, open, uniform, or species-poor habitats, and state that, where their use is appropriate, they can be less time consuming than point counts. The use of transects may also be more accurate because errors in distance estimation accumulate linearly in transects but by squares in point counts. For habitat correlations, however, mapping censuses or point counts are preferred. A procedure not found in American publications is the Look-see method, which can be used for species such

as the Barn Owl in special situations where nesting sites are so few and obvious that essentially each is found and examined.

The chapter on banding focuses on estimating population size with the Lincoln (1930) index and the du Feu (1983) method. The latter procedure (Ringing and Migration 4:211–226) uses multiple captures during a single mark-recapture session. Unfortunately, the more sophisticated recent literature on analyzing mark-recapture data is not mentioned. Anyone attempting such a study would be well advised to read the three pages of assumptions that should not be violated.

The species index is not user friendly. It is arranged taxonomically by English names of either order (passerines) or family or subfamily (terns), under which one searches alphabetically for the species name. For example, Kestrel, European, *Falco tinnunculus,* is found between Hen Harrier, *Circus cyaneus,* and Marsh Harrier, *Circus aeriuginosus* (sic.), under the heading "Birds of Prey." One might quibble over the misspelling of scientific names in the species index or the misciting of the Christmas Bird Count circle radius as 15 instead of 7.5 miles, but mistakes are relatively few.

The attractive volume is sturdily bound. A male Fuerteventura Stonechat (*Saxicola dacotiae*), a Canary Island endemic, graces the front cover. I recommend this book to anyone interested in studies of bird populations. It gives an excellent review of methods, especially those that are applicable during the breeding season when populations are relatively static. Although some of the methods and especially potential sources of error apply also to the winter and migration seasons, the authors' main emphasis is on the nesting period. Depending on the study to be conducted, American references also should be consulted, particularly Ralph and Scott (1981), Verner (1985), Handbook for Atlasing American Breeding Birds (Smith 1990, Vermont Inst. Nat. Sci., Woodstock), Inventory and Monitoring of Wildlife Habitat (Cooperrider et al. 1986, U.S. Dept. Inter., Bur. Land Manage., Denver), Modeling survival and testing hypotheses using marked animals (Lebreton et al. 1992, Ecol. Monogr. 62:67–118), and the references cited by Lowe (1993, J. Field Ornithol. 64 suppl.: 3–4).—CHANDLER S. ROBBINS.

THE PRIVATE LIFE OF JAMES BOND. By David R. Contosta. Sutter House, Lititz, Pennsylvania. 1993:127 pp., color frontispiece (childhood portrait), photographs. $16.95.—I think it is safe to say that no ornithologist who was not also an artist has been featured in as many biographical publications as the late James Bond (1900–1989). As the long-established authority on the birds of the West Indies, his scientific career was covered in obituaries in ornithological journals (Parkes, 1989. Auk 106:718–720; Snow, 1990. Ibis 132:130). As for other aspects of his long life, these were chronicled in a series of books by his wife, Mary Wickham Porcher Lewis Bond, already an established writer by the time of their marriage (her second, his first) in 1953.

The latest addition to Bondiana is a slim volume by David R. Contosta, Chairman of the History Department at Chestnut Hill College, Philadelphia, and a family friend of the Bonds. His previous books have dealt mostly with biography and with aspects of the history of the Philadelphia suburbs; Mrs. Bond, who cooperated closely with Mr. Contosta, believed that Contosta's interests made him an ideal author for an account of James Bond's life that would touch only peripherally on his ornithological achievements.

There is, of course, much overlap with the material in Mrs. Bond's books: "How 007 Got His Name" (1966); "Far Afield in the Caribbean" (1971); "To James Bond With Love" (1980); "Ninety Years 'At Home' in Philadelphia" (1988). As befits a book by a historian/

biographer, the two chapters covering Bond's antecedents and his life before his marriage to Mary are more thorough than in her books, and include a generous number of photographs (the equivalent period of Mary's life is covered in "Ninety Years").

Contosta's text is quite readable, although as a historian his style is understandably less lively than that of Mary Bond. The sources of his information and his quotations are thoroughly footnoted. The book will be useful for scholars of the history of American ornithology, and for anyone curious about the life of one of the last of the great ornithologists who made a permanent impact on our discipline in spite of never achieving an advanced degree.—KENNETH C. PARKES.

THREATENED BIRDS OF THE AMERICAS. THE ICBP/IUCN RED DATA BOOK. Third Edition Part 2. By N. J. Collar, L. P. Gonzaga, N. Krabbe, A. Madroño Nieto, L. G. Naranjo, T. A. Parker III, and D. C. Wege. Smithsonian Institution Press, Washington, in Cooperation with the International Council for Bird Preservation. 1992:1150 pp. $75.—The long-awaited Red Data book for the western hemisphere makes a timely arrival with this impressive compilation. The title is somewhat misleading since after treating the 302 forms from South and Central America and the Caribbean Islands, it became necessary to defer the 25 North American and the "Neotropical Pacific" species to a future volume. An appendix gives a brief treatment of these species.

Forty-eight families are represented in the listing. As might have been expected the family Psittacidae with 38 species treated has the most threatened forms. The Trochilidae and Formicariidae with 28 each follow. Some of the species included should probably be considered to be subspecies of other forms, but the authors have wisely decided to treat them as distinct forms. As might be expected many of these forms are poorly known, often from only a few specimens collected years ago.

The species are classified in a 12-point scale, with five categories of Endangered, three categories of Indeterminant, for which insufficient information is available, and four categories of Vulnerable or Rare. There are 96 species listed as "Endangered" of which 23 species are listed as "Endangered/Extinct, Situation Terminal." for which action is urgent if population is indeed extant. This list includes the Ivory-billed Woodpecker (*Campephilus principalis*), the Eskimo Curlew (*Numenius borealis*), and Bachman's Warbler (*Vermivora bachmani*). Five species are listed as "Situation unclear urgent if taxonomic status confirmed". Seven species are listed as "perhaps in need if and when found" and 31 species are considered "insufficiently known." However, the picture is not totally gloomy, as occasionally a species account details the rediscovery of a species, not otherwise reported for years.

The species accounts follow a set pattern, leading off with a brief summary statement on the status. A section on Distribution discusses in detail the specimen records as well as other published records. The sections on Population and Ecology give what is known for the species, which in many cases is very little. These are followed by sections entitled "Threats," "Measures Taken," and "Measures Proposed." The threats almost always are the loss of habitat, either by clearing of the forest (not always primary forest) or drainage of wetlands. Measures taken or proposed usually involve the preservation of the habitats, as for example in the establishment of a reserve. In many cases the only measure proposed is for further research. For many species, so little is known that assigning a threat cannot be done. A section on Remarks includes taxonomic history or other pertinent material. It would appear that these accounts are essentially complete and include everything that was known about the species at the time of writing. Several appendices organize this massive data set in useful

ways. The species in each of the categories are listed, a tabulation by country is given (Brazil leads the list with 97 entries), and a list of 325 additional "Near-threatened" species is given. This comprehensive survey may have arrived too late to help many of its subjects, but it does provide guidance for some conservation efforts.—GEORGE A. HALL.

FLORIDA BIRD SPECIES. AN ANNOTATED LIST. By William B. Robertson, Jr., and Glen E. Woolfenden. Spec. Publ. No. 6, Florida Ornithological Society, Gainesville, Florida. 1992: 260 pp., 1 fig., 1 table, and 3 appendices. Cloth $22.95, Paper $17.95 (plus $2.00 per book shipping, Florida residents add 7% sales tax); Available from Florida Ornithological Society, Archbold Biological Station, P. O. Box 2057, Lake Placid, Florida 33852.—When the Florida Ornithological Society was founded in 1972, one of its early goals was to publish an annotated list of Florida birds. Forty years earlier Howell's (1932) Florida Birdlife had appeared (updated by A. Sprunt in 1954), and although Henry Stevenson was working on a new comprehensive text (Stevenson and Anderson, in press), it was felt that an annotated checklist would be helpful to the many birders—both residents and visitors—in Florida. A committee was appointed, museum research conducted, and drafts circulated. In the late eighties Robertson and Woolfenden grabbed the floundering bull by the horns and the result is this outstanding publication.

It is an annotated list of all bird species reported to have occurred in Florida through 31 December 1991. Included is a list of 461 verified species (a specimen, photograph, or voice recording of unquestioned provenance) and three appendices: A—Unverified stragglers (75 species), B—Probably unestablished exotics (16 species), and C—Unestablished exotics (119 species).

Florida's geographical position on the Atlantic and Gulf of Mexico, with the southern part of the peninsula extending into subtropical waters, results in a number of western, northern, and Caribbean stragglers in the state. Miami is a major port for the avian pet trade, and with a large Hispanic population, many of whom keep caged birds, it is no surprise that so many exotic species have escaped or been released. The mild climate and the abundant exotic flowering and fruit-bearing trees and shrubs planted as ornamentals, in addition to back yard feeders, provides the sustenance for longterm survival of many individuals of these species.

Several pages of the Introduction are devoted to comments on the changes in bird populations during the 20th century, especially the latter half. Howell (1932) reported 361 Florida species, Sprunt (1954 and a 1964 addenda) reported 411 species, Stevenson (1976) 463 species, and the current list (1992) now totals 536 species. About 65 species have expanded their breeding ranges in Florida, chiefly species closely associated with altered habitats. In contrast, about 30 species show a receding breeding range, apparently unable to adapt to altered habitats. Most of these are colonial wading birds or species associated with pineland, prairie, and scrub habitats.

The following information is presented for each species: Evidence of occurrence, distribution in Florida, the salient characteristics (seasonality, abundance, frequency, habitat, life history context) of its occurrence, and how, if at all, has its pattern of occurrence changed during the period of record.

Appendix A is a catch-all category ranging from species that have been seen over and over again (for example, Red-necked Grebe [*Podiceps grisagena*] and Rough-legged Hawk [*Boteo lagopus*]) but for which no verifiable evidence (specimen, photo, etc.) exists, to species mentioned in print in the 18th and 19th centuries based on observation only, or specimens

now lost or of dubious origin. All such reports were included so that they would be available for re-evaluation rather than to be arbitrarily deleted and lost. Appendix B lists those exotic species that breed regularly (or once did) in Florida, but do not yet appear to have a self-sustaining wild population. Appendix C lists those exotics that have been seen in the wild, some may have bred, but for the most part they are not self-sustaining populations at this time. Needless to say, this is the most incomplete list in the book.

The authors hope that the emphasis placed on verifiable evidence and published accounts will stimulate Florida birders of all degree to seek and preserve the best possible supporting documentation and to publish their important observations. Hereafter, birders will turn to Florida Bird Species as their initial reference to learn the significance of an observation.—HERBERT W. KALE II.

ATLAS OF BREEDING BIRDS IN PENNSYLVANIA. Edited by Daniel W. Brauning. Univ. Pittsburgh Press, Pittsburgh. 1992:484 pp., 8 acetate overlays. $29.95.—Breeding bird atlases have become one of the more important results produced by the non-professional birding community. They provide a wealth of distributional information for our breeding avifauna, serving as a benchmark against which future range and status changes can be compared.

The contents of the Pennsylvania atlas are similar to other breeding bird atlases that have been published previously. The four introductory chapters describe the atlas methodology employed in Pennsylvania, a brief summarization of the results, a description of climatic and physiographic features of the state, and a brief history of Pennsylvania ornithology. Most of the book is devoted to the species accounts written by 21 authors. The content of these accounts vary from species to species, but are largely devoted to discussions of the atlas results and historic changes in status and distribution. Maps depicting the atlas records, tables summarizing these data, and a black and white line drawing are provided for each species. Data from the North American Breeding Bird Survey (BBS) is depicted graphically for those species adequately surveyed in Pennsylvania. Among the appendices are brief accounts of the 16 species that have nested in the state but were not encountered during the atlas, and a large table summarizing egg and fledgling dates for Pennsylvania.

The 2050 participants embarked on the ambitious goal of atlasing every one of the 4928 blocks within the sate. They succeeded in adequately covering many of these blocks, but there were areas where the coverage was less rigorous. These coverage problems generally are not apparent in the distribution maps, however, which correspond well with similar maps produced by breeding bird atlases in the surrounding states. The treatment of BBS data should be viewed with some caution. The discussion of BBS population trends in the text is based on the results of the route-regression analysis routinely performed by the U.S. Fish and Wildlife Service (USFWS). The graphic presentation of the BBS data represent annual changes in the mean number of birds per route, which may or may not directly correspond with the trends calculated by the USFWS. Where discrepancies occur, the route-regression results are more reliable.

This book provides a wealth of information on the historic and current distribution of Pennsylvania's breeding birds. As the culmination of countless hours of field work over a seven-year period, everyone who participated in the data collection and preparation of the manuscript should be proud of their efforts. Anyone with an interest in this diverse avifauna will find the atlas to be a valuable source of timely distributional information.—BRUCE G. PETERJOHN.

MANUAL OF ORNITHOLOGY. AVIAN STRUCTURE AND FUNCTION. By Noble S. Proctor and Patrick J. Lynch. Foreword by Roger Tory Peterson. Yale University Press, New Haven. 1993:340 pp., many black-and-white drawings and photographs. $40.00.—At first glance this book makes a favorable impression because of the attractive drawings, but a closer inspection reveals some serious problems. It is meant to serve primarily as a laboratory guide for a course in ornithology, and secondarily as a reference manual. With one chapter on systematics, one on field techniques, and nine on the organ systems, this is mainly a treatise on avian structure. It is difficult, however, to understand how it is meant to be used in the classroom because there are no specific dissection instructions. Indeed, in his Foreword to the book, Roger Tory Peterson states "As we slowly evolve from the age of dissection, here is a book that will help us to understand the internal structuring of birds without the need to dissect them in the laboratory." This is about as realistic as thinking that we can learn to identify birds just by looking at the pictures in a field guide.

The chapter on systematics has a number of misinterpretations. With respect to higher-level relationships it gives the impression that the field consists of only two parts; morphological systematics as practiced by Gadow, and biochemical systematics as practiced by Sibley and Ahlquist. Morphological characters that vary little are "conservative" and are somehow thought to contain phylogenetic information, while characters that change in relation to behavioral evolution are "plastic" and therefore less useful. This inverted notion seems to suggest that adaptive evolution is more likely to reflect convergence than common ancestry, but no explanation is offered. There is no hint that morphological methods have changed in the last 100 years, or that the character concept is no longer exemplified by palate types or muscle formulas. Cladistic analysis is not explained, nor is the interdependency of morphology and biochemistry through congruence testing of phylogenetic hypotheses.

Convergence is defined as a situation where "completely unrelated" groups evolve similar traits. What is meant, of course, is that similar traits evolve independently in groups whose last common ancestors lacked those traits. This is not just semantic carelessness; the use of "unrelated" reveals a failure to understand that classification today is based on phylogeny, which is a pattern of relationships of common descent.

Another example of the confusion engendered by a failure to distinguish between classification and phylogeny is provided by the discussion of divergence. Referring to the Order Ciconiiformes of Sibley and Ahlquist, which includes storks, New World vultures, penguins, birds of prey, loons, etc., Proctor and Lynch suggest that "the new Order Ciconiiformes is surely the best example of divergent evolution ever devised." How could this be? Any clade larger than, but including the Ciconiiformes will show more divergence. I suspect that the problem arises from a supposition of categorical equivalence between orders in different classifications.

The discussion of subspecies is also flawed. Subspecies are defined as geographic variants that are distinguished from the parent species, rather than from other subgroups of the parent species. "Thus the pale Song Sparrows . . . are called *Melospiza melodia saltonis,* to distinguish that form from the parent species" (p. 34). Actually that form *is* part of the parent species, and is being distinguished from other subspecies.

The chapters on the organ systems of birds are flawed by a recurring set of problems: (1) Different terms are used for the same structures in text and figures. For example, in the text the premaxilla is said to have *nasal, dentary,* and *palatal* processes, but in the figures it is labelled with *nasal, frontal,* and *maxillary* processes. Similarly, on p. 131 the text refers to the *spinous process* of a vertebra, but the accompanying illustration calls it the *neural spine.* (2) The selection of structures to be named is arbitrary. On p. 129 a ventral view of the

skull shows many nerve foramina, but only the hypoglossal foramen is identified. Of what use is such incomplete information? (3) Some labelled structures are not discussed, and some structures are discussed but not labelled; (4) There are errors. On p. 119 the first *phalanx* of digit IV is mislabelled *metatarsals.* The gastrocnemius muscle does not "flex the digits of the foot", nor do Mm. flexor perforans et perforatus II and III insert on the *dorsal* surface of the phalanges (p. 164). The figure on p. 165 shows a muscle whose belly is labelled *Flexor perforans et perforatus iii,* but whose tendon is identified as *Flexor digitorum longus.* Problems like these are sufficiently numerous to seriously compromise the utility of the book.

Another shortcoming is poor editing. Singular and plural usages are confused and nouns are used as adjectives. For instance, on p. 140 we read that "The pelvis has two openings, or foramen." One of these lies "posterior to the acetabulum joint . . ."

Finally, the terminology employed for anatomical structures is a mixture derived from various sources that do not always represent the most recent work: a standard nomenclature for avian anatomy has been available for over a decade and should be used in works of this kind (Baumel, J. J., A. S. King, A. M. Lucas, J. E. Breazile, and H. E. Evans. 1979. Nomina Anatomica Avium. Academic Press, London).

Scattered through the book are boxes whose illustrations and text make specific points about avian biology, and many of them are accurate and interesting. But again there are difficulties. On p. 35, for example, a discussion of subspecies in the Song Sparrow (*Melospiza melodia*) states that there is "a well-known cline in body size." The drawing, however, depicts the different subspecies as being of equal size.

The illustrations are the best part of this book and it is unfortunate that the text does not achieve the same standard of excellence. As a laboratory manual, Proctor and Lynch competes with an established standard (Pettingill, O. S., Jr. 1985. Ornithology in Laboratory and Field. Fifth edition. Academic Press, Orlando). The illustrations are superior to those in the latter work, but as for information content and class exercises it is no contest. If I were choosing books for class use I would provide a copy of Proctor and Lynch as a reference, but would use Pettingill as the laboratory manual.—ROBERT J. RAIKOW.

BIRD ANATOMY II. THE SURFACE ANATOMY OF BIRDS. By Patrick J. Lynch and Noble S. Proctor. Yale University Press, New Haven. 1993. Four 800K disks, plus User's Guide. $75.00.—This computer program is intended to supplement the authors' book, "Manual of ornithology. Avian structure and function" (Yale University Press, 1993). It contains a series of lessons on general anatomy, skeleton, head, wings, flight, and feathers, with a little on muscles and almost nothing on visceral systems. The technical requirements for running this software are a Macintosh computer with operating system version 6.07 or later, 2 megabytes or more of RAM, a hard disk with 2.5 megabytes or more of free space, and HyperCard version 2.1 or later.

Educators have heard many glowing predictions about computerized instructional materials, but those that I have seen have been disappointing, and this one is no exception. The supposed advantages of such a program over a book include animation, sound, and multiple pathways through the information. Animation in the present program is rare and rudimentary: air moves through a diagram of the respiratory system, two muscles laboriously raise and lower a humerus, and from time to time an otherwise immobile bird opens its bill and chirps. The latter is about the extent of sound production in this program. The use of alternate pathways is more successful here, and yet it is not clear that anything is achieved that could not have been accomplished by cross references and page-turning in a book.

Another computer trick involves the mouse. By clicking on the illustrations, one can make labels and text appear and disappear. Some of the problems in the implementation of this capability may be illustrated by the structure of the skull in lateral view. In the book there is a labelled drawing on p. 125. In the program the same drawing is reproduced, but takes two screens for the posterior and rostral regions. The drawings in the program have only some of the labels found in the book. To see the rest one must click on the structures, as though they had been removed in an effort to make the experience more interactive. Unfortunately the labels are not always the same in the two media. The *parietal* of the program is called the *squamosal region* in the book, while the *parietal region* of the book has become the *occipital* of the program. The *pterygoid* of the book has no name in the program. The *nasal process* of the *premaxilla* in the book is called the *frontal process* in the program. The frontal process of what? Clicking reveals that the *premaxilla* of the book has become the *maxilla* in the program. The same structure may even have different names within the program itself. The angle of the lower jaw is called the *articular* in one screen and the *angular* in the next. Perhaps it is a sense of embarrassment that causes the computer to frequently produce at this point an offer to let one quit.

This program has an optional feature that I did not experience. It may be used with a videodisc player and color monitor to run the videodisc *Encyclopedia of Animals, Volume 4, Birds 1,* which provides additional pictures on screen.

I cannot recommend Bird Anatomy II as a serious learning tool. Its information content is limited and inaccurate, and its interactive features are rudimentary. Read a good book.—ROBERT J. RAIKOW.

THE OSTRICH COMMUNAL NESTING SYSTEM. By Brian C. R. Bertram. Monographs in Behavior and Ecology. Princeton Univ. Press, Princeton, New Jersey. 1992:196 pp. 46 black-and-white plates, 48 figs., 35 tables. $35.00.—This is a good reference for anyone interested in Ratites, mating systems, or ostriches in general. While the study was conducted on the Masai ostrich, (*Structhio camelus massaicus*), the information should apply to all ostriches.

The book begins with a chapter on the bird itself, along with information on the subspecies of ostrich, their distribution, habitat, feeding behavior and their relationship with man. The author then describes previous studies of ostrich along with a summary of ostrich behavior before explaining details of his study.

The next chapter on Methods describes the basic parameters of the study, with the following chapters, entitled "The Population" and "The Breeding System" going into the population and breeding biology of the species. These are followed by a chapter on the ecological relationships and aspects of the information provided in the prior chapters.

Chapters on the reproductive strategies of males and females lead right into the final discussion and comparisons with other ratites. The discussion includes comparisons to a variety of other social systems found in birds and as a result is a first rate review of social systems and strategies found in birds. The review of the literature in chapter nine and the list of references following it are extremely useful for anyone interested in the reproductive biology of ratites.

In the discussion section entitled "The Evolution and Maintenance of the Communal Nesting System" the author compares the system of ostriches to all other ratites—cassowary, emu, and rhea. This section provides a good review and is very useful to anyone interested in this group of birds. The ostrich is a unique bird, the largest living bird; it has a very interesting social system which shows a lot of similarities to other ratites but also some interesting differences. The fact that ostriches must have evolved with and have survived

in an environment with a vast assortment of large mammalian predators has probably influenced their social system and reproductive strategies significantly.

With the current great interest in breeding ostrich with the intent of developing a major ostrich industry in the United States and in other portions of the world, this book should prove useful to a variety of people. It can also be used to assist in the development of management techniques based on the natural social and reproductive systems of wild ostriches. As a result, everyone ranging from the biologist interested in social systems and strategies to the potential ostrich rancher should find this book to be as interesting and useful as I did. I certainly recommend the book highly for these reasons.—DONALD BRUNING.

ROBERTS' BIRDS OF SOUTHERN AFRICA, Sixth edition. By Gordon Lindsay Maclean, illus. by Kenneth Newman and Geoff Lockwood. The Trustees of the John Voelcker Bird Book Fund, Cape Town, South Africa. 1993. ixxx & 871 pp., 3 maps, 77 color plates. No price given.—"Roberts" is the standard handbook for birds of southern Africa, and the sixth edition is an update of the 1985 edition. It gives current and comprehensive accounts for birds in Africa south of Angola and the Zambezi River. The text is modified slightly in about 60% of the species accounts, and 16 species were added to the southern African list, most of them vagrants. The color plates are attractive and adequate for identifying birds in the field.

The introduction is a text on systematics, names, topography, song, habitats, a glossary of ornithological and zoological terms, a list of general and historical readings, and maps of localities, rainfall, and habitats. A new feature is a set of keys to certain groups. The characters used are mainly plumage and bill traits that are visible in the field. The keys may be useful for the nightjars and larks if the birds are in the hand. References are given for many birds in the species accounts.

As in the fifth edition, audiospectrograms of songs are included. This is a useful feature. In Zimbabwe, I was able to identify a small rail as a Streaky-breasted Flufftail (*Sarothrura boehmi*) from a glance of a bird and a recording of its call by checking the descriptions and audiospectrograms in the fifth edition. In the sixth edition, the sound traces are blurred and the lettering is less legible for those songs that are in both editions. The choice of songs is a mixed lot and in some cases the songs are not diagnostic of the species. The brood-parasitic *Vidua* finches, which mimic the songs of their foster species, are represented in some song diagrams by their nonmimetic songs (in the paradise whydahs *V. paradisaea* and *V. obtusa*), and the mimicry songs shown are not similar to the foster species' song models in some others (in the indigobird *V. chalybeata*). Including the nonmimetic songs is not helpful for these species, even though these were the songs most readily available on the commercial recordings from which the audiospectrograms were taken.

The species included are generally up to date. Some questionable birds are included. The record of a "violet widowfinch" is based on an unidentified female seen in 1973 near a "Brown Firefinch" (*Lagonosticta* (*rufopicta*) *nitidula*) on an island in the Zambezi, and not on song mimicry or on a morphologically distinct male. This record appears much as in the fifth edition, but the species name here is different, reflecting the observation that the supposed species has the same song mimicry of Bar-breasted Firefinch (*Lagonosticta rufopicta*) as in Wilson's Indigobird (*V. wilsoni*) in West Africa, as noted in the review of the fifth edition. The color plate of this bird is imaginative. On the other hand, the sixth edition was produced too early to include a recently recognized distinct species, the Green Widow-

finch or Indigobird *Vidua codringtoni,* which mimics and is associated with Peters' ("Red-throated") Twinspot *Hypargos niveoguttatus* (*Ostrich* 63:86–97, 1992).

The sixth edition of Roberts' is an informative and attractive handbook, and I recommend it to all persons and institutions with an interest in the birds of Africa—ROBERT B. PAYNE.

ECOLOGY AND MANAGEMENT OF THE MOURNING DOVE. A Wildlife Management Institute book compiled and edited by Thomas S. Baskett, Mark W. Sayre, Roy E. Tomlinson, and Ralph E. Mirarchi. Technical editor Richard E. McCabe. 1993. Stackpole Books, Harrisburg, Pennsylvania. 567 pp. $44.95.—The Mourning Dove (*Zenaida macroura*) is the most abundant and the most widely-distributed gamebird in North America. As a result of these characteristics and its desirable sporting qualities, it is harvested in larger numbers than is any other North American gamebird. Although classified as a gamebird in most states, Mourning Doves are classified as songbirds in at least seven states. The adaptability of Mourning Doves to residential areas where they nest and frequent bird feeders has resulted in their increased popularity as a songbird. In most states they play a dual role of gamebird and songbird. Their pleasing vocalization, quiet demeanor, physical attractiveness, and acrobatic aerial skills have made them favorites of both amateur and professional ornithologists. In spite of, or perhaps because of, these attributes no comprehensive books have ever been written about the Mourning Dove. This book is not only the most comprehensive ever written about Mourning Doves, but one of the most comprehensive ever written about any bird.

A total of 29 chapters are included in four sections: (1) Introducing The Mourning Dove, (2) Life History and Biology, (3) Population Characteristics and Harvest, and (4) Research and Management. Chapters are authored by 24 different authorities and nearly 200 persons were involved in reviewing the final manuscript.

The book is not only informative to read, with 99 tables and 73 figures, but enjoyable to examine because of the nearly 400 photographs and the interesting illustrations of Harold Irby and Francis Sweet. Scientists involved with research or management of Mourning Doves will benefit from this book as a result of the compilation of scientific data covering all aspects of Mourning Dove biology. Amateur ornithologists will appreciate the in-depth life history information which has never before appeared in one publication.

The overall quality of "Ecology and Management of the Mourning Dove" is excellent. Typographic and scientific errors appear to be nonexistent, as one would expect from a book written by specialists, edited by professionals, and published by Stackpole Books. The index is thorough and enables readers to locate almost any subject of interest. Over 1400 references add to the value of the book and most likely include every important publication dealing with Mourning Doves.

Future habitat and harvest management of Mourning Doves will be improved as a result of this book, because area wildlife managers can better relate the temporal and geographic relevance of their actions to the dynamics of the total Mourning Dove population in their management unit. This book will undoubtedly result in the improved quality of future research design and direction. Research priorities for all aspects of Mourning Dove management are discussed in the final chapter. The authors state, "In our view, the two most important issues for Mourning Dove managers today are (1) population declines throughout the Western Management Unit (WMU) and in the eastern tier of the Central Management Unit (CMU), and (2) the lack of a standardized nationwide harvest survey." The authors also describe research needs for: (1) assessment of breeding population status, (2) assessment

of mortality, (3) assessment of productivity, (4) relationships with habitat, (5) biology, and (6) harvest management.

Although the overall value of this publication is quickly evident to any reader, one of its greatest contributions will be the standards it sets for similar books written on others species in the future.—EDWIN D. MICHAEL.

ERRATUM

In "Migration of woodland birds at a fragmented inland stopover site" by Kevin Winker, Dwain W. Warner, and A. R. Weisbrod (Wilson Bull. 104:580–598), the statistical results in Table 3 (p. 591) were not presented correctly. In the first two rows of the table, the lines denoting statistically different groups should be broken three more times. These breaks should appear between Swamp and Floodplain in both of the first two rows, and between Floodplain and Willow in the second. The groupings for the first two rows are thus: Spring: (Swamp) (Floodplain, Willow) (Willow, Upland), and Autumn: (Swamp) (Floodplain) (Willow, Upland). The lower half of the table is correct.

In addition, two confusing lines appear in the text. The first sentence in the second full paragraph on page 582 should read "Our netting periods spanned the bulk of both spring and autumn migration (Fig. 1), but did not encompass the full migratory period of several species, most of which were Nearctic-Nearctic migrants (unpubl.)." The third sentence in the only complete paragraph on page 593 should read "For ground-foraging species this is not a problem, but most of the species captured at our site forage above ground or near-ground levels."