REVIEWS

EDITED BY M. ROSS LEIN

The following reviews express the opinions of the individual reviewers regarding the strengths, weaknesses, and value of the books they review. As such, they are subjective evaluations and do not necessarily reflect the opinions of the editors or any official policy of the A.O.U.—Eds.

Bird Respiration.—Timothy J. Sellers (Ed.). 1987. Boca Raton, Florida, CRC Press. Vol. I: 164 pp., 4 black-and-white plates, 60 text figures, 11 tables; Vol. II: 198 pp., 1 color plate, 2 black-and-white plates, 108 text figures, 8 tables. ISBN 0-8493-4690-8 (set). $295.00.—The intention of this work is to provide an updated, comprehensive review of the current state of research in a wide range of topics in bird respiratory physiology. Although several of the topics covered in this two-volume set have in fact recently been reviewed elsewhere (e.g. embryonic respiration and respiratory evaporative water loss), this work serves to bring together comprehensive reviews of diverse topics in bird respiration. The ten contributions are organized in two volumes with five chapters each. The motivation for this arrangement is not entirely clear; each volume is relatively short in length. The economic consequence, found in the price of the books, is substantial. In fact, the extraordinary price merits special comment, because evaluation of the scholarship is inevitably colored by economic considerations. At a cost of nearly one dollar per page, the price of this work generates an expectation for quality in content, artwork, design, and production that is difficult if not impossible to meet. The pricing strategy found here calls to mind the young entrepreneur who, when asked why he is selling lemonade for five dollars a cup, responds, "Because all I have to sell is one glass!"

The topics are well-organized in a sequence that begins with a section on basic structure and function of the avian respiratory system, followed by a section on gas exchange and temperature control. The second volume begins with a third section entitled "Special Demands" in which respiration during embryonic development, flight, and diving are discussed. The final section reviews respiratory control mechanisms. The various contributors to these sections are remarkably consistent in their approach; with only a couple of exceptions, each chapter comprises an extensively referenced and independently written overview of the chapter topic. Little attempt is made to integrate the chapters, with the result that a number of topics are rehashed in several chapters (e.g. pulmonary ventilation under resting conditions and during flight, respiration at high altitude, and acid-base regulation). The overlap in some cases is sufficiently great that the reader is tempted to score various contributions for the lucidness and clarity with which they discuss the same topics. On the positive side, the independence of the chapters confers an internal cohesiveness that allows each of these contributions to stand alone as a comprehensive piece of scholarship.

The least impressive contributions are simple compendia of information that serve well the function of describing the state of research, but offer little in the way of creative synthesis. Not only do they fail to provide suggestions for future research, but they convey the impression that few, if any, important questions remain unanswered. A couple of these chapters suffer further from the absence of any concluding or summary statement. In contrast, a number of contributors clearly made an effort both to assemble a comprehensive list of relevant literature and to reassess the generalizations and conclusions that emerge from that work. Among these, the chapter on phonation by Gaunt is notable. The scholarship in this chapter is commendable; an obvious attempt has been made to include the very latest references, including an important 1987 paper by Nowicki on the role of vocal tract resonance in avian sound production. As Gaunt points out, much remains to be learned about avian vocalization, including a basic understanding of how sound is produced and modulated, and the energetic cost of this key reproductive behavior. Also noteworthy is the chapter on diving birds by Jones and Furilla. This useful and timely review extends beyond respiratory physiology to include anatomical and behavioral correlates of diving. The comparative appraisal of data collected during forced and voluntary dives is especially revealing. The conclusion that voluntary diving often involves fundamentally different processes from those operative during forced dives is consistent with recent evidence for mammals and reptiles.

Typographical errors and factual misstatements are rare, although one might argue from the price of the books that they should be nonexistent. Artwork and production are generally of very high quality, but at least three illustrations in two different chapters merit comment for their poor presentation.

The appeal of this set of books is greatly tempered by its cost and the limited usefulness of its weaker chapters. Researchers working in the field of avian respiration may want to encourage their institutional libraries to acquire a copy, but it is hard to imagine a market for the book beyond that. The extent to which the publishers will enjoy a marketing success in excess of "just selling one" is unresolved.—THEODORE L. TAIGEN

Les Oiseaux du Lac Léman.—Paul Géroudet. 1987. Neuchâtel-Paris, Delachaux & Niestlé for "Nos Oiseaux," Société romande pour l'étude et la protection des oiseaux. 303 pp., 24 color plates, 16 by Robert Hainard, tables, numerous maps, black and white illustrations, ISBN 2-603-00612-6. Cloth, SFr 98.00 (in bookstores), SFr. 75.00 (from: Administration de "Nos Oiseaux," Case postale 54, CH-1197 Prangins, Switzerland).—Lake Léman, also known as Lake Geneva, is one of the most important freshwater bodies in central Europe, with a shore development of 114 km in Switzerland and 53 km in France, a maximum depth of nearly 310 meters, a surface of 582 km^2, and a mean volume of 89 km^3 (or 89 billion cubic meters). As the crow flies, Lake Léman is located 350 km from the Mediterranean, where its waters flow, 600 km from the North Sea, and 900 km from the Baltic. In spite of being in a densely populated area, with cities, towns, and villages dotting its shores, and in spite of having lost much of its fringe of natural vegetation, Lake Léman is wintertime host to tens of thousands of waterfowl. A yearly average of about 62,000 *Aythya fuligula* and about 25,000 *A. ferina* represent, respectively, about 8.5% and 4.3% of the mean Central and Western European winter totals of these two duck species. Four main guilds of wintering birds can be recognized: the fish-eaters (12 species), the mollusk and plant-feeders (11 species), the surface-feeding ducks (7 species) and the gleaners (4 species). Most of these winter visitors breed to the northeast of Lake Léman. Since 1950–1951, Paul Géroudet has organized a winter census each year and a March one since 1976. Besides these collective efforts, integrated with the I.W.R.B. work since 1967, Géroudet has studied the birds of "his" lake since 1933, in winter and in other seasons as well. The numerical analyses summarized in this book are based on 33 winter censuses during 36 years, between 1950–1951 and 1986 (no census in 1960–1961, 1963–1964, and 1964–1965), a remarkable record indeed. I cut my first ornithological teeth during the pre-1961 censuses, and Paul Géroudet is the person who is ultimately responsible for my career as an ornithologist. As editor of "Nos Oiseaux" and author of numerous books and articles, Géroudet has done more than any other person in French-speaking Europe both to bring scientific rigor to the study of birds and to bring birds to a wide audience of interested laypersons and amateurs. This book has been anticipated for years, and it is a tour de force. In the very best Géroudet tradition, *Les Oiseaux du Lac Léman* includes data and interpretations that are scientifically useful and, at the same time, presents the lake and its birds in a readable fashion that will appeal to a wide audience. The text is greatly enhanced by an abundant iconography: photographs of sites and of birds, maps, sketches, graphs, and a number of beautifully reproduced color woodcuts by Robert Hainard. For the professional, Géroudet's book is important because it synthesizes the numerical fluctuations of birds on this vast water body over many years, especially documenting variations in numbers before and after the introduction and spread of the bivalve *Dreissena polymorpha* in 1962. Because the data base is three decades long, the short-term fluctuations can be distinguished clearly from longer trends. Thus a fascinating picture emerges of a dynamic avifauna adapting constantly to changing environmental conditions.

For the amateur and general reader, the most important message conveyed by this book will be the magnitude of the role humans played in modifying, for the better as well as the worse, an aquatic substrate of nearly 90 billion cubic meters, and the sensitiveness of birds to these modifications. The intimate interrelationships between man and nature, as well as those within nature, are described in a forceful prose because it blends science, emotion, and realism. Thus Géroudet's Lake Léman and his birds become everybody's Lake Léman and birds. All citizens of central Europe should be asked to read this book because it will make them aware that high human density is not necessarily synonymous with low avian density, *provided* a few elementary (and not necessarily costly) precautions are taken, and maintained.—FRANÇOIS VUILLEUMIER.

Extinct Birds.—Errol Fuller. 1988. New York, Facts on File Publications. 256 pp., 81 black-and-white illustrations, 55 color plates. ISBN 0-8160-1833-2. $35.00.—Drawing on whatever information he could glean, Fuller has written a fascinating and comprehensive book about all the bird species that have become extinct since 1600. The tragedy of extinction haunts every page. The author describes what information is available, and tries to pinpoint both the time and cause of the extinction of each species. Wherever possible, Fuller includes a thorough discussion of plumage, measurements, habits, the manner of first discovery, and when the last of each species was seen alive. The accounts are written in a scholarly, yet informal and lively fashion. Some read like an adventure tale, as scientific explorers discover new lands and scramble among themselves to be the first to name the species they find. Others are poignant, such as the story of the Wake Island Rail, which was eaten to extinction by starving Japanese troops stationed on Wake Island during World War II.

The illustrations in the book are gorgeous. Almost every species is illustrated in color by renowned artists such as Keulemans and Audubon. In some instances, where the author could not find pictures to reproduce, he has included some of his own paintings, and these are truly beautiful. The production is of the highest quality and the book is aesthetically pleasing and instructive. The information is valuable for the scientist and layman alike, making this an

important book to have in a university or community library as well as in a private collection. Pertinent material is brought together in one delightfully beautiful volume. Previously it has been scattered and inaccessible to most readers. The book also carries a strong message about the senseless, unrelenting destruction of forest and island fauna by humans and introduced pests. While 75 species have been lost since 1600, it is Fuller's opinion that the next time anyone attempts to update the book, it will be impossible to include all the new accounts in only one volume.—LAURIE A. HUNTER.

The Bald Eagle: Haunts and Habits of a Wilderness Monarch.—Jon M. Gerrard and Gary R. Bortolotti. 1988. Washington, D.C., Smithsonian Institution Press. xiv + 143 pp., 53 black-and-white plates, 10 text figures. ISBN 0-87474-450-4. Cloth, $24.95. ISBN 0-87474-451-2. Paper, $12.95.—Like so many "raptorphiles" Jon Gerrard, a medical researcher, has been fascinated with birds of prey since childhood. He began looking for nesting Bald Eagles in 1966 with Doug Whitfield. Ten years later, Gary Bortolotti, who is now at the University of Saskatchewan, joined Jon to band and study eagles on Besnard Lake in central Saskatchewan. Together Gerrard and Bortolotti have compiled a book on the life history of the United States' national bird from hatching to maturity and from migration to return to the breeding grounds. They trace the history of *Haliaeetus leucocephalus* from the days of early settlers to the present while documenting population declines, management efforts, and partial resurgence in various parts of the continent.

Written in a relaxed, popular style but supported by scientific data, direct observations, and appropriate references, the book is readable, and I thoroughly enjoyed it. Each chapter is introduced by bits of poetry followed by descriptions of the authors' field experiences. While the writers focus primarily on their own observations, they review the subject at hand in other locations throughout the continent. In doing so, they are very generous to other researchers and their work. A liberal use of black-and-white photographs to illustrate a variety of subjects complements these discussions, and the reader will appreciate the long hours necessary in the field to obtain these photos.

This book provides a good review and many unique observations, such as Bortolotti's description of a parent intervening in a siblicidal battle first with its beak and then by brooding. Other parents intervene by covering their battling young with grass or pecking them in the head. Many, many hours were spent in the field to witness such occurrences.

Although perhaps poetic, the chapter titles are not descriptive of the material within ("Flap, Glide, Soar," "Talons Awaiting," "A Matter of Space," and "Whither the Wind Blows") and are indicative of a much more amateurish presentation than exists in the text. The book is well-indexed, which helps to compensate for the chapter titles. The bibliography is listed both alphabetically and by chapter with notations, but this format is awkward for the reader trying to locate particular references. The series of appendices provide useful data not included in the text.

With frequent references to Bortolotti's unpublished data (e.g. p. 77—diminishing sizes of successive eggs within a clutch), it is unfortunate that he could not take this opportunity to publish it, but perhaps he is doing so elsewhere. Speculation about interpretation of findings is always of interest, but it is difficult for me to accept that an adult eagle will "intentionally" bury its own live, fully incubated egg in the nest material in response to food stress (p. 81) rather than "allowing" normal siblicide and selection of the strongest chick to remedy the situation. The authors cite unpublished data by Gerrard (p. 54) in regard to sex-specific defense in which males defend primarily against intruding males, and females against females and indicate that this is the best way to match the size and strength of the resident defender to the intruding opponent. However, no mention is made of sexual strategy theories guarding against mate infidelity. There are a few other criticisms but they are as minor as those already listed.

The authors provide a mass of knowledge, yet they display a warm personal touch and emotional involvement with their subject. A passage such as the vivid description of the territorial defense by a resident male eagle against intruders is reminiscent of early ornithological records in the A. C. Bent series. This writing style portrays the enthusiasm and passion of the investigators, something often lost in a modern display of dry data. Gerrard and Bortolotti are representative of seasoned field investigators who "feel" (p. 130) a momentary silhouette overhead to be an eagle because they know the bird so well. Conversely, they discuss the boredom of sitting in a blind with mind wandering and watching everything except the particular bird you are studying, which is totally inactive for hours at a time.

If you enjoy being entertained while digesting natural history, then you will appreciate this work. A contribution to ornithology, the book is desirable for all libraries. A copy of this book, complemented by another sporting the same title by Mark Stalmaster (1987), will provide the reader with the most up-to-date and comprehensive material available on North America's fish eagle.—STEVE K. SHERROD.

Speciation and Geographic Variation in Black-tailed Gnatcatchers.—Jonathan L. Atwood. 1988. Am. Ornithol. Union, Ornithol. Monogr. No. 42. v + 74 pp. ISBN 0-943610-53-2. $10.00 ($8.00 to A. O. U. mem-

bers).—Studies of geographic variation contribute information central to an understanding of the processes of allopatric speciation and adaptive evolution. The most complete studies progress through three stages. In the first stage—that of data gathering, description, and analysis—the taxa of interest are studied at a representative series of geographic sites to determine the pattern of variation present and to relate it to environmental heterogeneity. In the second stage, the investigator determines, for each population under study, the taxonomic status that best reflects its biologic status. In the final, interpretive stage, the researcher attempts to infer the populational and evolutionary processes responsible for the observed patterns of variation. Importantly, progress through stages two and three is impossible without the foundation of information provided by stage one.

Although geographic variation in North American birds has been studied for decades, much of the research is inadequate. Serious deficiencies in sampling and outmoded analytical approaches characterize most investigations published before the 1970s. The older studies typically present univariate analyses of a limited number of linear dimensions and subjective analysis of color. Even today, sophisticated treatment of size and color variation is uncommon. Complementary studies of geographic variation in vocalizations and allelic frequency are discouragingly rare. Not surprisingly, many taxonomic problems persist simply because no one has gathered the kinds of data necessary for their solution.

Against this somber backdrop, it was a pleasure to read Jonathan Atwood's fine new monograph on the gnatcatchers, *Polioptila melanura* and *P. nigriceps* of the most recent Check-list of North American Birds (Am. Ornithol. Union 1983). Based on sympatry of breeding populations and on differences in vocalizations, Atwood divides *P. melanura* into two species: (a) *P. californica*, comprised of the subspecies *P. "melanura" californica*, *P. "melanura" pontilis*, and *P. "melanura" margaritae*, and (b) *P. melanura*, comprised of the subspecies *P. melanura melanura*, *P. melanura lucida*, and *P. melanura curtata*. Atwood recommends abandoning the confusing vernacular name "Plumbeous Gnatcatcher," which in the past has been used for both *P. californica* and *P. melanura*, and advocates the use of the name "California Gnatcatcher" for the former species and "Black-tailed Gnatcatcher" for the latter species.

For analysis of geographic variation, 851 study skins and tape recordings of 447 individual males of *P. californica*, *P. melanura*, and *P. nigriceps* were divided into a total of 33 logically spaced sample areas. A subset of 594 specimens was analyzed spectrophotometrically for the appraisal of color. Nineteen measurements of study skins and 12 characters of color were studied. In breadth and depth, Atwood's treatment far surpasses anything previously available for these taxa. Raw data were reduced, summarized, and compared with technically advanced biometric routines. ANOVA, CDA, DFA, MANOVA, SS-STP, and UPGMA were all used to good advantage.

To begin the description of morphological variation, both sexual dimorphism and relative variability of characters received detailed attention. In common with other studies of the latter topic, trends are few and most data are uninterpretable. Geographic patterns of variation in seven selected characters for all three species were plotted on maps next to which were placed lists of rank-ordered means that represented the sample areas. Although these maps enable one to visualize broad patterns of variation in the southwest, trends in the lists of means are difficult to follow because the species are mixed. Most geographic patterns are either north-south clinal or moderately chaotic. Samples of *P. californica* from the Cape region of Baja California frequently differed abruptly from those located farther north. Within *P. melanura*, Sonoran desert populations contrasted with the disjunct Chihuahuan desert populations. In principal component space and in the UPGMA dendrogram, samples of males reveal four clusters: (a) all populations of *P. californica*, (b) all populations of *P. nigriceps*, (c) Sonoran desert populations of *P. melanura*, and (d) Chihuahuan desert populations of *P. melanura*. Groupings of females are less discrete. Morphologic distinction of the two major series of desert populations in *P. melanura* serves as the principal evidence for Atwood's belief that they represent phylogenetic species. Their similar vocalizations and disjunct allopatry deny the opportunity for a biologic species decision.

The ecologic distribution of each species is described thoroughly and illustrated with nine sharp black-and-white photos. *P. californica* and *P. melanura* occur sympatrically at three places: (a) locally in the vicinity of Palm Springs, Riverside County, California, (b) the vicinity of Valle de Trinidad, Baja California, Mexico, and (c) the coastal Gulf strip of north central Baja California from latitude 29° to 31°N. At a series of localities scattered through the latter region, 60 pairs of *P. californica* and 32 pairs of *P. melanura* mated assortatively and coexisted without evidence of hybridization. The discovery and detailed analysis of this region of sympatry represents a major contribution of the research.

Atwood also considered interspecific relationships. In view of their close resemblance, the two "black-tailed" species, *P. californica* and *P. melanura*, are deemed sister species. In contrast, the mostly white-tailed *P. nigriceps* is more distantly related and may have its closest affinities outside this trio of taxa. Furthermore, "Although several of the important vocalizations of *P. nigriceps* resemble those of *P. californica*, the overall vocal repertoires of *P. nigriceps* and *P. californica* are more different from each other than are the vocalizations of *P. californica* and *P. melanura* from each other." Finally, "An electrophoretic analysis of these three species indicated that *P. nigriceps* was sharply

different from Sonoran desert samples of *P. melanura* and specimens of *P. californica* from northern Baja California and California; the "black-tailed" gnatcatchers were indistinguishable based on the limited number of loci that were studied (R. Matson, pers. comm.)." Surprisingly, these genetic findings were presented without supporting evidence. I trust that Atwood and Matson will document these tantalizing statements in the near future.

Noting the broadly similar distributions in the southwestern deserts of the three species of gnatcatchers and several species of *Callipepla* (quail) and *Pipilo* (towhees), Atwood speculates on the relative roles of vicariance processes vs. colonization in the diversification of these taxa. He wisely concludes that no clear interpretation is possible from the evidence at hand.

Atwood's comprehensive, scholarly analysis deserves a place among the handful of modern investigations of geographic variation in North American birds. This monograph belongs in the library of every ornithologist and student of biologic variation.—NED K. JOHNSON.

OTHER ITEMS OF INTEREST

The Atlas of Breeding Birds in New York State.—Robert F. Andrle and Janet R. Carroll (Eds.). 1988. Ithaca, New York, Cornell University Press. xiii + 551 pp., 256 maps, 244 illustrations. ISBN 0-8014-1691-4. $29.95. Eight transparent map overlays (available separately), $9.95.—Of the four breeding bird atlases published in the western hemisphere, this is the most thorough. It improves upon the British model by censusing 5 km × 5 km squares, or blocks. In effect, it holds a 4 × magnifying glass over the area of New York state. An impressive 99.8% of the state (5,323 blocks) was censused. Most noteworthy in this atlas, however, are the 4,300 humans who tallied more than 200,000 hours in the field.

The format and content follows the standard set by "The Atlas of Breeding Birds in Britain and Ireland," and therefore is similar to the publications for Vermont and Ontario. The methods and coverage are presented clearly; 244 species accounts are consistent and well-written. The literature cited is extensive and pertinent to New York for a given species; however, most references are from older, broad survey works. Some relevant studies may have been overlooked; for example, David Krieg's study on the behavioral patterns of the Eastern Bluebird (1971. N.Y. State Museum and Science Service, Bull. 415). I found references in the species accounts not listed in the literature cited, but overall the book reflects careful editing.

David Steadman's chapter on the prehistoric birds of New York State and an appendix by Gordon Meade with a table of breeding phenology for each species are excellent additions. The computer generated distribution maps are of a higher quality than most and are perhaps the most easily interpreted in any bird atlas so far. The map overlays are also of high quality and may be worth purchasing, but all of them are reproduced in the book. The pen and ink illustrations are an enhancement that will provide lasting enjoyment. I was especially impressed with Cynthia Page's contributions.

A well-produced book that should find usefulness well outside the state of New York. This work sets a very high standard for other atlases to emulate.—LOUIS R. BEVIER.

Eric Hosking's Birds of Prey of the World.—Eric and David Hosking with Jim Flegg. 1987. Lexington, Massachusetts, The Stephen Greene Press. x + 176 pp., 162 color plates, 32 black-and-white photographs. ISBN 0-8289-0653-X. $19.95.—The first sentence on the dust jacket of this book reads "Raptors have always commanded great interest and attention: in this book ornithologist Jim Flegg and photographers Eric and David Hosking have collaborated to show how justified is this fascination." A large section of the book consists of portraits of 12 family groups: New and Old World vultures, kites, hawks, buzzards, honey buzzards, secretary birds, harriers, caracaras, ospreys, and falcons. Color, and black-and-white, photographs of birds of prey from all over the world have been selected to illustrate points covered in the text.

Other topics such as birds of prey in action, breeding biology, conservation, falconry, and distribution are also included. The term "birds of prey" as used in this book refers only to the diurnal birds of prey, order Falconiformes. Owls are excluded.

Much as the Hoskings would have liked to have all of the illustrations of wild birds, there was either not enough time or they could not be at the right place at the right time. Therefore, some photographs of captive birds had to be used. On some of the plates these birds can be recognized by their overgrown or chipped beaks (Saker, p. 23; Lanner, p. 33) and bumblefoot on the Gyrfalcon (p. 33).

In the discussion of sexual dimorphism (pp. 27–28) it is stated that a larger female would have behavioral dominance at the nest and, in times of food scarcity, would be able to ensure that the male part with his prey when he arrived at the eyrie. This may be true but there are other relevent points that could have been discussed here. The size differences between the sexes varies with the type of food eaten. It increases as diets change from carrion, insects, fish, reptiles, and mammals to birds. Birds are the most difficult prey to catch and a smaller male is more maneuverable and better able to catch the more abundant smaller birds than a larger male. Today, the greatest sexual size dimorphism is found in the bird-catching species.

In predominantly insect, snake, or mammal-catching species, agility is not as important as size, and differences are not as great.

This book presents an excellent summary of basic information about birds of prey throughout the world. It is well-written and illustrated with magnificent photographs. Anyone, from the casual bird watcher to professional ornithologist, will enjoy reading this book and gain a better and broader worldwide understanding of these remarkable birds.—HEINZ MENG.

North American Owls.—Paul A. Johnsgard. 1988. Washington, D.C., Smithsonian Institution Press. 295 pp., 32 color plates, 54 text figures. ISBN 0-87474-560-8. $45.00.—Johnsgard has produced a "modern, not-too-technical treatment of the owls of North America." For myriad reasons owls have an extraordinary appeal to humans and Johnsgard uses many of them to present some solid natural history. The information in the book is comprehensive, sound, and current. Many species are illustrated with color photographs, but this is not a picture book. There are reproductions of ten Fuertes watercolors of owls, and they are somewhat disappointing. The colors are generally dull, and the plumage execution and details are not among Fuertes' best. But that is a minor matter.

The text is divided into two major parts. The first covers the "Comparative Biology of Owls." There are six chapters that explore classification, ecology and distribution, morphology and physiology, behavior, reproductive biology and "Owls in Myth and Legend." The last was fun to read and reflects a high degree of scholarship. The material in the other chapters ranges from restating the obvious to rather sophisticated discussions. Among the latter, I would include the treatment of vision and hearing and some of the sections on behavior. Much of the information is contained in tables which are well organized, thoroughly documented, and easy to read.

The second part, over half the book, is dedicated to species accounts. For 19 species we are given the North American range (with maps), a listing of subspecies, linear measurements, weight, physical description (mostly plumage), aids to identification, vocalizations, habits and ecology, movements, food and foraging behavior, social behavior, breeding biology, evolutionary relationships and conservation status. The accounts are well balanced and informative. There are three appendices. One, a key to genera and species, will be most useful to schools and nature centers. The others cover the origin of names for owls; the last is a glossary. An index is provided.

This volume is appropriate for individuals wanting a reasonably comprehensive treatment of owls and for community museum and nature center libraries. Johnsgard writes clearly and briskly and speaks directly to the reader.—A.H.B.