The Birds of Pennsylvania

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Reviews

Edited by Rebecca Holberton

The following critiques express the opinions of the individual evaluators regarding the strengths, weaknesses, and value of the books they review. As such, the appraisals are subjective assessments and do not necessarily reflect the opinions of the editors or any official policy of the American Ornithologists' Union.

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Erwin Stresemann (1889–1972).—Leben und Werk eines Pioniers der wissenschaftlichen Ornithologie—Jürgen Haffer, Erich Rutschke and Klaus Wunderlich. 2000. Acta Historica Leopoldina, Number 34. Deutsche Akademie der Naturforscher Leopoldina e.V., Postfach 110543, D 06019 Halle (Salle), Germany. 465 pp., 74 illustrations. ISBN 3-8304-5091-5. Paper, 68 DM. (Note: This book can be obtained online through Barnes & Noble, [www.bn.com], and then scrolling down the left margin to click on their European partner, [bol.com], click on Germany and finally entering the ISBN number and search.) Erwin Stresemann was clearly the most influential ornithologist of the twentieth century, being primarily responsible for the rise of the New Avian Biology beginning in the 1920s. The first International Ornithological Congress (Vienna, 1884) convened just five years before his birth on 22 November 1889. And, having died two days before his 83rd birthday on 20 November 1972, just two years after the 14th Congress, Stresemann is a distant historical figure. Most present-day ornithologists are largely unaware of his significant contributions to ornithology over three-quarters of a century ago, before most of us were born. Only three of his pre-World War II students (Wilhelm Meise, Ernst Mayr, and Joachim Steinbacher) are still alive. Even the number of ornithologists who actually met Stresemann is decreasing rapidly. His last visit to North America was in 1962 and his last International Ornithological Congress was in 1966 (Oxford). When Stresemann first began his studies, ornithological research (mainly systematic and faunistics) was drastically different from the diversity of avian biological work done during the past half century. That change in the direction of ornithological research was the direct consequence of ideas developed by the young Stresemann during his student days in the 1910s and incorporated into his major work—the *Aves* volume of the *Handbuch der Zoologie*.

The publication of that excellent book provides a detailed history on the life and scientific work of Erwin Stresemann and enables avian biologists and science historians to learn just about everything about this remarkable ornithologist. Haffer, Rutschke, and Wunderlich provide a detailed history of Stresemann's life and career in three chapters: his personal life (K. Wunderlich), his personality and its influences (E. Rutschke), and his scientific work (J. Haffer). Haffer has added a detailed 29-page summary in English to a series of appendices. Because of the untimely deaths of Klaus Wunderlich (18 April 1997) and Erich Rutschke (12 February 1999), Jürgen Haffer had the responsibility of seeing the manuscript through the publication process.

This work is well illustrated with photographs and line drawings, all of which have an English as well as German legend. An appendix with 14 separate parts includes many details such as a list of avian taxa described by Stresemann (pp. 375–385); taxa named in Stresemann's honor (pp. 387–390); references to published biographies of Stresemann (p. 391); honors (pp. 393–394); festschrifts, obituaries, and appreciations (pp. 395–397); a time table of his life (pp. 441–442); several unpublished manuscripts; and the excellent 29-page English summary by Haffer. A list of illustrations and several indices are provided. Very useful are the birth and death dates given for many workers in the Index of Persons (however, my birth date is given as 1939 rather than the correct 1933).

This book is an excellent and thorough treatment of the scientific career of this most important ornithologist of the twentieth century. In the two decades before World War II, Stresemann was at the center of international ornithology with close connections to all of the world's important ornithologists. During that time, he revitalized the systematic work in the Berlin Museum; wrote the *Aves* volume of the *Handbuch der Zoologie*; directed the work of a remarkable group of graduate students in ornithology; was, for 50 years, the central figure in the Deutschen Ornithologen-Gesellschaft; and, most importantly, was the catalyst in the development of the New Avian Bi-

ology beginning in the early 1920s (the ''pioneer of scientific ornithology'' of the title). If Stresemann did not accomplish anything else during his long career, his action in pushing development of the New Avian Biology is sufficient to insure his position as having the most profound influence on twentieth-century world ornithology. Most interesting is that Stresemann stayed strictly within ornithology during his entire scientific career; he did not branch out into general zoological or theoretical biological topics.

The three authors have done an excellent job in presenting the life and work of Erwin Stresemann, with each of the major chapters full of interesting facts and analyses, and extensive documentation. This history is best read in conjunction with Haffer's 1997 *Ornithologen-Briefe des 20 Jahrhunderts* (see, W. J. Bock, 1999, Auk, 116:861–863). Because those chapters were written at different times and independently of one another, there is some duplication of material but that does not distract from the book. One of the little-known aspects of Stresemann's life was that, in 1934, he was offered a research professorship at Yale University through the efforts of Dr. Leonard Sanford, with the possibility of heading up the Peabody Museum (pp. 42, 144). Stresemann visited Yale during his trip to the United States from November 1935 to March 1936, but, feeling himself bound to Berlin and Germany, he declined the offer. There is little discussion of Stresemann's other trips to North America: in 1958 he addressed the American Ornithologists' Union on the status of avian systematics (1959d) at its 75th anniversary meeting in New York City, and in 1962 he attended the International Ornithological Congress in Ithaca, New York to speak on the taxonomic value of wing molt. During both trips, Erwin and his wife, Vesta Stresemann, studied the molt of birds at the American Museum of Natural History (E. and V. Stresemann, 1966). It was during those visits that most North American ornithologists would have met Stresemann.

Stresemann's best known publications are his *Aves* volume in the *Handbuch der Zoologie* 1927–1934 (only 536 were sold by 1934 and an additional 156 by 1944, a total of only 692 of the original 2,200 printed; the remaining two-thirds were tragically destroyed by fire toward the end of World War II, see. p. 248), and his *Ornithology: From Aristotle to the Present* (1975; original German edition, 1951). Both were discussed by Haffer (pp. 248–250, and 297–302). The *Aves* volume was analyzed in connection with a long section on the development of the New Avian Biology (pp. 248–295). Haffer points out that Stresemann's history of ornithology was written during the difficult years following World War II when his access to the literature was restricted. That historical work concentrated on avian systematics and on European workers; hence there is still a great need for a thorough treatment of the history of worldwide ornithology.

Another of Stresemann's important contributions in 1939 was part of his *The Birds of Celebes* in which he advocated his ideas of a ''dynamic zoogeography'' (pp. 213–219; 414–416). That was in reaction to excessive land-bridge building by the biogeographers of the time and which was based on changes in the habitats over time and the differential dispersal abilities of different species. Although a few persons acknowledge credit to Stresemann for these ideas (e.g. E. Mayr, 1944, *The Birds of Timor and Sumba,* Bulletin of the American Museum of Natural History, 83:123–194), his concept of dynamic zoogeography is still insufficiently unknown and deserves a full analytic review.

The leading German Academy of Science, the Leopoldina, published this book by Haffer and his colleagues on the life and work of Erwin Stresemann, the leading German ornithologist; hence the bulk of the publication is in German. That is unfortunate because most of the world's ornithologists will not be able to appreciate in depth the importance of Stresemann to the development of ornithology during the first half of the twentieth century, in spite of the excellent English summary by Jürgen Haffer (pp. 399–427). It would be a great benefit to most ornithologists if someone would undertake the great task of translating this volume into English and republishing it, perhaps as a CD-ROM.

In summary, this authoritative history of the life and work of Erwin Stresemann is essential to all ornithologists and science historians with the slightest interest in the history of ornithology. Jürgen Haffer, Erich Rutschke and Klaus Wunderlich are to be congratulated for their excellent and thorough presentation; all ornithologists and historians of science are in their debt. The cost of this book is most reasonable compared to its contents, and I urge anyone interested in the history of ornithology to obtain this valuable addition to our science.—WALTER J. BOCK, *Department of Biological Sciences, Columbia University, 1200 Amsterdam Avenue, Mail Box 5521, New York, New York, 10027-7004 USA. E-mail: wb4@columbia.edu*

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Ecology and Conservation of Grassland Birds of the Western Hemisphere—Edited by Peter D. Vickery and James R. Herkert. 1999. Proceedings of a Conference, Tulsa, Oklahoma, October 1995. Studies in Avian Biology No. 19. Cooper Ornithological Society, Camarillo, California. vii + 299 pp., numerous figures. ISBN 1-891276-08-5. Paper, $25.00; ISBN 1-891276-11-5. Cloth, $39.50.—Within the past 10–15

years, the widespread declines of grassland birds throughout the Western Hemisphere have become well known. For example, Knopf (1994:251) states that North American grassland birds have experienced ''steeper, more consistent, and more geographically widespread declines than any other behavioral or ecological guild.'' Similar population trends are reported for birds of South American grasslands. Those declines have generated a flurry of research, some of which is reported in this book. This book, therefore, represents a timely contribution to our knowledge of the ecology and conservation of grassland birds.

This book comprises a series of 34 papers originally presented at a two-day conference held in Tulsa, Oklahoma in October 1995, and loosely organized into four major sections (Introduction, Ecology, Breeding Ecology, and Latin America). The Breeding Ecology section is by far the largest and is further organized into subsections on habitat selection, fire, the Conservation Reserve Program (CRP), management, and data collection and analysis. Each chapter can stand alone (e.g. each has its own literature cited sections, and abstracts in both English and Spanish). Most chapters represent the results of original research conducted by the 66 authors throughout the Western Hemisphere. The book is written and organized much like a typical scientific journal, and the target audience is the scientific community. As is true of most edited books of this nature, the chapters are a somewhat haphazard and eclectic mixture of studies on topics ranging from nocturnal migration calls and thermal aspects of nest sites, to summaries of continental population trends from the Breeding Bird Survey (BBS). This results in some important subjects being largely ignored (e.g. virtually none of the studies looked at hayfields—currently a major habitat type for grassland birds in North America—or at the effects of mowing) and other subjects covered in some detail (e.g. five papers on the effects of fire). As is also frequently true of most of these collections, the reader is left with the impression that the truly good stuff from many of these studies will likely be published elsewhere in more prestigious outlets. Despite those limitations, the chapters typically are based on interesting and solid science. The book is extremely well edited and is virtually error-free. The figures are uniformly of high quality. The only minor exceptions are the population-trend maps found in the chapter by Peterjohn and Sauer (two of the three trend classes are hard to distinguish). Although the inclusion of a large number of maps no doubt necessitated their small size, distinguishing the categories was difficult. Also, the cover photograph of Greater Rheas (*Rhea americana*) seems inappropriate given that none of the papers dealt with that species. However, each of the four major sections contained noteworthy chapters, some of which I will discuss below.

The introductory chapter on the conservation of grassland birds in the Western Hemisphere by Vickery et al. was one of the highlights of the book. It outlines and summarizes the locations (and terminology) of the various grasslands of the Western Hemisphere and contains lists of the obligate and facultative grassland birds of both North and South America. Useful definitions are also given for grasslands and grassland birds. Although one can quibble with these definitions (e.g. I am not sure I would include sedge-dominated tundra with more ''traditional'' grasslands) and lists (jaegers, *Stercorarius* spp., as obligate grassland birds?), they are a valuable reference and an excellent starting point for more specialized or restrictive lists. In addition, the chapter summarizes likely causes of population declines, current and future threats to grassland birds, and conservation strategies and future research needs.

The second section (Ecology) begins with a useful summary by Peterjohn and Sauer of current population status of grassland birds in North America. They report trends based on 30 years of BBS data. Askins' paper on history of eastern grassland birds is fascinating and based on impressive historical research, although one should be forewarned that it is very similar to an early chapter in his recent book (Askins 2000). I also enjoyed the two papers by Rotenberry and Knick and one by O'Connor et al. because they remind us of potential overriding importance of landscape effects on bird-habitat associations, and that those effects are not restricted to forest birds.

The Breeding Ecology section also had several interesting chapters. For example, the chapter by Bock et al. on grassland birds at a suburban edge contains one of the best demonstrations to date of reduced densities of grassland birds near certain types of habitat edges. The five-year study by Herkert and Glass on fire effects on Henslow's Sparrow (*Ammodramus henslowii*) should be very valuable to managers interested in this enigmatic grassland bird, as should Winter's paper on Baird's Sparrow (*Ammodramus bairdii*). Igl and Johnson's contribution (on Le Conte's Sparrow, *Ammodramus leconteii* and CRP fields) shows us that climate variation may lead to dramatic annual fluctuations in grassland bird abundance whereas Koford provides an important assessment of the value of CRP grasslands in North Dakota and Minnesota. Also in this section was Temple et al.'s treatment of effects of grazing on nesting birds in Midwestern pastures. Their ''probird'' grazing management system provides concrete management guidelines that may benefit the especially vulnerable grassland bird populations of the Midwest. Finally, I thought the three papers in the Data Collection and Analysis subsection were especially noteworthy. I was intrigued by Evans and Mellinger's paper suggesting that the measurement of vocalizations produced by night-migrating birds has

potential as a monitoring tool. Peterson and Best provide important warnings regarding the interpretation of perturbation experiments (including the need for controls, pretreatment data, and long-term posttreatment monitoring). Further, Rotella et al. discuss the importance of estimating detectability (through estimating distances in which birds can be detected) in avian censuses.

The last section, entitled simply Latin America, presents some much needed information on the ecology and conservation of grassland birds south of the United States. Papers by Cavalcanti (on the Cerrado region of Brazil), Tubaro and Gabelli (on the Pampas Meadowlark, *Sturnella defilippii*), and da Silva (on seedeaters of the genus *Sporophila*), among others, should help expose North American readers to the fact that grassland-bird problems are not limited to our continent. Basili and Temple (through two papers in this section) also highlight the fact that population declines of one North American grassland breeder, the Dickcissel (*Spiza americana*) may result from human-caused mortality on their Venezuelan wintering grounds. However, that section, in particular, would have benefited from more contributions related to grassland birds spanning the Americas.

In conclusion, this book has much to offer avian ecologists, especially those interested in grassland ecosystems. It is well worth its relatively modest cost and should be included in all university libraries.—Eric K. Bollinger, *Department of Biological Sciences, Eastern Illinois University, Charleston, Illinois 61920 USA. Email: cfekb@eiu.edu*

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The Birds of Pennsylvania—Gerald M. McWilliams and Daniel W. Brauning. 2000. Cornell University Press, xiv + 479 pp., 67 black-and-white photographs, 44 maps, ISBN 0-8014-3643-5. Cloth, $39.95.—Pennsylvania, the home of Wilson, Audubon, and Bartram in the historic era, and Todd, Sutton, Parkes, Gill, and Parker in more modern times, has been a keystone state to American ornithology. The study of American birds was practically founded at the Academy of Natural Sciences in Philadelphia and continues through that institution and the Carnegie Museum in Pittsburgh. Hawk Mountain Sanctuary rides the backbone of the state's Kittatinny Ridge, inspiring raptor research, education, and conservation around the world. Pennsylvania recently became the first state to list its Important Bird Areas. Yet, in spite of Pennsylvania's significant contribution to ornithology, there were no statewide bird references until the last decade. Amazingly, McWilliams and Brauning's book is the first comprehensive book about the state's birds since Warrens' *Birds of Pennsylvania* published in 1890.

McWilliams and Brauning's book is a successor to Earl Poole's unpublished manuscript (circa 1960) and benefits from the many detailed observations made in W. E. C. Todd's magnificent *Birds of Western Pennsylvania* (1940). Brief works by E. L. Poole (1964) and M. Wood (1979) gave only cursory species accounts, but did provide mileposts on bird ranges from which to compare those described in the present book.

Although Pennsylvania has a reputation as an urban center, most of the state is rural. Approximately 59% of its area is covered with diverse forest types. Indeed, Pennsylvania is a stronghold for many eastern forest birds. A large percentage of the world's Scarlet Tanagers (*Piranga olivacea*), Worm-eating Warblers (*Helmintheros vermivorus*), and Wood Thrushes (*Hylocichla mustelina*) live here (Rosenberg and Wells 1996). With its large forest cover and geography, Pennsylvania has high responsibility for the conservation of several of the Watch List species such as Golden-winged Warbler (*Vermivora chysoptera*), Cerulean Warbler (*Dendroica cerulea*), Louisiana Waterthrush (*Seiurus motacilla*), and the species already named. The western reclaimed strip mines may support the largest Henslow's Sparrow (*Ammodramus henslowii*) populations in the Northeast. The state's line of ridges provide a major highway for diurnal raptors, whereas its woods and thickets are vital stopping points for many migrating songbirds. Because this book covers the relationships of many bird species to Pennsylvania's physical features, it is not only valuable for academic and recreational uses, but pertinent and timely for bird conservation.

After a forward by Pennsylvania native, Kenn Kauffman, and a preface that puts this publication in its historical context, the authors present a thorough and insightful review of ''Historical Perspectives on Bird Populations and Habitats'' in the Introduction. This 24-page review is a must-read for anyone interested in the state's ornithology. It puts into perspective modern bird populations in light of what we know of the state's history, geography, and ecology. The Introduction also guides the reader through the seasonal changes of bird distribution and movements as well as the state's geographical and ecological units. Convenient maps show physiographic provinces, counties, popular birding spots, and

Breeding Bird Survey (BBS) routes. The authors define what they mean by their various relative abundance and frequency of occurrence categories, Records Committee standards of bird sighting documentation, and bird location abbreviations used throughout the text. The Introduction lists many regional bird publications on which, in part, this book is based.

The meat of the book is the large species-accounts section that describes the general status, habitat, seasonal status and distribution, history, and some additional comments for each of the 428 species reported in Pennsylvania. That section also covers breeding, winter, passage migration, or vagrant records for each species as applicable. Although succinct, those accounts are rich in detail. They reflect a thorough review of published and unpublished bird records. Some of the most intriguing parts of those accounts concern the species' history. The comment sections review pertinent taxonomic, identification, or conservation issues (including the state species of special concern listings).

I found that, in almost all cases, the habitat descriptions and migration patterns match my own impressions. The description of migration gives the general time frame for migration in the state, including the weeks when migration generally starts and ends, and its peak times during the migratory period; however extreme dates for each season are not provided. That might disappoint some readers, but the authors do provide many aberrant early and late migrants to spice up the accounts.

The skills and experiences of the two authors complement each other, resulting in a well-rounded account of Pennsylvania's bird life. McWilliams served for over a decade on the Pennsylvania Ornithological Record Committee (PORC) and has been as a dedicated observer of birds and natural history of Erie County, especially Presque Isle. Brauning coordinated the state's breeding-bird atlas, served as its book editor, and works as a wildlife biologist for the Pennsylvania Game Commission. The species accounts benefit from the authors respective experiences and skill, and reflect their understanding of the problems often associated with bird identification and the interpretation of bird records and data collection. A large number of the state's field workers who contributed data reviewed earlier drafts of the manuscript (including myself), providing other perspectives to the resulting product.

The Birds of Pennsylvania makes good use of a wealth of data contributed primarily by avid birders over the last two decades. The *Atlas of Breeding Birds in Pennsylvania* (Brauning 1992) built a sound foundation on the summer distribution of the state's birds. The Atlas also organized and energized the state's birding community. From the Atlas network emerged the state's bird journal (*Pennsylvania Birds*), founded and edited by Frank and Barb Haas, and the Pennsylvania Society for Ornithology (PSO). Many of the details found in the species accounts of this book originated from the journal's seasonal summaries, PSO members, PORC reports, and Brauning's many contacts through PGC projects. The authors also make good use of Audubon Christmas Count and BBS route data.

The range maps show relative abundance of some of the state's most common breeding birds in much the style of *The Summer Atlas of North American Birds* (Price et al. 1995), but with somewhat higher definition. Breeding-range maps are shown for only those species for which are adequate data to produce detailed maps. The species accounts are built upon the Atlas data, but the Atlas maps are not reproduced here. The abundance maps illustrated here supplement the nonquantitative range maps provided by the Atlas. As such, these books are companion books. The black-and-white photographs of 67 species give evidence of many of the most interesting and well-documented rare bird sightings.

Because I have a very favorable impression of this book, I hesitate to mention any deficiencies. However, given the rich history of Pennsylvania bird artists and illustrators, I found the illustrations rather disappointing. Where are the reminders of the great artwork of Audubon, Sutton, and Poole? Except for the striking cover, we are left with many uninspiring and sometimes blurry black-and-white photographs of those species least representative of the state's avifauna (although many serve as convincing documentation). The birds of Pennsylvania, and those that have illustrated them in the past, deserve better consideration. I was disappointed with the lack of Breeding Bird Census (BBC) data that are readily available in the literature and from cooperators. For example, the Introduction mentions high breeding densities of some species in old growth forest, but the species accounts fail to provide the data where they might give the reader a better idea of the state's breeding population densities in a variety of habitats (an ecological and conservation issue). It would be helpful to see a summary of the state's rich set of BBC data, if not in this book, perhaps in a future edition. Banding data are hardly mentioned, but perhaps that information is difficult to access and integrate into the species accounts. It would also be interesting to see a summary of hawk count data for which the state is so famous. Many of the species accounts give the details of rare-bird reports but neglect other large data sets I have already mentioned. I have listed elsewhere (Gross 1998) those groups of birds most in need of population surveys (night birds, marsh birds, diurnal raptors, etc.) for which this book should serve as an inspiration for more work. These are minor complaints, and the lack of some data may not be the fault of the authors, and may come forth in later editions.

Hats off to McWilliams, Brauning, and their many contributors, on a very fine book. I heartily recommend it. It is a work for which the authors can be justly proud. This book ably fills a void in the literature and deserves a space on the bookshelf next to the *Atlas of Breeding Birds in Pennsylvania* (Brauning 1992). It is an essential reference that belongs in all university libraries of the region or any library that aspires to have a good ornithological collection. Birders and academics alike should own it. I hope to see updated and improved editions of this standard reference book in years to come.—DOUGLAS A. GROSS, *144 Winters Road, Orangeville, Pennsylvania 17859 USA. E-mail: dougross@sunlink.net*

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Owls: A Guide to the Owls of the World—Claus König, Friedhelm Weick, and Jan-Hendrik Becking. 1999. Yale University Press, New Haven, Connecticut. 462 pp., 64 color plates, numerous maps and line drawings. ISBN 0-300-07920-6. Cloth, $50.—Humans are fascinated with owls, and many birders and ornithologists seem to have an insatiable appetite for books on this enigmatic group of predators. Authors with little direct experience with owls have been quick to exploit this fascination, resulting in a spate of owl books that leave much to be desired. Thus, the appearance of a new book coauthored by noted owl researcher Claus König was welcome news to those of us who have been less than satisfied with several of the recent owl books produced by nonspecialists.

König and his colleagues (most notably Petra Heidrich and Michael Wink) have been very active in describing new species of owls based on the application of molecular techniques and the understanding that vocalizations provide valuable clues about species limits in strigiforms. The notion that the number of owl species in the world has been vastly underestimated is reflected in the fact that 10 years ago, Hume and Boyer (1991) recognized only 151 species (13 tytonids, 138 strigids). Owing in large part to the work of König and his colleagues, del Hoyo et al. (1999) recently recognized 205 species of owls (16 and 189, respectively). In this new book, König et al. go even further than *Handbook of the Birds of the World* in recognizing 18 tytonids and 195 strigids, for a grand total of 213 species. Two species have been described since König et al. went to press (Rasmussen 1999, Rasmussen et al. 2000), and several more are in the works. Thus, the species tally in the next few years is likely to be much larger than that treated by König et al.

The stated purpose of the book is to serve as an identification guide and an information source on the ecology and biology of owls. The introductory material includes brief but sound treatments of morphology and anatomy, topography, food habits, behavior, breeding biology, vocalizations, taxonomy, and conservation. Also included is a 19-page chapter by Wink and Heidrich entitled ''Molecular Evolution and Systematics of the Owls (Strigiformes)'' in which they summarize their research on owl phylogeny on the basis of mitochondrial DNA.

The meat of the book occurs in its illustrations and species accounts. Each species is depicted in a color plate (oftentimes three or more illustrations per species), and the species accounts provide a range map and information on identification, vocalizations, distribution, movements, habitat, physical description, measurements, geographic variation (when present), habits, food, breeding, and status and conservation. The book includes an erratum sheet to correct mistakes on one of the plates and on five of the range maps. At least one other map, that for the recently rediscovered Forest Owlet (*Athene blewitti*), however, also is in need of correction (see Rasmussen and Collar 1998). Each species account concludes with a list of references.

How well does this book serve its purpose? In terms of providing an up-to-date list of the world's owls (but see below) and summarizing what is known about some of the more poorly known species, this book has no equal except for the lavishly produced and thus more expensive fifth volume of *Handbook of the Birds of the World*. The illustrations are adequate, although the colors are often washed out such that the irides and plumage of many species are much duller than they should be, and the subtle plumage characters that might allow one to separate similar species are not always readily apparent. For temperate North America and Eurasia, at least, existing field guides do a much better job in allowing one to identify the various species of owls by sight. In the tropics, however, the appearance of many owls, especially *Otus* and *Glaucidium,* provides little clue as to species identification, and one must rely on voice. Sadly, the CD that is to be the companion to this book, and said to provide vocalizations of ~90% of the world's owls, was not available when we wrote this review nearly a year after the book appeared. On balance then, this book's value as an identification tool will be most useful in areas not covered by standard field guides, and then probably only in conjunction with the CD.

As an information source on the ecology and biology of owls, this book falls far short of summarizing current knowledge for many of the species. Indeed, it is almost as though König et al. made a conscious effort to ignore most of the literature published in English during the last 15 years. Similarly, many North American authors have been guilty of ignoring parts of the vast literature on owls that was published in Europe in the second half of the twentieth century, but that is no excuse for the weak treatment of the literature by König et al.

Anyone who has kept up with the owl literature will be surprised to find that the book's bibliography of more than 700 citations contains not a single reference to the works of Jim Belthoff, Eric Forsman, Rocky Gutiérrez, Greg Hayward, Denver Holt, Stu Houston, Erkki Korpimäki, Carl Marti, Gary Ritchison, Geir Sonerud, and the authors of this review, to name but a sample of people who, over the last 20 years, have published more than a dozen papers apiece on owls. Moreover, many of the papers cited at the end of the species accounts are missing from the bibliography. A check of the species accounts for taxa that occur in the United States and Canada revealed 40 citations in the terminal list of references that are not in the bibliography, scores of important papers that have been omitted, and dozens of citations that are inappropriate. For example, why is Monroe's (1968) monograph on birds of Honduras cited in the species account for Barred Owl (*Strix varia*) when the species does not occur there? And what is the value in citing the National Geographic Society's *Field Guide to the Birds of North America* in the account for Northern Saw-whet Owl (*Aegolius acadicus*)? Further, the references for the species accounts of Flammulated Owl (*Otus flammeolus*), Eastern Screech-Owl (*O. asio*), Great Horned Owl (*Bubo virginianus*), Spotted Owl (*Strix occidentalis*), Elf Owl (*Micrathene whitneyi*), Burrowing Owl (*Athene cunicularia*), Boreal Owl (*Aegolius funereus*), Northern Saw-whet Owl, Long-eared Owl (*Asio otus*), and Short-eared Owl (*A. flammeus*) are so incomplete that they can fairly be described as pitiful. This is completely unacceptable given that *Birds of North America* (BNA) species accounts were available for 13 owl species well before König et al. went to press. In fact, only one BNA account, for the Burrowing Owl (Haug et al. 1993), is cited in the book. We suspect that part of the problem is that König et al. compiled most of their literature long before writing the book, and then failed to update their references. It is also evident that the book received no more than cursory attention from the publisher's editorial staff nor any peer review by North Americans who were familiar with the recent literature on strigiforms (or if such input was obtained, it was ignored).

Two kinds of systematic revisions are included in this book. First, in several cases previously recognized polytypic species are split into multiple species-level taxa. Second, novel conclusions about higher-level relationships within owls are drawn; many of the latter are in the chapter on DNA sequencing results by Wink and Heidrich. Decisions about the species-level taxa of owls have always been difficult, largely because vocal differences, rather than plumages, seem to be important to the birds but are rarely associated with the museum voucher specimens that are used by systematists. Consequently, depending on how much is known about voice and on the taxonomic philosophy of the author, owl taxonomies tend to be more idiosyncratic than are treatments of other groups of birds. König et al. are splitters. They recognize more species-level taxa than have previous authors, relying more on vocalization differences, but occasionally simply on possible allopatric distributions (e.g. *Otus lambi*). We find this troublesome in cases where taxonomic revisions are made without precise sonogram, specimen, or locality information, and without normal peer review. Forms such as *O. roraimae* and *O. usta* may indeed be species-level taxa, but the argument presented in this book is too abbreviated to evaluate the issue, and unless more detailed publications appear, the logic and justification will not be available for further consideration.

The higher-level systematic results reported by Wink and Heidrich are based on 300 to 1,040 base pairs of DNA sequence of the mitochondrial cytochrome-*b* gene. This molecular work involved multiple representatives from most of the larger genera of owls. Many of the phylogenetic results obtained are encouraging: congeneric species tend to form clades, and some generally accepted opinions, such

as the allocation of the genus *Phodilus* to the Tytonidae, are confirmed. Relationships that make biogeographic sense, such as the monophyly of New World *Otus* and of Old World *Otus,* are recovered. Other results are surprising: the two *Otus* clades are not sister groups, and *Ketupa* and *Nyctea* are deeply embedded within *Bubo.* Overall, however, these molecular results are not very robust and ought not to be used as the basis for a revision of owl taxonomy. Alternate methods for inferring phylogenetic trees were used, such as parsimony, likelihood, and neighbor-joining, and they led to some surprisingly different results. In addition, the usually employed indices of robustness in phylogenetic analyses, such as bootstrap confidence levels for nodes on trees, are moderately high only for some nodes in the neighbor-joining tree. For example, they range from 0.5 to 0.7 for older, intergeneric relationships, but for the most part are less than 0.5 for the parsimony analysis. Much more mitochondrial data or slower-evolving nuclear genes are going to be required to settle the problem of intergeneric relationships among owls. It is fortunate, therefore, that König et al. have not adopted many of the DNA results in their classification. For example, most New and Old World *Otus* remain in that genus, and the Snowy Owl remains in *Nyctea.* However, *O. leucotis* becomes *Ptilopsis leucotis* and *P. granti* (taxa that may be more closely related to *Asio* than to *Otus*), and *Ketupa* and *Ciccaba* are merged into *Bubo* and *Strix,* respectively.

Despite our criticisms, König et al.'s *Owls* will be useful as the only medium-sized (and thus easily transported) book that illustrates and discusses all of the world's owls and as a source for many of the latest thoughts about owl systematics. However, readers must be cognizant of the fact that the lack of scholarship revealed in this book renders it nearly useless as a modern summary of what is known about the biology of the world's owls. The door continues to remain wide open for someone to tackle the challenging task of adequately synthesizing the current literature on the more than 200 species of strigiforms thought to occur in the world today.—Jeffrey S. Marks, *Montana Cooperative Wildlife Research Unit, University of Montana, Missoula, Montana 59812, USA. E-mail: jmarks@selway.umt.edu* George F. Barrowclough, *Department of Ornithology, American Museum of Natural History, Central Park West at 79th Street, New York, New York 10024, USA. E-mail: gfb@amnh.org*

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A Manual for Wildlife Radio Tagging—Robert E. Kenward. 2000. Academic Press, London, United Kingdom. x + 311 pp., 107 text figures. ISBN 0-12-404242-2. Cloth, $65.00.—Radio tagging provides a convenient and cost-effective means of remotely monitoring the physiology, movements, resource selection, and demographics of wild animals. Consequently, radio tagging has become an important and attractive tool for ecologists. The past 10 years have been a particularly interesting time for users of telemetry. Radio tags have become smaller and more reliable; advancing technologies such as satellite telemetry, global positioning systems, and user-friendly, PC-based geographic information systems (GIS) have emerged; and new data-analysis techniques to incorporate those advancements are numerous and impressive. Despite those advancements, there has been no up-to-date synthesis on radio tagging wild animals. Kenward's *A Manual for Wildlife Radio Tagging* fulfills an important niche. In this book, Kenward has provided a scholarly review of study planning, available equipment, tag-attachment methods, and data-collection techniques in an informative and timely text. Assuredly, anyone embarking on a radio-tracking study, particularly first-time telemetry users, would benefit from Kenward's keen insight and cogent recommendations.

This book updates Kenward's *Wildlife Radio Tagging: Equipment, Field Techniques and Data Analysis*

published in 1987. Chapters 5 (Making Tags), 7 (Radio Tracking), and portions of other chapters were retained and modified from the original edition. However, this update contains several new additions: ~70% more text contributing to 10 chapters in total, a detailed glossary, a thorough literature cited section containing >600 historical and contemporary references, ample figures, and appendices indexing equipment suppliers and software vendors. Of particular interest to ornithologists, there are several examples of fitting tags to and collecting data on birds. As with the original edition, this book is intended to provide guidance to first-time telemetry users for choosing equipment and collecting and analyzing radio-tracking data. This book successfully accomplishes many of those aims.

Chapter 1 begins at a rudimentary level with an instructive discussion on whether radio tagging is the best approach to answer questions posed in your study. This chapter challenges researchers to improve the biological questions they ask and to more carefully plan their study to answer those questions, as well as to better train those involved in telemetry research. As Kenward stresses, a good telemetry study requires more than attaching radio tags to a few animals and following them around haphazardly. He describes four stages to plan a radio tracking study: obtaining equipment, successfully tagging the animal, collecting satisfactory data, and analyzing those data. By posing a series of questions, Kenward helps you determine whether radio tagging is right for your project. Although more experienced users may be aware of many of these issues, the sensible recommendations made by Kenward are ideal for someone beginning their first radio-tracking study.

A review of basic VHF transmitting and receiving equipment is the topic of Chapter 2. As done throughout the book, a historical context is provided so the reader has a feel for how the field has developed. In addition to frequency selection and allocation, there is a succinct and thorough review of receivers, antennas, and transmitters. Kenward provides a detailed description of VHF receivers available, including specific models and their capabilities, prices, and mode of operation. This is an especially balanced review of current options, and anyone considering buying a VHF receiver may be surprised at the advancements and new capabilities available. Practical advice and comparisons of different antenna designs are presented in a way that even a novice reader will be able to select the most appropriate portable antenna for their study. General advice on transmitter construction and ways to optimize tag range and tag life through use of microcontrollers and power sources is offered. Sensors available to indicate posture, activity, moisture, and a host of important processes round out Chapter 2.

One of the most important recent technological developments in radio tagging has been increased use of satellite tracking and GPS tags. In Chapter 3, general principles, advantages, and disadvantages of automated systems are described, along with cost, size, and potential uses of those technologies. Ground-based stations, capable of recording presence or absence and azimuths to estimate locations by triangulation are adequately described. Those sections are well referenced so a reader can locate the original literature for additional information. There is useful advice for evaluating those automated systems, especially in light of biological questions posed.

Any first-time buyer of radio tracking equipment must read the first four pages of Chapter 4. Contained here are detailed, useful tips on selecting equipment and manufacturers to suit your needs. Kenward also reminds us to select analytical software at the outset, which may be a daunting task. For example, I am aware of at least 25 software packages (including PC and MAC operating systems) that will conduct home range analyses alone! Certainly waiting until the end of one's research project to select software is not a good idea. Using the RANGES V software suite (Kenward and Hodder 1996) as a model, Kenward demonstrates how to prepare telemetry data for analysis. Options for obtaining digital maps and a review of the relative advantages and drawbacks with various formats are provided at the end of Chapter 4.

In keeping with the old adage ''you don't have to know how to build a clock to tell time,'' you don't have to know how to build a radio tag to use one. However, Chapter 5 provides explicit details on tag components and construction. Although most of us will never build our own radio tags, this section does provide valuable information for those purchasing manufactured equipment. For example, the request for new super-elastic nickel-titanium alloy wire as a whip antenna on small bird, bat, and reptile radio tags is bound to gain you respect from that transmitter manufacturer! For those ambitious types, Kenward covers the construction of eight different radio tags that could be modified to fit a variety of species. Tag designs include glue-on, tail-mount, back-pack, implant, necklace, and collar devices. He provides detailed descriptions of tag construction while avoiding unnecessary jargon. This chapter also would be helpful to anyone interested in refurbishing radio tags.

Chapter 6 provides a thorough and thoughtful account of tag attachment techniques and the possible effects of transmitters on animals. I applaud Kenward for making this a significant section in the book. In any radio tagging study, we assume that radio-tagged animals behave, function, and survive similarly to animals without tags. It would be difficult to overstate the importance of that assumption. Many useful references are provided, and will assist

the reader in identifying literature pertaining to their study. Here, Kenward provides helpful guidance on placing radio tags on animals using glue-on, harnesses, tail mounts, necklaces, collars, implant, and ingested tags. Careful consideration is paid to animal welfare, appropriate fit, and the merits of each attachment technique. Ornithologists will particularly appreciate his thoroughness in describing harness and tail-mount attachment techniques.

How to radio-track tagged animals is the subject of Chapter 7. Here, basic information on radio wave behavior, taking bearings, and estimating tag distance and position are described in great detail. Kenward effectively underscores the point that practice is necessary to efficiently use tracking equipment. For beginners, advice on selecting triangulation sites, overcoming tracking problems in obstructed country, and locating lost signals is informative and worthwhile. Throughout this chapter, Kenward's >25 years of experience with radio-tracking techniques is evident. A discussion of motorized tracking from a vehicle or aircraft completes this chapter. Illustrative figures will help the reader determine how to affix antennas on airplanes or vehicles.

In Chapter 8, Kenward describes data collection methods. After a brief description of radio surveillance techniques, there is a discussion of experimental design issues related to VHF radio tags. As discussed, a researcher must either collect continuous data or point data at specified intervals; the choice is related to the stated objectives of the study. This raises the issue of autocorrelation in point observations (Swihart and Slade 1997); an issue with a 15-year history. In a constructive manner, Kenward describes some problems that may arise by strict adherence to the temporal-independence assumption. This section will certainly help people evaluate the implications of violating that assumption. Techniques to minimize error and bias, such as team tracking and minimizing time between successive azimuths, are drawn into a discussion of location accuracy. However, for those interested in testing and calibrating a radio tracking system, the work of White and Garrott (1990) is a more appropriate reference. Very appropriately, Kenward emphasizes the need for pilot studies and systematic sampling, themes extended in other chapters.

The last two chapters describe analysis of radio-tracking data. Specifically, Chapter 9 describes analysis of daily and seasonal movements, with an emphasis on home-range analysis. A strength of this chapter is the attention given to the virtues of various home-range estimators. Mathematical expressions are provided, although Kenward reminds readers twice that those equations can be ignored. Personally, I encourage the reader to review the mathematical notation to understand exactly what those estimators are doing. You might be surprised how the home-range estimate for your study animal is actually computed! This recommendation is extended to software; knowing exactly what analytical options your software package incorporates is essential when comparing your results to others. Also notable is a series of illustrative figures that help to demonstrate how features such as grid cell size, grid placement, and outliers ultimately influence home-range estimates. Appropriately, this chapter concludes with a summary discussion on choosing estimators and includes a classification scheme of six common home-range estimators.

Chapter 10 describes techniques for analyzing demographics (e.g. density and survival estimation), resource selection, and social interaction among species. The chapter begins with brief descriptions of direct population estimation, density estimation correction, and enhancements to line-transect techniques using radio-tagged animals. A minor criticism is that some important assumptions and developments in population estimation using radio tags, such as sightability models (Rivest et al. 1998), were not included. Following those summaries, survival analysis is examined. Although this review is not exhaustive, it does provide a starting point for more in-depth accounts. Unfortunately, only six pages are devoted to resource selection analyses. Admittedly, entire books have been written on the subject (Manly et al. 1993) and an exhaustive review would be much to ask, but there is an unbalanced discussion of available techniques. For example, there is no discussion of Euclidean distances, discrete choice modeling, or logistic regression. Kenward does, however, effectively point out that individual locations should not be considered the experimental unit and he describes a couple of interesting, yet not commonly used analyses (e.g. habitat dependence analysis). The chapter concludes with a brief discussion on social interaction analyses.

In addition to the extensive literature cited section and a functional glossary, two appendices complete the book. The first provides addresses and contact information for suppliers of telemetry hardware, complete with addresses, e-mail addresses, phone numbers, and web-sites. The concluding appendix provides some sources for radio tracking software, general purpose GIS vendors, sources of map data, and pertinent web sites.

In summary, this book represents an important resource for anyone conducting or supervising a radio-tagging study and is a must-read for first-time users of telemetry. I recommend it without hesitation to all researchers and students interested in study planning, telemetry equipment, tag attachment procedures, and how to collect data from radio-tagged wildlife. The book should be in every university library. It contains a wealth of practical and useful advice in a clear and readable format from which everyone can learn.—JOSHUA J. MILLSPAUGH, *Department of Fisheries and Wildlife Sciences, University of Missouri, 302*

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A Thesaurus of Bird Names: Etymology of European Lexis Through Paradigms—Michel Desfayes. 1998. Museé Cantonal d'Histoire Naturelle, Sion, Switzerland. Two volumes, 1240 + 1288 pages, CD-ROM. ISBN 2-88426-021-8. $476 for the set or each component can be purchased separately (Volume 1, Cloth, $238.00; Volume 2, Cloth, $251.00; CD-ROM, $338.00).—This monumental work deals not with scientific names or ''Linnaean'' nomenclature, but with names for birds that exist in other than the scientific idiom—the so-called ''common'' or ''folk'' names for birds. The first volume is a compilation of such names for all of the species of European and Middle Eastern birds, plus a few others that are almost universally known, such as the domestic fowl (*Gallus gallus*) and the Ostrich (*Struthio camelus*). Unfortunately, the introductory material does not clearly state or list which languages are included, but most of them appear in the list of abbreviations. Names for birds have been sought in Indo-European languages including ''Iranian, Caucasian, and Hamito-Semitic languages'' because ''the area covered by these languages includes the Palaearctic region, a zoogeographical entity within which can be found most of the European bird species. . . .'' Names in Finnish, Estonian, and Hungarian are omitted because they are not Indo-European languages. Names from languages written with different alphabet characters, such as Cyrillic, Hebrew, and Greek, are transliterated with Roman characters.

The first volume proceeds species by species, with each account consisting of a list of names, given language by language, arranged in a geographical sequence more or less from the northwest (British Isles) to the south and east. All names that the author could discover are presented along with information on the counties or provinces in which each name, no matter how local, is used. The amount of detail is staggering. The section on names for the Magpie (*Pica pica*), for example, comprises 13 pages, of which more than 6 deal only with names used in Germany.

Being Swiss, with an interest in etymology, Desfayes naturally has several languages at his command and has written his book using more than one. In the species accounts, explanatory remarks are generally in French, except for names from the British Isles, for which English is used. Remarks about German names seem to be in either German or English. Definitions in Volume Two may be in either English or French. Anyone who is linguistically challenged would have considerable difficulty using this work, but would have little need for it in any case.

The second volume is less easily characterized. About two-thirds of it consists of what Desfayes refers to as his ''paradigms'' (Appendices 3–14). Here, names or the words used in names, along with various cognates (or perhaps pseudocognates), are arranged according to qualities, somewhat in the manner of the familiar Roget's *Thesaurus* of English words. The major groupings include terms of chromatic origin (e.g. red, dark, spotted), morphological (e.g. tall, tufted, swollen), acoustic (mostly onomatopoetic), kinetic (e.g. fly, wag, dive), and others.

The ultimate subheadings are combinations of sounds used in words that Desfayes identifies as being related to a given quality. Thus, section 3.2.54.2 is a list of words that contain the sounds ''r–p'' and mean ''red'', including the Greek, Latin, English, Czech and other words for turnip (*rapys, rapa, rape, repka*). The list also contains a Russian word for menstrues (*repaki*), Serbo-Croatian, Polish, Ukranian and other words for linnet, robin, and whinchat (*repka, rzepoluch, repel, repalsic*), and a French word for the caruncles of a turkey (*roupie*), among others.

There are fascinating diversions to be encountered here. For example, we learn that the traditional (and believable) derivation of ''belladonna'' is folk etymology, and that ''mayonnaise,'' according to Desfayes, is related to words meaning flecked or spotted, and is not derived from the siege of Port Mahón, Minorca, as given in many etymologies. These paradigms will be of as much interest to philologists and

ethnolinguists as they may be to ornithologists. That great erudition, maybe even genius, has been exercised in their compilation is scarcely to be doubted, though I cannot shake off the impression that they may reflect considerable idiosyncrasy as well.

The second volume also contains various other lists of bird names, including those in ancient languages, words for nests, eggs, and bats, terms used in falconry, and bird names from ''overseas francophone countries'' and Latin America.

There is no index, because this would have added more than 700 pages to the work. The CD-ROM, therefore, is an absolute necessity. If, for example, one encountered an unknown word for some European bird and wanted to know to what species it applied, there would be no practical way to find it without searching the text with a computer. I have little doubt that it would be found, however. Michel Desfayes has presented us with a labor of love of such scope as to leave thoughtful reviewers with a lingering sense of their own deficiencies.—STORRS L. OLSON, *Department of Vertebrate Zoology, National Museum of Natural History, Smithsonian Institution, Washington, D.C. 20560, USA. E-mail: olson.storrs@nmnh.si.edu*

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Albatrosses—W. L. N. Tickell. 2000. Pica Press (Helm Information Ltd.), Sussex, United Kingdom. 488 pp., 52 color plates + text figures. ISBN 1-873403-94-1. Cloth $60.00.—W. L. N. (Lance) Tickell can truly be considered one of the fathers of albatross research. In 1958, he started banding Wandering Albatrosses on Bird Island, South Georgia, and that formed the nucleus of the long-term population study of that species which continues to this day. I still remember the thrill, some 30 years later, of encountering some of the birds Lance had banded as adults when I too was fortunate enough to work on Bird Island (even though those particular birds might have been only about halfway through their remarkable lives!). The book *Albatrosses* represents a superb, and fitting, conclusion to Tickell's more than 30 years of professional involvement with these magnificent birds, and it provides the most comprehensive, comparative account of the albatross family currently available.

The bulk of the book, 10 chapters in all, detail each of the 13 species or sub-species of albatross, organized from a geographical perspective: the southern, tropical, and northern albatrosses. Each of those sections commences with an overview of the relevant oceans, oceanography, bathymetry, and meteorology. Each chapter is rich in historical and geographical information on the discovery and exploration of the many breeding islands as well as the different species themselves. Every breeding island is dealt with individually, with maps indicating all breeding sites, and tables summarizing breeding populations. All aspects of albatross biology are then covered species by species, including breeding ecology and population dynamics, food, parasites and disease, and predators. Those sections are well illustrated with line drawings and include examples of most of the exciting at-sea distribution and foraging data that have only recently been obtained using remote-sensing and satellite tracking. The species accounts are preceded by a general introduction (Chapters 1 and 2) dealing with issues such as basic anatomy, similarities and differences with the albatrosses' closest relatives, the petrels, and the current controversy over albatross classification. Following the species accounts, Chapters 13–16 review and synthesize aspects of comparative biology (molt, flight, behavior, and ecology), and the text concludes with two chapters on human relations and attitudes towards albatrosses, including a fine collection of albatross poetry. The book also contains a substantial appendix, with a checklist, morphological measurements, egg size, diet, aging criteria, behavior, and population estimates for all breeding locations, together with an extensive bibliography (with references up to and including 1999).

In general, the book is very well produced, and the text is well written and highly readable. The general reader (including nonornithologists) will find much of interest here (and they should not be put off by the opening of the Introductory chapter in which ''cladistic,'' ''trinomials,'' and ''mitochondrial cytochrome *b*'' appear in rapid succession without explanation or definition!). For me, the highlights of the book included the ''Photographic Section'' with color photographs of each species (many taken by the author himself), and the line drawings by Robin Prytherch, which superbly and delightfully illustrate many of the albatross' complex courtship behaviors. However, the text is also sufficiently detailed and comprehensive enough to be of great value to the professional biologist (especially for the detailed population data). The book will perhaps be most often visited as a reference text rather than being read cover to cover. *Albatrosses* would make a fine gift for any amateur ornithologist and should be on the book shelf of all seabird biologists.—TONY D. WILLIAMS, *Department of Biological Sciences, Simon Fraser University, Burnaby, British Columbia, V5A 1S6, Canada. E-mail: tdwillia@sfu.ca*