



EDITED BY CARL D. MARTI

*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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**Cowbirds and Other Brood Parasites.**—Catherine Ortega. 1998. University of Arizona Press, Tucson. xv + 371 pp., 6 text figures, 30 tables, 4 appendices, 9 maps. ISBN 0-8165-1527-1. Cloth, \$65.00.—Natural historians since Aristotle have marveled at the unusual habits of avian brood parasites, but it was not until Herbert Friedmann's classic 1929 monograph, *The Cowbirds: A Study in the Biology of Social Parasitism*, that the study of brood parasitism coalesced as a scientific discipline. In that volume, Friedmann not only accumulated vast quantities of natural history information, he also presented a phylogenetic hypothesis for the six species of New World cowbirds and a detailed discussion of the evolution of the parasitic habit. Although Friedmann and others continued their research, relatively few substantive advances occurred in our understanding of brood parasites in the subsequent decades.

Beginning in the 1970s, interest in brood parasitism was rejuvenated by the experimental approaches of researchers such as Stephen Rothstein and Robert Payne. This resurgence has extended into the 1990s as cowbirds and other brood parasites continue to attract considerable research interest from both the academic and management communities. A key factor contributing to the growth of this field has been the presumed role of cowbirds in the decline of many species of Neotropical migrant songbirds. The 1990s have seen two research conferences devoted exclusively to the ecology and management of cowbirds, with hundreds of attendees from throughout North America. Until now, however, few authors have attempted to synthesize the burgeoning literature in a way that is useful to the scientific community and of interest to a lay audience. As cowbirds become increasingly vilified as agents of extermination in the popular press, the need for such a synthesis becomes more urgent. The new book by Catherine Ortega, *Cowbirds and Other Brood Parasites*, seeks to fill this niche.

In the first three chapters, Ortega offers an excellent review of the literature on brood parasitism (in-

cluding many interesting references not previously known to me). Chapter 1 explains the potentially confusing distinctions among facultative interspecific, facultative conspecific, and obligate interspecific parasites and introduces the taxonomic representatives of each group. Ortega briefly outlines the ways in which brood parasitism reduces host reproductive success. She misses an opportunity, however, to discuss recent evidence that cowbirds and other species of brood parasites depredate host nests, either to force them to renest or to punish them for ejecting parasitic eggs. In Chapter 2, Ortega enumerates the various defenses hosts have evolved against brood parasites. Included in this chapter are breeding characteristics (e.g. colonial nesting and overnight roosting), the relevance of which to brood parasitism has been studied only recently. Chapter 3 is the strongest of these introductory chapters, offering a thorough evaluation of the factors contributing to the evolution of brood parasitism in various taxa. Unfortunately, some of the recent molecular studies on the timing of host-parasite speciation events and genetic differentiation among genera were not referenced in this chapter, or were published too late to be included. This chapter also includes a section on host-parasite coevolution, which summarizes the myriad counter defenses parasites have evolved (e.g. egg and nestling mimicry), apparently in response to host defenses.

The remainder of the book is devoted exclusively to the biology of the New World cowbirds in the genera *Molothrus* and *Scaphidura*. In Chapters 4 to 8, Ortega revisits Friedmann's monograph with the wisdom of 70 years of hindsight. Each of the five species of parasitic cowbirds receives separate treatment, with the exception of the Screaming Cowbird (*Molothrus rufoaxillaris*) and its host, the nonparasitic Bay-winged Cowbird (*M. badius*), which are discussed together in Chapter 4. With several notable exceptions (e.g. the work of Rosendo Fraga), the reader cannot help but notice how little we have learned in 70 years about the basic biology of Screaming, Bay-winged,

Giant (*Scaphidura oryzivora*), and Bronzed (*M. aeneus*) cowbirds. Ortega acknowledges this dearth of scientific information in Chapter 4, where she adds a useful section on suggestions for further research. Unfortunately, similar sections are not included in the chapters on Giant and Bronzed cowbirds (5 and 6) but are included in the chapters on Brown-headed (*M. ater*) and Shiny (*M. bonariensis*) cowbirds (7 and 8). Although undoubtedly unintentional, this oversight gives a skewed view of what future research priorities ought to be. That criticism notwithstanding, these species treatments are invaluable references for those seeking specific information on individual species of cowbirds. Contained within these chapters and the appendices are updated lists of known hosts for each species, as well as tables of parasitism rates gleaned from hundreds of field studies.

Chapter 9 represents one of the book's most useful contributions: i.e. an excellent discussion of management for Shiny Cowbirds and Brown-headed Cowbirds. In addition to simply reviewing case histories of endangered taxa under intense parasitism pressure (curiously, the Black-capped Vireo [*Vireo atricapillus*] and the Southwestern Willow Flycatcher [*Empidonax traillii extimus*] receive only cursory mention), Ortega delves into divisive issues such as overgrazing by livestock, winter trapping of cowbirds, and the paradoxical decline of Brown-headed Cowbirds in much of the United States. Although this chapter offers no great solutions, the information it contains is essential reading for anyone with an interest in bird conservation. Ortega acknowledges that cowbirds may be convenient scapegoats for anthropogenic changes, but we bear the responsibility for the ecological havoc they are wreaking. Some circumstances may require extensive and immediate control of cowbird populations. This chapter, appropriately titled "The Management Challenge," illustrates the complexity and contentiousness of these issues. Although many researchers disagree on how best to approach the problem of cowbird control, Ortega makes it clear that we have come a long way since the day when even Friedmann suggested that bird enthusiasts should "destroy all Cowbird eggs found and, if so inclined, destroy Cowbird eggs or young anywhere."

*Cowbirds and Other Brood Parasites* is appropriate for a broad audience. Amateur ornithologists will appreciate the amount of work Ortega has done in the first three chapters to distill literally hundreds of research papers into a concise, informative introduction to the study of brood parasitism. Wildlife managers also will find the first three chapters of considerable use, and behavioral ecologists interested in brood parasitism will greatly appreciate the chapter on management. The individual species treatments, particularly those on Brown-headed and Shiny cowbirds, will be useful to all audiences. Graduate students and other new researchers will find this book

an invaluable reference, one to which they will refer throughout their careers. *Cowbirds and Other Brood Parasites* is a worthy successor to Friedmann's monograph, and it belongs on individual and institutional bookshelves alike.—ETHAN D. CLOTFELTER, *Department of Zoology, University of Wisconsin, Madison, Wisconsin 53706, USA.*

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**The Mistaken Extinction. Dinosaur Evolution and the Origin of Birds.**—Lowell Dingus and Timothy Rowe. 1997. W. H. Freeman and Company, New York. xiv + 332 pp., numerous text illustrations. ISBN 0-7167-2994-X. \$34.95.—*The Mistaken Extinction* is another of the books published over the past several years dealing with the evolutionary origin and radiation of birds. This volume is presented from a cladistic point of view and is based on the conclusion that birds evolved from an advanced group of dinosaurs—the Maniraptora of the Theropoda. The Theropoda is a subgroup of the Saurischia (reptile-hipped dinosaurs), which in turn is a subgroup of the Dinosauria, which is a subgroup of the Archosauria, and which is finally a subgroup of the Archosauriformes—the archosaurian or ruling reptiles. This volume is written for the general biologist and the lay public with a relaxed, easy-to-read style and from a personal viewpoint. The book is well illustrated, although it would have been better to have the illustrations numbered.

Probably because this book was issued in two forms—one for the lay public and one for academic biologists—it has two ISBN numbers; I have no idea whether the copy before me is the academic one or the lay-public one. Moreover, the copyright is 1998, but the first printing of this book is 1997, although the Library of Congress cataloging information gives the publication date as 1998. Hence, I am not certain just how to cite this book (the citation at the start is that available from the publisher's web site).

The thrust of this volume is that because birds are dinosaurs, dinosaurs did not become extinct at the end of the Mesozoic—hence the title *The Mistaken Extinction*. Yet, it is interesting that the first 100 pages discuss theories about the extinction of the dinosaurs, especially marshaling the evidence for the large meteorite impact identified as the Chicxulub Crater at the edge of the Yucatan Peninsula as the "smoking gun" responsible for the extinction event at the K-T boundary. Several interesting aspects of this extinction event are left undiscussed in this volume.

First and most interesting of these is the ease with

which paleontologists talk about the causes of extinction of organisms, including large taxa and major parts of the biosphere. Yet, ascertaining the causes for extinction of organisms is a most difficult task for neontologists. It should be noted that even if excellent evidence exists for a large meteorite impact that formed the Chicxulub Crater, all that can be said is that the time of occurrence of this meteorite impact and of the final extinction of the nonflying dinosaurs (and possibly a lot of other species of animals) are correlated. Causal relationships still remain to be determined.

The second problem is that if birds did descend from theropod dinosaurs, and if this relationship is used by many dinosaur paleontologists, including Dingus and Rowe, to argue that physiological properties (e.g. homiothermy) of dinosaurs are similar to those of birds, then it is far more difficult to claim that the nonflying dinosaurs—but not birds—became extinct as a result of the effects of this meteorite impact. This is especially difficult to understand because Dingus and Rowe (Chapter 15) argue against the hypothesis of Alan Feduccia that many groups of birds died out at the end of the Mesozoic and that the modern avian groups present in the Tertiary radiated from a few lineages that survived the extinction event at the end of the Cretaceous.

Dingus and Rowe accept the hypothesis that birds evolved from an advanced group of theropod dinosaurs and are most closely related to the Dromaeosauridae, which includes such genera as *Deinonychus* and *Velociraptor*. They illustrate this relationship with numerous cladograms, none of which indicates possible times for the splits between sister taxa. The problem is that many of these splits, including almost all between sister taxa of the entire dinosaur radiation, would have to be pushed back into the middle of the Jurassic (prior to the date of *Archaeopteryx*), or possibly early in the Triassic, if *Protoavis* is an ancestral bird. Yet, few fossil remains provide evidence for these early dichotomies, and Dingus and Rowe had to advance the concept of ghost trails to account for all of the missing lineages. One gets the impression that hypothesis is piled on hypothesis to support the favored idea so that the entire argument starts to become rather unparsonious.

Several serious matters undermine the hypothesis advocated by Dingus and Rowe on the theropod origin of birds. The first is that they dismiss, almost out of hand, all discussion of the Triassic *Protoavis* described by Sanker Chatterjee (see my review of his book, *Auk* 115:808–809, 1998). It is not true that only Chatterjee and Larry Martin accept that *Protoavis* is an ancestral bird. Evgeny Kurochkin, who has examined more Mesozoic avian fossils than any other avian paleontologist, has accepted *Protoavis* as an early ancestral bird and has placed it in the subclass Praeorinthurae, which is at the base of the radiation of the Ornithurae (*Archaeopteryx* 13:47–66, 1995). Ku-

rochkin places *Archaeopteryx* and the Enanthiornithes in the subclass Sauriurae, which is a side branch to the radiation leading to the living birds. If the Triassic *Protoavis* is an ancestral bird for which there is some good evidence, then the origins of birds would be pushed back to the mid-Triassic or earlier, and all of the ghost lineages of dinosaurs associated with the hypothesis that birds descended from the Maniraptorata would have to be pushed back to the early Triassic, a time before the earliest known dinosaur fossils.

The third problem lies with many of the features used by Dingus and Rowe, and presumably other dinosaur cladists, to ally birds to dinosaurs. These features are presented in a poor fashion in this volume, being rather scattered throughout the discussion and with dubious authority. For example, they state that "... theropods had a kinetic or flexible lower jaw in which a mobile joint between the bones of the lower jaw enabled it to bend downward and outward." Later, they state that "... many [birds] have jaws with kinetic joints." I am at a loss as to what is meant by a kinetic lower jaw, because I know of no such general property in theropods, and assume what is meant is a kinetic upper jaw that dinosaurs possess, as do *all* birds. But this feature cannot be used as a synapomorphy uniting birds and theropods because cranial kinesis is a pleiomorphic feature of all gnathostomes. Further a "highly mobile joint between the occipital condyle and the vertebral column" provides no details and could be a feature found in many vertebrate groups. The common possession of hollow bones again is a feature found in all tetrapods, if not also in fish. It is difficult to understand that the midline fringe observed in an early Cretaceous nonflying basal tetanurine (= early Theropoda) dinosaur from Liaoning, China, could be considered as protofeathers for two reasons. First, true feathers had already evolved in the Jurassic *Archaeopteryx*, and it is difficult to see how any features in a basal tetanurine dinosaur from the Cretaceous can have any relevance to the evolution of birds. Other features, such as elongated forelimbs and the semilunar carpal in late maniraptoran theropods, provide little support for the theropod ancestry of birds. Finally, one can read in the display of newly opened fossil halls in the American Museum of Natural History (for which Dingus was the responsible director) that birds inherited their three-digit hind foot from their theropod ancestors. Surely, "hand" was meant instead of foot, but even here is a major problem. It is true that both dinosaurs and birds possess a three-digit hand, of which much is made by dinosaur cladists in allying birds to dinosaurs. But all of the embryological studies done on recent birds (e.g. Montaga, *Journal of Morphology*, 6:87–113, 1945) have concluded that the development of the wrist and hand in birds allows only the conclusion that the three digits are 2, 3, and 4, whereas the paleontolog-

ical evidence shows that the remaining three digits in the hand of dinosaurs are 1, 2, and 3. This being the case, the presence of a three-digit hand in dinosaurs and birds cannot be taken as evidence for the origin of birds from dinosaurs. To suggest that maniraptoran dinosaurs possessed an avian salt gland based on the absence of prefrontal bones in these reptiles is pure speculation. And it should be noted that these glands secrete, not excrete, salt.

Third, it is most interesting that Dingus and Rowe link the dinosaur ancestry of birds with the origin of flight from the ground up, and the origin of birds from the early archosaurian thecodonts with the origin of flight from the trees down, concluding that "Our map [of avian relationships] suggests that flight evolved from the ground up, but exactly how this happened is another question altogether." If the origin of birds and the origin of flight are tightly linked in this fashion, then the available discussion of all specialists in vertebrate flight is that the origin of avian flight from the ground up is exceedingly improbable, which would fatally weaken the dinosaur ancestry of birds.

Lastly, one receives the impression that Dingus and Rowe accept the general assumption that the presence of a feature, such as a bony sternum or a fused furcula, indicates the same functions and adaptations for these features in the diverse groups possessing them and provides strong evidence for relationship of these groups. However, functions other than flight may exist for the presence of a bony sternum or a fused furcula. And it may come as a surprise to many nonavian biologists that some excellent fliers among the birds, such as several genera of parrots, lack a fused furcula.

Although this volume is well written and well illustrated, my assessment is that the cases it makes for the evolution of birds from theropod dinosaurs, and for the non-extinction of dinosaurs, are not convincing. Ornithologists and lay persons interested in an overall account of avian relationships and evolution are best served by reading Feduccia's *The Origin and Evolution of Birds*. A satisfactory account of early avian evolution will be unavailable until paleontologists describe fully and analyze thoroughly the wealth of Mesozoic avian fossils that have been discovered during the past two decades. Until this material is well studied, and until paleontologists have carefully reanalyzed the early members of the Archosauriformes (such as *Euparkeria* and its close relatives at the base of the archosaurian radiation), the question of the relationships and origin of birds will remain unanswered. Until that time, it is best to consider birds as part of the great archosaurian radiation without being more specific, as has been agreed by zoologists for more than a century.—WALTER J. BOCK, *Department of Biological Sciences, Columbia University, 1200 Amsterdam Avenue, Mail Box 5521, New York, New York 10027, USA.*

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**A Passion for Birds: American Ornithology after Audubon.**—Mark V. Barrow, Jr. 1998. Princeton University Press, Princeton, New Jersey. x + 326 pp., 33 figures. ISBN 0-691-04402-3. Cloth, \$49.50.—It seems to me that all serious ornithologists should possess a knowledge of the history of their field because it is useful to know not only where we are going, but where we have been. The history of ornithology is intertwined with that of all vertebrate natural history. For instance, some of the main personalities in ornithology in the late 19th century were also into mammalogy, and they catalogued the animals of the newly opened western frontier. *A Passion for Birds* describes in rich detail the events and issues surrounding the founding of the American Ornithologists' Union (AOU) and the Audubon movement, complete with the contributions of the leading naturalists of the time, rivalries, disagreement over policies, and the means to resolution of the issues of those times. In this context, the saying "the more things change, the more they stay the same" contains more than a grain of truth. Examples include (1) tension between preservationists and avid collectors and/or hunters, (2) tension in the symbiotic relationship of professionals and amateurs (with some professionals apparently trying to keep amateurs out of the AOU power structure), (3) splitters versus lumpers, (4) disagreements over the quality of the journal (*The Auk*) and what constitutes good science, and (5) a nearly complete ignorance of the European literature. And yes, there is even a little sexual scandal. The cast of characters will be familiar to most readers because many birds are named after them, and major awards and grants, and even societies, bear their names (e.g. Coues, Brewster, Chapman, Baird, Ridgway, J. A. Allen, A. K. Fisher, C. H. Merriam, and his sister Florence Merriam).

This thoroughly researched book provides a fine record of the developmental history of American ornithology from about 1870 until the late 1930s. Chapter 1, entitled the "Culture of Collecting," describes the cultural context of collecting at the time. In his best-selling collecting manual of 1874, Elliott Coues advises collectors on the optimum number of specimens to collect: "All you can get . . . Bird skins are *capital*." Other important publications offered specimens for sale. Any species could be bought, even those that were the most rare.

Chapter 2, "Desiderata: Bird Collecting and Community," describes the mentoring relationships and collecting networks that developed in mid-century or later; e.g. Spencer Fullerton Baird and Robert Ridgway of the Smithsonian Institution, Louis Agassiz and J. A. Allen of Harvard, T. B. Wilson and

John Cassin of the Philadelphia Academy of Natural Sciences, and Thomas Brewer and others (such as Jonathan Dwight) affiliated with the Boston Society of Natural History. William Brewster, a founder of the AOU who never held a professional position, nonetheless bequeathed more than 40,000 specimens to Harvard's MCZ, whereas Dwight's collection of 65,000 specimens went to the American Museum of Natural History. These men, and their contemporaries such as J. A. Allen and Frank Chapman, who were important personalities of the culture of collecting, at the same time often publicly decried the precipitous decline of North American wildlife. For instance, Chapman, who later published *Bird-Lore* (now *Audubon*), collected perhaps the last large series (15) of Carolina Parakeets (*Conuropsis carolinensis*) ever obtained. As the collectors accumulated large series, some of them, such as Coues, helped popularize natural history through the publication of guides to identification and preservation of specimens. Similarly, Lattin's *The Young Oologist* provided careful instruction on collecting and storing of eggs. Although not so widely known today, women also contributed to the culture of the times: Martha Maxwell is claimed to have been the only woman who collected birds in the 19th century.

Chapter 3 deals with the events surrounding the founding of the AOU at the American Museum of Natural History, instigated primarily by Allen, Brewster, and Coues. The proceedings of this historic meeting proclaimed "utmost harmony," but this was not to last indefinitely. The big tent the founders created in New York managed to include scientific collectors, hunters, dealers, and taxidermists, but with a two-tiered membership structure. The professional scientists (as Full Members) managed to control the Union, whereas the rest (Associate Members) mostly paid for the Union and its new organ, *The Auk*. This organizational structure lasted into the 20th century. I do not want to spill the beans entirely, but within this chapter one learns of the struggles over professionalism and amateurism, and the scope of journals of the various societies that were springing up at the same time. There is even a scandal involving allegations of adultery and blackmail (mention of Lord Rothschild's troubles in this context comes considerably later).

Chapter 4 covers the growth of systematic ornithology, especially the describing of new taxa and the controversies over the use of trinomials, which were already in use in Europe unbeknownst to American practitioners of the trade. One of the most heated issues within the AOU early in its history was the exclusive use of formal names, including trinomials, in *The Auk*, of which many Associates had little knowledge. Amateurs also complained that the formal names changed constantly and argued that what the movement really needed was a set of gen-

erally agreed-upon English names for North American birds.

Chapter 5, "Embracing and Abandoning Bird Protection," details the growth of the protectionist movement within the AOU and its subsequent abandonment (still later, the cause was taken up again with real commitment). J. A. Allen, in particular, trumpeted the sorry status of many well-known species, including the Carolina Parakeet, Ivory-billed Woodpecker (*Campephilus principalis*), and Passenger Pigeon (*Ectopistes migratorius*), as well as the American bison (*Bison bison*). It was *de rigueur* in the late 19th century to protest market gunning, including the use of feathers by the millinery trade, as endangering many species, while maintaining the right of scientific collecting for a select few. Included in the book is a picture of Brewster and Chapman with an Ivory-billed Woodpecker in Florida, which highlights a host of inconsistencies in the arguments of the times. These and other events surrounding the growth of the conservation movement, including the founding of the Audubon Society, are developed in Chapter 6, "Protecting Birds, Protecting Ornithologists." The seminal role played by William Dutcher in these developments, and the role of the AOU and the Audubon Society in protectionist legislation, are treated at length. "I do not protect birds, I kill them," declared Charles Cory, president-elect of the AOU, in 1902. Not that Cory advocated the destruction of birds, but he and many other AOU members wished to retain the right to unrestricted scientific collecting, while at the same time Dutcher's camp was lobbying for protective legislation. These debates formed a backdrop for the events leading to the Lacey Act and later the Migratory Bird Treaty Act. The AOU, throughout, continued to run hot and cold on preservationism.

Chapters 7 ("Birdwatchers, Scientists, and the Politics of Vision") and 8 ("Reforming American Ornithology") bring us into the 20th century and the coming of new trends: observation of birds, and the sciences of behavior and ecology. Notable features of these chapters are the role of Florence Merriam's publications on how to identify and study birds, and the popularization of ornithology through articles in *Bird-Lore* and the *Handbook of Birds of Eastern North America* by Frank M. Chapman. Enter also Chester Reed, who illustrated Chapman's *Color Key* and later published field guides that many birders found indispensable. In 1900, Chapman also published the first book on studying birds with a camera!

Chapter 7 also features the role of the Wilson Ornithological Society, and *Wilson Bulletin* editor Lynds Jones (who taught the first ornithology course at Oberlin College), in encouraging amateur ornithology. The growth of banding, life-history studies, and arguments over the validity of sight records early in this century round out this chapter. Twentieth century ornithology was heavily influenced by new in-

sights provided by young Turks such as Arthur Allen, Herbert Friedmann, Joseph Grinnell, Ernst Mayr (newly arrived in New York from Germany), and Margaret Morse Nice, who arguably was the most influential amateur ornithologist of all time ("I did not like to cut up animals," and "I am *not* a housewife, I am a *trained zoologist*"). Mayr's influence on academic biology is widely recognized; less well known to many readers, perhaps, is his influence on amateur ornithology and his role as mentor to many youngsters in the New York area in the 1930s and 1940s. He influenced members of the Linnaean Society of New York and the Bronx County Bird Club to conduct original research on well-thought-out themes ("everyone should have a problem"), an approach that would be revolutionary in many birding clubs even today! Over the years, he had great influence on notable ornithologists like Joseph Hickey and Margaret Nice, who in turn mentored many others. Like the spreading ripples on a pond, his legacy has gone far and wide in American Ornithology. He and Nice had a particularly influential professional relationship: Nice's first book on Song Sparrows (*Melospiza melodia*) was published in Germany in that language (it could not be published in the United States!), and over the years Nice used her fluency in foreign languages to alert American ornithologists to important papers appearing in Europe, thereby helping to alleviate that chronic American lack of knowledge about foreign ornithology.

I know of no other single book where one could obtain such a complete review of the first 50 years of North American ornithology. Although I cannot guarantee the accuracy of the details, this book seems to have been exhaustively researched. One-third of the book is devoted to footnotes detailing the sources of information. I did wonder about one detail where Barrow writes that Mayr worked for the Berlin Museum, Walter Rothschild, and the American Museum during his two years in the South Pacific (1928–1930). Yet, on a delightful evening that I and several others spent with Mayr in February 1997, at Glen Woolfenden's house at the Archbold Biological Station, he said he had no knowledge of events involving either Rothschild or the AMNH until he got off the slow boat from the East Indies upon his return to Europe.

Another quibble for me is in the organization of the chapters, which makes it hard to remember in one chapter (e.g. "Bird Protection") what else was going on at the same time (e.g. with regard to the progress of the science). And even though Barrow makes frequent reference to concurrent events, I would love to see a time line detailing the main events at least decade by decade.

Barrow has certainly done ornithologists a great service in writing such a well-researched and readable account. I recommend it for anyone with a deep interest in birds, and most certainly for all public and

university libraries. The price is a bit steep for students, but hopefully this book will always be available somewhere for all to read and profit from.—CURTIS S. ADKISSON, *Department of Biology, Virginia Tech, Blacksburg, Virginia 24061, USA.*

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**Nightjars. A Guide to the Nightjars, Nighthawks, and Their Relatives.**—Nigel Cleere. 1998. Yale University Press, New Haven, Connecticut. 317 pp., 36 color plates, numerous range maps. ISBN 0-300-07457-3. Cloth, \$40.00.—This book is long overdue. The Caprimulgiformes, or whatever it is that these birds should be called, represents a fascinating group of animals that has been ignored by most ornithologists. How can species with such delicious names as Satanic Nightjar (*Eurostopodus diabolicus*) and Coffinbird (*Caprimulgus macrurus*) not generate some curiosity? As with any review, one must carefully consider the plaudits in balance with the criticisms and come up with an overall recommendation. In this case, I believe that Cleere has made a significant contribution to caprimulgid biology. He has brought together a wealth of information, much of it from very obscure sources, and he has done so in an extremely thorough and as far as I can tell, accurate manner. I think that the book is an excellent value for the money. Thus, although this book is not without some limitations and faults, it is well worth the price for anyone with an interest in Caprimulgiformes.

My review treats the different sections and/or components of the book in turn and presents my opinions on both the pros and cons for each section. Taken as a whole, the paper and binding are of superior quality. In flipping back and forth repeatedly (see below), I submitted the volume to a substantive physical test. Several of the textbooks used in the courses I teach are printed in far larger runs and of considerably poorer quality, yet they come with a much higher price tag. The book represents the 8th volume in the Pica Press series, and this high quality has been maintained throughout. One interesting note is that the European version of this book has a different title: *Nightjars: A Guide to Nightjars and Related Nightbirds*, which leads me to wonder if anything else is different between the Pica Press and Yale University Press versions.

The book begins with an introductory section followed by color plates for every caprimulgid species save one, *Caprimulgus solala*, which is known only from a wing. The final 65% of the book is dedicated to individual species accounts organized around treatments of species sequence and nomenclature,

identification, voice, habitat, habits, diet, breeding biology, description, molt, geographic variation, distribution and movements, status, a range map, and key citations used to compile the account. The writing style throughout is fluid and easy to read. I really liked the general distribution maps for the five families in the beginning section.

I found the organization of the book to be somewhat frustrating to the extent that I began to question the primary purpose or function of the volume. Although clearly it is not meant to be a field guide, it falls a little short as simply a compendium of information. One of the book's major limitations, in my view, is an exceptionally modest Introduction. Most of the best information in this regard is in a short section entitled "Structure and Mechanics," which does a credible job of summarizing information on the form, function, and physiology for the five families. However, readers who are less familiar with the literature may be left without a clear sense of the general biology of the group. In fact, Cleere's Introduction is less than a single page long. I think that an expansion of this section would have been beneficial. I liked the author's idea of encouraging readers to contact him with any additional information that they might have. I was surprised to find no direct comments about how poorly studied these birds are, and no suggestions for fruitful avenues of further research. In fact, no explicit justification is given for why a book about this group is needed (although I do not question the book's value). Cleere does explain why the taxonomic classification of this group needs to be revised, and he gives strong evidence for why the traditional levels of classification are incorrect and provides some models for evolutionary relationships that likely exist. This rationale is then ignored and the rest of the book follows the traditional treatment, a format that I found perplexing.

Given the ecological information that was presented in the species accounts, I was surprised at the lack of general discussion in the Introduction on the following: influence of moonlight, convergence in appearance, diet, nesting habits, clutch size, parasites, thermal physiology, and ecological interactions. Considerable evidence is in the literature about the effects of moonlight on foraging behavior, nest initiation, and vocal activity. Cleere also makes numerous references in the species accounts to the influence of moonlight, even where published data are limited. I was surprised by the lack of comment about the remarkable convergence in appearance, body size, diet, nesting habits, etc. For example, it has always intrigued me as to why clutch size is so small (1 or 2 eggs) and usually determinate. Informed speculation by the author about topics such as why ground nesting is so prevalent might have served to stimulate research on the many unanswered questions about the biology of these birds. Given the recently revived interest in parasitology,

especially as it relates to sexual selection, I was surprised to find no mention of it whatsoever. Although some details about thermal physiology are discussed in the section on form and function, more detail would have been useful, especially in the area of heat tolerance. Perhaps I am biased, but given that the Common Poorwill (*Phalaenoptilus nuttallii*) is the only species of bird allegedly able to hibernate, and whose body temperature has been recorded below 5°C, the subject of thermoregulation deserves a bit more arm waving! Finally, although it may be perceived to extend beyond the scope of an ornithological volume about a single group of birds, a treatment of the caprimulgids seems to represent an intuitive invitation for exploration of the ecological relationship among these birds, small owls, and microchiropteran bats. In short, the introduction to the book could have been substantially strengthened. Not only would this have served to guide readers, it would have provided for a much better justification for the book in the first place.

Terms such as crepuscular, aerial foraging, calls versus songs, and nuchal collar may not be immediately known or familiar to all readers. Therefore, the book would have benefitted from the addition of an expanded glossary treating more than just molt terminology. If this had occurred before the text of the Introduction, it would have been most helpful. That the glossary was related only to molt is correlated with the emphasis placed on this topic. Cleere's treatment of molt is extensive, but in my opinion, the lack of data for many species suggests that a slightly expanded general treatment may have obviated the need for this section in the species accounts.

The exceptional thoroughness exhibited in the volume is most evident in Cleere's treatment of each species. I was especially impressed with the excellent job done on the range maps. Given that maps in this type of book often are poorly done, these are at the perfect scale (tailored to each species) and show enough detail to be extremely helpful; yet, they are economical in their use of space. Likewise, I was extremely impressed by the depth of treatment of the literature, especially information from very obscure sources. The only citation I found conspicuous by its absence was a paper by Thomas et al. (*Physiological Zoology* 66:322-348, 1993) on Oilbirds (*Steatornis caripensis*). The list of literature citations was impressive in its length and depth and also by the fact that several 1998 papers were cited, amazing for a book published in 1998! However, I disagree with the strategy of not using direct citations in the text of species accounts. It is arguable as to whether this makes the accounts more readable, and the drawback of omitting them is that at least some of the references cited appear nowhere in the text except the bibliography. Without careful checking, some pertinent references for a species can easily be overlooked.

The treatment of songs and calls was excellent, and

I very much liked how these and the contexts in which they were used were described. I also am favorably impressed that a compact disk of vocalizations has been produced, and that information about how to obtain it is given in the book. At only \$20, I expect it will make a great companion to the book.

Several drawbacks to the species accounts are due mostly to organization. On the one hand, I found it frustrating to constantly flip back and forth between the plates and the species accounts. On the other hand, this follows the format of previous Pica volumes and obviously contributes to the low cost of the volume, a practice that is tough to criticize. The fact that the plates are all together near the beginning of the book does make it easier. However, I am at a loss to explain why the species were treated in different order in the plates and the text. Also, I suspect that some readers will test the resolving power of their spectacles when dealing with the very small print in the species accounts.

Although aesthetically pleasing, the plates have some problems. I readily admit to being low on artistic talent, especially when it comes to drawing from museum specimens, but the breast of the Australian Owlet-Nightjar (*Aegotheles cristatus*) is too light (plate 24a and 24b), Wallace's Owlet-Nightjar (*Aegotheles wallacii*) shown in a tree roost appears to be too wide (27b), and the Common Nighthawk (*Chordeiles minor*) has too much white streaking and is too heavy (36a). The *C. minor* shown on the back dust jacket is much better in both of these respects, but it is perched in a manner that I have not observed (much more of its chest should rest on the perch). The Common Poorwill is far too light (48a) and the throat patch too wide, the European Nightjar (*Caprimulgus europaeus*) also seems too light (79a), and I am unsure why the Band-winged Nightjar (*Caprimulgus longirostris*) is pictured in plates 17 and 18. The male Philippine Nightjar (*Caprimulgus manillensis*) is described in the text as being similar to the female, yet the white tips on the other tail feathers are pictured as being clearly distinct (32). Finally, it is not clear why a number of races are pictured for some species, whereas for others only the nominate race is depicted. Despite these criticisms, the overall quality of the plates is excellent.

In any work of this size and complexity, a few errors are bound to creep in, and I was extremely impressed by how few I found. In terms of spelling mistakes, Trayhorn should be Trayhurn in the references; the description for the Nubian Nightjar (*Caprimulgus nubicus*) should read "outer tail feathers;" it should be "Lasiocampidae" on page 233; in plate 12, the breeding range of Common Poorwills is described as extending from southeastern Canada, when clearly it should be southwestern; echolocation and echo-location appear on the same page; a "/" snuck into the word "temperature" on page 187; a "-" appears in "mountains" on page 206 and in "infor-

mation" on 291; and finally, a series of strange symbols appears in what should be "song is slower" on page 210. I suspect that the printer must assume blame for these last errors.

Cleere's treatment of description and identification of species is exhaustive and seems virtually errorless. I was very pleased to see data presented on "weight" (which should properly be called mass), because this is an important morphological measurement rarely included in ornithological treatments. I was likewise impressed to see information about eye-shine color and data on distribution with respect to elevation. On the other hand, given the extensive descriptions of form in the species accounts, I wondered why many of these details were repeated in the plate captions, and more important, why no dichotomous keys were presented. This limitation was driven home when, while I had the book at home, I overheard my 10-year-old son exclaim "they all look the same" while he was flipping through the plates. Clearly, the convergence in appearance within the group is extreme, and it would have been very useful for the volume to include a key (perhaps several) to facilitate separation of species. Keys could have been presented for regions, which would have kept them of manageable size. A good model for this is Jackson's 1984 key to African caprimulgids. Cleere does include a helpful means to identify races in the diagrams in the species accounts, e.g. the illustration of primary feather (p. 178) markings on different races of White-throated Nightjars (*Eurostopodus mysticallis*). Unfortunately, too few of these helpful diagrams are provided.

To conclude, despite the limitations I have outlined (and most of them are relatively minor), this is a quality book bursting with information. It is well worth the price, and I recommend it highly to anyone with an interest in this fascinating group of birds. It certainly sets the bar very high for the inevitable comparison that will be made with the forthcoming volume from Oxford University Press by David Holyoak, which treats the same group.—R. MARK BRIGHAM, *Department of Biology, University of Regina, Regina, Saskatchewan S4S 0A2, Canada.*

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*The Auk* 116(2):572–573, 1999

**The Raptors of Arizona.**—Edited by Richard L. Glinski. 1998. University of Arizona Press, Tucson. xv + 220 pp., 42 color plates, 42 range maps, 1 table, 1 appendix. ISBN 0-8165-1322-8. Cloth, \$75.00.—Arizona has nearly all the species of raptors found in the continental United States and many Central and South American species as well. This handsome,



well-written, and beautifully illustrated volume includes descriptions of these species, their distribution, habitats, life histories, and status in Arizona, a state famous for its great variety of habitats.

The book begins with an overview of the diversity of Arizona habitats and conservation issues involving Arizona raptors in habitats that face human encroachment. Included is information on the habitat associations and seasons of occurrence of raptors in Arizona. There follows a guide to watching raptors in Arizona, an overview of the present status of falconry in the state, and a discussion of the current classification of New World vultures. The remainder of the book consists of 42 chapters on each of the 26 falconiform, 13 strigiform, and 3 New World vulture species for which sound evidence exists that they either reside, or have resided in the past, in Arizona. Each chapter includes a description of the species; a range map; and information on its distribution, habitat, life history, and status.

The book includes 42 color plates by Richard Sloan that depict each of the Arizona raptors in its native habitat. Sloan is the recipient of the prestigious Leigh Yawkey Woodson Art Museum Award for Birds in Art, and his works are in the permanent collection of the Smithsonian Institution. These paintings are exquisite, and each species is shown in a characteristic pose. These superb illustrations are without a doubt one of the strongest points of the book because they capture the essence of each species in its typical habitat in the state. I found the plates of Harris's Hawk (*Parabuteo unicinctus*), Aplomado Falcon (*Falco femoralis*), and Peregrine Falcon (*F. peregrinus*) to be particularly good.

The editor has drawn on the vast knowledge of 27 raptor experts who have devoted years to the study of raptors in Arizona to write the individual species accounts. Nearly one-half of the 42 accounts are contributed by Noel and Helen Snyder, Gale Monson, and the editor himself. The accounts are well written, and together they represent more than 100 years of experience in studying raptors in Arizona. Accounts on the California Condor (*Gymnogyps californianus*), Mississippi Kite (*Ictinia mississippiensis*), Cooper's Hawk (*Accipiter cooperii*), Northern Goshawk (*A. gentilis*), Gray Hawk (*Asturina nitida*), Harris's Hawk, and Peregrine Falcon are particularly good and are based on many years of field experience by the authors.

The goal of this book is to highlight the diversity of raptor species in Arizona and to entice readers to discover these birds and to help in their conservation. The book accomplishes this goal well. It is a pleasure to read and simply to look at. Readers will find its distribution maps and color illustrations to be especially useful. This book is a must for the libraries of all those interested in natural history, ornithology, and raptors.—MARC J. BECHARD, *Department of Biology, Boise State University, Boise, Idaho 83725, USA.*

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**Birds of Southern South America and Antarctica.**—Martín de la Peña and Maurice Rumboll. 1998. Harper Collins, London. 304 pp., 97 color plates, 5 black-and-white plates, 1,139 distribution maps. ISBN 0-00-220077-5. Paper, \$35.95.—Since 1987, birders and ornithologists have relied on Tito Narosky and Darío Yzurieta's *Guía para la identificación de las aves de Argentina y Uruguay* (Asociación Ornitológica del Plata, 1987; English edition, 1989) as the best single-volume field guide to the birds of the southern cone of South America. Despite its substandard illustrations, inconsistent color reproduction (varying greatly among copies), pathetic binding, and high cost, Vuilleumier (*Ornitología Neotropical* 8:195–236, 1997) rated it as the best field guide to Neotropical birds, based primarily on its organization.

As the latest entry in a market with few competitors, de la Peña and Rumboll's book represents a true pocket-sized (12.8 × 19.2 cm) field guide that focuses almost exclusively on the identification of birds in the region. The guide is an English-language adaptation of de la Peña's six-volume *Guía de las aves Argentinas* (Literature of Latin America, 1988–1994), with coverage expanded to include Chile, southern Bolivia, Paraguay, southernmost Brazil, and Uruguay. Despite the implications of its title, only the portion of Antarctica adjacent to South America is covered. The authors justifiably claim "It is the most up-to-date and comprehensive single volume on the subject with as much information as necessary—habitat, description, behaviour, voice, distribution and an illustration," but concede that "There are obviously gaps in the data for a continent where new species are yet to be discovered and a number of taxonomic conundra yet to be elucidated, and where opinions vary greatly between the experts."

The book commences with introductory sections that briefly describe sources of information, the area and species covered, nomenclature, and use of the plates and maps. Although the guide is written in English, the acknowledgments section appears in Spanish. Unfortunately, the book does not include a vegetation map or a written summary of where the dominant vegetation communities occur.

The 97 color plates by Gustavo Carrizo, Aldo A. Chiappe, Luis Huber, and Jorge R. Mata are of fairly high quality and are far superior to those of Narosky and Yzurieta (1987). Some plates, however, are overcrowded (e.g. 82), others insert large blank spaces among the birds (e.g. 32), and a few are bordered above and below by excessive margins (e.g. 55); plate 39 somehow manages to incorporate all of the above criticisms. The number of birds per plate varies greatly, even within taxonomic groups (e.g. five spe-

cies of tubenoses on plate 6, but 15 on plate 7). In some plates, the birds show ruffled feathers (resembling museum specimens), distracting shadows, or the artist's signature. When deemed necessary, the illustrations include birds of both sexes or breeding and nonbreeding plumages. Although distinct races of some species are illustrated, a few of the species included in the text are not. The five black-and-white plates of raptors in flight are rather simplistic, but adequate nevertheless.

The text appears opposite of each color plate (except for the rheas on plate 1), with enumerated species accounts corresponding to numbers that appear erratically on the plates. Stripped to the bare essentials, the text is a paragon of concision. Each species account includes the English name; scientific name; vernacular names (in different countries); body length (sometimes separately for each sex); and brief descriptions of habitat, plumage, soft parts, vocalizations, and habits (as necessary). No information is provided on the abundance of each species or its distribution (but see below). The English names follow American usage (e.g. jaeger instead of skua) and conform more to Meyer de Schauensee's *A Guide to the Birds of South America* (1970) than to the changes proposed by Ridgely and Tudor's *The Birds of South America* (1989, 1994), but the spellings are British (e.g. Chequered Woodpecker [*Picoides mixtus*]). Some recent changes in scientific names have not been incorporated (e.g. Crested Caracara is placed in *Polyborus* rather than *Caracara*).

Taxonomic notes are occasionally inserted in the text, some of which are awkwardly worded (e.g. the Swallow-Tanager [*Tersina viridis*] of plate 89 "certainly seems a very aberrant Thraupin"). Because many controversial taxa require further study, the authors seldom take a strong position and do not introduce any novel taxonomic changes. However, they remain convinced that the White-bellied Tyrannulet (*Serpophaga munda*; plate 71) is a race of the Yellow-bellied Tyrannulet (*S. subcristata*), declaring that the "voice is the same." On many occasions, I have easily identified the two taxa by their distinct vocalizations (Hayes, *ABA Monographs in Field Ornithology* No. 1, 1995).

The color plates and text are adequate for identifying nearly all of the birds. However, the illustrations of some species may be problematic, a few of which include: Swainson's Hawk (*Buteo swainsoni*), which has a remarkably narrow breast band; the Azure Gallinule (*Porphyryla flavirostris*), which appears partially leucistic; and Euler's Flycatcher (*Lathrotriccus euleri*), which has an enormous eyering and contrasting underparts.

The distribution maps, which may also assist in identification, unfortunately are placed in the back of the book separate from the text. This section commences with a full-page map showing the boundaries of the countries (and political subdivisions for

several countries) that are covered. Several major cities are labeled; curiously, São Paulo is spelled in Spanish (San Pablo), Rio de Janeiro is labeled "Río" (as in Spanish), and Porto Alegre retains its Portuguese spelling. No major geographical features, such as the Andes, Paraná River, or offshore islands, are labeled. Although the names of the countries covered are given, no political claims are made for the Falkland Islands or Antarctica.

Each species map conveniently includes the English name and a number corresponding with the plate and species number. The maps include distinct shades of dark gray and light gray, with the only explanation appearing early in the book: "The shaded areas are the known RANGE of the species." The light gray shading obviously refers to seasonal occurrence of nonbreeding birds for many species, but in others (e.g. Greater Rhea [*Rhea americana*]) it apparently refers to rarity of occurrence. On some maps, oversized "+" symbols presumably refer to extralimital records of vagrants. Because birds have a proclivity for showing up in places where they are not supposed to be (which makes them all the more exciting to study), field guide maps are inherently inaccurate. Nevertheless, some of the distributional maps are less accurate than they should be, particularly in Paraguay (perhaps the least familiar to the Argentinian authors, but the most familiar for me), for which few distributional maps have been published previously. To mention a few inaccuracies, the dark shading for the Little Blue Heron (*Egretta caerulea*) and light shading for the Andean Condor (*Vultur gryphus*) in portions of Paraguay imply the existence of a breeding population in the former case and regular seasonal occurrence in the latter, yet both species are known from only a few records in Paraguay (Hayes 1995). The book concludes with a brief bibliography of 16 abbreviated references that could have been expanded to at least fill the page, and separate indices for English and scientific names.

Despite its many faults, all of which are relatively minor, the authors and artists have put together an outstanding field guide that covers a vast geographic area and includes a wealth of information for more than 1,100 species of birds. As a field guide, it effectively renders the competing guides for the region obsolete. Because of its conveniently small size, excellent color plates, and textual conciseness, it is the *only* guide needed in the field. Although the price is a bit steep, *Birds of Southern South America and Antarctica* is a better deal than any of its competitors. It should be purchased by anybody interested in the birds of southern South America.—FLOYD E. HAYES, *Unit of Zoology, Department of Life Sciences, University of the West Indies, St. Augustine, Trinidad and Tobago.*

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**Breeding Birds of Washington State.**—M. R. Smith, P. W. Mattocks, Jr., and K. M. Cassidy. 1997. Volume 4 in Washington State Gap Analysis Final Report (K. M. Cassidy, C. E. Grue, M. R. Smith, and K. M. Dvorich, Eds). Seattle Audubon Society Publications in Zoology No. 1, Seattle. xi + 538 pp. 3 color plates, 6 tables, 10 figures, 244 maps. ISBN 0-914516-09-4. Paper, \$30.00.—This comprehensive book will serve as a useful addition to the library of every professional and amateur ornithologist who is interested in the status and distribution of North American birds. It covers all species currently known to breed in Washington, including species that have been extirpated since the time of European settlement. Introduced species that nest in the wild but have not reached long-term sustainability in the state are excluded.

The volume begins with a thorough discussion of how to use the book and strong reminders of its limitations. The report fills two important gaps in our knowledge. First, it was written as volume 4 of the Washington State Gap Analysis Project final report, and as such, it includes predictive models of habitat distribution for each species. Second, the volume serves as an anthology of the Seattle Audubon Society's Breeding Bird Atlas data. Thus, each of the 244 species maps provides a predicted distribution for most species as well as shows the general location and status determination for each species based on atlas records. Where little or no recorded data exist for a given species, predicted distributions are based on a combination of expected habitat associations and expert opinion. In light of these constraints, the authors carefully stress how each model should be viewed as a hypothesized determination of distribution and that limitations exist for all models and maps in the volume.

The bulk of the book is devoted to the individual species accounts. These are divided into three parts including a brief summary of status and breeding distribution of each species, a section on the major components of each habitat model, and an annotated section on miscellaneous aspects of each species' biology, status, and predicted distribution. Data from the atlas project were collected via a township/range system, which covers the state with a grid of 6 × 6-mile blocks and are reported on the distribution

maps. Within each block, data on breeding birds were recorded and categorized as observed, possible, probable, or confirmed breeders based on the level of breeding behavior observed. Strictly observational data (no additional evidence of breeding) were not reported on the individual species maps. Colonial seabirds were afforded special treatment given the difficulty in mapping and modeling breeding habitats for these species.

Predicted breeding distributions were mapped by selecting appropriate habitats (based on the Washington Gap Analysis land cover map) within each species' range. Habitat associations were formed via literature review, location records, and expert opinion. It is important for readers to understand how information was translated from the scale at which it was reported and described into something that could be mapped at a much coarser scale. An example of the mapping limitations was given where a species might be associated with small openings in conifer forests but not with clearcuts. As such, this species would be mapped in association with the distribution of conifer forest and not nonforest cover, because small forest openings were below the minimum mapping unit of 100 ha for terrestrial cover types and 40-ha minimum mapping unit for wetlands. For the actual modeling of breeding distributions, habitat was coded for eight different levels of quality ranging from not suitable to peripheral or contingently suitable. Descriptions for each code are provided.

I have only one negative comment regarding this publication. In keeping the distribution maps uncluttered, I found myself, a non-Washingtonian, a bit frustrated by reading text references to specific counties or towns and having little knowledge about where those locations were on the map without digging through the volume back to the reference figures. I would have preferred to see a few major highways identified on each map as well as some of the major towns referred to in the text.

Overall, this is a well-organized compendium of where birds breed in Washington. It takes atlas data one step further by outlining potential distributions for birders to grab hold of and use to explore the fine state of Washington, and it likely will be of greatest interest to ornithologists in the Pacific Northwest.—PATRICIA J. HEGLUND, *Department of Biological Sciences, University of Idaho, Moscow, Idaho 83844, USA.*