

THE HANDICAP PRINCIPLE: A MISSING PIECE OF DARWIN'S PUZZLE

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EDITED BY REBECCA L. 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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The Handicap Principle: A Missing Piece of Darwin's Puzzle.—Amotz Zahavi and Avishag Zahavi. 1997. Oxford University Press, New York. xvi + 286 pp., numerous text figures. ISBN 0-19-512914-8. Paper, \$16.95.—In this book, the Zahavis explore how their handicap principle hypothesis might explain the selective advantage of behavioral, physiological, and anatomical characters that appear to decrease survival. They expand on Amotz Zahavi's original hypothesis for the adaptive value of extravagant though burdensome male ornamentation (*Journal of Theoretical Biology* 53:205–214, 1975), to include explanations for everything from avian information centers to sociality in slime molds and thickness of human eyebrows. The style of writing and the appearance of the book (including rather remotely located footnoted references) suggest that it is targeted at the well-read amateur naturalist as well as the academician. The authors begin with a parable involving a wolf and a gazelle to exemplify how reliable communication between individuals, in this case predator and prey, requires that signals be costly to the extent that they impair survival of the less-vigorous members of a population. The parable is followed by a very brief historical review of the scientific community's response to the handicapping hypothesis.

The authors remark that “throughout all these years, while our colleagues were debating the validity of the principle, we continued to observe and explore the living world around us.” Unfortunately, it appears from this book that the Zahavis did not design their 25 years of observations and data collection to test *alternative* hypotheses, as well as the handicap principle. This is not to say that the authors do not build a persuasive argument. Many familiar examples of animal behavior can be construed to fit the handicap scenario. Regrettably, to convince the reader that the handicap process is real, the Zahavis frequently use stories of human communication. For example, while playing tag, some children taunt the child who is “it” from nearby, while other children

run away silently. The Zahavis argue that silent children are inadvertently and honestly communicating their poor running ability but that the vociferous ones can get away with such handicapping loud behavior because they are superior runners. Although the authors may be correct, the reader expects data to support the supposition that the silent kids run more slowly than the others, and that the child who is “it” prefers to chase the silent runners. The only chapter that presents any sort of data is the one on the babblers (Timaliidae) that the Zahavis have studied for 30 years at the Shezaf Nature Reserve in Israel, and it is here that they shine. Observations of these fascinating birds vying with one another for the opportunity to be sentinels, allofeeders, and mobbers no doubt explain why the authors developed the handicap principle in the first place.

The handicap principle has been the subject of chronic debate but little empirical research. This book attempts to expand the scope of biological characters that might have evolved as handicaps, but it never presents compelling scientific evidence that sexual ornaments, the original Zahavian handicaps, are maintained by this process. General readers may become convinced by the friendly anecdotes, anthropocentric analogies, and persuasive prose. However, if my experience is representative, behavioral ecologists will find themselves intrigued by the first few chapters and dismayed by the lack of data and the absence of consideration of competing theories in the rest of the book. The Zahavis must be credited for remaining the long-term proponents of an innovative idea initially dismissed as biologically ridiculous. Zahavi's (1975) introductory paper was purely theoretical, providing agreeable examples and anecdotal observations that supported his notion but providing no predictions or data to discriminate handicap traits from those that evolved under alternative selective regimes. Not much has changed. Even though the handicap principle was proposed several decades ago, the definitive work on the subject awaits actual scientific research in the field.—RICHARD BUCHHOLZ, *Department of Biology, University of Mississippi, University, Mississippi 38677, USA.*

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New World Blackbirds: The Icterids.—Alvaro Jaramillo and Peter Burke. 1999. Princeton University Press, Princeton, New Jersey. 432 pp., 39 color plates, 17 figures. ISBN 0-691-00680-6. Cloth, \$49.50.—The New World blackbirds exhibit exceptional diversity in morphology (ranging from some of the smaller *Agelaius* and orioles through the giant oropendolas) and ecology (occurring in a wide variety of habitats including marshes, grasslands, deciduous forests, and tropical wet forests). It is their nearly unparalleled diversity in social behavior, however, that has attracted the attention of many ornithologists. Among the blackbirds one can find species that are socially monogamous (many orioles), highly polygynous (caciques, grackles, and oropendolas), cooperative breeders with low levels of polyandry (Brown-and-yellow Marshbird [*Pseudoleistes virescens*], Bay-winged Cowbird [*Molothrus badius*]), colonial breeders (oropendolas), and obligate brood parasites (most of the cowbirds). Thanks to this diversity, the icterids have been the focus of much research and have figured prominently in the development and testing of many theories in behavior, ecology, and evolution.

Jaramillo and Burke have produced a book that serves as a guide to the natural history of this fascinating family of birds. Their stated goal was not to produce a field guide or a scientific monograph, but rather to give an overview of the natural history of blackbirds that will serve as a “starting point for anyone interested in the icterids” (p. 9). To do this, they provide detailed species accounts, most of which are several pages long. A total of 103 species is included (a somewhat larger number than that commonly recognized because Jaramillo and Burke include taxa that are “widely regarded” to be full species). Also provided are detailed accounts of an additional six subspecies that differ markedly from other populations of the same species (e.g. Fuerte’s Oriole [*Icterus spurius fuertesi*]).

The species accounts are well organized, giving details of identification, voice, plumage, geographic variation, habitat, behavior, nesting, distribution and status, movements, and molt patterns. Each account ends with a list of relevant literature to which the interested reader can turn for more details. Each species is also shown in a detailed color plate that includes a range map and, in many cases, shows plumage variation associated with sex, age, molt, and/or geography. The plate for Red-winged Blackbirds (*Agelaius phoeniceus*), for example, shows 13 individuals of various age/sex classes and subspecies.

By far the greatest strength of this book is the extensive literature that the authors have amassed and summarized for each species. The bibliography includes more than 1,000 citations, including several

theses and papers in relatively obscure journals. Moreover, the authors do a good job summarizing the literature for each species, making it possible to look up any blackbird of interest and quickly learn virtually all that is known about its morphology and plumage (the details of geographic variation are quite good in most cases), voice, distribution and status, and behavior (particularly breeding behavior, which has been the focus of many studies). The job of summarizing was no small task for species that have been the target of numerous studies (e.g. Red-winged Blackbird and Brown-headed Cowbird [*Molothrus ater*]). Thus, this book will serve as an extremely useful reference for those interested in the natural history of blackbirds.

The primary weakness of this book is that it gives relatively little in the way of an overview of the general trends and patterns for this diverse family of birds. That is, little attempt is made to place the detailed species accounts into a broader context of evolutionary and behavioral theory. Systematic relationships among blackbirds are touched upon, as are some general behavioral and evolutionary issues, but the treatment is extremely brief and superficial. Similarly, it is difficult to glean from this volume general patterns of life histories, plumage variation, ecological groupings, mating systems, and parental behavior, nor is there any treatment of the interaction between humans and blackbirds (e.g. conservation issues relevant to the rarer forms).

Given the above, this volume will be most useful for those generally interested in blackbirds and those with very targeted, species-specific questions, such as “what are the patterns of geographic variation in Streak-backed Orioles (*Icterus pustulatus*)?” or “which species are parasitized by Giant Cowbirds (*Scaphidura [Molothrus] oryzivora*)?” However, those interested in more general questions such as “what are the patterns of sexual dimorphism in blackbirds?” or “how do food resources affect blackbird distributions?” will have to extract and synthesize the information themselves from the species accounts. Ornithologists interested in questions of the latter type will do better to turn first to more-focused monographs (e.g. Searcy and Yasukawa 1995), or to the excellent book by Gordon Orions (1985), even though the latter is nearly 15 years old and targeted at a lay audience. Indeed, a hybrid between the synthetic approach of Orions (1985) and the exhaustive, up-to-date literature survey of Jaramillo and Burke would be a welcome and useful addition to the ornithological literature (a hint to any of you looking for a book to write!).

By and large, the illustrations by Peter Burke are detailed, accurate, and engaging, making this book handsome as well as useful. However, the choice of background color for some of the plates is questionable. This is particularly true for some of the blackbirds and grackles, whose portraits fade into the

dark backgrounds. Aside from this quibble, the plates do an excellent job of portraying the birds in realistic poses and settings. Similarly, the text figures do a good job of showing variation in plumage for a few confusing groups or species pairs.

In summary, this book is an excellent and detailed species-by-species account of the natural history of a very diverse and interesting group of birds. Although it is difficult to extract general behavioral trends and evolutionary patterns from this book, the information content is high, and one can easily find the details relevant to any particular species of interest. It is, as the authors intended, a very good starting point for those interested in the biology of icterids.—MICHAEL S. WEBSTER, *Department of Biological Sciences, State University of New York at Buffalo, Buffalo, New York 14260, USA.*

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Goose Populations of the Western Palearctic: A Review of Status and Distribution.—Edited by Jesper Madsen, Gill Cracknell, and Tony Fox. 1999. National Environmental Research Institute, Rønde, Denmark. 334 pp., 26 black-and-white plates, 29 tables, 107 figures. ISBN 87-7772-437-2. Cloth, GBP 25 (ca. \$40.00).—This volume is an impressive and handsomely presented compilation of the status and distribution of the 23 Eurasian goose populations, which represent seven species not found in North America. It contains a detailed presentation of population sizes that are spatially referenced by distinct breeding, migration, or wintering areas. Perhaps more impressive is the cooperation required to assemble information from a part of the world that is much more politically stratified than we are accustomed to in North America. This “biopolitical diversity” comprises contributions from 19 principal authors, 56 coauthors, and an additional 23 contributors.

The motivation for the book involved a need to assemble a diversity of information into a single resource. An introductory chapter provides historical and geographical perspectives for how monitoring is accomplished and discusses potential biases in esti-

mates of productivity. It also includes information on which populations have been studied using marked individuals. Of 23 recognized goose populations representing 9 species and 13 subspecies, 14 currently show increasing trends, 4 are stable, 2 are decreasing, and trajectories for 3 are unknown. Most trend data in this book are based on counts rather than on statistical estimates of population size from a sampling design. This is because geese are highly gregarious and clumped and do not lend themselves easily to spatially random sampling during migration or in winter. Nevertheless, counts underestimate population size because of incomplete detectability, and the distinction in this book between counts and estimates is sometimes clouded. Thus, readers probably should consider population numbers in this book to be biased low by an unknown amount.

After the introduction are 23 chapters that follow a uniform format for each population, as referenced by breeding area. Each chapter contains six sections starting with a general review of the population including range, delineation of flyways, population trends, breeding success, and mortality. The next three sections of each chapter address population issues from a geographical perspective: breeding grounds, staging areas, and finally staging/wintering areas in countries where both exist. For example, the first section provides details on breeding distribution and breeding ecology with information on habitat use, feeding ecology, molt migrations, and molting areas, as well as a summary of research, including banding activities and basic breeding ecology. Finally, this section ends with a discussion of protection and conservation on the breeding grounds, including hunting legislation, site protection, and conflicts with agriculture where they exist. Separate sections on staging and staging/winter areas cover distribution (range, habitat, and feeding ecology), abundance (phenology of migration, trends, and numbers), research activities, and protection and legislation. Information in these last two sections is replicated for each country in which a population is found. For example, the Greater White-fronted Goose (*Anser a. albifrons*) occurs in no fewer than 25 countries in the western Palearctic! Thus, considerable detail is available for those who wish to examine such stratified information.

The penultimate section for each population is a discussion of current population status, range changes, and conservation issues (including speculation about the effect of hunting on population size, agricultural conflict, future research needs, and international conservation). Finally, extensive bibliographies make this book a valuable compendium of publications for each population.

Personally, I found value in being able to compare sizes and trajectories in the Nearctic goose populations against those of the western Palearctic. Population increases on both continents reminded me of

how adaptable these voracious herbivores are, especially in their ability to exploit agricultural ecosystems. The editors were careful to state that the objective of the book was not to provide a synthesis of the effects of hunting and agriculture on goose population dynamics. Nevertheless, some chapters contain a focus on protection of geese that brought to my attention an apparent difference in philosophy regarding desirable population sizes.

In North America, population control is being advocated for mid-continent populations of Lesser Snow Geese (*Chen c. caerulescens*) that nest in the arctic and for Giant Canada Geese (*Branta canadensis maxima*) that occur in certain urban areas. The primary motivation for such advocacy is concern for arctic ecosystems and secondarily the concerns of urban residents regarding perceived health risks, unsightly droppings, and even aggressive interactions between humans and Canada Geese. The effects of geese on tundra ecosystems in the Palearctic apparently are unstudied, and there appears to be no conflict between urban humans and geese at any time of the year. In North America, management plans originate from each of the four flyways in which each goose population is found and include population goals. Such goals are absent from this book, and the focus on protection conveys the implicit message "more is better." It makes me, even as one who enjoys and studies geese, wonder "how many geese are enough?" As most Palearctic goose and human populations continue to increase, it becomes interesting to anticipate when new conflicts will develop between geese and humans in shared environments. Perhaps the editors missed an opportunity to discuss such population objectives, as well as what may be the best way to manage habitats and goose harvest internationally.

Overall, a compilation such as *Goose Populations of the Western Palearctic* has great value. Such information (e.g. spatial-temporal summaries of harvest for each species over most of the continent) exists for Nearctic goose populations, but most of it remains dispersed in various management plans, government reports, and data files. A similar document for Nearctic populations is needed, which, in itself, represents a strong endorsement.

Many similarities exist between Nearctic and Palearctic goose populations, but there are also many differences. For those unfamiliar with Palearctic geese, this volume provides an opportunity to learn not only about their status, population dynamics, and ecology, but also about processes, both biological and political, that may influence geese on other continents. The editors state that the book is written for the international community of goose researchers, nature conservationists, and waterfowl managers. However, the text is not technical and is very easy to read, so that the book will appeal to a wider audience interested in geese. In my view, this is an

important addition to the exponentially growing body of ornithological literature. At the very least, this book is recommended for goose researchers (whether civil servant or academic) on both sides of the Atlantic.—RAY T. ALISAUSKAS, *Canadian Wildlife Service, Prairie and Northern Wildlife Research Centre, 115 Perimeter Road, Saskatoon, Saskatchewan S7N 0X4, Canada.*

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Helpers at Birds' Nests: A Worldwide Survey of Cooperative Breeding and Related Behavior.—Alexander F. Skutch. 1999. University of Iowa Press, Iowa City. xv + 298 pp., 62 drawings by Dana Gardner, foreword by Stephen T. Emlen. ISBN 0-87745-674-7. Paper, \$24.95.—This book is a very slightly modified version of one published in 1987. It has the same number of pages in the main text and the same number of chapters as the first edition. To me it looks identical for all practical purposes. Additions are a forward by Stephen Emlen and a new preface by Skutch. Emlen points out that this book is "delightfully readable in the relaxed, engaging style for which Skutch is well known." In my review of the first addition (Brown 1988), I recommended the book to bird watchers. Rereading my earlier review, which was very favorable in this respect, I am struck by how little my opinions about the book have changed. Unfortunately, however, the book is now severely out of date, and it appears that no new references have been added to the original text. This is not a book for scientists, but perhaps it will be appreciated by those who would rather have their natural history without the complications of science and scholarship and without knowledge of the many fascinating developments in the study of avian helping that occurred after Skutch published the first edition.

Although I can appreciate Skutch's love of the rambling naturalist's approach, I am reluctant to recommend this book to anyone who loves science or wants to know about the science behind the study of helping behavior in birds. I found no reference to W. D. Hamilton, without whose theory the study of helping would still be in the doldrums in which it reposed from 1935 to 1963. Nor is there a single reference to the numerous important papers of Rabenold on *Campylorhynchus* wrens (Rabenold 1984, 1985; Wiley and Rabenold 1984; Austad and Rabenold 1985, 1986; Rabenold et al. 1990, 1991). The most recent reference to Woolfenden and Fitzpatrick was in 1978, to Koenig and Mumme in 1983, to Emlen in 1984, and to myself in 1984. The exciting recent work on sex ratios in the Seychelles Warbler (*Acrocephalus*

sechellensis; Komdeur 1992, 1994; Komdeur et al. 1997) is, of course, not mentioned. Many other important omissions from the literature exist given that no references after 1984 are included in the first or second editions. Thus, an important niche remains unfilled.

We need a book for birders and other lay readers that conveys the excitement of the scientific study of bird behavior. A good model for such an approach is a recent treatment of natural selection in the Galapagos finches (Weiner 1994).

There is a sheep-like tendency among ornithologists to play follow-the-leader with regard to the terminology in this field, and I am as guilty as anyone. Consequently, the terms used in this book and elsewhere are not necessarily rational or usefully descriptive. Such terms as "cooperative," "communal breeding," and "helping," are misleading at best. Cooperative breeders are, in some sense, cooperative, but not in breeding. They are rivals with respect to breeding. It is only in the rearing of young (especially their feeding) where one sees "cooperation" or helping. Other species that are not officially "cooperative breeders" actually do cooperate in breeding by giving alarm calls at colonies. Thus, I favor the terms "cooperative rearing" or "helper systems" and have stopped using "cooperative breeding" or "communal breeding."

In summary, owners of the first edition do not need the second edition. Scientists do not need either edition, although the books are rich in references to the very early literature. Some birders and other lay readers may share my disappointment in the lack of coverage of the scientifically exciting aspects of the study of helping behavior.—JERRAM L. BROWN, *Department of Biological Sciences, State University of New York at Albany, Albany, New York 12222, USA.*

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Helpers at Birds' Nests: A Worldwide Survey of Cooperative Breeding and Related Behavior.—Alexander F. Skutch. 1999. University of Iowa Press, Iowa City. xv + 298 pp., 62 drawings by Dana Gardner, foreword by Stephen T. Emlen. ISBN 0-87745-674-7. Paper, \$24.95.—Although touted as "an expanded edition," this volume appears to be identical to that published in 1987, except for a new preface and the addition of Emlen's foreword. The latter, while providing a bit of interesting history, serves the useful, albeit unorthodox, purpose of warning readers against Skutch's treatment of evolutionary theory as it pertains to cooperative breeding. As for the main body of the book, it offers an overview of cooperative breeding that is organized systematically with more detailed summaries of in-depth studies performed on individual species within each group and is uncluttered by statistics, tables, or the usual complications of scientific progress. The bad news is that the book includes only studies available to Skutch when he wrote the first edition in the early 1980s. Consequently, the volume, which was already outdated in 1987 (Mumme, *Auk* 105:402–403, 1988),

is woefully so now. As hard as it is to imagine a book on cooperative breeding published today that fails to cite work by Nick Davies on Dunnocks (*Prunella modularis*), Andrew Cockburn and Steve Pruett-Jones on *Malurus* fairy-wrens, Jan Komdeur on Seychelles Warblers (*Acrocephalus seychellensis*), and Kerry Rabenold on *Campylorhynchus* wrens, here it is. As a result, the book is frighteningly inadequate unless one is aware of how the field has advanced since the book was first written.

This is not to say that the book lacks redeeming features. Skutch is not just a fine naturalist, he is possibly the greatest avian natural historian alive today. The fact that he is still active at 95 is nothing short of amazing. The ornithological community is truly fortunate that he has devoted so much of his life to observing Neotropical birds and that he has made his observations so accessible as a result of his prolific writings. Skutch's contributions are legion and include the first review of cooperative breeding (*Auk* 52:257–273, 1935), which was published long before most of us were born, much less old enough to hold binoculars and write field notes. The multitude of natural history observations reported and summarized in this book are part of his vast legacy and, as such, deserve publication despite the lack of a modern evolutionary perspective. I'd even go so far as to condone a reprint of the original edition, in spite of it being obsolete, as long as the publisher made it clear that this is what it was. However, passing the volume off as "an expanded edition" when nothing substantive had been expanded is sleazy. I can only recommend it if (1) you don't have the 1987 edition, and (2) you have a shelf of "Skutchiana" that needs filling out.—WALT KOENIG, *Hastings Reservation, University of California, 38601 East Carmel Valley Road, Carmel Valley, California 93924, USA.*

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The American Robin.—Roland H. Wauer. 1999. University of Texas Press. Austin. x + 93 pp., 14 color plates, 1 table, 2 maps. ISBN 0-292-79123-2. Cloth, \$17.95.—The American Robin is No. 39 in the slim, elegant volumes of natural history in the Corrie Herring Hooks Series by the University of Texas Press. Wauer's book, like others in this series, is written for a lay audience and summarizes the natural history of America's "most visible and beloved songbird," the American Robin (*Turdus migratorius*). Throughout the book, the author successfully weaves together personal observations, scientific facts, and obscure tidbits of information that make *The American Robin* delightful reading. Its relatively short length and

clear, concise writing make it easy material to absorb. I would recommend the book to anyone who is interested in a basic introduction to robin natural history. The book is composed of 10 chapters, each of which addresses different aspects of robin biology ranging from basic descriptions of appearance to the robin's enemies and threats.

In Chapter 1, the author introduces the robin as America's most well-known songbird: "It is as American as apple pie, baseball, and the Stars and Stripes." Our familiarity with this species stems from the widespread distribution of robins throughout North America and their successful adaptability to human-dominated landscapes. Wauer reminds us that we have all experienced close encounters with robins, whether watching them hunt earthworms on our lawns or listening to their cheerful and familiar song. The author provides some of his own interesting experiences with robins that caused him to take up birding as a hobby and natural history as a career (he is a retired National Park Service park interpreter, scientist, and resource specialist). As a result, he refers to the robin as his "spark bird." The introductory chapter concludes with a section on the robin's "claim to fame" by mentioning some well-known popular references to the species, such as the color "robin's-egg blue," and song titles, lyrics, and numerous nursery rhymes that refer to robins. Unfortunately, as the author correctly acknowledges, the cited nursery rhymes most likely refer to the unrelated European Robin (*Erithacus rubecula*).

Chapter 2 is brief and offers facts and fiction about robins, including some useful information such as estimated life span, wingspan, body mass, and clutch size. Wauer also provides some interesting (not-so-useful?) and hard-to-find tidbits, such as the fact that the robin has approximately 2,900 feathers on its body (how did he know this?! I was also unclear on how to interpret the fact that 2,200 to 3,300 cycles per second reportedly have been found in the robin's song. This section would have been more useful if metric measurements had also been provided, especially because mass is given in both ounces and grams a few pages later in the book (p. 13). The next section addresses the derivation of the robin's name, which I found to be an interesting interpretation. I had always thought the American Robin was given its name by the British because its red breast reminded them of the European Robin back home. According to Wauer, however, it was the American Robin's behavior, rather than its plumage, that reminded early settlers of the European Robin. The scientific name, *Turdus migratorius*, is well described in a simple and accurate manner. The chapter ends by providing numerous excerpts from historical legends and folklore that mention the robin. I found "non-scientific" inclusions like these to be particularly interesting and to greatly enhance the readability of the book. The chapter's final quote from Shake-

speare, who refers to the "ruddock," is definitely a reference to the "British robin" and not the American species.

Chapter 3 describes the robin's appearance, flight, voice, physiology, and senses. Throughout this chapter, Wauer compares various aspects of the robin (e.g. body mass, flight speed, body temperature) with other familiar bird species. I thought this was particularly useful, especially for the readers for whom this book is primarily intended. Again, some interesting facts are mentioned, such as the observation that both males and females apparently sing. Unfortunately, the author doesn't provide any citations for these poorly documented facts, so the reader is unable to follow up on these points. I was often left wondering, here and elsewhere throughout the book, whether the observations being reported were from the author's personal experiences or from the scientific literature. Toward the end of this chapter (sections on physiology and senses), much of the information refers to birds in general rather than specifically to robins. Again, the lay audience will appreciate this more than the avian research biologist who might be looking for specific information on robins.

Chapter 4 describes the distribution of the robin, which can be found from shoreline to above tree line throughout North America. The author provides several quotes from previous works that document the robin's range expansion since the early 1900s and separates this chapter into summer and winter distributions. The comment that the robin is one of the few native species to have benefitted from human development is a good one. Maps of the breeding and wintering distributions are derived from Breeding Bird Survey (BBS) and Christmas Bird Count (CBC) data, respectively. A review of BBS and CBC data helps complete this chapter. However, readers who are unfamiliar with interpreting such maps might find them confusing because the numbers provided in the legend on both maps lack units. As noted by the author, robins appears to be stable or increasing throughout their range. Not mentioned, however, is the fact that some western populations are clearly declining (e.g. in the Sierra Nevadas and the Northern Rockies, as well as in Oregon and California).

Despite the fact that Chapter 5 is only two pages long, it is an important contribution to the book. Here, the author puts the robin in perspective with other North American thrushes (subfamily Turdinae), specifically the genus *Turdus*. Most readers, even professional ornithologists, will appreciate this brief diversion into thrush taxonomy. Using the sixth edition of the AOU's "*Check-list of North American Birds*," Wauer ends the chapter with a useful table that lists all species of the genus *Turdus* that breed in North America. These have remained unchanged in the AOU's recently published seventh edition of the check-list. The scientific name of the Bare-eyed Robin (*Turdus nudigenis*) is misspelled in the table. Al-

though perhaps beyond the scope of the book and its intended audience, an appropriate addition to this chapter would have been some discussion of the seven subspecies of *Turdus migratorius* itself.

In Chapter 6, Wauer does an excellent job of summarizing the complex behaviors of robins. We perhaps know more about this aspect of robin natural history than any other. In the section on feeding, Wauer clearly describes the familiar behavior of a robin foraging for invertebrates on a lawn. The classic "head-cock" and "bill-pounce" behaviors are described eloquently. When they feed in this way, robins actually are foraging by sight and not sound, and Wauer's review of studies that support this idea is excellent. The rest of this section is devoted to a thorough description of major food items in the robin's diet. Other sections in this chapter cover bathing, preening, anting, flocking, and roosting and include Wauer's interesting personal observations. Wauer uses these personal experiences to portray some poorly studied aspects of robin behavior; e.g. he is convinced that robins bathe twice daily, once in the morning and once in the afternoon.

Chapter 7 is entitled "Life History" and is by far the longest chapter in the book. The author begins with an introductory section on the concept of life history and reproduction. Again, some useful comparisons, this time of maximum known ages, with other well-known bird species are provided. The robin's life history (or "breeding cycle") is broken down into seven sections: migration, territory, courtship, nest building, egg laying, incubation, and care of young. The section on migration focuses on spring (i.e. arrival on breeding grounds). Oddly, however, the discussion of fall migration, which is more complex than a simple shift southward, was not included. The use of quotes in this section also seemed a little excessive. In contrast, the section on territory and territory defense is enjoyable and well researched. I wish the author had provided the citation for his interesting observation that older (experienced) males are the first to arrive on the breeding grounds and obtain territories, and that inexperienced males usually must settle for suboptimal sites. The section on courtship, primarily a collection of quotes from previous works, is a pleasant reminder of how classic writers such as Audubon and Bent once described birds and their behavior.

Because of its attention to detail, the next section on nest building is the strongest part of the chapter. I especially liked the various reports of unusual nest locations. The next two sections, egg laying and incubation, are straightforward. The statement that "egg-laying usually occurs in the early morning hours. . . ." is incorrect, however. Robins are, in fact, unusual among songbirds in that they lay their eggs late in the morning, or even during the early afternoon, rather than around sunrise. I also noticed one inconsistency in that the incubation period is quoted

as 11 to 14 days on page 62, yet 11 to 13 days on page 55. Published studies actually document an incubation period of 12 to 13 days or 12 to 14 days, depending on geographic location. The penultimate section of this chapter addresses care of young and makes for a delightful combination of scientific facts, fascinating tidbits, and well-written prose. I enjoyed learning things like "by the last day in the nest, a young robin may eat 14 feet of earthworms" and that several other bird species have been documented feeding young robins, both in and out of the nest! The final section in Chapter 7 on "associates" has limited usefulness, in my opinion, and is an unnecessary inclusion in what is already a relatively lengthy chapter.

Chapter 8 describes enemies and threats of robins and is packed with detailed information. The chapter contains seven sections: predators, competitors, brood parasites, overindulgence, weather, diseases, and human-caused deaths. The section on predators is a good one, despite going off on a tangent about a "Dear Abby" column concerning house cat reproduction. The sections on competitors and brood parasites are succinct and solid contributions to the chapter. The section on overindulgence captures the well-known observation of drunken robins that have ingested too much overripe (fermenting) fruit. The section on threats from weather includes an interesting example of mortality from a tornado, as well as a well-chosen quote from Leopold's (1966) "*A Sand County Almanac*." Robin deaths from disease are difficult to detect. As a result, the next section on diseases considers songbirds in general, but nevertheless is an excellent summary of available information. The use of cited literature is especially good in this section. Wauer begins the final section of this chapter, on human-caused deaths, by reminding us that such deaths are not only senseless, they are also illegal. This section is also enjoyable reading as it moves from a historical perspective to an elaborate discussion of the more recent devastating effects of DDT. It was the robin that became the symbol of the fight to stop the use of this deadly chemical, and the link between earthworm immunity to DDT and robin deaths is well made.

The author nears the end of the book (Chapter 9) with several suggestions on how to invite robins to your home. After reading about the natural history of the robin, I think this is a wonderful attempt to involve the lay audience in providing food, water, and nesting platforms for this species in their own backyards. The American Robin is not my "spark bird" (having grown up with the European Robin in my backyard), but building a nest box as a young child and watching a pair of birds (in my case, Eurasian Kestrels [*Falco tinnunculus*]) use it to successfully raise brood after brood had a significant influence on my choice of career. The author's early encounters with robins clearly show through in his en-

thusiasm for others to have similar personal experiences. Finally, although the artificial diet referred to by the author that was used in the 1960s probably worked perfectly well, a more recently developed banana-soy-protein-fruit diet ("banana mash") has become a standard for feeding robins during behavioral observations in captivity.

The final chapter (Chapter 10) provides highlights from the book with a one-page summary of the robin's characteristic features, adaptability, and familiarity that make it North America's most widespread, visible, and beloved songbird. As such, it is a fitting close to a fascinating book. Following the closing chapter is a bibliography that allows the reader to follow up on references to previous works that are made throughout the book. Although many of the references in the text are made only casually (often, only names are provided, but not dates), the reader should have little trouble identifying the corresponding citation in the bibliography. Finally, the color photographs throughout the book are excellent and enhance its appearance and readability considerably. This book belongs in all university and community libraries, as well in the personal collections of ornithologists interested in learning more about the basic natural history of the American Robin.—
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A Guide to the Birds and Mammals of Coastal Patagonia.—Graham Harris. 1998. Princeton University Press, Princeton, New Jersey. xviii + 231 pp., 33 color plates, 30 figures, 251 distribution maps. ISBN 0-691-05831-8. Cloth, \$65.00.—This interesting book is a hybrid in several ways. Its hard cover and size render it rather awkward as a field guide, but it is a nice addition to a personal bookshelf. Its scope encompassing birds and mammals renders it "half interesting" to pure ornithologists or to pure mammalogists. Contents include descriptions, status, and ranges of terrestrial and marine birds and mammals, all elements useful for bird watchers and whale watchers. The book provides insightful comments on habitat and behavior, areas of much interest to ecologists. Its concentration on the coastal strip of Patagonia provides a detailed picture of that specific meeting of sea and land but consequently fails at setting a proper biogeographic context. In addition, its small print throughout is an insult to the tired eyes of bird watchers and reviewers alike. Although I read

the entire book, I will comment only on the part specific to birds.

The presentation of birds follows that of Meyer de Schauensee, with some updates in nomenclature (and a few misspellings). Each species account contains a serviceable description, a welcome section on typical behaviors (illustrated when deemed necessary), a useful summary of abundance and resident status, a depiction of the distributional range (complemented by rather small maps), and sometimes a note about cues that enable one to distinguish some species from other very similar ones. Each account has a referral to a color plate, with rather competent drawing and coloring.

First, there are very few typographical errors. An embarrassing one is the misspelling of wing "converts" (coverts) in the plate for Wilson's Storm-Petrel (*Oceanites oceanicus*). The Description section of each species account is helpful and easy to understand. Providing measurements of birds in both inches and centimeters was a very good idea. There are a few inconsistencies when judging size, such as when two birds are of the same size but one is labeled "small" and the other "very small." The Behavior section is a treasure chest of keen natural history observations. I found it useful not only for the basic information provided, but also in the complementary description of some peculiar habits of each bird. The Status and Habitat section is informative but with a few misleading exceptions, such as the statement that the Barn Owl (*Tyto alba*) "needs trees for perching." The Range section is generally accurate, except for some species such as the Crested Caracara (*Caracara plancus*), which is depicted as ranging into the southwestern United States without mention of the southeastern United States. The Similar Species section is useful but sparse, thus giving the impression that there should not be much fear of confusing bird species in coastal Patagonia.

I have some praises and complaints with respect to the color plates. I like very much the idea of presenting several positions of the bird in focus (e.g. in flight, standing) and showing, of course, any differences between males and females, adults and sub-adults, as well as different color morphs if they exist. On the negative side, Darwin's Tinamou (*Nothura darwini*) and Elegant Crested-Tinamou (*Eudromia elegans*) are both said to have very short legs, but the drawings show a noticeably longer-legged aspect for the latter. No mention is made of the fact that the only *Podilymbus* species in the area differs from the rather similar *Podiceps* species by the former having black eyes and latter red ones. The same applies to the difference between red-eyed adult Black-crowned Night-Herons (*Nycticorax nycticorax*) and yellow-eyed juveniles, and to red-eyed male Rosy-billed Pochards (*Netta peposaca*) and black-eyed females. The Wandering Albatross (*Diomedea exulans*) is said to

have a yellow bill, but in the drawing the bill is pink. Similarly, we are told that the Silver Teal (*Anas versicolor*) has a black beak with an orange base, but in the drawing the base is yellow. Only the male Green-backed Firecrown (*Sephanoides sephanoides*) is shown, and not the crown-dimorphic female. And only the male Fork-tailed Flycatcher (*Tyrannus savana*) is shown. What does the female look like? We are also told that the male Ringed Kingfisher (*Ceryle torquata*) has a rufous breast and belly and that the female has a gray breast, but in the plate the breast color is red. The White-crested Tyrannulet (*Serpophaga subcristata*) is said to be pale gray below but is depicted as bright yellow. The captions for Black-chinned Siskin (*Carduelis barbata*) and for Grassland Yellow-finch (*Sicalis luteola*) seem to be transposed with respect to the drawings, at least for the males. In a different vein, a couple of plates are so overcrowded with species that it is difficult to figure out the birds' markings (particularly plate 11, and to some extent, plate 17).

The book ends with an Appendix of accidental records and sightings, and another with recommended reading, the last of which I found most wanting and very idiosyncratic in the number and type of references cited. A Glossary of terms follows, which I also think should have been more thoroughly chosen. A Bibliography comes next, which I found to be deficient and very biased. Without any headers, 251 maps follow, packed at six per page, describing in dark and light gray the ranges of the species discussed in the main text. Unfortunately, one has to go back to page 6 to find the key for the dark and light shading (breeding and nonbreeding range, respectively). I take issue with some of the ranges reported, particularly with those of *Circus buffoni*, *Thripophaga modesta*, and *Agelaius thilius* on the western edges of their ranges. Finally, a serviceable index presents English, Latin, and Spanish order and species names of birds.

I am somewhat puzzled as to the intended readership for this book. It is midway between a field guide and an annotated account of birds and mammals of a non-biogeographical region. Having personal long-term interests on everything that has to do with Patagonia, I will stock this book with others dealing with that region. However, I am reluctant to recommend it as a pocket field guide to the birds of coastal Patagonia. It won't fit in any pocket, but it may provide a wonderful filling-in of details back in your tent or guest room once you know what birds you have seen. If you are intent on knowing Patagonia and its critters, I think this is a good book for a personal library. If you are a great fan of Patagonia for traveling or researching, I recommend that you purchase it.—FABIAN M. JAKSIĆ, *Departamento de Ecología, Universidad Católica de Chile, Casilla 114-D, Santiago, CP 6513677, Chile.*