

BOOK REVIEWS

Nearctic Passerine Migrants in South America.—R. A. Paynter, Jr. 1995. Publications of the Nuttall Ornithological Club, no. 25. Cambridge, MA. + 126 pp., 71 text figures. ISBN 1-877973-37-8. \$13.50 (cloth).

This volume is most instructive by detailing how little is known about Nearctic passerine migrants wintering in South America. By Paynter's account, 68 species have been recorded in South America; those include almost the entire wintering distribution of some of North America's most familiar and widely distributed summering species (e.g., Red-eyed Vireo *Vireo olivaceus*, Purple Martin *Progne subis*, Swainson's Thrush *Catharus ustulatus*). The data set he has amassed includes 4400 (mostly) published records at 1,260 sites. The most widely reported species (Barn Swallow *Hirundo rustica*) is based on accounts from only 202 sites; five species that winter exclusively in South America are known from fewer than 50 sites. For comparison, consider North America, where just one data set (the Christmas bird counts) generates records on nonbreeding distributions from over 1000 sites every year.

Most (89 of 112 pages) of this slim volume is devoted to species accounts, each with a nicely scaled map. Unfortunately, aside from country borders, no features are included on the maps, making more detailed interpretation difficult. In addition, no distinction of records by season is made: records of supposed transients, wintering populations, and the few non-breeding summer layovers are all lumped under the same symbol. For this reason, Paynter may have missed significant patterns, such as the restriction of actual wintering populations of the Veery (*Catharus fuscescens*) to south-central Brazil (J. V. Remsen, unpubl. data). In addition, no distinction is made for records based on hard evidence (specimen or photographs) from those based on sight records only. In the text of the species accounts, Paynter gives dates of occurrence, elevations, and detail of extra-limital records. The subspecific identity of some species could have been discussed further (e.g., Swainson's Thrush).

In his discussion following the species accounts, Paynter spends far too much time analyzing results by country, instead of by biologically significant features, such as latitude, habitat, or elevation. His country-based analyses, combined with his obfuscation of wintering and transient populations, has led to his missing some important patterns. For instance, nowhere does Paynter discuss the importance of lowland Amazonia for Nearctic migrants. He briefly mentions that Amazonian Brazil is an infrequent destination for Nearctic passerine migrants (excepting the Connecticut Warbler *Oporornis agilis*). However, Amazonian lowlands include significant portions of Colombia, Ecuador, Peru and Bolivia, as well as Brazil, and probably hold important wintering populations of many species, including Eastern Kingbird (*Tyrannus tyrannus*), Barn Swallow, Bank Swallow (*Riparia riparia*), Purple Martin, Veery, and Blackpoll Warbler (*Dendroica striata*). This

pattern would be more apparent in his maps if he had distinguished wintering populations from those of transients and if he had indicated elevations.

Paynter does not mention if a companion volume for the non-passerine taxa is in the works. Unfortunately, there appears to be a greater need for such a volume given that all species covered here were recently discussed in the first two volumes of Ridgely and Tudor's *Birds of South America* (1989 and 1994, respectively; University of Texas Press), although Ridgely and Tudor's treatments are much more cursory and their maps less clear than Paynter's.

Regardless of the above mentioned faults, this inexpensive volume should be considered for the bookshelves of the ever-growing army of those studying Nearctic-Neotropical migrant passerines. It is a quick and easy reference for determining nonbreeding distributions of these species in South America. More importantly, this volume should spur amateurs and professional alike to beat a hasty path to South America and fill in the many holes. This volume should also be a call for those with field experience in South America to publish their records of Nearctic migrants.—ANDREW W. KRATTER, Museum of Natural Science and Department of Zoology and Physiology, 119 Foster Hall, Louisiana State University, Baton Rouge, LA 70803.

A Century of Avifaunal Change in Western North America.—Edited by Joseph R. Jehl, Jr., and Ned K. Johnson. 1994. Studies in Avian Biology No. 15. Lawrence, Kansas. vi + 348 pp. ISBN 0-935868-72-0. \$40 (cloth).

This important volume publishes the proceedings of a symposium at the centennial meeting of the Cooper Ornithological Society at Sacramento, California, in April 1993. I emphasize "important," because environmentalists and biologists must recognize the overriding importance of *facts* in relation to conservation. Without an accurate assessment of population trends, without information coming in from the field, we do not have a clue about where to direct our limited resources. "Save the Whales" is a wonderful rallying cry, but it may be that whole assemblages of small bird species are even more imperiled, but to know this, we must conduct analyses of population changes such as those that make up the meat of this volume.

Authors. The list of 41 authors of the included papers reads like a who's who in western North American ornithology. Most authors have studied birds in the field for years, some for multiple decades. Not only the quantitative data that are available to them, but their own field experiences, influence their thought processes and conclusions.

Addresses of the authors point out where most bird-population expertise is to be found: nine from government agencies, nine from university departments, eight from bird observatories (seven from Point Reyes, the single largest source), five from university museums, four from the Smithsonian. Private museums (3), private research institutes (2), and private consultants (1) complete the list, with a further three with private addresses who may be among those who contribute to science without being directly paid for it.

Range of studies. Two chapters focus on historical aspects of avian distributions. The remaining chapters present a rich mixture of studies, from rigorously quantitative to anecdotal, from single species through ecological and taxonomic groups to entire faunas. The disparate approaches effectively support the theme of avifaunal change.

After a brief overview by the editors, the book comprises four sections: (1) regional avifaunal change, (2) population trends, (3) effects of human-induced environmental change on avian populations, and (4) case histories. This is a somewhat arbitrary division, since the sections are closely related and all contribute to the single theme of changing (or, in many cases, not changing) populations.

One approach to population change is a simple assessment based on subjective status in two time periods, such as Scott's simple comparison of species "in jeopardy" or "not in jeopardy" in 1930 and 1992 in California. At the other extreme, quantitative data such as those from the Breeding Bird Survey (BBS) can be analyzed statistically in many ways, and most of our recent data on breeding passerines have by necessity come from these censuses.

Range changes. Ongoing changes in distribution, both expansions and contractions, are so common among birds as to be characteristic. They can be "natural" (independent of human causes) or anthropogenic. Some happen at surprisingly rapid rates, as documented especially by Johnson in western North America. From his thorough compilation, Johnson lists more bird species expanding their ranges northward than all other directions combined. The list includes species of major terrestrial habitats in the Southwest, from desert and riparian to pine-oak woodland. Those trends are always of interest, but rarely of concern, although those attributed to climatic change might serve as predictors, if we are indeed facing a period of global warming. Johnson makes the significant point that species that become common in areas from which they were previously lacking, such as Barred Owls (*Strix varia*) on the Pacific coast, surely have an effect on their environments. We should thoroughly study those situations, as all will be relevant to our understanding of human-caused changes.

Spectacular range expansions documented by Johnson and in several other chapters have occurred in both breeding and nonbreeding ranges, some of them recoveries after earlier contractions. On the contrary, present substantial contraction of range is less evident as a general phenomenon, the only dramatic examples among grassland birds (DeSante and George; Page and Gill) and a few species on their winter ranges (Root and Weckstein). Extirpation of Spotted Towhee (*Pipilo maculatus clementae*) and Song Sparrow (*Melospiza*

Melospiza melodia clementae, *M. m. graminea*) subspecies from the Channel Islands (Power) and a substantial decline of the endemic Song Sparrow subspecies (*M. m. maxillaris*, *M. m. pusillula*, *M. m. samuelis*) of San Francisco Bay (Marshall and Dedrick) document the same phenomenon on a much smaller but just as significant scale, as do the Hawaiian extinctions (Pratt).

Finally, some range changes occur because birds are nomadic, adapted to ephemeral conditions such as those provided by saline and alkaline lakes. Unfortunately, there are fewer such lakes now than a century ago, limiting the options of such birds (Jehl).

Population declines. More seabirds have declined than increased on the Pacific coast (Ainley, Sydeman, Hatch, and Wilson). After great increases from a low at the turn of the century, waterfowl numbers are again going down, in part because of the dramatic decline of the once very abundant Northern Pintail (*Anas acuta*) (Banks and Springer). Shorebird numbers have been effectively monitored only quite recently, and major declines of many species happened during the market-hunting era; some have recovered, some have not. Present declines are clear for only a few species (Page and Gill).

Our knowledge of passerine migrant populations in the West has lagged greatly behind that in the East, and accounts in this book are among the first that have dealt with western North American passerines, Neotropical or otherwise. Substantial declines of passerine and/or nonpasserine land-bird migrants are documented for Alaska (Kessel and Gibson), California (Pyle, Nur, and DeSante), and the West in general (DeSante and George). Although wetlands, old-growth forests, grasslands, and riparian woodlands have been singled out as habitats of special concern in this volume (and elsewhere), avian population declines occurred in species of every major western habitat. Some chapters point to unequivocal habitat-wide declines, as in grasslands birds (Knopf).

Nowhere has avifaunal change been more dramatic than in the Hawaiian Islands (Pratt). Of the 68 land and freshwater species and subspecies present a century ago, 43% are extinct or nearly so and an additional 25% are listed as Endangered. This leaves 22 natives to contend with the 41 exotics now established on the islands. Those islands, of course, are the site of the most intense conservation efforts in the region covered by this volume.

Causes of avian declines are well documented in the symposium chapters; they include direct killing, habitat destruction, competition and predation by both introduced species and native species that have become more successful because of human commensals, pollutants such as DDT, and disease.

Population increases. This heading covers a variety of situations, including climate-mediated range expansions, increase of human commensals, and recovery of managed populations, often those from which threats such as pesticides were eliminated. Not so expected are increases such as those of wetlands birds in Baja California (Massey and Palacios), perhaps in part a consequence of much improved knowledge. Oddly, there has been an increase in eastern Neotropical migrants on the Farallon Islands, and DeSante and George

speculate that increased rates of vagrancy in first-year birds may be caused by increased rates of habitat alteration. One region's gain may be another's loss.

Introduced species for the most part have not spread widely beyond their points of introduction in North America, with the conspicuous exception of Rock Doves (*Columba livia*), European Starlings (*Sturnus vulgaris*), and House Sparrows (*Passer domesticus*), populations of which are now more or less stable in the West (Johnston and Garrett). Starlings consolidated most of North America during the century, reaching their northern limit of 65° N in Alaska by 1978, with no subsequent increase (Kessel and Gibson). Many other species are increasing locally, particularly in the subtropical climate of southern California, and parrots are now a familiar part of the landscape there (Johnston and Garrett).

Native human commensals, at least those that are considered "native pest bird species," are treated by Marzluff et al. Most of the species in this group have increased historically, both in extent of range and abundance. Three factors are considered especially important: flock foraging, generalized foraging, and increase of breeding habitat by human changes. Another obvious factor is the proliferation of bird feeding. The authors conclude that "the western avifauna has become dominated by generalized, flocking species." Some human commensals are surprises. An example is the Black Guillemot (*Cepphus grylle*), which has increased dramatically along the north coast of Alaska by breeding in human debris, augmented by "guillemot farming" (Kessel and Gibson).

Recovery of populations previously reduced by pesticides or direct human persecution has taken place in some raptors, as well as Brown Pelicans (*Pelecanus occidentalis*) and some other seabirds (Ainley et al., Kessel and Gibson, Massey and Palacios, Scott, White). The decline of the Peregrine Falcon (*Falco peregrinus*), the most dramatic case of the second half of this century, has been reversed, and there may be hope for North America when we place this in the perspective of the declines and ultimate falls of widespread species—Passenger Pigeon (*Ectopistes migratorius*), Carolina Parakeet (*Conuropsis carolinensis*), and Ivory-billed Woodpecker (*Campephilus principalis*)—at the beginning of the century, prior to any semblance of biodiversity concern.

Habitat and species studies. Accounts dealing with particular habitats are of special interest, as we will have to focus on specific habitats, as well as individual species, to understand the broader picture. Coniferous forests (Hejl), riparian woodlands (Ohmart), grasslands (Knopf), and saline lakes (Jehl) are all showcased, and all show a varied palette of population changes.

Case histories are given for three species that point out a persistent problem, forest fragmentation. Marbled Murrelets (*Brachyramphus marmoratus*) (Ralph) and Spotted Owls (*Strix occidentalis*) (Gutiérrez) have declined because of the reduction of old-growth forests; and Brown-headed Cowbirds (*Molothrus ater*) (Rothstein) have increased because of the opening up of forests throughout the West.

For further thought. There is little to criticize in this fine series of papers in which authors have presented effective summaries and, in most cases, attempted ex-

planations. The criticisms come from the authors themselves, several of whom point out shortcomings in the status of population monitoring vis-a-vis conservation and the fact that natural cycles of unknown magnitude, as well as range shifts, confuse the analysis of decreases and increases.

We are left with many puzzles. For example, data from the Farallon Islands (Pyle et al.) show in surprisingly many cases an overall decline in populations sampled in spring but stability or even increase in populations of the same groups of species sampled in fall. This badly needs explanation. Similarly, data from the whole region and its parts are not always in agreement. For example, DeSante and George list 11 emberizines that have decreased in western North America, based on published literature. They also list 10 members of this group for which BBS data indicate a recent decline. Only three species are on both lists, which would seem to make them real candidates for concern, yet two of those three, Chipping Sparrow (*Spizella passerina*) and Song Sparrow, are abundant in my home state of Washington. Patterns seem more local than universal.

Even more thought-provoking in this era of concern for declining populations are several chapters that present information indicating increases in more species than decreases (Kessel and Gibson in Alaska, Power in the California Channel Islands, White for raptors, Hejl for coniferous-forest birds, and Root and Weckstein for winter ranges). This information, along with other studies showing declines not much more prevalent than increases (DeSante and George, Knopf), promotes guarded optimism.

Two major questions subsume all others. Are populations of a given species limited on its breeding, wintering, or migration range? Most of all, why are some species increasing or stable, others decreasing? This book has much to contribute to the answers to those questions, but many individual cases still beg understanding. Even after publication of this milestone volume, clearly we have many more miles to travel. Throughout, authors are to be commended for making a valiant effort to explain changes observed. Some explanations will stand the test of time, while others will surely have to be modified as we learn more. Further analysis of those population changes and their correlates will be essential to the quest for the predictive power so urgently needed in conservation biology.

In writing about the Channel Islands, Power's simple conclusion "Range expansions have come about naturally or as a result of protection and conservation efforts. Losses are almost all due to human influences . . ." rings true for most of the changes documented in this volume. Scott's report that five species increased, while 34 species and subspecies declined, in the same state during the last six decades is the clearest sign of trouble. Scott then went on to offer detailed suggestions on what we must do to preserve western avifaunas; his call to action must be read.

This volume should be in every biological and environmental library and is a very important reference for all who believe that the next 100 years will be among the most critical ones for the survival of our birds.—DENNIS R. PAULSON, Slater Museum of Natural History, University of Puget Sound, Tacoma, WA 98416, e-mail: dpaulson@ups.edu

Woodpeckers, a Guide to the Woodpeckers of the World.—H. Winkler, D. A. Christie, and D. Nurney. 1995. Houghton Mifflin Company, New York. 406 pp, 64 color plates. ISBN 0-395-72043-5. \$40 (cloth).

This book provides an informative summary of basic information for each woodpecker species throughout the world. Although it is definitely not a substitute for Short's *Woodpeckers of the World*, (Delaware Museum, 1982) it is a good addition to the literature on woodpeckers and gives users a fast and complete picture of the diversity of woodpeckers, plus some basic information on the distribution, habitat, and geographic variation of each species. As an identification guide that one takes to the field, its additional weight is probably more than most would like; only those with a particular interest in woodpeckers would want to carry this volume. Sections on individual species are easy to access for information if one is a "picophile" and familiar with the current woodpecker taxonomy. However, for a novice, the book does not categorize species by field marks or geographic distribution. Thus, it is very difficult for an inexperienced ornithologist to use the book to identify a woodpecker seen in the field, or for that matter, identify a woodpecker in a museum drawer.

I had some difficulty determining the actual title of the book. The front of the dust jacket indicates the title as *Woodpeckers an Identification Guide to the Woodpeckers of the World*. Inside the book, the title page reads *Woodpeckers a Guide to the Woodpeckers of the World*, whereas the title on the spine is *Woodpeckers an Identification Guide*. This will present some difficulties to individuals trying to cite the book as a reference. Also, the pages covering the Table of Contents have neither Roman nor Arabic numerals.

The background information on woodpeckers provided in the first 35 pages of the book serves as a very brief summary of the complete wealth of knowledge present in the literature. There are some gaps relative to what is known about the cavity-tree requirements of the family, especially the relationship with fungal decay and the requirements of some species for decay in both the heartwood and sapwood as prerequisites for cavity excavation. This section is too general to be of any great value for individuals interested in detailed attributes on a particular species, and is not as detailed as Short's book.

Overall, the art work on the plates is quite good with fine details of plumage carefully depicted. However, the quality of the color plates lacks consistency and it appears as though more time may have been put in on some plates than others. The pictures showing species of the genus *Dryocopus* in Plate 48 show what appear to be "erasure" marks around the heads of some of the woodpeckers. The most obvious of apparent erasure corrections occurs on Plate 10 around the bills of Acorn Woodpeckers (*Melanerpes formicivorus*). The bills of the *Campophilus* appear to be too long and slim, especially the ivory-billed complex on Plate 52. Only four of the plates show species in flight, and surprisingly the Nearctic *Colaptes* are not shown. More examples of woodpeckers in flight would have added substantially to this volume and ample space is available on many of the plates for such pictures.

This book deviates from several other books in the series in that range maps are not associated with species depicted in the plates. The book would have benefited by having color in the range maps as other books in the series have done. But, woodpeckers are largely sedentary, and the additional expense of color was probably deemed unnecessary.

The information presented within individual species accounts is excellent considering the diversity and geographical distribution of woodpeckers, and the fact that many species have received minimal field study. This reflects the authors' breadth of knowledge. There are hints in the text that the guide was written by Europeans for a primarily European audience, but printed in English by a North American publisher. For example, the New World Striped Woodpecker (*Picoides lignarius*) is described as resembling the Old World Lesser Spotted Woodpecker (*P. minor*) in its foraging behavior. This comparison would likely be of little value for most Latin American or North American readers.

Despite the few problems mentioned above, the book is a valuable addition to personal libraries of those with a particular fascination for woodpeckers. Its greatest utility will most likely be in the office rather than the field. Although the book does not replace Short's monograph, it does add updated material to the growing collection of woodpecker books. Given its \$40.00 price, the book is an excellent value.—RICHARD N. CONNER, Southern Research Station, U.S.F.S., Nacogdoches, TX 75962.

Shorebirds of the Pacific Northwest.—Dennis Paulson. 1993. With illustrations by Jim Erckmann. University of Washington Press, Seattle. 406 pp. ISBN 0-7748-0442-4. \$40.00 (cloth).

Each year, ornithologists and serious birdwatchers can expect one English reference book on birds to be published weekly—and the number is increasing annually. With dwindling shelf space and financial considerations, difficult decisions have to be made concerning new purchases. However, if you are looking for a current, well researched, and superbly illustrated publication on the identification and general biology of shorebirds, *Shorebirds of the Pacific Northwest* is one to invest in.

The author, a recognized authority on shorebirds, has incorporated professional training and vast experience in museum science, field observation, and teaching into the preparation and content of information in this book. *Shorebirds of the Pacific Northwest* demonstrates the level to which field guides must now evolve. We have progressed beyond introductory-level identification guides; the recent continent-wide interest in biodiversity, the continuing saga of habitat loss, and a rapidly growing population of serious birders who want to be better informed bear witness to this.

The book contains nine chapters. The first provides a brief overview of the volume's geographic coverage which includes southern British Columbia, Washington, Oregon, Idaho, and western Montana. In total, 62

species of shorebirds are discussed of which 42 occur annually in the area. Since all regularly occurring Northwest shorebirds are discussed in considerable detail, the scope of this book extends far beyond the Pacific Northwest region. A comprehensive discussion on references provides the solid base upon which the text has been prepared and completes the introductory chapter.

Chapter 2 includes a well-organized discussion of "What are Shorebirds?" and includes lucid figures, tables, and text on anatomy, plumages, coloration, flight, and vocalization. The confusing terminology surrounding plumages and molts is clearly defined in the text and is summarized in a table under the simple headings of plumage, other names (technical), usual season, and duration. Identification of shorebirds, which are typically composed of browns, grays, whites, and blacks, is made much easier with illustrated tables on patterns that include 14 different kinds of markings (e.g., stripe, chevron, subterminal blotch, dot), their description, and location on feathers. In flight identification aids are helpful because they are discussed by shape, wing patterns, and back and tail patterns. The 30 pages in this section could easily be issued as a separate chapter and used as a field identification aid. They could be of particular value to enforcement agencies and officials involved in monitoring the illegal capture, killing, or transportation of shorebirds and their parts.

The next chapter, "Shorebirds in Time and Space," includes subsections on the shorebird's year, distribution, conservation, and the need for record keeping. The updated discussion on subspecies will be of use to ornithologists and wildlife biologists. The final section will have a much wider appeal because it provides distribution lists of shorebird groups into "Northern breeders," "Continental breeders," and "Eurasian breeders."

Unfortunately, only three pages are devoted to conservation. The 14 breeding species of northwest shorebirds are listed in seven habitats (without descriptions) by status, while 43 species are listed in 10 nonbreeding habitats, also by the same status. Hunting and legal protection, habitat loss and degradation, population trends, and vital spots for shorebirds, are only briefly discussed as conservation issues and concerns. This section could have been greatly expanded by including a map, areas of significant shorebird concentrations, and recommendations for areas of special biological concern. The importance of the Pacific Northwest for populations of some species could have been highlighted. For example, the entire world's population of the Western Sandpiper (*Calidris mauri*) passes through that area twice each year, stopping to rest and feed mainly at a handful of locations. Arguments could have been made for delisting Common Snipe (*Gallinago gallinago*) as a hunted species. Furthermore, some discussion on the threatened and endangered status of Northwest shorebirds and their habitats, would have been helpful.

Topics of record keeping and computer databases complete Chapter 3. I was very encouraged that the author emphasized documenting long-term life history information for common species, such as Dunlin and Western Sandpiper, as opposed to recording details for only rare migrants. The author's recommendation to

organize regular shorebird censuses over a broad region within the Northwest should be encouraged and supported. He also encourages birdwatchers to put their records into computer databases. Further discussion here might have included a caution that many such data bases are established and operated by well meaning, but uninformed, amateurs. It should be stated strongly that standardized databases, with professional direction, should be encouraged as they are often set up in such a way as to analyze data statistically, which, in turn, provides more convincing answers to current and future biological and management questions.

A short chapter on "Shorebird Finding" is followed by another 18 pages on "Shorebird Identification." Unlike the earlier chapter, the author discusses identification tips and problems, and identification of shorebird groups. A quick identification table, divided into regular and irregular species, using field-group marks such as leg color, bill shape, size and color, and conspicuous markings is very useful.

The "Family and Species Accounts" section of chapter 5 is the major feature of the book. Species accounts are crammed full of detailed and useful information which is divided into 11 categories. The world distribution and migration patterns are succinctly summarized under "Distribution." In "Northwest Status," a phenological chart, divided into coast and interior and months of the year, starts each account. Bars of various thicknesses and shades indicate the monthly status of each species, while a dot indicates a single occurrence. Text follows with a more in-depth discussion of regional occurrence and migration within the Pacific Northwest through 1990. Those statements are well supported by lists of records of high counts, early and late migration dates, and tables of five-year averages for Christmas Bird Counts for select localities. For rare species, every record is listed. This concise summary will be of considerable value to those wanting to put their local areas in perspective within the Northwest.

Although the emphasis in each species account is on occurrence and migration, there are range maps for most breeding species and very brief discussions about breeding habitat, nests, and eggs.

Preferred habitats and general behavior patterns for each species are included in "Habitat and Behavior." The section on "Structure" emphasizes specific details needed for identification, while a "Plumage" section presents details on breeding, nonbreeding, juvenal, and immature plumages. A plumage bar chart nicely summarizes the approximate period when specific plumages are likely to occur in Northwest shorebirds throughout the year.

The updated section on "Subspecies" is timely as many wildlife agencies are now including races in their management plans. Most of the discussion centers around identification which will now encourage serious observers to document their occurrence so migration patterns and populations can be determined.

Three additional sections entitled "Further Questions," "Notes," and "Photos" include information for each species that is different from other bird books, but quite useful. The former, which could be subtitled "Research Needs," encourages shorebird observers to provide answers to questions that will further the understanding of the species. Suggestions here include

describing how to locate Solitary Sandpiper (*Tringa solitaria*) nests to define its southern breeding range, studying the feeding behavior of Black Oystercatchers (*Haematopus bachmani*), and comparing timing of migrations between sexes of Ruddy Turnstones (*Arenaria interpres*). In "Notes," the author comments on published statements or records which he considers erroneous.

Each species account ends with a "References" section which includes significant literature on taxonomy, identification, distribution, foods, and general biology. Four appendices complement an already full text. A useful gazetteer of over 300 Northwest localities that have been cited in the text is presented. The status of Northwest shorebirds is summarized in a table which is divided into coastal and interior. Appendices giving shorebird weights and measurements and a list of the earliest and latest migration dates for regular Northwest shorebirds by season and location is also included.

The book concludes with a comprehensive list of nearly 600 references including world-wide, and more importantly "gray" literature, that is generally unknown or unavailable to most researchers. A four-page index is cross-referenced by both common and scientific name with primary species account pages highlighted in bold-face type.

The production of the book itself is of consistently high quality. It is obvious that artist Jim Erckmann is an experienced shorebird enthusiast as his line drawings are crisp, accurate, and appealing and greatly enhance the attractiveness of the book. They show various aspects of identification and natural history. The text figures include 97 color images with most being tack sharp and well composed.

Despite minor criticisms mentioned earlier, the only shortcoming in this fine work is that not all plumages of shorebirds are represented by photographs. Some may be impossible to obtain but artwork should have been substituted.

The author has successfully developed a new model for guides to other groups of birds by skillfully blending technical and popular information with field and teaching experience. The volume will be extraordinarily useful to ornithologists, nearctic biologists, enforcement officials, environmentalists, and birdwatchers at all levels. Today, there is no single-volume substitute. Because publication of *Shorebirds of the Pacific Northwest* is long overdue, and the text contains fresh and new information, the book will have a long shelf life. We can only hope now that the author's next project will involve the Larids.—R. WAYNE CAMPBELL, British Columbia Ministry of Environment, Lands and Parks, Wildlife Branch, Victoria, BC V8V 1X4, Canada, e-mail: rwayne@islandnet.com

Macroecology.—James H. Brown. 1995. University of Chicago Press. Chicago. xiii + 269 pp., 51 text figures. ISBN 0-226-07614-8. \$15.95 (paper), \$42.50 (cloth).

In *Macroecology*, James H. Brown achieves a major synthesis of over 20 years of work on large-scale eco-

logical problems. What, exactly, is macroecology? Brown describes it as "a way of studying the relationships between organisms and their environment that involves characterizing and explaining statistical patterns of abundance, distribution, and diversity." It thus encompasses much of the traditional domain of biogeography, but includes a greater emphasis on spatial patterns of population abundance.

In thirteen chapters, Brown delivers his "progress report" on patterns and mechanisms of distribution and abundance at continental scales. Brown examines relationships among body size, geographic range size and placement, and local abundance and considers a number of mechanisms that can give rise to these patterns. There is a thoughtful chapter on the ecological niche and a provocative one on human ecology and conservation biology.

The book's great strength is its synthesis of data from a variety of spatial scales and the creative construction of hypotheses to account for patterns. Brown is a powerful advocate for the importance of large-scale non-experimental approaches, and this book provides ample evidence that many important problems in ecology cannot be addressed with experiments. Brown's clear and forceful writing style should inspire ecologists to return to many of their own non-experimental data sets. Indeed, one of the strengths of this book is that it highlights research areas that still need to be explored.

For example, in 1984, Brown first argued that the interspecific correlation between distribution and abundance reflected niche differences among species—widespread, abundant species are hypothesized to be ecological generalists. Alternative hypotheses include metapopulation dynamics, and sampling artifacts at local and regional spatial scales. In spite of more than a decade of discussion of these ideas, no one has quantitatively compared niche breadths of species with widespread and restricted geographic ranges. *Macroecology* should inspire ecologists to critically test these ideas with new data sets.

Although the macroecological approach is powerful, it has some weaknesses. Throughout this book, Brown favors complex explanations over simple ones. Thus, he explicitly rejects the idea that many macroecological patterns are sampling artifacts. His "statistical" view is that large samples of species reveal patterns that reflect underlying ecological constraints. This leads him to sketch absolute and probabilistic boundaries surrounding clouds of data points, but he leaves the statistical and sampling issues of this approach largely unexplored. Brown's perspective is that ecological influences can always override historical constraints, leading to simple predictions (and supporting data!) such as an "optimal" mammalian body mass of 100g.

Finally, it seems odd that a book on macroecology does not contain a single figure of a cladogram, because "comparative method" analyses have contributed substantially to our understanding of biogeography. The comparative method also addresses the statistical problem that species do not represent independent entities, even though they are largely treated that way in this book. Brown briefly discusses these issues, but unfortunately chooses not to include phylogenetic analyses under the current umbrella of macroecology. In-

stead the book mostly discusses the work of Brown and his students and collaborators.

These are minor complaints. *Macroecology* is synthetic and creative, and will appeal to all ecologists, even those who disagree with many of Brown's conclusions. Ornithologists will be especially interested in this treatise, because one of the most important data sets that Brown relies on is the North American Breeding Bird Survey.—NICHOLAS J. GOTELLI, Department of Biology, University of Vermont, Burlington, VT 05405.

Bird Song, Biological Themes and Variations.—C. K. Catchpole and P. J. B. Slater. 1995. Cambridge University Press, 248 pp. ISBN 0-521-41799-6, \$32.95 (hardback).

The study of bird song got a late start in the emergence of modern ethology, but advances in technology around 1950, especially the invention of portable tape-recorders and the sound spectrograph, initiated a stampede of research. Bird song is now in the forefront of so many scientific disciplines that it is difficult to keep up with them all. This new book provides a good place to start catching up.

The authors cover all aspects of research on bird song, from neuroethology and environmental acoustics to sexual selection and dialects. Numerous illustrations illuminate the text, and they follow the practice now well established in the literature on bird song of including cameo portraits of the species under study. Each topic receives an easily understood summary with clearly explained examples. Even technical subjects get clear explications. Although the authors apologize for the manifest impossibility of including everybody's favorite example, in fact they do a fine job of introducing the literature on bird song through about 1993. For the novice, there could hardly be a smoother initiation into this literature.

On a few occasions the aim to be easily understood leads to over-simplification. For instance, I continue

to be frustrated by the promulgation of simplistic ideas about the acoustics of parabolas, and the quick treatment on page 14 is no better than usual. In addition, so critical a term as decibel deserves more rigorous treatment than it receives on page 22. In the discussion of harmonics, we get a correct definition on page 15, although it is not so clear that the example in the figure on that page actually shows harmonics. No mention is made of side bands. Some general issues also seem to receive less adequate coverage than others, notably brain mechanisms that control song production, learning, and perception. However, these are carpings about minor points. The pellucid summaries of topic after topic are so compelling that I defy anyone, no matter how expert in some speciality, to claim they have gained no enlightenment from reading this book.

Often the discussion goes beyond just clarity to become a sensible, and sometimes critical, review of contentious topics. I particularly enjoyed the treatments of dawn chorusing, female responses to song, adaptations for sound transmission, repertoires, and dialects in relation to genetics. Each of these topics has attracted its own specialized literature, which the authors adroitly summarize and criticize.

Perhaps the greatest disappointment of the book is its sharp boundaries. What the reader misses most are connections to larger issues in ethology, neurobiology, and evolution. No doubt, including such connections would have increased the size and complexity of the presentation. The enticing progression of topics would surely not have survived. It is a trade-off, however. For example, the reader gets a sensible discussion of songs in relation to some simple issues in sexual selection, but no hint of the potential complexities.

My minor reservations about this book should not detract from its overall excellence. Its clarity and focus on the issues are an inspiration. For bird song the only comparison is William Thorpe's slim classic from 1961. Like that volume this one presents no new hypotheses and no grand syntheses, but I predict that it will take the lead from its predecessor in steering our ideas about bird song for some time to come.—R. HAVEN WILEY, Biology Department, University of North Carolina, Chapel Hill, NC 27599-3280.