



EDITED BY ROBERT M. ZINK

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 Black Robin: Saving the World's Most Endangered Bird.—David Butler and Don Merton. 1992. Oxford, Oxford University Press, 294 pp., 127 text figures, including 105 color or black-and-white photographs. ISBN 0-19-558260-8. \$45.00 (cloth).—The saga of the rescue of the Black Robin (*Petroica traversi*) from the brink of extinction over the past 20 years is documented painstakingly in this inspirational book. For at least the last 100 years, the species had persisted in a small 9-ha patch of windswept forest and scrub on the summit of Little Mangere Island, a tiny rock stack rising like a blunt needle 200 m above the sea in the Chatham Islands (800 km east of mainland New Zealand). The entire species' population had sunk to a low of five birds and only one breeding pair by 1980 and, thus, desperate measures were instituted by a small team of scientists and conservationists lead by Don Merton.

The value of this book is that it chronicles the temporal sequence of these interventionist management strategies, including the now famous and exceedingly risky experiment to increase breeding success by cross-fostering Black Robin eggs and chicks to phylogenetically distantly related Chatham Island Warblers (*Gerygone albofrontata*), and later to closely related Chatham Island Tits (*Petroica macrocephala chathamensis*). This was followed by an equally daring inter-island transfer of birds to more suitable habitat on South East Island, where they potentially would be in direct competition with Chatham Island Tits. An earlier transfer experiment to nearby Mangere Island that presaged this effort was typical of the thought and planning that went into the team's management practice, but the habitat there was not extensive enough (only 4.2 ha) to resurrect the species to a viable population size. Having visited the Chatham Islands to do fieldwork twice in the last two decades, I am familiar with the difficulty of the terrain, often inclement weather, lack of facilities, and logistical problems in this remote archipelago. However, I did not previously appreciate that all of these difficulties had to be overcome on what was by international standards

a shoestring budget. I am filled with admiration for the dedication, fortitude, and intrepidity of the New Zealand Wildlife Service crews and their volunteer assistants in pulling off this remarkable recovery plan. Current estimates are that the total population on South East and Mangere Islands is stable at about 130 birds, a remarkable 26-fold increase over the 1980 low.

As with nearly all such rescues, the interest lies in the details, most of which are usually kept locked away in departmental files or in field notebooks. With the publication of this book, we are able to see the trials and tribulations faced by field workers, to sense their frustration with bureaucratic procedures that might threaten the success of their work, and to assess the successes and failures of their management program. The authors are to be congratulated for being so forthcoming because their candid style provides a broad base of techniques and experiences for conservationists contemplating recovery programs of other endangered species of birds. The early problems of mal-imprinting of Black Robin young to their foster parents could and should have been avoided by transferring the eggs back to their parents or to other incubating conspecifics. Presumably, this problem was exacerbated by having so few breeding pairs to work with when the population was very small. Another snippet of interest to population biologists is that some birds in the newly established populations on South East and Mangere Islands laid clutches of three eggs, whereas their contemporaries in the ecologically restricted source population on Little Mangere Island had laid only two eggs. By cross-fostering clutches as soon as they were laid and then destroying nests to speed re-nesting attempts, the field team was able to effectively compress the breeding cycle and dramatically boost egg production. The birds were perfectly capable of producing three broods of chicks each breeding season under this intensive management regime. Supplementary feeding of Black Robins by the team members also produced the heaviest chicks ever recorded. This illustrates that there are fewer genetic constraints on reproduction than commonly assumed by avian ecologists. No obvious trade-off was

apparent between increased allocation to reproduction and longevity, as predicted by life-history theory. For example, two of the longest-lived birds were the now-famous female "Old Blue" and the male "Old Yellow," who together have been credited with saving the species because of their unusually high productivity. Although the primary focus of this program had to be restoration of population size, it seems a great pity to me that ecologists were not assigned to work with the team and, thus, maximize the scientific data and its significance to population regulation. For example, there is a strong hint that density-dependent effects are now beginning to reduce productivity in the new populations following the cessation of interventionist management practices in the 1990–1991 breeding season.

The extreme reduction in population size to five individuals (and possibly one female) makes the Black Robin an extremely important species in the ongoing debate about the relevance of genetics, demography, and ecology in the conservation of endangered species. In a recent perspective in *Science*, Caro and Laurenson (1994) argued that predation of cubs was a much more important factor in the endangerment of wild cheetah populations, rather than previously documented genetic factors. They questioned whether inbreeding depression or loss of genetic variation in small populations were important in species conservation, as no population had been shown to go extinct from these genetic factors. Much the same conclusion is reached for the Black Robin by Butler and Merton, who noted that the species has high egg fertility and hatchability, high survival in their first year, and no "particular vulnerability to disease." The only maladaptive trait they perceived was in the tendency for some birds to lay eggs on the rim of nests inside nest boxes rather than in the nest cup. However, throughout the book there are indications of problems that might be attributable to inbreeding depression, such as infertility of some birds, deformed chicks, and poor parental behavior. Unless these effects are dramatic, they are likely to be ignored in the face of more pressing ecological and demographic concerns. A recent study of DNA fingerprint variation has shown that the species is genetically impoverished relative to translocated populations of South Island Robins (*P. australis australis*) founded with only five individuals, suggesting that effective population size in the Black Robin has been historically very small (Simone Holmes pers. comm.). We might anticipate that that these bottlenecks have reduced variation at MHC loci mediating the immune response to pathogens and parasites, and this may explain why cross-fostered chicks were extremely susceptible to nest parasites in other species nests, and usually died. Great care also was taken to eradicate outbreaks of avian pox because the team feared the Black Robins might succumb to these diseases. While it is undoubtedly true that in the short term endangered species are threatened more by de-

mographic and ecological factors, a rational approach to conservation will also incorporate genetic assays to assess long-term prospects for survival. It would be a grave mistake to ignore the latter, as a relatively small population of 130 Black Robins could easily be decimated or extirpated by an outbreak of an infectious disease borne by any of the millions of seabirds on the islands, or by introduced passerines.

In summary, this is a fascinating book that all conservation biologists will want to have on their bookshelves. It will also hold much attraction for ornithologists in general, particularly those interested in island birds. Because of its popular style it is both easy and enjoyable to read, and I recommend it heartily to all.—ALLAN J. BAKER, *Department of Ornithology, Royal Ontario Museum, Toronto, Ontario M5S 2C6, Canada.*

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The Ecology and Conservation of Palaearctic-African Migrants.—Humphrey Q. P. Crick and Peter J. Jones (Eds.). 1992. *Ibis*, Volume 134, Supplement 1. Tring, Hertfordshire, United Kingdom, British Ornithologists' Union. 132 pp. £10.00 (UK) or £11.00 (overseas).—This informative volume is composed of papers from a conference organized by the British Ornithologists' Union, the British Trust for Ornithology, and the International Council for Bird Preservation convened at the University of East Anglia, Norwich, from 4–7 April 1991. The conference took as its starting point R. E. Moreau's monumental *The Palaearctic-African Bird Migration Systems* (1972). As expressed by Crick in his introduction, the conference and resulting volume are "a testament to the progress, or in some cases the lack of progress, that has been made in the intervening 20 years."

The volume contains three introductory chapters and four thematic sections ("the breeding grounds," "migration," "the wintering grounds," and "populations"), and the breadth of topics addressed is impressive. The comprehensive purpose, as stated by Fry, is one of providing a solid scientific understanding of the ecology and behavior of Palaearctic-African migrants, which in turn can form the basis of biological conservation of these species. Contributions representing major programs of European migrant research, such as long-term population monitoring, physiological and morphological aspects of migration, and studies of the genetics of migration (Bertold's paper is particularly instructive) are included, as well as a number of papers on habitat use by migrant species, especially on their African wintering grounds. There are many points of comparison be-

tween the Palaearctic-African migration system and the Nearctic-Neotropical system; several papers, especially those of Mönkkönen et al., Leisler, and Kelsey, seek to compare the two systems or to apply insights from Nearctic-Neotropical research to the Palaearctic-African system.

To one acquainted mainly with migration in the New World, many of the most interesting papers are those addressing aspects of Palaearctic-African migration without parallel in the Americas. Papers by Bairlein and Biebach on trans-Saharan migrants provide perspective on the strategies evolved by small passerines for dealing with this formidable geographic barrier. McCullough et al. discuss the hunting and mist netting of hundreds of millions of migrant passerines each year in Europe and North Africa, and the likely effect on bird populations. Pearson and Lack present a wealth of data concerning migration patterns and ecology of migrants in East Africa, and relate the gradual southward movements of many migrants within Africa (occurring over periods of up to five months) to broad seasonal patterns of rainfall and emerging vegetation.

Several of the papers indicate, directly or indirectly, critical directions for future research in Palaearctic-African migration. Morel and Morel describe habitat changes in the Sahel and other areas of sub-Saharan West Africa, noting the effects, good and bad, of habitat modification on migrant species. Such research should be continued and expanded, and threats to species of differing ecological requirements should be assessed in light of the projected continuing agricultural development and desertification. Conservation priorities should focus on those species unable to adjust to changing land-use patterns. Baillie and Peach analyze evidence for population limitation of selected migrant species and conclude that several are limited by recruitment to the breeding population, but that others are limited by competition for resources in winter. Studies of the population dynamics of migrants have obvious conservation application, and demographic research on both the breeding and wintering grounds should be given high priority. Detailed research on migration strategies of individual species, such as that of Wood on the Yellow Wagtail, should also be emphasized, especially in light of the importance of the multiple fattening, initiation, and stop-over sites required by many Palaearctic-African migrants.

That much progress has been made since Moreau's work on Palaearctic-African migration is evident from this volume, but that much remains to be learned is perhaps even more evident. This volume is highly recommended to anyone interested in assessing the state of knowledge of Palaearctic-African migration, or interested in bird migration and conservation in general, and it will be a valuable addition to university and scientific libraries.—R. TERRY CHESSER, *Museum of Natural Science and Department of Zoology and*

Physiology, Louisiana State University, Baton Rouge, Louisiana 70803, USA.

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White Ibis. Wetland Wanderer.—Keith L. Bildstein. 1993. Washington and London, Smithsonian Institution Press. xiii + 242 pp., 62 figures, 10 tables, 8 maps, 3 appendices. ISBN 1-56098-223-3. \$22.50 (cloth).—Most of the colonial wading birds of the Northern Hemisphere are comparatively well-known, lending themselves to intensive study by virtue of being predictably and conspicuously visible in large numbers. However, as this book demonstrates, even for some of the best-studied species, very little is understood of the factors that determine population fluctuations. Careful and imaginative long-term studies such as Bildstein's study of the White Ibis (*Eudocimus [ruber] albus*), now well into its second decade, often elucidate unsuspected factors of considerable scientific and conservation significance. This book summarizes much of what has been learned about White Ibises through this study, and does so in a readable and entertaining, yet informative, fashion.

The *White Ibis* begins with: a brief introduction to ibises and their interactions with man; accounts by early naturalists of White and Scarlet ibises; and a short discussion of the taxonomic problems that convinced the author to concur with those who consider the two ibises conspecific color morphs. The second chapter relates the events that led the author to initiate a major study of the White Ibis, a bird he admits he previously thought had been adequately studied. Next follows a charming tour of the study site, its associated fauna, weather, and human history. The succeeding chapters deal with the White Ibis's breeding biology, colonial nesting, maturation, feeding behavior, habitat choice, prey choice, effects of habitat disturbance, and conservation. The author also details his brief study of the Scarlet Ibis in Trinidad, which apparently solved the mystery of this form's disappearance as a breeding bird from the island. The book closes with appendices, which summarize the family of ibises and their characteristics, and a short review of the status of the world's threatened ibis species. These appendices seem somewhat superfluous because more authoritative treatments are readily available elsewhere.

Although written in a nontechnical manner, this book addresses scientific issues in a way that amateur naturalists or students should find rewarding and stimulating. Technical terms are kept to a minimum and are thoroughly explained where necessary. Much of the book is devoted to recounting the scientific questions encountered and how studies were de-

signed by Bildstein and his research group to answer each problem, as well as the unexpected and sometimes extraordinary (such as a hurricane) pitfalls that beset his study.

This book contains few obvious errors, although ornithologists will take issue with the statement on page 129 that, in addition to ibises, decurved bills are "restricted mostly to kiwis, flamingos, curlews, bee-eaters, sunbirds, and several species of hummingbirds," because representatives of at least 18 other avian families have long decurved bills, and many others have short but strongly downcurved bills. In figure 5.4 (p. 78), which depicts the measurements taken of nestling ibises, the measure diagrammed is wing length, erroneously captioned "flight feather or primary." In Appendix 2 (p. 222), the statement that ibises differ from storks, as well as other wading birds, "by their decurved and tactilely sensitive bills" is in error, as some storks share one or both of these features.

All in all, this is a delightful, easy-going book, and a quick and painless way for the nonspecialist to learn a lot about the White Ibis. Most of Bildstein's and his collaborators' work on ibises is outlined in the book, and it would serve well as an entrée into the literature. The book also demonstrates effectively how a variety of problems can be approached with limited time and resources. In my opinion this well-produced but inexpensive book will be valuable to ornithologists in a variety of subdisciplines, such as ecology, behavior, and conservation, as well as being enjoyable and informative to amateur naturalists.—PAMELA C. RASMUSSEN, Room 336 NHB MRC 114, Smithsonian Institution, Washington, D.C. 20560, USA.

Gray Partridge (*Perdix perdix*), many of the other papers provide unprecedented access to information on numerous poorly known species.

As is the case with most conferences, the papers vary greatly in quality. Nevertheless, the diversity of participation produces valuable insight into species largely ignored in previous literature. Although it is not possible to discuss each paper individually, certain papers within each of the eight sections are noteworthy. In the introductory section on population dynamics, Carroll evaluates models of population regulation with data collected on Gray Partridge in North Dakota. Carroll concludes that nest success has the largest effect on annual population fluctuations. Although the second section is titled population ecology and ethology, most of the papers deal directly or indirectly with habitat selection. A paper by Lucio and Purroy was effective at illustrating differences in habitat selection for Red-legged Partridges (*Alectoris rufa*) in fragmented and unfragmented areas in Spain.

Sections 3, 4, and 5 examine the status, ecology, and conservation of grassland, tropical forest and swamp, and mountain species, respectively. Despite sample sizes that often are small and methods that often are crude, these sections include numerous excellent papers on species that are poorly known, including those by Kaul and Howman (Painted Francolin [*Francolinus pictus*] in India), Ash (several species in Ethiopia, Somalia, and Djibouti), Balen (partridges in Indonesia), Zhao et al. (Daurian Partridge [*Perdix dauuricae*] in China), Liu (Przewalski's Rock Partridge [*Alectoris magna*] in China), Li and Lu (Snow Partridge [*Lerwa lerwa*] in China), Ma (Himalayan Snowcock [*Tetrao gallus himalayensis*] in China), and Lukianov (Altai Snowcock [*Tetrao gallus altaicus*] in Russia).

Section 6 covers adaptation, evolution, genetics, and nutrition. Potapov provides an excellent interpretation of snowcock adaptation to mountainous conditions and their evolution into five species. Paganin and Meneguz compare gut lengths of wild- and captive-reared Rock Partridges (*Alectoris graeca*), and examine the effects of gut length on subsequent survival. Section 7 deals with ethology, captive rearing, and restocking. Beani et al. show that increased opportunity for mate choice results in increased reproductive success among Gray Partridges. A unique paper in the final section on hunting and management describes a traditional Chinese technique for capturing Daurian Partridges (Zhao et al.).

Standards for publication are perceived to be lower for papers in conference proceedings than for typical papers in journals; this is probably due to the lower intensity of peer review associated with proceedings. However, without a published proceedings, the research of many of these authors would never be published in formats accessible to most ornithologists, primarily because of the authors' language differences and lack of access to widely distributed journals. Hence, the variable quality of papers is more than

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Perdix VI, First International Symposium on Partridges, Quails and Francolins.—M. Birkan, G. R. Potts, N. J. Aebischer, and S. D. Dowell (Eds.). 1992. *Gibier Faune Sauvage* 9:283-918. Address inquiries to: M. l'Agent Comptable de l'O.N.C., CCP 9061 92 X Paris, France. ISSN 0761-9243. No price given.—Following a series of five "Perdix" symposiums in North America and three "Partridge" symposiums in Europe, 108 biologists from 26 countries participated in an intercontinental symposium in Fordingbridge, Hampshire, United Kingdom in 1991. This resulting volume includes 59 papers and 14 abstracts on population dynamics, ecology, behavior, habitat selection, nutrition, genetics, evolution, conservation biology, and management of 124 species of the subfamily Phasianinae. Although 18 papers deal with the

compensated for by the rare insight into species underrepresented in the scientific literature.

Although most ornithologists will find papers of interest in this volume, the primary audience is biologists interested in partridges, quails, and francolins and/or those interested in the conservation and management of endangered species and gamebirds. Consequently, I recommend this publication for university libraries and individuals with related interests.—MICHAEL A. SCHROEDER, *Washington Department of Fish and Wildlife, P.O. Box 1077, Bridgeport, Washington 98813, USA.*

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Ecology and Conservation of Neotropical Migrant Landbirds.—J. M. Hagan III and David W. Johnston (Eds.). 1992. Washington, D.C., Smithsonian Institution Press. xiii + 609 pp., numerous figures. ISBN 1-56098-113-X, \$48.00 (cloth). ISBN 1-56098-140-7, \$17.95 (paper).—Neotropical migrant birds (NMBs) have long fascinated avian biologists (e.g. Keast and Morton 1980), but recent concern for the conservation of NMBs has prompted an unprecedented degree of activity and cooperation among researchers, managers, governments, and nongovernmental organizations. In 1989, the Manomet Bird Observatory hosted a well-attended symposium on NMBs. This book is based on that symposium and significantly adds to our understanding of the biology and status of terrestrial NMBs.

The book is organized into four major sections: trends in populations, the nonbreeding season, the breeding season, and hemispheric perspectives. These sections are preceded by a foreword (Lovejoy), a general introduction (Hagan and Johnston), and two plenary lectures (Terborgh, Hartshorn). Overall concluding remarks (Morton) follow the sections. Each section is summarized in a short introductory chapter. These summaries are effective and especially useful for those seeking specific information because a subject index is, unfortunately, lacking.

One inescapable message from the section on trends is that NMBs are a heterogeneous group of species exhibiting diverse patterns of change in their abundances through time. By any method of census or analysis, some species clearly are decreasing at a rapid rate, but others are holding their own or even increasing in certain parts of their range. The population dynamics of NMBs simply cannot be lumped into a single identifiable category. As Hagan and Johnston stress in the book's introduction, qualitatively different trends need not be dismissed as contradictory. Rather, contrasting results often are complementary

and offer an opportunity for further research into the biology and conservation implications of such variation. O'Connor reinforces this point in the section's introduction and recommends research on species that are currently in good shape and on those in decline.

The section on trends also offers a clear and valuable lesson that abundance dynamics of NMBs (or any species) must be interpreted with caution. The data sets considered in the section are largely long-term (i.e. >10 years), but these data were collected and analyzed by several methods. In his plenary address, Terborgh questions the basic credibility of many data used in the section (e.g. the Breeding Bird Census and the Breeding Bird Survey). Whereas some might deem this overly harsh, Terborgh's point should be heeded. Estimating the relative contribution of sampling versus true biological variation is critical for judging whether trends in abundances are real or simply epiphenomenal. In acknowledging the problem, Johnston and Hagan suggest detailed monitoring as a supplement to regional surveys.

Certain analytic methods in the section are questionable, whereas other chapters offer well-reasoned, statistically sound approaches. Especially irksome is the frequent use of regression with years as the independent variable for data collected at the same site over time. Many parametric and nonparametric methods are available (e.g. Jassby and Powell 1990) that circumvent problems associated with temporal pseudoreplication. The chapters by James et al. and Sauer and Droege are among the most statistically rigorous and provide thoughtful, albeit contrasting, approaches to analyses of Breeding Bird Survey data. Also welcome is the realistic perspective offered by Hussell et al. on "variation" and why recent declines do not necessarily extrapolate to the impending extinction of a species.

Notwithstanding issues of sampling and analysis, most chapters provide useful summaries and tables that will allow readers to identify species in decline and where (by habitat or geographic region) such declines are most frequent. The summaries provided by Arendt and colleagues for recent trends within the Caribbean region are particularly complete and valuable because nearly all chapters in the section are on North American breeding populations. Interestingly, trends in abundances of species breeding in "open" habitats (e.g. grasslands and early successional forests) are especially worrisome (James et al., Sauer and Droege, Witham and Hunter, and Faaborg and Arendt) and species such as Prairie Warblers (*Dendroica discolor*) appear on nearly all "in trouble" lists.

The next section on the nonbreeding seasons contains much natural-history information and details on associations between habitat alteration and local abundances; chapters on stopover ecology also are included. Greenberg introduces the section and reports an adverse scenario for forests in Central America. Accordingly, Greenberg calls for research on

means of mitigating the effects land use on wintering populations. Several of the section's 19 chapters indicate the this approach will work for many NMBs, but the nonmigratory endemics will probably face increasingly bleak prospects without large tracts of intact forest.

Nine chapters in the section document habitat associations of NMBs on their wintering grounds in Central America, Mexico, and the Caribbean. A common topic is comparisons of NMB abundances within mature forests, younger successional forests (often called second growth), and agricultural or severely disturbed habitats. Whereas NMBs again emerge as a heterogeneous group, most species are tolerant of, or favored by, moderate levels of disturbance. In contrast, ground foragers such as the Kentucky Warbler (*Oporornis formosus*) and Wood Thrush (*Hylocichla ustulata*) are more restricted to mature forests, and these species will likely be those most affected by continued deforestation. Powell and Greenberg report that even agricultural habitats can accommodate certain NMBs if isolated trees are retained. Robbins et al. point out that the toxicological effects of agricultural pesticides on NMBs are unknown.

Other chapters in the section (Staicer, Mabey and Morton, and Wiedenfeld) report on the behavior of selected species and demonstrate how natural-history information can help to identify (or manage) the specific mechanisms whereby habitat affects abundances or survival. The five chapters on stopover ecology (Moore and Simons, Bairlein, Vidal-Rodriguez, Atwood, and Winker et al.) further illustrate the complexity of conservation strategies associated with the complex life cycle of NMBs. How migrating birds select stopover areas is an important research question and critical for managing the size and structure of potential stopover sites.

The section on the breeding season contains eight chapters that complement each other well with effects of fragmentation as a common theme. With the exception of Bollinger and Gavin's chapter on Bobolinks (*Dolichonyx oryzivorus*), all data are on forest birds. As stressed by Robinson in the introduction and in Martin's chapter, demographic data linking fitness components such as survival and recruitment with habitat are crucial for understanding population dynamics. The adverse—potentially catastrophic—effects of fragmentation on productivity are clearly illustrated in Robinson's chapter on NMBs breeding in the severely fragmented landscapes of Illinois. Rates of nest predation and brood parasitism are so great in Illinois' woodlots that the dynamics of NMB populations in the region may be uncoupled from local rates of reproductive success. Thus, the source-sink model of population dynamics is applicable. Villard et al.'s chapter on population dynamics in Ontario also corroborates source-sink models. Moreover, Freemark et al. convincingly argue that effects of patch size and fragmentation are best interpreted by considering

the landscape context and proximity of large tracts of forest.

In contrast to the Midwest, annual variation in recruitment of NMBs in the large contiguous forests of New England are related to the previous year's rate of nest success (Sherry and Holmes). Differential rates of nest success stemmed from variation in predation and food availability. Nearly all papers in the section corroborate Martin's thesis that predation has strong influence on the fitness of NMBs. The chapters by Sherry and Holmes and that of Blake et al. report that variation in rainfall (too much or too little) can significantly affect the demography of NMBs in North America.

I particularly enjoyed Litwin and Smith's account of long-term changes in NMB populations in Sapsucker Woods, New York. This chapter is one of the few (along with those of Lynch and Hunter) to consider the importance of historical effects such as land use, succession, and natural disturbance cycles.

The final section on hemispheric perspectives was intended to address the role of global change, but the papers have varying levels of relevance to the topic, and I found this section to be the least coherent. Based on current understanding of life history and paleoecological evidence, Hunter contends that NMBs are comparatively plastic and better adapted to prospective climatic change than the permanent residents of boreal forests. Ricklefs presents a model that depicts NMBs as a demographic link between resident populations in North America and the Neotropics. Many assumptions of this model require empirical support, but the premise offers several interesting topics for further theoretical and empirical research. The chapter by Holmes and Sherry discusses site fidelity of warblers on wintering and breeding grounds, and illustrates why we need to understand the effects of habitat destruction on NMBs during all phases of their life cycle. This chapter is important and would have better served as part of a general introduction to the book.

Overall, the book is excellent and provides an almost overwhelming amount of readable information and analysis. One minor shortcoming was that several authors ignored data and conclusions in papers other than their own. Summaries declaring habitat losses on breeding versus wintering grounds as "the problem" were unconvincing.

In sum, this book belongs in all libraries and bookshelves as an essential reference for conservation biologists and avian ecologists. Managers may find some of the material a bit specialized, but not inaccessible. Spanish versions of all abstracts also are included.

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—JEFFREY D. BRAWN, *Illinois Natural History Survey, 607 East Peabody Dr., Champaign, Illinois 61820, USA.*

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Nesting Birds of the Coastal Islands: A Naturalist's Year on Galveston Bay.—John C. Dyes. 1993. Austin, Texas, University of Texas Press. xii + 160 pp., 14 color plates, 50 black-and-white photographs. ISBN 0-292-71567-6. \$24.95.—Something's right with the world when retired oil-industry engineers spend their time writing books like this. The author, a former chemical engineer with Marathon Oil, has compiled eight years' worth of photographs and observations of waterbirds breeding on islands in Galveston Bay, Texas. His love of his subject and his concern for the conservation of these island habitats show on every page.

This book is presented as a "diary" of a single year's breeding cycle on natural and dredge-spoil islands in Galveston Bay. The narrative is, in fact, a curious (and sometimes disjunct) mix of personal memoir, species descriptions, avian etymology and anecdotes, and discussion of the historical and contemporary conservation issues surrounding colonial waterbirds in coastal Texas. Chapters are organized into months, and contain accounts of the breeding-related activities of the resident pelicans, herons, egrets, gulls, terns, spoonbills, ibises, and cormorants. Photographs and species accounts are interspersed, along with passages describing the vicissitudes of photography (which seems to have been the author's initial primary aim) in a waterbird colony. The book's reference value is somewhat reduced by this manner of organization: species accounts for the Black-crowned Night-Heron and the Little Blue Heron appear, respectively, in "April" and "July." This slim volume is abundantly illustrated, and many of the illustrations are quite handsome. Considering that the author is color blind, the color plates are particularly admirable, although this volume as a whole would have been easier on the eye (although undoubtedly harder on the wallet) had they been scattered throughout the text instead of placed, in a clot, at the front of the book.

This publication is not meant to be a technical manual or a research contribution, but is a competent, often charming, summary of the basic breeding biology of the colonial waterbirds in a part of Texas perhaps better known for its refineries than for recruitment. The book's strongest point is clear, infor-

mative writing, marred only by a very few ill-advised flights of fancy (Chapter 1 begins, "My islands sleep through January. They need long, deep rests after very busy years"). As a layman writing (presumably) for laymen, Dyes succeeds in avoiding anthropomorphization while simultaneously shunning jargon. The emphases throughout are on the scarcity of breeding habitat for these birds, the damage caused by disturbance, and the importance of conservation efforts to populations of waterbirds in Texas. I recommend this book for nonprofessionals interested in coastal birds, and for birders with interests in this area of Texas, and in aspects of colonial waterbirds that extend beyond simple identification. It would be useful in community and high-school libraries, and in personal collections.—MARGARET A. RUBEGA, *Ecology, Evolution & Conservation Biology Program, University of Nevada, 1000 Valley Road, Reno, Nevada 89512, USA.*

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Bird Life of Coasts and Estuaries.—Peter N. Ferns. 1993. New York, Cambridge University Press. xiv + 336 pp., 20 halftones, 71 line diagrams, 20 tables, 1 appendix. ISBN 0-521-34569-3. \$54.95.—For those among us with a secret, gnawing suspicion that the British are still, somehow, our superiors, this book will offer little relief. The more well-adjusted among us will simply welcome this addition to our libraries because Peter Ferns has, as they say, done a dashed wonderful job. The second in the Cambridge Bird Life Series (there will be six), this volume lives up to the Cambridge Press standard of beautifully produced, beautifully written, comprehensive reference and text books (with the caveat that the binding seems to have been carelessly done; the entire first signature of my copy fell out, scattering pages as it went, on the first reading).

This contribution (and probably the rest of the series) is somewhat misleadingly named. It contains not just descriptions of the birds found in British coastal areas, but a careful, research-based discussion of the ecology of coastal habitats, and the resulting foraging and breeding behavior, distribution and abundance of the birds found there. Six chapters cover the coastal environment as a whole; the open sea (which in some minds may not be coastal, but could hardly have been included in the other titles forthcoming in this series, e.g. *Bird Life of Towns, Parks and Gardens*), rocky shores, cliffs and shingle beaches, mudflats and sandy shores, the coastal fringe, and threats to coastal birds. Chapter 1 describes the physical factors which historically and currently contribute to the geomorphology and primary production of coastal areas and,

hence, their value as habitat. This first chapter introduces us to the approach applied throughout the book; the stated aim of the book is the description of the bird life of the British Isles and, while most (though far from all) the illustrative examples used are from these islands, the discussion addresses fundamental concepts in a sufficiently general way to be applicable almost anywhere in the world, and particularly on the Atlantic coast of North America. Ferns provides fine, succinct summaries of important concepts not always considered in coastal conservation efforts (e.g. the importance of scale when measuring coastline or remaining coastal habitat).

Chapters 2 and 3 are dedicated almost entirely to seabirds and their habitats, covering the major seabird groups, their behavioral and morphological specializations for life at sea, the biomechanics of flight over water, foraging and diving, rocky-shore coastal areas as breeding habitat, adaptations to cliff nesting, numbers of breeding seabirds, nest-site limitation, clutch sizes, growth of young, diet and foraging range. Although this book's most valuable contribution may be its holistic treatment of all birds associated with saline through brackish habitats, these chapters make it plain that Dr. Ferns has another book in him, probably entitled *Sea-Bird Life*. The breadth and detail of these chapters is almost certainly due to the wealth of seabird research at Fern's disposal; again, the overview is sufficiently general to be widely useful. He ranges far afield of the British literature in his citations, although his reasons for citing some examples and not others are unclear; for example, he completely overlooks 20 years worth of work by Hunt and his colleagues in a discussion of seabird distributions at sea.

Chapters 4 and 5 cover, respectively, mudflats and sandy shores, and the coastal fringe (meaning salt-marsh, sand dunes, and habitats just inland thereof). These correspond, roughly (though not exclusively), to chapters on shorebirds/waders and ducks/geese. The available information on the influence of physical factors on the prey base (and hence on avian feeding specializations, foraging behavior, etc.) is synthesized with an equal degree of skill, though perhaps in somewhat less detail, as for seabirds. These chapters are, of necessity, rather more specific to the British Isles, but will still be of interest to anyone concerned with the effects of weather, hunting, and habitat destruction on the behavior, numbers, and distribution of aquatic birds.

The book concludes with a chapter on threats to coastal birds that is excellent, and exhaustive in its consideration of factors affecting the size and diversity of coastal bird populations. Ferns makes a strong case for the need for a national policy on coastal areas, incorporating not just a recognition that some kinds of coastal habitat need protection, but mandating consideration of the state of the coast on both local and national scales when decisions are made about the

use of any given coastal area. Britain is far from the only country in need of this sort of policy; if the British find a way to institute and enforce such a policy, they will indeed be superior to the rest of us.

The book contains a number of beautiful illustrations by Chris Rose; they are so well done that some of the figures drawn by the author, in contrast, look diagrammatic in the extreme. The text is amply illustrated throughout with tables, graphs, and figures, and contains few detectable mistakes; in one of the rare exceptions the author states that the pecten (an eye structure) is unique to birds, when in fact it is a feature shared with reptiles. Also, the downside to Fern's admirable ability to summarize disparate information as a unified whole shows in several apparently unsupported generalizations. For instance, in Chapter 4 (p. 166), in reference to distribution of waders on wintering grounds, he states that "there is no doubt that size dimorphism influences the behavior of waders in winter." There is, in fact, no doubt that in many cases sexually size-dimorphic species segregate with respect to wintering grounds, but to my knowledge there are no data causally linking size dimorphism to the distribution of the sexes in winter, nor does Ferns cite any. In Chapter 5 (p. 206) he forwards the hypothesis that mating-system variation in waders is likely to represent adaption to variation in environmental conditions, declaring that "Monogamy is generally a suitable strategy where conditions are relatively stable from year to year, but various forms of polygamy, and the associated production of multiple clutches, allows individuals to take advantage of good years and of newly appearing patches of suitable habitat." This point of view will be news to mating-systems theorists, who generally seem to believe that polygamy is driven by mate and/or resource distribution and availability, and overlooks completely that polygamy, in stable or unstable environments, is a loser's deal for the sex stuck with a single clutch, a single mate, and the burden of parental care.

These few flaws aside, this book is an important and useful synthesis of the ecological literature on coastal birds, especially seabirds, shorebirds, and waterfowl. Its emphasis on birds of the British coast will not detract from its usefulness for professionals working on ecological questions related to aquatic birds, conservationists with a global outlook (as all conservationists ought to have), and nonprofessionals interested in a clear, concise explanation of how ecological factors affect bird behavior, numbers, and distribution. I recommend it as an excellent, as well as a possible textbook for an undergraduate course in coastal avian ecology. It certainly should be in university library collections, and in the personal collection of everyone interested in aquatic birds.—MARGARET A. RUBEGA, *Ecology, Evolution & Conservation Biology Program, University of Nevada, Reno, 1000 Valley Road, Reno, Nevada 89512, USA.*

The Auk 112(1):276–278, 1995

Molecular Markers, Natural History and Evolution.—J. C. Avise. 1994. New York and London, Chapman and Hall xiv + 511 pp. ISBN 0-412-03771-8; \$89.95 (cloth). 0-412-03781-5, \$37.50 (paper).—Neo-Darwinism emerged in the decade of the 1920s as an elegant synthesis of the idea that evolution results from natural selection operating on Mendelian genes transmitted across generations through populations of living organisms. In the ensuing decades of the 1930s, '40s, '50s, and early into the 1960s, the neo-Darwinian "paradigm" was successfully "articulated," but with a growing imbalance between theoretical progress and empirical corroboration. This is not to say that neo-Darwinism failed at the empirical level; rather, the genetic markers necessary to test the theoretical predictions generated by the mathematical theory of population genetics were limited to a few chromosomal variants and phenotypically visible mutants. This changed, dramatically, in 1966 when the application of protein electrophoresis to the problem of measuring genetic variation in natural populations was reported in three independent studies by Harris, Lewontin and Hubby, and Johnson et al.

Molecular Markers, Natural History and Evolution is a synopsis and articulation of much of the molecular work since 1966 that has focused on classic problems that have intrigued evolutionary biologists for decades, such as: How much genetic variation exists in natural populations? What genetic changes are associated with speciation? What are the levels of kinship among members of social groups? And, how can evolutionary history be reliably inferred? Avise has participated as fully as anyone in this remarkable era and provides in this book both a sweeping overview of evolutionary biology in the molecular era and a myriad of examples and paradigms that test and articulate the neo-Darwinian theory at the levels of whole organisms, populations, and biotas. Many books on molecular evolution focus on evolution of the molecules and genes themselves; but this book, although it provides essential information on molecular evolution, very much focuses on the applications of molecular biology for understanding whole organisms—their systematics, their biogeography, their adaptations, and their natural history.

The word paradigm has come to have two related but somewhat distinct meanings in science. In its more conventional meaning, a paradigm is a model for a set of repeated patterns, such as the conjugation of a regular verb in grammar. In this sense biologists often use the term paradigm to characterize an experiment or set of observations made on one species, or in one situation, that serves as a model for the phenomenon that (presumably) occurs generally. But, Thomas Kuhn in his influential book *The Structure of Scientific Rev-*

olutions, broadened this meaning by characterizing a set of scientific achievements, such as the formulation of a new theory and the gathering of some dramatic empirical support for the theory, as a paradigm (e.g. neo-Darwinism) for further work in that science. The Kuhnian paradigm has the properties that it must be successful in explaining a realm of nature (e.g. the diversity and adaptive nature of life) to the extent that it attracts adherents from older, less successful paradigms (e.g. neo-Lamarckism), and at the same time is sufficiently open ended to allow converts to extend, or articulate, the paradigm to explain nature and, indeed, discover new phenomena in nature. Kuhn further characterized the process of articulation of the paradigm as normal science, the day-to-day execution of experiments designed within the conceptual framework of the paradigm—the stuff that NSF proposals are made of and that is published in *Evolution*, the *American Naturalist*, and the *Auk*.

Molecular Markers, Natural History and Evolution is the quintessential articulation of a paradigm—the Neo-Darwinian paradigm—and is normal science at its best. And let me dispel any sense that normal science is a pejorative term, that normal science is in some way uninspired or unimaginative science—it is not! It is simply the science that must be done during periods in the history of that science when an established paradigm is being successfully articulated. Indeed, the normal science embodied in the application of molecular-genetic markers to the study of evolution is nothing short of breathtaking. The idea is astonishing that mitochondria and chloroplasts came to be eukaryotic cell organelles as the result of ancient symbioses between proto-eukaryotic host cells and ancient eubacteria. It is astonishing that these events happened, but just as astonishing is that we know they happened, that we can take a tool, molecular-genetic markers, and apply that tool in context of the scientific method to gain a vision of events that occurred perhaps three billion years ago. And so when Avise begins his preface with the words "I never cease to marvel that the DNA and protein markers magically appearing on laboratory gels and autoradiographs can reveal so many otherwise hidden facets about the world of nature," he establishes not only the premise for this book but conveys the emotion that he and so many other molecular evolutionists feel about this remarkable period—the present period—of evolutionary biology.

The book is divided into two major sections, (I) Background, and (II) Applications. The four background chapters provide the rationale for using molecular-genetic markers, review the history of molecular phylogenetics, and review molecular and interpretive tools (data analysis). The rationale for using molecular markers is manifold, but most fundamentally their great power stems from the fact that protein and DNA markers are genetic; neo-Darwinism is, after all, a theory of genetic change. Even in phylo-

genetics, Avise points out, the simple and relatively well-understood relationship between a molecular character state (e.g. a nucleotide substitution) and its genetic basis is a powerful tool that allows one to make an informed inference about homology versus homoplasy. This advantage of molecular-genetic characters is not widely appreciated. Another important aspect of molecular-genetic characters, especially to ornithologists, is that they make virtually all species amenable to genetic analysis—not just those that can be bred in captivity. It is no coincidence that population-genetic studies of avian species were nearly nonexistent before the molecular era and, as Avise points out, birds appear to have unique modes of evolution in that intertaxon molecular divergence is extraordinarily low relative to other vertebrate groups, and that populations spread over wide areas tend to exhibit relatively little geographic structure. The former probably results from a high rate of morphological evolution and the resultant tendency of avian systematists to “over split” taxa; the latter from flight resulting in high gene flow. Avise provides interesting historical perspectives (Chapter 2) on the neutralist-selectionist and phenetic-cladist debates, which have dominated and channeled theoretical thinking in the molecular era—certainly not always along the most productive avenues. Neutral theory, which Avise credits with providing “molecular evolution’s gigantic null hypothesis” drove the “find-em and grind-em” area of protein electrophoresis when attempts were made to correlate genetic population parameters, such as heterozygosity, with everything under the sun. This was not molecular evolution’s finest hour. Avise concludes: “The numerous correlations involving heterozygosity . . . remain intriguing, but largely unexplained.” Ironically, the momentum in the neutralist-selectionist debate shifted with the transition from protein to nucleotide data in favor of a selectionist perspective. Testing the “gigantic null hypothesis” with allozyme data appears to have resulted in a gigantic false acceptance of the null hypothesis. But, to spread the irony evenly, Avise points out that genetic diversity is actually lower than neutral theory predicts, and the inferred selection is purifying rather than balancing as advocated by the old balanced school.

Avise is not an ideologue, and he presents the often disparate views on topics fairly—and with remarkable, sometimes unprecedented, clarity. Only once does he get on a “soap box,” and there he stands tall as he mildly scolds combatants in the cladist-pheneticist debates for having diverted attention from the application of molecular-genetic markers to problems in evolutionary biology. In this instance he is harder on cladists, referring to Hennig’s *Phylogenetic Systematics* as “the original ‘bible’” of the cladistic school and finding “little justification for the rancor of the cladistic attack on phenetics.” Remarkably, phenetic algorithms (now more commonly called dis-

tance algorithms because they are based on genetic distance between taxa, but also to avoid the inflammatory use of the word phenetic) usually give identical or substantially the same result as parsimony (cladistic) algorithms when applied to molecular data sets. One reason for this, Avise concludes, is that many character conflicts arise in phylogenies constructed from large data sets, and resolution of these conflicts is inherently statistical in nature. This curious validation of distance methods applied to molecular data should be of outstanding interest to ornithologists because DNA-DNA hybridization, which provides only distance measures of relatedness, has made a huge contribution to avian phylogenetics. (Some of Sibley and Ahlquist’s work is reviewed in the applications chapter on “Species Phylogenies and Macroevolution”.)

The applications section comprises six chapters: Individuality and Parentage, Kinship and Intraspecific Phylogeny, Speciation and Hybridization, Species Phylogenies and Macroevolution, and Conservation Genetics. Each chapter is chock-full of examples that illustrate these and related conceptual touchstones, and the touchstones are knitted together by brief historical and theoretical discussions. More lengthy digressions into theory, historical chronology, techniques, etc., are set off from the main text in numbered boxes, which usually run a page in length, but even these elaborations are notable for conciseness and clarity. A boxed compilation of the cladistic lexicon, and boxed discussions of effective population size and species concepts are three of many examples.

The essence of the book is the examples, or paradigms. Each chapter or major subheading begins with a brief introduction, which typically ends with a statement like “the purpose of this chapter is to illustrate by chosen examples some of the wide variety of problems and approaches in supraspecific phylogeny tackled through molecular markers.” The examples are too numerous to abstract even briefly here but range over DNA fingerprinting in forensics, assessment of levels of recombination in *E. coli*, kin relationships in lion prides, the monophyletic origin of bats, evolution of interspecific brood parasitism in cowbirds, global phylogeny of the fungi, horizontal transfer of genes, evolution of the mtDNA genetic code, and genetic stock assessment in commercial fisheries. The range of taxa represented is extensive, ranging from the Archaea (Archaeobacteria) to angiosperms to all of the major invertebrate and vertebrate groups. The book includes a separate taxonomic index by genera. Of interest to ornithologists is a large number of avian examples that include: gender determination in Herring Gulls, a tabulated summary of cuckoldry and egg dumping in passerines, sperm competition in Spotted Sandpipers, philopatry and gene flow in Snow Geese, population structure and intraspecific taxonomy in Sharp-tailed Sparrows, tests of biogeographic hypotheses on the Black-throated Green Warbler com-

plex, and many more—the taxonomic index lists 50 avian genera.

In reviewing a book, one of course asks: What use is this book? This is not a textbook, although it could be used in that context, and it lacks the depth of exposition and size expected of a major reference work, although I will often use it as such. The book is best described as a survey of theory and applications of molecular biology to natural history “written at a level that is appropriate for the advanced undergraduate or graduate students, or for such scientists in fields such as ecology, genetics, ethology, molecular biology, population biology, and conservation biology who may wish a readable introduction or refresher to the burgeoning application of molecular markers in their discipline” and with the hope of capturing “the genuine excitement that can be brought to such fields when genetic attributes with known patterns of inheritance are applied to organismal-level issues” (p. xi).—WILLIAM S. MOORE, *Department of Biological Sciences, Wayne State University, Detroit, Michigan 48202, USA.*

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Status and Management of Neotropical Migratory Birds.—Deborah M. Finch and Peter W. Stangel. 1993. U.S. Department of Agriculture, Forest Service, Rocky Mountain Forest and Range Experiment Station, Gen. Tech. Rep. RM-229, Fort Collins, Colorado. iv + 422 pp. Available on request.—Migratory birds that breed in the Nearctic region and winter, all or in part, in the Neotropics have become a topic of considerable interest in recent years. Despite the fact that migrants may be no more or less inherently appealing than colonial waterbirds, ant-following species, or any other group of birds that share a particular behavioral characteristic, growth in migratory bird programs in the past half decade has been remarkable. What factors account for the rapid increase in interest in this group, to the point where the migratory bird program, Partners in Flight (PIF), now has a distribution list for its newsletter of 12,000, and nearly every state, park, and national forest has a migratory bird coordinator? First, declines have been reported from a number of different sources for nearly one-third of the 350 or so species of Nearctic migrants that winter in the Neotropics, raising concerns among large parts of the public that a “silent spring” may once more be approaching. Second, migrants are a potent symbol of the fragile nature of globally shared resources. In addition, formation of PIF as a sophisticated advocacy and action organization has played a key role in the meteoric rise in interest in migrants. This group of concerned state, federal, and private agencies was organized in 1990, largely through the efforts of Amos

Eno and others at the National Fish and Wildlife Foundation (NFWF) and the U.S. Forest Service (USFS). At the time, some government agencies as well as nongovernmental organizations (NGOs) were not pleased at the tactics used by NFWF and USFS in forcing a coalition, but it is hard to complain now given the enormous success of their efforts.

The volume reviewed here is the product of a workshop convened at Estes Park, Colorado, from 21–25 September 1992. Deborah Finch (USFS) and Peter Stangel (NFWF) not only edited the book, but served as major players in the founding and organizing of PIF. Stangel has edited the enormously successful PIF Newsletter since its inception four years ago. “Newsletter” no longer seems an appropriate title for this journal that provides regular updates on migratory bird programs; the most recent issue has 86 pages.

The purpose of the workshop and the volume emanating from it was to “bring together researchers and natural resource managers to discuss ideas, problems, and solutions for managing neotropical migratory birds.” In terms of providing a forum for discussion of migrants, the workshop was unquestionably a resounding success. Over 700 participants gathered in Estes Park for a week to ponder and debate migrant problems, including many prominent persons from both the natural resource field and the migratory bird research community.

The quality of the contributions runs a broad gamut from innovative and insightful to misguided. This range is, perhaps, to be expected in an effort that includes 56 papers from a wide range of backgrounds and disciplines. Normally, one can fault the editors when papers of low quality are included; but, in this case, some latitude must be allowed because part of the exercise was to be as inclusive as possible, which must conflict with the editors’ responsibility to accept only the highest-quality product.

The book is divided into an Introduction and seven topic sections. I will follow the same outline in this review. The Introduction, written by the editors, Finch and Stangel, explains the purpose of the volume, and presents the organization of the proceedings and principal findings in clear and concise form, providing excellent summaries for each of the sections. Two key elements, however, are missing: a definition of what constitutes a “Neotropical migratory bird,” and a list of the species that meet this definition. Omission of these elements perhaps is understandable given the level of debate surrounding them. As Levey (1994) pointed out, the PIF definition of a “Neotropical migrant” as an upland species that breeds in the Temperate Zone and winters in the Neotropics “excludes Austral and intratropical migrants, an exclusion that is more than a problem in semantics.” In his commentary, Levey suggested use of the term “Nearctic-Neotropical migrants” and presents the reasonable definition of “a species that breeds north of the Tropic of Cancer and spends the nonbreeding season to its

south." The list of species that was ultimately generated and published based on the PIF definition (Gauthreaux 1992) represents various compromises and excludes whole groups of species that breed in the Nearctic and winter in the Neotropics (e.g. waterfowl, most shorebirds, ciconiiforms, and many others). Unfortunately, the list is biologically indefensible.

The first of the seven topic sections is entitled "Changing Values and Partners in Flight" and contains an eclectic selection of nine papers, ranging in subject from migrant population trends (Robbins et al.) to use of migrants as measures of "ecological integrity" (Maurer). Several of the papers present state, federal, NGO, and Canadian perspectives on PIF. These works now seem dated. September 1992 was not very long ago chronologically, but in terms of the history of PIF, it is antediluvian. In contrast, the homily by Wigley and Sweeney on how to gain cooperation from private landowners in migrant conservation programs (beef up incentive programs, reduce regulation) sounds positively timeless.

The most interesting work in this section is that by Kerlinger on the economics of bird watching. He effectively makes the point that one key to migrant conservation includes identifying a migratory-bird constituency and finding ways to enlist that constituency in supporting their interest, just as hunters support wildlife-management programs through their license fees. The paper includes some intriguing data on the 10 most-visited birding hotspots in the United States, numbers of bird watchers, and amounts they contribute to the economy.

The second section is titled "Population Dynamics and Habitat Concerns" and includes five papers, four of which are reviews pulled together by ad hoc teams of researchers on the topics of transient stopover habitat (Moore et al.), winter habitat use (Petit et al.), cowbird parasitism (Robinson et al.), and natural disturbances (Rotenberry et al.); the fifth, by Sherry and Holmes, is a consideration of the question of when during the annual cycle migrant populations might be regulated (throughout, they conclude). These summary papers, as well as some others in this volume, will appear in an expanded version as chapters in the forthcoming book *Ecology and Management of Neotropical Migratory Birds: A Synthesis and Review of Critical Issues*, edited by Martin and Finch (Oxford Univ. Press).

Section III, "Prioritizing Regional Species of Concern," contains an introductory chapter by Hunter et al. describing the PIF prioritization scheme. The other four chapters address efforts using these procedures to develop regional lists for the U.S. It is easy to quibble with the PIF prioritization system, mainly because so much subjective judgement is involved in evaluation of both breeding and nonbreeding "threats." Obviously, some species that are not in trouble will be wrongly identified as being "of concern" and, more seriously, others that are in trouble

will be missed. Nevertheless, the listing process is likely to be the single most valuable tool that researchers can provide to managers at this stage.

"Monitoring Bird Populations and Habitats" is the focus of the seven papers in Section IV. Most of these papers reflect the rush to implement migratory-bird-monitoring programs throughout the hemisphere. It is certainly appropriate that agencies charged with managing resources should keep watch over the health of those resources. However, as is made clear in the valuable paper by Nur and Geupel, monitoring is a complex business that warrants careful attention to the assumptions of the methods used and the types of conclusions that can be drawn from the data.

Section V is a continuation of the monitoring theme entitled "Organizational Monitoring Goals and Programs." The seven papers in this section review the types of migratory-bird-monitoring programs planned or in place for various federal and state agencies, as well as NGOs. Sauer's paper in this section is particularly instructive, especially his concluding admonition: "The experience of the large-scale monitoring programs of the [U.S. Fish and Wildlife] Service indicate that unless these programs are designed with specific goals and products in mind they are unlikely to succeed. A mandate to count birds without specific uses for the results is doomed to produce useless results of unknown validity" (Sauer 1993:250).

The sixth section contains 12 papers addressing the topic of "Land Use Practices and Neotropical Migrants." Possible impacts on migrant populations of farming procedures, grazing, contaminants, riparian habitat loss, fragmentation, and silvicultural practices are discussed. Unfortunately, only one of these papers (Whitacre et al.) makes more than incidental mention of the nonbreeding portion of the life cycle. Furthermore, the omission of whole categories of species from consideration as migrants assures that large categories of potential habitat problems (e.g. wetlands loss) are also overlooked. Nevertheless, the knowledge of breeding habitat requirements demonstrated in some of these chapters is quite impressive. DeGraaf et al., for instance, present data on relationships between forest-related migrants in New England and a suite of microhabitat characteristics including perch location, canopy closure, litter density, and mast occurrence. Also, the papers on the negative impacts of grazing on migrants presented by Krueper and Bock et al. should serve to awaken conservationists to the threats to ecosystems posed by this subtle and pervasive form of habitat alteration.

The final section of the book is titled "Conflicts and Solutions for Integrating Neotropical Migratory Birds with Management of Other Wildlife." Ten papers are presented in this section, two of which are summaries of roundtable discussions that took place at the Estes Park meeting. As is the case for Section I, several of the papers in Section VII sound somewhat quaint in their pleas for integrating traditional wildlife man-

agement with migratory-bird conservation. During the two years that have passed between the Estes Park meeting and the writing of this review, "integration" has occurred with a swiftness few would have thought possible, though the size of the meeting should have been a clue to the sea change that was about to occur. Neotropical migrants are now a mandated concern for nearly every state and federal agency, as well as being a focus for many conservation NGOs. Whether this level of attention will lead to improved management and reversal of declines for a significant portion of these species remains to be seen.

Wildlife managers and conservation biologists may want this book for its data content, which, as I have noted above, is excellent in some papers and less useful in others. Most of the information contained in the summary papers, however, is premature. There just were not enough good data in 1992 to provide definitive direction for managers. An additional problem from my perspective is that only three articles deal directly with the nonbreeding portion of the life cycle: Petit et al. on winter habitat use; Moore et al. on stopover habitat use; and Whitacre et al. on migrants in Guatemala. Some others make passing reference to this aspect of migrant life history. The editors apologize for this omission, noting that future workshops will focus on nonbreeding biology of migrants. Nevertheless, the lack of work dealing with the nonbreeding seasons, at the least, should have been reflected in the name of the workshop; "Status and Management of Neotropical Migratory Birds from a Breeding Ground Perspective" would have been a more appropriate title.

Government-sponsored symposia, such as this volume, are frequently criticized for their uneven editing and quality of scholarship. However, at their best, these works can have an immediacy of time and place that is seldom captured in more polished scientific publications. I did not attend the Estes Park meeting, but I confess to a certain regret for having missed it after reading the book. There is a sense conveyed in many of the papers of being there at the beginning. Neotropical migrants have served as a vanguard issue, heightening awareness throughout the Hemisphere to conservation biology concerns. The participants at the Estes Park Conference played a significant role in that process, and many people will want this book to be able to share vicariously in this awakening.

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- JOHN H. RAPPOLE, *Conservation & Research Center, National Zoological Park, Smithsonian Institution, Front Royal, Virginia 22630, USA.*
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- The Auk* 112(1):280-281, 1995
- A Naturalist in Indian Territory: The Journals of S. W. Woodhouse, 1849-50.**—Edited and annotated by John S. Tomer and Michael J. Brodhead. Norman, Oklahoma, University of Oklahoma Press. xv + 304 pp., 4 maps, 23 illustrations. ISBN 0-8061-2476-8. \$29.95 (cloth).—Samuel Washington Woodhouse was one of a number of surgeon-naturalists who accompanied the many official exploring expeditions in western North America. Tomer and Brodhead have for the first time transcribed, reproduced, and annotated Woodhouse's diaries for the Creek Boundary Expeditions, 26 April-29 December 1849 and 12 June-8 October 1850. The Creek Indians had agreed to move from Alabama and Georgia to lands in Indian Territory that were to be theirs in perpetuity. The 1849 and 1850 expeditions were to survey and mark the northern and western boundaries of the Creek Indian lands in Indian Territory.
- The diaries are preceded by a helpful introduction, which places the expedition and its achievements in perspective, and by a separate biographical sketch of Woodhouse. A well-trained medical doctor and an all-round naturalist, he was 27 when appointed as physician and naturalist to the expedition. Woodhouse unfortunately was too late for the breeding season each year; compared to some of the naturalists on other expeditions, his collections were rather modest in size. An appendix lists one mussel, four beetles, three snakes, one mammal (now a subspecies), and a still-recognized subspecies of the Mourning Dove, *Zenaida macroura marginella*, that were first described from specimens collected by Woodhouse on these expeditions, as well as three beetles and three snakes that have since been merged with sister taxa. Woodhouse collected a Prairie Falcon, but failed to recognize it as a species new to science and, hence, lost any chance of priority for its description. Passenger Pigeons were still numerous, but bison already were scarce. Woodhouse in August 1849 was the last to see the Common Raven, then still a breeding species, in eastern Oklahoma.
- Woodhouse's most important contributions to natural history did not occur until the Zuni expedition with Sitgreaves in 1851, the year after the expeditions covered by this book. Furthermore, the Woodhouse diaries contain much medical, anthropological, geo-

logic, and geographic information (e.g. the Creek and other Indians are described as generous, sharing, musical, and nonthreatening). Yet, some material may not be of great interest to a naturalist. Tomer and Brodhead's extensive footnotes explain and expand on information given about people, places, and natural-history specimens, with an exhaustive history of each steamboat mentioned.

The diaries are attractively presented. They are followed by an excellent index and a detailed bibliography. Inexplicably, the bibliography does not mention the 120-page biography of Woodhouse published privately in 1902, and cited by Hume in his *Orni-*

thologists of the United States Army Medical Corps in 1942. The location of the river ports of Napoleon and Lewisburgh are not provided on the maps nor in a footnote. I detected only two typographic errors and one omission from the index.

Winner of the Oklahoma Historical Society's "History Book of the Year," this work should be in all major libraries but in the personal collection only of those naturalists with an interest in history in general or Oklahoma in particular.—C. STUART HOUSTON, 863 University Drive, Saskatoon, Saskatchewan S7N 0J8, Canada.



Also Received

The Auk 112(1):281-283, 1995

Dabbling Duck Recruitment in Relation to Habitat and Predators at Union Slough National Wildlife Refuge, Iowa.—J. P. Fleskes and E. E. Klaas. 1991. Fish and Wildlife Service Technical Report-32. U.S. Fish and Wildlife Service, Washington, D.C. 19 pp. No price given.

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Wigeongrass (*Ruppia maritima* L.): A Literature Review.—H. A. Kantrud. 1991. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. 58 pp. No price given.

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Peterson First Guides—Seashores.—J. C. Kricher. 1992. Houghton Mifflin Company, New York. 128 pp. ISBN 0-395-61901-7. \$4.95 (paper).

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High Jungles & Low.—A. Carr. 1992. University of Florida Press, Gainesville, Florida. 226 pp. \$16.95, (paper). Reprint of 1953 edition.

The Cardinal.—J. Osborne. 1992. University of Texas Press, Austin, Texas. 108 pp. No price given.

The Birder's Guide to Bed and Breakfasts.—P. van Hulsteyn. 1993. John Muir Publications, New Mexico. 368 pp. \$15.95 (paper).



Announcements

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22nd International Ornithological Congress.—The 22nd International Ornithological Congress will be held in Durban, South Africa from 16–22 August 1998. Professor Peter Berthold (Germany) will serve as President, Dr. Janet Kear (United Kingdom) as Vice President, and Dr. Aldo Berruti as Secretary-General. This Congress will include a full scientific program and a large series of ornithological tours to numerous areas within southern Africa. All interested ornithologists are invited to take part.

Potential members of the Durban congress are requested to contact Dr. Aldo Berruti (Durban Natural Science Museum, P.O. Box 4085, Durban 4000, South Africa) to be placed on the mailing list, or to provide suggestions on any aspects of the 22nd Congress. Persons on the mailing list will be sent information on all aspects of the Congress in proper time.

The chairman of the Scientific Program Committee is Dr. Lukas Jenni (Schweizerische Voegelwarte, CH-6204 Sempach, Switzerland). Suggestions for the scientific program should be sent to him. Announcements for the scientific program will be published separately. Letters of inquiry about the scientific program can be sent to Dr. Lukas Jenni, Professor Peter Berthold, Professor Walter Bock (Secretary of the IOC,

Box 37 Schermerhorn Hall, Department of Biological Sciences, Columbia University, New York, New York 10027, USA).

New Tissue Collections Policy, Museum of Vertebrate Zoology.—The Museum of Vertebrate Zoology (MVZ), University of California, Berkeley, has recently instituted a formal policy for issuing grants of tissues or extracts from its collections. Any requests for material should follow the guidelines established in this policy. The policy statement is online and may be accessed directly at the following URL: <http://www.mip.berkeley.edu/mvz/fcpolicy.html>. It may also be accessed through the MVZ WWW server (<http://www.mip.berkeley.edu/mvz/>) by clicking on the word "tissue" or its icon. A written copy of the policy may be obtained by contacting: Carla Cicero, Museum of Vertebrate Zoology, 3101 Valley Life Sciences Building, University of California, Berkeley, California 94720-3160, USA (telephone, 510-642-3567; fax, 510-643-8238; e-mail, ccicero@violet.berkeley.edu).

New Editor Selected.—Thomas E. Martin has been selected to be the new Editor of the *Auk*. All new manuscripts should be sent to: Editorial Office, *The*