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ORNITHOLOGICAL LITERATURE

HOMEWARD BOUND: PROBLEMS WADERS FACE WHEN MIGRATING FROM BANC D'ARGUIN, MAURITANIA, TO THEIR NORTHERN BREEDING GROUNDS IN SPRING. B. J. Ens, T. Piersma, W. J. Wolff, and L. Zwarts, eds. Special Edition of Ardea 78 (1/2), 1990: 364 pp. No price given.—The Banc D'Arguin is a tidal, shallow section of the Saharan Atlantic coast of Mauritania that is a major wintering area for Palearctic, and to a lesser extent Nearctic, breeding shorebirds. This book, originally published as a special edition of *Ardea,* is a collection of 23 papers by 11 senior authors, two of whom (Zwarts and Piersma) account for 40% of senior authorship. All senior authors are from the Netherlands, where vast numbers of shorebirds gather at major migration staging areas on the Wadden Sea coast, many of which continue migration to wintering areas on the West African coast.

The editors have grouped the papers, all of which are original works, into topics addressing basic shorebird migration and wintering ecology, this as a way of appraising conservation needs from a sound biological perspective. The book divisions address questions of (1) why the Banc D'Arguin is so attractive to shorebirds, (2) migration patterns of shorebirds wintering there, (3) migration behavior, and (4/5) two sections dealing with energetic aspects of migration.

The papers of the first section raise as many questions about why so many shorebirds winter at Banc D'Arguin as they answer. An obvious hypothesis would be that there is an unusual availability of food, an idea not supported by earlier research or by research of the papers in this work. The Banc D'Arguin evidently has a relatively low annual biomass production as compared to temperate sites. The studies which look at food and foraging are observational studies of feeding birds. Zwarts et al. found that prey taken by small shorebirds tend to be much smaller than at sites studied in Europe; unfortunately, the sampling design had not anticipated this. Due to problems of identifying prey, more emphasis is given to the largest species such as curlews, godwits and oystercatchers whose prey populations were reliably determined, leaving open questions about foraging of many of the smaller species which comprise the majority of shorebirds wintering at Banc D'Arguin. The tentative explanation of why so many shorebirds winter at Banc D'Arguin hinges on the size of prey consumed by the smaller species, which could not be determined. Unfortunately, potentially supporting data, for example from stomach contents of birds accidentally killed, and/or from invertebrate sampling and exclusion cage studies, was not described.

Part 1 also includes preliminary studies of other factors of shorebird wintering ecology such as heat stress (not indicated) and salt stress (differs among individuals, depending on opportunities for acclimatization, and among species), and the possibility of synergistic stress from salt and heat. Finally, part 1 includes a paper by Bijlsma on the predatory behavior of falcons on shorebirds. Falcons concentrated their hunting on the high tide resting areas of shorebirds, especially in the case of Dunlins (*Calidris alpina*) taking mostly juveniles.

Part 2 focuses on the geographic origins and migration patterns of shorebirds wintering at Banc D'Arguin. Much of the potential underlying these studies depends on the breeding ground geographic variation of the species involved, as well as on the availability of comparable biometric data from sites used for comparison, for example the Netherlands and the United Kingdom. Comparative data also were available from Guinnea-Bissau and South Africa. A wealth of information is available, and convincing evidence is presented by Wymenga et al., to show that shorebirds wintering at Banc D'Arguin come from western Nearctic breeding grounds (e.g., Sanderling [*C. alba*]) to as far east as Siberian breeding grounds (e.g., Red Knot [*C. canutus*]). For some species they also found indications that birds wintering in Guinnea-Bissau were from breeding zones farther north and east than for counterparts

caught at Banc D'Arguin. Considering all species together, three general patterns were evident: (1) species which breed in the Baltic, Fenno-Scandinavian, and Western or Central Siberian area, (2) those migrating principally to Iceland/Greenland, and (3) exceptions to these which generally have eastern breeding distributions. The clear, graphic species by species summaries used by these authors are especially noteworthy.

In their paper, Zwarts and Piersma conclude that the Banc D'Arguin also is an important migration staging area for shorebirds that winter farther south than Mauritania. The authors note that evaluations were complicated by not knowing whether counts made at high and/or low tides were most appropriate for analysis and by not knowing migration arrival/departure dates at key sites to the south such as at Guinnea-Bissau. Evidently many birds in transit visit Banc D'Arguin but do not necessarily accumulate fat there.

Piersma et al. describe spring migration departure of shorebirds from Banc D'Arguin based on three years of data on visible departures. While visible, departing waders typically ascend to altitudes exceeding 1.5 km. Species' departure dates are correlated with nesting latitudes, with more northerly breeders departing on later dates. Most species showed unimodal departure dates, with no evidence suggesting that departures are correlated with surface wind conditions.

Using information on biometrics, mass change, turnover, and band recoveries, Goede et al. evaluate spring migration of Dunlin departing the Dutch Wadden Sea. They develop persuasive evidence to suggest that two distinct groups of Dunlin use the staging area, one in April and early May that breeds in northern Europe and another during late May that breeds in Siberia. They suggest that both groups winter principally in Great Britain and along the Atlantic coast of Europe.

Van Dijk et al. report on shorebirds summering on the Banc D'Arguin and show that roughly 16% of wintering numbers remained at Banc D'Arguin during Boreal summer; their distribution corresponded well with winter distribution at Banc D'Arguin. The authors suggest that most summering shorebirds are younger than breeding age.

The third section of "Homeward Bound" is comprised of two papers which focus on behavioral aspects of migration. In an especially interesting paper, Piersma, Zwarts, and Bruggemann present a comprehensive evaluation of flocking behavior, including flock size and formation, vocalizations, orientation, flight speed, and flock ascent. Most of the study is based on observations from Banc D'Arguin, but additional information about departures in Europe during spring and autumn is included. Size of departing flocks was typically lower than of resting flocks or flocks in local movements. Larger than average departing flocks tended to split into smaller flocks, and smaller than average flocks often merged into larger flocks. There was a tendency for larger species to form larger flocks. Mixed species flocks were uncommon, and when they formed, companion species generally were of similar size. Also discussed is behavior of embarking flocks, ascent rates, departure tracks with respect to wind (compensation is not indicated except during following winds), diurnal timing (most departures were during afternoons), and cloud cover at departure (sun always visible). This paper and its discussion should be considered imperative reading by students of flocking.

The second paper, by Blomert, Engelmoer, and Ntiamoa-Baidu looks at the Banc D'Arguin as a briefly visited meeting point for migrating Avocets (*Recurvirostra avosetta*) departing from sites south of Banc D'Arguin. The fact that arriving flocks are smaller than departing flocks, and that the arriving flocks are smaller than flocks departing Guinnea-Bissau to the south, suggests to the authors that the brief visits of Avocets at Banc D'Arguin are useful for the reformation of flocks that have become disorganized.

The papers of the fourth section explore energetic aspects of preparation for long-distance migration by shorebirds. Zwarts and Blomert's paper evaluated the food value of crabs eaten by Whimbrels (*Numenius phaeopus*), exploring how energy intake may be maximized. High

ingestion rates (much of it indigestible) reduces digestibility. Still, net energy accrued is greater with high crab consumption. Bottom line: captive Whimbrels needed to increase food consumption by 45% to realize a 30% increase of digested energy.

Klaassen, Kersten and Ens used captive shorebirds to look at maintenance and premigratory fattening energetics, focusing especially on comparisons between shorebirds wintering in tropical versus temperate regions. The work indicates that temperate-wintering shorebirds have maintenance metabolic rates averaging 42% higher than tropical-wintering shorebirds. When tropical-wintering Ruddy Turnstones (*Arenaria interpres*) were displaced for one year to the Netherlands, the authors note that "It is thrilling that the results of this 'control' experiment . . . reproduce the original discrepancy . . . ," raising fundamental questions about the underlying mechanisms regulating metabolism.

Piersma and van Brederode continue with their study of pre-migratory fattening, focusing on relationships between body size versus fat and non-fat mass. They quantify the proportions of pre-migratory mass increase that is attributable to fat deposition versus non-fat mass change. In the four species with sufficient sample sizes, pre-migratory mass increase consists of 55–75% fat, with the balance being mostly muscle increase.

Zwarts, Blomert, and Hupkes looked at foraging behavior of shorebirds at Banc D'Arguin during the 4–6 weeks before migration departure. The species they studied did not increase feeding time during daylight, which is restricted by tidal flux. However, in 10 of 14 species, the feeding activity increased during times of tidal flats immersion. In addition, nocturnal feeding of several—but not all—species increased during March and April, especially on 'light' versus 'dark' nights. In related evaluations, the authors found a negative relationship between average body mass of species and their diurnal feeding activities. Likewise, smaller species tended to feed more at night than larger species; they note, however, that several complications could affect their conclusions. Chief among these is that digestive bottlenecks (see below) could explain different foraging times of small versus large species and that no data allowed comparing effectiveness of foraging under different (day/night, tactile/visual) conditions.

Zwarts and Dirksen studied digestive bottlenecks in free-living Whimbrels, and showed that maximum food assimilation is not merely a function of food intake, but also of the ability of the digestive tract to process food. Even though per unit time intake is greatest during pre-migration, increased consumption also is achieved by expanding foraging hours. Increase may also be facilitated by discarding less digestible parts of crabs. In a stimulating discussion, the authors suggest that Whimbrel at Banc D'Arguin are living at their physiological limit, even during the winter. In the paper following this one, Zwarts suggests that pre-migratory fattening of Whimbrels at Banc D'Arguin is possible only because of a seasonal increase of available resources, caused in good part by changing activity patterns of the Whimbrels and of their marine crab prey. Moon phase played a role in the crab/Whimbrel activity patterns, and migratory departures also appeared related to moon phase.

The last section of "Homeward Bound" evaluates energy budgets of alternative migration schemes. The first paper, by Ens et al., should be read by people undertaking shorebird banding projects, for it contains a wealth of suggestions regarding field methodology as well as evaluation of data. Their work indicates that many adult Ruddy Turnstones from Mauritania migrate to Greenland/eastern Canada whereas others migrate to Fenno-Scandinavian breeding zones. Young birds (ca one year old) do not migrate.

Piersma and Jukema's stimulating paper assesses the migration energy budget of Bar-tailed Godwits (*Limosa lapponica*) in their highly synchronized migration between the Banc D'Arguin and their next migration staging areas on the Dutch Wadden Sea. Although the authors assemble evidence to suggest that the Banc D'Arguin godwits are among those studied in the Wadden Sea, I did not find the case to be compelling.

Godwits at the Banc D'Arguin show steadily increasing masses beginning in March. The rate of mass gain at the Banc D'Arguin was roughly half that gained at the Wadden Sea. Roughly half of this mass gain was attributable to fat deposition, which provides roughly 90% of the available migration energy, with the balance being non-fat tissues, mostly muscle protein. Taking wind into account, the authors estimate flight distance capabilities of godwits based on their empirical observations of mass change between the godwits at Banc D'Arguin and those at the Wadden Sea. They then compare these observations to various formulae designed to estimate flight distance capabilities, with some unexpected results, especially with respect to those prior formulae which factored in components of wing morphology to derive flight distance capability estimates. The empirical estimates from this study fall between the lowest and the highest theoretical estimates. The authors conclude that godwits from the Banc D'Arguin do not have much of an 'energy margin' in making their flight between West Africa and the Wadden Sea.

Zwarts et al. close out the volume by looking at molt and body conditions of shorebirds just prior to departure from Banc D'Arguin, especially focusing on questions of whether the accumulated evidence indicates that different migration strategies are employed by shorebirds wintering at Banc D'Arguin. They point out that there is a wide spread of spring migration departure dates at Banc D'Arguin, both within and between species, excepting Bar-tailed Godwits. Species breeding in temperate regions migrated earlier than Arctic-breeding species. Prenuptial molt in all species was completed about four weeks prior to migration departure, suggesting the two processes are physiologically linked.

The authors also look at relationships between departure mass of shorebirds and their winter (lean) mass, showing that the larger the species (e.g., Whimbrel, Bar-tailed Godwit) the lower is the migratory reserve as a percentage of body mass. They also looked at mass gain as it relates to incipient migration distance. In their words, "As we see it, departure mass is adapted to the travel distance and the rate of mass gain to the average feeding conditions. These two bear no relation to each other, so we were surprised to see that the higher the departure mass, the faster the rate the mass is deposited." This would appear to be a fruitful area of future research.

The collection of papers in "Homeward Bound" is "must" reading for anyone working on shorebird nonbreeding biology, and for anyone working on more general topics of migration ecology; it contains a wealth of stimulating ideas as well as a large volume of sound, factual information.—BRIAN A. HARRINGTON.

THE KNOWN BIRDS OF NORTH AND MIDDLE AMERICA, Part II. By Allan R. Phillips. Publ. by author, Denver, Colorado. 1991: 249 + liii pp., 5 color plates, 5 range maps, 8 taxonomic keys. $64.—This book describes species and subspecies-level taxa "known" by Phillips and some of his colleagues (D. D. Gibson, K. C. Parkes, M. A. Ramos, and A. M. Rea) in the Bombycillidae, Sylviidae, Muscicapidae, Prunellidae, Motacillidae, Sturnidae, and Vireonidae. The Introduction includes sections on biodiversity, can we trust our eyes, more on sightings, statistics versus perception, the new Dark Ages, and lessons of *Catharus* thrushes. The main body of the book includes species and subspecies accounts and taxonomic keys.

Although the introduction reads like a tract from the Creationist literature, and rambling would be a kind description for parts of it, Phillips makes many points with which we agree. For example, we agree that far too little emphasis is placed on collecting specimens, the importance of systematics, and funding of biological inventories. We share his concern about the prevalence of anti-collecting attitudes and the lack of documentation given by the AOU Check-list committee for some of their pre-1984 actions. We agree that phenotypic variation in North American birds is known incompletely (having already said so in Zink and Remsen,

1986, Current Ornith. 4:1–69) and that too few people study it. We also agree that some papers are obfuscated with extraneous statistics and that some studies using molecular methods contain a bewildering array of measures of genetic variability. However, Phillips fails to realize that not everyone is interested in the narrow topic that he is (variation in the external phenotype). Systematic biology is now a broad and exciting field that incorporates many endeavors, some of which Phillips neither understands nor appreciates.

Given that Phillips discounts "modern" (=molecular, statistical, or both) avian systematics, what does he offer instead? His methods are vague at best: specimens examined are not stated and his characters are often loosely defined and highly subjective. Because his analyses (=subjective comparisons) lack rigor, we doubt that anyone could replicate his studies and arrive at the same conclusions. His abhorrence of quantitative analysis means that we cannot tell whether his taxa are really distinct, products of incomplete sampling, or arbitrary partitioning of clines. We found his description of his research program telling (p. xliv) "I persist in considering taxonomy the *art* (italics ours) of judging relationships. . . ." It should come as no surprise that this "science" failed to attract many students to systematics or to earn respect of other scientists. It cannot escape notice that attention in ornithology shifted away from systematics during the description-of-subspecies era in which Phillips was trained. The current "revival" in avian systematics is because new techniques and ideas were incorporated into this area of research. Phillips, however, has not incorporated many new methods or ideas into his research, not that that is always necessary for obtaining new information. Most systematists agree that important theoretical and methodological contributions have been made to the field, including the study of geographic variation and species limits. For example, studies of geographic variation are now mostly quantitative and the results often interpreted in an evolutionary rather than strictly taxonomic context; Phillips seems to resent this trend, but he has no scientific reason for this view. The use of statistical methods in documenting geographic variation is widely established, and it is, therefore, hard to find credibility in Phillips' view that statistics were introduced into systematic ornithology as a "crutch for weak subspecies." That Phillips does not recognize geographic variation as an inherently statistical concept is astonishing. Statistical analyses, as well as molecular genetic methods, have all contributed to the resurgence of interest in the analysis of geographic variation and its evolutionary significance. This is not to say that description of taxa based on morphology is not valuable, but quantitative methods represent a drastic improvement over subjective, verbal descriptions.

What is the justification for modern analyses of geographic variation? One concern of such studies is the detection of basal evolutionary taxa or phylogenetic species. Clearly, such basal groups evolve via a restructuring of the genetic variation within populations. Phillips considers genetic variation the underlying cause of the geographic variation in morphology that he partitions taxonomically. Genetic variation within populations is converted to among populations on the breeding grounds, and it is here that modern students of geographic variation collect their specimens. However, Phillips continually stresses the need for "fresh fall specimens" because their plumages are not worn, and because they permit better assessment of colors. Unless specimens are clearly from a known breeding population they are *irrelevant* for analyses of geographic variation. Anyone using fall specimens should have first banded them on the breeding grounds to establish their true breeding area (even sedentary species exhibit post-breeding dispersal). Many students of geographic variation have switched to other character sets, such as skeletal measurements, which can be studied irrespective of degree of feather wear in specimens taken from breeding populations. For the type specimen of *Catharus fuscescens levyi* subsp. nov., Phillips used a fall TV-tower-killed, immature male from Wisconsin. Because the description of this new taxon was not based on careful study of variation among breeding populations, we urge that it not be

accepted. Acceptance of such taxa would be akin to advocating a return to typological thinking.

Despite the theoretical and methodological limitations of Phillips' approach, and his distracting ramblings and personal attacks (as in Part I, research from persons at Berkeley is dismissed), we think his summary of specimens of North American birds is useful. Anyone interested in geographic variation of a taxon discussed by Phillips should consult his species accounts. Forty-five new subspecies (most with primarily Mexican distributions) are described in this volume. However, the new taxa are diagnosed primarily by slight color variations and some might be arbitrary divisions of clines. Independent corroboration of the new taxa with the same and other character sets must precede their acceptance. Clearly, Phillips' subjective assessments might encourage further research and lead to the discovery of undescribed phylogenetic or biological species.

The species accounts update distributional information and are useful for subspecies' distributions. Obviously, Phillips has invested considerable effort into locating specimens relevant to his distributional analyses. However, a quick check of our specimen holdings (examined several times by Phillips) of North American *Catharus* (and *Hylocichla*) thrushes resulted in the following omissions from the species accounts: *C. fuscescens* (winter record, 18 December 1983, Cameron, Louisiana, and presence of Louisiana late spring migrants to 31 May [1], 5 June [2]); *C. guttatus oromelus* (the only record for E. USA, 29 April 1984, Cameron, Louisiana—identification by Phillips); *C. minimus* (specimens to 6 June); *C. ustulatus swainsoni* (account does not indicate that its winter range is mainly lower montane Andes); and *Hylocichla mustelina* (two Louisiana specimens taken in February). We suggest thorough examination of his other species accounts.

Phillips is skeptical of sight records by all but himself and a few friends, and defends their omission by citing old and long-recognized examples of erroneous records being published. A section on Dubious and Erroneous reports is contained in many accounts and offers Phillips' views on specific sight records. Unfortunately many of the sources that Phillips used are omitted so as "to . . . not . . . bore the readers with citations." This hardly advances the science of avian distributions. Likewise, disregard of acceptable sight records results in incomplete distributional information. For example, in Part I (p. 82–83) the resident population of Chestnut-backed Chickadee on the west slope of the Sierra Nevada was omitted, apparently because there were no specimens, in spite of the zoogeographic and ecological significance of the recent colonization of this area. However, we do agree that if possible, specimens are preferred over sight records, because of the wealth of additional information that specimens provide.

Keys are provided for species identification of some genera (e.g., *Catharus*) and are relatively useful, especially if a reference series is at hand. The color plates provide an aesthetic break to the text, but are of little value. The *Catharus* painting (plate 2) is a poor rendition, especially considering Phillips' concern with accuracy and his view that illustrations in recent field guides inhibit proper identification. Plate 3 is supposed to illustrate a typical "western" Veery, which Phillips claims resembles a Swainson's Thrush, thereby showing that field identification is tenuous. However, the Veery specimen selected does not seem representative of a typical Veery (of any subspecies). None of the 32 recent (1981–1991) Veerys (primarily *C. f. salicicola,* a few brighter individuals of eastern subspecies included) in our collection approaches this individual in the buffiness of the face (especially around the eye) or along the flanks. The plate (No. 5) depicting subspecies of Warbling Vireo might illustrate the subtle plumage differences of the southeastern taxa (subspecies to Phillips), but there is no discussion of these characters in the figure legend. Because Phillips makes numerous caustic comments about the lack of accuracy in the work of modern ornithologists, we note that the leg color of the Warbling Vireo is leaden blue, not flesh, as illustrated.

If Phillips completes his series, will it be the best reference for avian distributions? Actually, given the fluid nature of bird distributions, we question whether there is such a thing as a "best" source of distributional information. Because Phillips does not consider most sight records, we suspect that his descriptions of ranges will be less useful than those that incorporate carefully evaluated sight records. However, his criticisms of many sight records should be taken seriously.

We suggest that persons interested in intraspecific variation will want to consult Phillips' species accounts. Those interested in distributions would be just as well off combining general and regional references for the species in question.—ROBERT M. ZINK AND DONNA L. DITTMANN.

CONSERVING MIGRATORY BIRDS. Edited by T. Salathé. ICBP Technical Publication No. 12, International Council for Bird Preservation, Cambridge, U.K. 1991: 405 pp. (British pounds 19.50).—Migratory birds have been receiving increased attention lately. In the United States, an ambitious Neotropical Migratory Bird Conservation Program for the western hemisphere has been launched that involves a partnership of Federal and state agencies, nongovernmental organizations and academic ornithologists. Globally, the International Council for Bird Preservation (ICBP), which has been in the forefront of migratory bird conservation since its founding in 1922, has now made migratory birds the focus of its twelfth technical publication.

Migratory birds differ from other avian groups of concern in that relatively few species of long-distance migrants are endangered. According to ICBP, only 106 (10.3%) of the 1029 globally threatened species of birds are long-distance migrants (it is a sad sign of the times when one uses "only" to refer to 106 species of threatened birds). According to Jean-Pierre Biber and Tobias Salathé, most of the threatened migrants depend upon wetlands (41%) or are seabirds (26%). However, as ICBP Director-General Christoph Imboden points out in his foreword, "investigations in North America and Europe suggest that there is hardly a migratory species that, during the past 20 years, has not declined in numbers." We are thus faced with a "slow erosion" of abundance and distribution of widespread species, which is perhaps the least discussed aspect of the global loss of biodiversity.

"Conserving Migratory Birds" grew out of a 1989 conference of ICBP's European Continental Section. As a result, it deals disproportionately with the Western Palearctic and African flyways; more than half of the 23 papers deal with the Old World. The book is not intended to be comprehensive; its purpose is to illustrate specific problems and solutions. The introductory chapter by Salathé, the editor, describes the ICBP Migratory Birds Conservation Program, which he coordinates. The remainder of the book is divided into three sections: Problems Facing Migratory Birds, Conserving Migratory Birds, and Future Directions. Most chapters present case studies of specific conservation projects, with significant socioeconomic and legal components to many chapters. There are also overviews of regional situations, chapters on legal instruments such as the Bonn Convention for the Conservation of Migratory Species of Wild Animals, and an excellent paper by B. A. Lane and D. Parrish that summarizes the Asian-Australian bird migration system.

Unevenness is the hallmark of this publication. Although most chapters are well documented, others are anecdotal. The rationale for inclusion of papers is unclear. In particular, the section on problems facing migrants lacks balance. Despite the statement in the overview chapter that "alteration and destruction of natural and semi-natural habitats are *the* major threats" to birds worldwide (p. 22), two of the three case studies in this section deal with hunting, and the third discusses the impacts of pesticides.

The collection includes three papers with a New World focus—overviews of federal re-

search on conservation of nongame migrants in the U.S. (Marshall Howe), migrant birds in neotropical forests (John Rappole), and the Western Hemisphere Shorebird Reserve Network (Laurie Hunter et al.). The Old World tilt of the rest of the book is, in fact, useful to the American reader. We learn that in contrast to our (misplaced?) focus on forest birds, European birds of open habitats—grasslands and wetlands—are at greatest risk. Most of these birds migrate across the Mediterranean Sea and the Sahara Desert (where some passerines may stop to rest but not feed). The Mediterranean *maquis* between the sea and the desert is thus a critical habitat. Once across the Sahara, the birds of the western Mediterranean flyway winter mainly in the Sahel, where they must contend with drought and the literally hundreds of millions of people who themselves face not only drought, but malnourishment and potential starvation.

The case studies feature the roles that nongovernmental conservation organizations play in Mali, Turkey, Malta, Ghana, Nigeria, Japan, and Taiwan as well as in Europe. The common ingredient in all these programs is an integrated approach to conservation and economic development with a strong emphasis on education. Two approaches to bird conservation are presented. The traditional approach involves establishment of protected areas for populations that are concentrated around scarce resources (such as wetlands) and other key migratory stopover or wintering sites. However, this strategy does not work for species that are distributed widely as is the case for most migrants.

In the penultimate chapter, Patrick Dugan of the World Conservation Union (IUCN) calls for a new approach which features conservation and sustainable development in Africa. His message is that "rather than focus directly on the problems facing individual species . . . , conservation efforts may therefore be made more effective by addressing the diverse social and economic problems which are putting pressure on those natural ecosystems upon which migratory birds depend" (p. 375). He points out that in migrating between Europe and Africa, birds move back and forth between wealthy countries with wealthy farmers and strong national governments and private groups that support conservation and poor countries with impoverished, hungry farmers who largely view birds as pests, competitors, or a food source and where conservation is often seen as being in opposition to development. He argues that in the process of building environmental awareness, it "will not always be necessary or advisable to stress birds."

The volume concludes with Salathé's presentation of ICBP's action plan for the Western Palearctic and African flyways. While the work of ICBP will certainly continue to focus on birds, it is encouraging that their educational objective is expanding to include greater emphasis on awareness of the linkages between the well-being of birds and of the human populations that depend upon the same ecosystems. ICBP is also evaluating the impact of development assistance programs on migratory birds and their habitats. Inasmuch as conserving migratory birds entails fighting poverty and inequity, ICBP and its colleagues have barely begun their work.—DAVID E. BLOCKSTEIN.

THE MOUNTAIN AND THE MIGRATION: A GUIDE TO HAWK MOUNTAIN. By James J. Brett, illus. by Frank Fretz and Frederick Wetzel. Cornell University Press, Ithaca and London. 1991 (revised and expanded from 1986 ed.): xii + 114 pp., 17 black-and-white plates, 13 black-and-white photographs, 13 unnumbered figures and tables. $12.95 (paper).—Few locales in North America have been the subject of as many renowned publications as Hawk Mountain, Schuylkill County, Pennsylvania. Following the path blazed by Maurice Broun's *Hawks Aloft* (1948) and Michael Harwood's *The View from Hawk Mountain* (1973), James

Brett's revised and expanded guide to Hawk Mountain provides a useful summary of historical information presented in those two works, as well as a fine introduction to the geology and natural history of this site, with emphasis on the hawks migrating past the lookout each autumn.

Anyone planning a visit to Hawk Mountain will be enriched by reading Brett's guide. However, the work has broader application than that. Its contents may be used to understand better the geologic forces that created, and the natural communities that inhabit, almost any ridgetop site in northeastern North America. Furthermore, the guide offers a good summary of the dynamics of hawk migration. Finally, and perhaps most importantly, it provides an excellent discussion of information used to identify northeastern hawks in flight, as well as fine black-and-white plates depicting these species in a variety of poses and plumages.

Even though the hawk identification material may be the most important, and is certainly the best presented information in this book, it is not without fault. Without wishing to diminish the achievement of Brett's work, let me note a few, mostly minor, matters that deserve correction in future editions. First, and by no means a minor matter, the plates of the hawks are not in color. Any neophyte attempting to learn hawk identification would do well to begin with a series of color plates in one of the field guides (preferably Clark's "Hawks") before graduating to Wetzel's well-presented black-and-white drawings. As a result of this deficiency, one of the primary purposes of the guide—to act as an introduction to the various topics discussed, including hawk identification—is inadequately fulfilled. I realize that cost considerations probably dictated that plates in this guide not be in color, and I also realize that hawk identification involves many matters that have nothing to do with the color of birds of prey, but these plates will undoubtedly never be the place where beginners start learning hawk identification as long as they lack color. I hope that some future edition of this work will remedy this deficiency, because the plates are otherwise a wonderful presentation of field marks for the identification of hawks. I was especially pleased by the "head-on" and "tuck" profiles offered for most of the hawks; head-on profiles for Merlin (*Falco columbarius*) and Gyrfalcon (*F. rusticolus*) are, incidentally, lacking. Additionally, the difference in the streaking of immatures of Cooper Hawks (*Accipiter cooperii*) and Sharp-shinned Hawks (*A. striatus*) is not well presented.

The text opposite each plate discusses identification of the species and is quite thorough and up-to-date. I detected only a few matters of concern. I do not believe, for instance, that it is accurate to state that "there is little difference between adults and immatures" of Swainson's Hawks (*Buteo swainsoni*); there is certainly enough difference, especially in the more common light-phase birds, to warrant inclusion of a drawing of the immature, particularly if Brett is right in suggesting that Swainson's Hawks "may have been undercounted" at Hawk Mountain in the past. Also, Brett might mention the conspicuous light flecking found on the dorsal plumage of immatures of the Osprey (*Pandion haliaetus*), as well as the tendency of females and immatures of Northern Harriers (*Circus cyaneus*) to have a much darker underwing inward from the alula rather than outward.

The "Suggested Reading" section lacks mention of Ralph Palmer's monumental "Handbook of North American Birds" (Vols. 4 and 5: Diurnal Raptors); these volumes contain a wealth of information about the migration and identification of the hawks migrating past Hawk Mountain. Brett might also use the term "raptor" less loosely in future editions; it includes nocturnal birds of prey as well as diurnal ones. Finally, I would like to see capital letters in the common names of the species used (or not used) consistently.

Almost anyone who studies hawks will benefit from reading this book. All those who watch hawks for pleasure or science in the eastern United States will want to own a copy. It is a fine addition to the works devoted to Hawk Mountain.—STEPHEN J. STEDMAN.

SEABIRD STATUS AND CONSERVATION: A SUPPLEMENT. J. P. Croxall, ed. International Council for Bird Preservation, Technical Publication No. 11, Norwich, U.K. 1991: 316 pp., 64 maps, 41 tables. £17.50.—This collection of 15 papers documents the status of and threats to seabird populations in geographic areas which were omitted, or covered superficially, in ICBP's 1984 volume "Status and Conservation of the World's Seabirds." Each paper summarizes information on the abundance and distribution of seabird populations as well as indicating where gaps in current documentation occur. Additionally, each chapter outlines principal threats to seabirds in the region, existing conservation actions, and suggests methods of meeting conservation needs. In format, this work follows the style and depth of treatment accorded to geographic regions in the original volume.

Four of the papers present new data for regions covered in the previous volume where conservation problems have intensified during the last five years: California, Indonesia, and the northeast and southeast coast of the former Soviet Union. The majority of the work is given over to presentations on regions not previously discussed: northeastern and northwestern Canada, Baja California, the Great Lakes, Brazil, Uruguay, Sri Lanka, Malaysia, the Marianas, Heard and McDonald islands, and the Australian segment of the Antarctic continent.

This volume goes far in filling the gaps in coverage of regions important to seabirds but leaves several prime areas (such as New Guinea, Argentina, India, Micronesia and Melanesia) to be treated at a future date. The species covered are penguins (Sphenisciformes), albatrosses and petrels (Procellariiformes), boobies, frigatebirds, tropicbirds, cormorants and pelicans (Pelecaniformes), skuas (Stercorariidae), gulls and terns (Laridae), skimmers (Rynchopidae), and auks (Alcidae).

Problems common to many regions include loss of habitat, the introduction of exotic predators, direct exploitation of seabird products, deterioration of marine ecosystems, and increased mortality of seabirds as incidental catches in non-selective fisheries. Man, with his capacity to directly or indirectly affect seabird mortality, is implicated in nearly all cases as the principal threat to the continued existence of seabirds. Existing conservation actions to meet these threats generally include habitat protection, buffer zones for oil exploration, research, and protective legislation to curtail direct exploitation. Recommendations for further action frequently mention the need for surveys to determine the impact of human disturbance, monitoring population trends, research into the basic biology of little known species, research on applied methodologies for control of introduced predators, and preservation of habitat through creation of ecological reserves.

The only problem I had with the book (a quibbling detail) is that the Table following the editor's preface contains no heading to aid in interpretation; the purpose of the table, however, is explained in the text. I think that as a companion piece to the first volume, this book is an exceedingly useful tool for scientists, policy makers, conservationists and others who use quantitative information in their decision making.—JUSTINE B. DE CRUZ.

BIRDS OF THE BLUE RIDGE MOUNTAINS. By Marcus B. Simpson, Jr. The University of North Carolina Press, Chapel Hill, North Carolina. 1992: xiii + 354 pp., black-and-white illustrations by H. Douglas Pratt. $14.95 (paperback), $29.95 (cloth).—The volume of visitors to the Blue Ridge Mountains is extremely large, some localities being among the most intensively used natural areas in the United States. Accordingly, there was a need for a guide to finding birds in this area. However, the present book is more than the usual regional guide to finding birds to add to your life list. Simpson has produced a thorough description of many of the trails and localities in the Blue Ridge Mountains frequented by all kinds of

naturalists. Furthermore, he provides introductory comments about a variety of important, associated concerns of the birder. For example, he comments on vegetation and climate as related to birds, choice of binoculars, and possible problems in hiking into remote areas. He provides a specific section on birding for the handicapped and physically impaired. His remarks are insightful and accurate, although I disagree greatly with his observations regarding the extreme scarcity of rattlesnakes. (We have seen a few in and around nearly every campground in western Virginia!)

The text is sprinkled with attractive black-and-white illustrations of various birds. A few maps are provided. These seem accurate, but I would have preferred a bit more detail in these. An annotated checklist of the region is included. This list is useful, although its coverage is uneven. All birders familiar with the area will recognize omissions but probably will learn a few things from the list. Many of the mountains in this range (e.g., Mt. Rogers, Whitetop Mountain, Grandfather Mountain, Clingman's Dome) provide islands of habitat inhabited by birds reminiscent of boreal forests of Canada. Simpson indicates clearly the patchiness of the habitat in these mountains and the associated localization of specific birds. I found the text to be accurate and informative in describing specific areas ("hotspots"), and I am sure that it will be useful to birders new to the region.

This book takes the regional bird-finding manual to a new level. It provides interesting materials beyond where to find birds and is readable just for interest in the Blue Ridge. The book is attractive and nicely bound. I found no typographical errors. The reference section and index to bird species particularly are useful.

I highly recommend this book to both visitors to the Blue Ridge and to "old-timers" who want to expand their appreciation of the area.—C. R. Blem.

The Birds of Australia: A Book of Identification—760 Birds in Colour. Second Edition. By Ken Simpson and Nicolas Day. Tanager Books, Wolfeboro, New Hampshire, 1986: 352 pp. $45.00.—Anyone contemplating a trip to Australia will find this book an excellent identification resource. It is not designed as a field guide as it measures 8.5″ × 11″ and weighs a little over five pounds. In addition to the useful identification section of 271 pages, there is a 70 page handbook which probably would be of little value to most WOS Members. I have taken three extended trips to Australia, and for me it would be the book to have along in the car to check the many identifications which are difficult using presently available field guides.

The organization and page layouts make this book the best I have encountered thus far. The illustrations are large, and the many confusing species which look alike are usually on the same page for comparison. The colors are bright, contrasty, and exaggerated. This could upset purists, but I found these characteristics helpful in easily recognizing the field characteristics that were the greatest help in separating the many "look-alike" species. The illustrations are all on the right and the text for each species is on the left, corresponding closely to the relative position of the illustration of the bird on the right. Each species is clearly numbered, which eliminates any confusion of text with illustrations. On the right margin of the text pages, there is an excellent map showing the distribution of each species. In between the text and the map there are black-and-white line drawings of questionable value. In most cases, the reader would more readily see the same thing shown on the colored illustration page. The unusual nesting site drawings were helpful, but most often these were also illustrated on the color plate.

I feel the greatest weakness in the book is the attempt by the authors to make the book all things to all people. The Handbook portion is so different from what precedes it that it

probably should have been published separately. This would make the book lighter and, hopefully, would reduce the price somewhat, making it more attractive to purchase as an additional resource identification book to carry along in the car. I found it to be the best book to ponder over after returning to camp. The clear illustrations were most helpful in fixing the appearance and names of new species I was learning.—ROBERT D. BURNS.

ILLUSTRATIONS OF THE BIRDS OF CALIFORNIA, TEXAS, OREGON, BRITISH AND RUSSIAN AMERICA. By John Cassin. Facsimile of the 1856 edition. Texas State Historical Association, Austin. 1992: 460 pp., 51 color plates, additional black-and-white illustrations. $29.95; Limited Edition $75.—Except for several species of birds named for him, John Cassin is almost forgotten by present-day ornithologists, and his book is even less familiar. The Texas Historical Association has now published a handsome facsimile copy of this forgotten work.

In 1852 Cassin issued a prospectus for a three-volume supplement to Audubon's "Birds of America" describing those species discovered since the publication of that work. After being issued in parts in 1852–1855, this part of the work was issued as whole in 1856. Poor public response to the work made it impossible for Cassin to complete the contemplated work so only 10 of the proposed 30 parts were published. It is probable that there were never more than a few hundred copies available.

Fifty species are figured in lithographs by Wm. Hitchcock and George White. These vary from poor to almost acceptable by present day standards. Each illustration is accompanied by text of varying length, which includes a description and technical observations, as well more general notes about distribution, behavior, and life history. These accounts make extensive use of quotations from such people as Gambel, Heermann, and other early students of western birds. While some of the information is of use today, the text is mostly interesting as a window into the state of American ornithology in the mid-19th century.

Also scattered throughout the text in no apparent order are several sections entitled "Synopsis of North American Birds." These discuss four orders and six families, and with them Cassin attempted to make a comparison of North American birds with those of the world. As curator of the magnificent collection of the Academy of Natural Sciences of Philadelphia he was the first American ornithologist capable of such a synthesis.

The Introduction by Robert McCracken Peck, of Cassin's home institution, is a biography of Cassin, including the story of the publication of the book. An appendix gives a useful translation of Cassin's nomenclature to that of today.

Thanks to a generous grant from The Summerlee Foundation of Dallas, this impressive example of bookmaking sells for a remarkably low price. It should be of interest to all lovers of fine books as well as ornithological-history buffs.—GEORGE A. HALL.