



EDITED BY CARL D. MARTI

The following critiques express the opinions of the individual evaluators regarding the strengths, weaknesses, and value of the books they review. As such, the appraisals are subjective assessments and do not necessarily reflect the opinions of the editors or any official policy of the American Ornithologists' Union.

The Auk 115(4):1081–1084, 1998

Identification Guide to North American Birds. Part 1. Columbidae through Ploceidae.—Peter Pyle. 1997. Slate Creek Press, Bolinas, California. xi + 732 pp., 349 figures, 11 tables. ISBN 0-9618940-2-4. Paper, \$39.90.—Prior to 1987, the only aging and sexing guides for North American birds were taxonomically incomplete and out of date. As a result, many ornithologists shared Pyle's awareness of "the need for a thorough compilation" of data and literature regarding identification, aging, and sexing of North American birds, but nobody did anything about it until Pyle and his colleagues published *Identification Guide to North American Passerines* in 1987. Although that book was a Herculean task and has served the ornithological community extremely well, Pyle always intended to write a second edition—the book reviewed here. However, although its title is nearly identical to its predecessor, by any measure it is much more than a revised edition of Pyle et al. (1987). Written in collaboration with Steven Howell, David F. DeSante, Robert P. Yunick, and Mary Gustafson, it is an entirely new book both taxonomically and scientifically. Overall, this monumental effort is a superb achievement that will serve ornithologists very well for many years to come. Pyle made three major changes to the book by including: (1) all North American "near-passerines," i.e. doves through woodpeckers in the order of the AOU; (2) short descriptive summaries of all currently recognized subspecies (857 in all); and (3) sections on molt that have been substantially expanded by incorporating results from recent literature, and describing feather replacement to the level of wing coverts. As a consequence of this last change, the sections on aging have also been expanded by focusing on so-called molt limits among the various groups of coverts. Three additional minor changes in the species accounts include information for distinguishing between similar species in the field, sections on hybrids, and bar graphs that indicate the degree to which banders can reliably age and sex birds throughout the year and the age and sex codes cur-

rently accepted by the Bird Banding Laboratory. In terms of numbers, these changes have expanded Pyle et al. (1987) from 276 species, 278 pages, and 370 references to 395 species (including 89 near-passerines), 732 pages, and 2,316 published references (including 493 new citations published since 1987) in this book. It is noteworthy and commendable that Pyle cited a great deal more of the early literature than he did in his earlier version; e.g. of publications cited in Pyle et al. (1987), only 6% were published before 1951, whereas in this book these publications comprised 24% of citations. Overall, this book is impressively comprehensive in its coverage of the literature.

Like Pyle et al. (1987), the new book does not use dichotomous keys for aging and sexing birds. Instead, in each species account Pyle summarizes the distinguishing features between ages, sexes, and similar species because he argues, rightfully in my opinion, that such identifications "should be based on a synthesis or combination of all available characters" rather than on single characters as is required by dichotomous keys.

The book begins with many of the same general sections on aging and sexing that were in Pyle et al. (1987) including bird topography, measurements, wing morphology, skulling, molt, plumage, juveniles and soft parts, feather shape and wear, growth bars, and breeding characteristics. It also includes new sections on other techniques for aging and sexing (e.g. analyses of fecal or blood plasma steroid levels, microsatellite DNA fingerprint analysis, flow cytometry, bursa examination, laparotomy), hybrids, and geographic variation. The old general sections have been updated to incorporate recent advances in our understanding of these topics, and to address criticisms. Pyle has also integrated many new data regarding age- and sex-related characters, including molt and plumage sequences, from recently published *Birds of North America* species accounts. In addition, much of our improved understanding of molts and plumages, mainly of near-passerines and tyrannids, and of their relationships to age and sex,

is due to insights gained by Pyle and his colleagues from more than 1,000 hours of work examining more than 9,000 nonpasserine and 16,000 passerine study skins of 288 species. That Pyle and his colleagues were able to make such significant strides in our understanding of near-passerine and tyrannid molts and plumages with such a small amount of time and effort (relative to trying to do so by collecting data from live specimens in the field) is a superb example of the enormous untapped wealth of data that exist in museum specimens, and thus of the tremendous value of using, maintaining, supporting, and augmenting collections in the future (as Pyle himself argues on p. 38). However, Pyle also notes that many of his conclusions are tentative, either because the question being asked (e.g. how many molts are necessary to achieve definitive plumage?) is addressed better by serial data (i.e. data collected by recapturing banded birds of known age), or because there were not enough museum specimens in the collections he visited to provide an answer. Thus, Pyle repeatedly indicates where gaps occur in our knowledge that warrant additional research, and he urges others to collect data on these issues and publish their results to corroborate or refute his conclusions.

The introductory sections are followed by species accounts grouped by family. Each family is preceded by a brief but very useful summary of general physical attributes of the family, with particular reference to aging, sexing, and molts and plumages. In addition, Pyle has added excellent new sections on: (1) incomplete molts and aging in near-passerines, owls, and woodpeckers; (2) identifying, aging, and sexing small hummingbirds; and (3) molt limits in North American passerines. He also revised and updated sections on identifying *Empidonax* flycatchers and aging and sexing *Dendroica* warblers.

The introductory sections are generally accurate and thorough; they also are referenced very well, although some major general references were not cited. I have a number of minor criticisms, mainly regarding how some terminology is applied in these sections and throughout the book, but these do not detract significantly from the overall excellence and scholarliness of the book. Pyle presents 95% confidence intervals (CI) as the mean \pm 2 SD, regardless of the sample size of his data. This is technically incorrect. As a result, many of the 95% CIs presented in his various tables are slightly narrower than they should be. Flight feathers are defined as including primary coverts. This is contrary to the most common and currently accepted usage of the term that refers to remiges and rectrices, but not to primary coverts. "Partial molt" is defined as potentially including tertials and/or central rectrices. This contrasts with the standard definition that refers to replacement of body plumage but not remiges or rectrices. Pyle followed the latter terminology previously, but intentionally changed in this book, presumably be-

cause replacement of tertials and/or central rectrices is fairly common among juveniles during their first prebasic molt. However, replacement of some but not all flight feathers during a molt traditionally has been called an incomplete molt, and, I think, should continue to be defined as such. The term "protracted" molt is used to refer to molts that are suspended over the winter, whereas the term "suspended" molt is confined to molts that are suspended during fall migration. Birds that suspend molt vary in: (1) the location (e.g. breeding vs. wintering ground) at which they begin, suspend, reinstate, and complete molt; (2) the timing at which molt is begun, suspended, reinstated, and completed relative to annual cycle events and calendar date; and (3) the duration of molt suspension. Thus, the dichotomy between protracted and suspended molt is, I think, a false and misleading one, and one that would be difficult or impossible to apply meaningfully to many kinds of birds that suspend molt (such as certain tropical or desert birds, as well as many trans-Saharan migrants).

Regarding the sequence of flight-feather replacement, the terms centripetal and centrifugal traditionally have been reserved for replacement of rectrices from the outermost pair to the innermost (central) pair and vice versa, respectively. However, in a novel application of the terms to remigial molt, Pyle uses centripetal molt to indicate replacement of primaries or secondaries beginning at two molt centers, one proximally and one distally, and proceeding in two concurrent waves toward one another until they meet at a common center point. Similarly, he uses centrifugal to refer to replacement of primaries or secondaries beginning at a single molt center and proceeding in two concurrent waves proximally and distally. Although these terms were commonly used many decades ago, they confused people in much the same way that the terms ascendant and descendant continue to confuse people today; therefore, they have largely been replaced by other terms such as proximally and distally that are intuitively easier to understand. As a result, I think it is preferable to maintain the status quo rather than to re-popularize the terms centripetal and centrifugal, or to replace them with other synonymous terms such as convergent (centrifugal) and divergent (centripetal). In addition, and more important, applying the term centripetal to primary or secondary molt implies that such molt is initiated at two molt centers simultaneously and coordinated by a common physiological mechanism. However, this is incorrect and misleading because many, and possibly most, species with two or more molt centers in their primaries or secondaries do not initiate molt simultaneously at two or more molt centers. This suggests that initiation and progress of molt at each molt center may be physiologically, as well as temporally, independent of the other molt center(s). In species in which molt

originates at multiple foci in the primaries and/or secondaries and progresses both distally and proximally, application of the terms centrifugal and centrifugal is semantic at best. Well-known examples of this include many Strigidae and Alcedinidae, as Pyle mentions, in which primary molt begins in the middle of the primaries, say at P7, and proceeds both distally and proximally; at a later point in the same molt, primary replacement begins at P1 and proceeds distally. In this case, the progression of molt proximally from P7 could be considered part of a centripetal molt between P1 and P7, or the proximal half of centrifugal molt originating at P7.

The use of the term "eccentric" molt, which originated in the European literature and was popularized by Jenni and Winkler (*Moult and Ageing of European passerines*, 1994) is problematic. In the European literature, this term has been used to describe replacement of some but not all primaries (or secondaries) in which primary molt begins at a central primary and proceeds distally, proximally, or both proximally and distally, or begins with the outermost primary and proceeds proximally. Jenni and Winkler (1994) suggested that the term "should only be used for those partial primary moults which start somewhere in the centre of the primaries" and not for those starting at P1 or, rarely, P9 or P10; Pyle follows this definition. However, even this restricted definition refers to partial remigial molts that differ in the number and location of site(s) at which molt is initiated, the direction(s) in which molt proceeds, and the order in which remiges are replaced. As a result, the only information conveyed by the term "eccentric molt" is that it is an incomplete remigial molt, and it only achieves this if one already knows the definition of eccentric. As an adjective, eccentric suggests nothing except that it refers to something that is unusual in some respect. The meanings of other descriptive molt terms such as stepwise, centrifugal, centripetal, arrested, suspended, complete, incomplete, and partial are clearer and intuitively more obvious. Thus, rather than using the term eccentric, I think it would be simpler and better to simply use the term partial or incomplete primary or secondary molt. The feathers replaced in these molts could be described using modifiers such as inner, middle, or outer, resulting in terms such as incomplete middle primary and inner secondary molt; the order in which these remiges are replaced could and should be dealt with separately. In addition, defining partial remigial molts as eccentric implies, perhaps unintentionally, that these molts, and the physiological mechanisms that give rise to them, are functionally different from molts in which either no remiges or all remiges are replaced. However, this clearly is not the case in many species such as Northern Cardinals (*Cardinalis cardinalis*) in which, during their first prebasic molt, some individuals replace no remiges, others undergo an eccentric molt replacing

only some primaries and secondaries, and yet others replace all remiges.

As with the introductory sections, the overall quality of the species accounts is very good. Because of the physical dimensions of the book (about 23.5 × 15.5 cm), the species accounts contain fewer abbreviations, making the information relatively easy to understand. Each account includes sections on potentially confusing similar species, geographic variation, molts, skull pneumatization, aging and sexing characters, hybrids reported, and references. One aspect of the formatting that I do not like is that references are cited at the end instead of within the body of each species account. This is unfortunate because most species accounts cite a large number of published as well as unpublished sources, and it often is not obvious which references refer to which parts of various species accounts. As a result, it would have been very useful if references at the end of each account were given individual numbers, and if these numbers then were inserted at points within each species account.

In general, the species accounts are impressively well researched and referenced. However, few (if any) books of this scope can be flawless or completely comprehensive, and this book is no exception. Errors of various magnitude exist in many species accounts. For example, during first prebasic molt, Pyrrhuloxias (*Cardinalis sinuatus*) do not replace their primaries or secondaries eccentrically, nor do they replace all of their greater coverts as stated by Pyle. As a result, individuals should carefully critique accounts of species they are familiar with and contact Pyle regarding potential discrepancies. Similarly, although this book is referenced extremely well, many species accounts do not cite important references that also are not cited or discussed in other references cited by Pyle for these species; this is especially true of literature in relatively obscure journals as well as older literature including, for example, all of Frank Chapman's *Notes on the Plumage of North American Birds in Bird-Lore*. However, given the scope of this book, this is not meant as a criticism, but rather as a warning to others not to assume that this book is completely comprehensive in its coverage on any species. Last, typographic errors such as misspelled words (e.g. pneumatization instead of pneumaticization throughout the book) and author's names (e.g. Parks instead of Parkes), missing dates in the Literature Cited (Brackbill [1977], R.E. Jones [1971]; Smith and Sprunt [1987]), mislabeled figures and bar graphs, and reversed symbols such as \geq and \leq do occur but are rare and less frequent than in Pyle et al. (1987). A list of errata can be found at Point Reyes Bird Observatory's web site: www.prbo.org/prbo.

Overall, this book is an outstanding compilation of what we do and do not know about aging and sexing North American passerines and near-passerines, and it belongs on the shelves of every university library.

Like its predecessor, it will be the bible for banders and field ornithologists for many years to come. Equally importantly, it should inspire much additional research to further improve our knowledge of aging and sexing, including detailed field- and museum-based studies of molts and plumages.—CHRISTOPHER W. THOMPSON, *Washington Department of Fish and Wildlife, 16018 Mill Creek Boulevard, Mill Creek, Washington 98019, USA.*

The Auk 115(4):1084–1085, 1998

Current Ornithology, Volume 13.—Val Nolan, Jr. and Ellen D. Ketterson (Eds.). 1996. Plenum Press, New York. 359 pp. ISBN 0-306-45473-4. Cloth, \$89.50.—This volume, like those before it, contains a grab bag of reviews covering topics from cognition to chemical defense to effects of birds on agricultural pests. Although this volume is somewhat uneven, its six chapters are likely to be as influential as ornithological readers have come to expect from this series.

Titillatingly entitled “Social Cognition: Are Primates Smarter than Birds?,” Chapter 1 compares the evidence for thinking in birds and primates in the areas of cultural transmission of behavior, tool use, cooperation, complex social cognition (e.g. an individual’s familiarity with conspecifics and their past behavior toward him or her), and communication. Peter Marler makes the compelling case that, to the best of our knowledge, avian cognition is on a par with that of infrahuman primates in most of these areas. Perhaps as surprising as the relatively strong cognitive abilities of birds is the fact that the data the author discusses—like tits (*Parus caeruleus* and *P. major*) pecking through bottlecaps for cream, Egyptian Vultures (*Neophron percnopterus*) dropping rocks on eggs, and Harris’s Hawks (*Parabuteo unicinctus*) hunting cooperatively—are well known to students of bird behavior. The author’s contribution, of course, is the interpretation of these studies not as behavioral oddities, but as indications of avian cognition. I am certain that, after reading Marler’s review, many people will be convinced of the need to study the proximate causes of avian social behavior with an eye toward cognition. The paper seems destined to be read widely by ornithologists and primatologists alike, most of whom will feel richly rewarded for their trouble.

Chapter 2 is Russell Balda, Alan Kamil, and Peter Bednekoff’s paper entitled “Predicting Cognitive Capacity from Natural History.” Based on the subject matter, this chapter is well positioned after Chapter 1. Being somewhat ponderous and repetitive, however, Chapter 2 suffers in comparison to the

crisp, highly readable prose of the first chapter. The authors’ main contribution is to offer their own highly successful research program as a model for how the comparative method can advance the study of avian cognition. I appreciated their efforts to highlight potential trouble spots, both technical and conceptual, with cognitive work of this kind. Despite its weak presentation, this article seems likely to achieve its goal of encouraging others, principally behavioral ecologists, to attack cognitive issues with similar approaches.

The third chapter is Margaret Brown’s “Assessing Body Condition in Birds.” Brown does a competent job of giving a historical perspective on studies of this topic and reviewing the wide variety of techniques used in determining body condition in birds. Here again, however, weak presentation—particularly verbosity and overuse of the passive voice—bogs down the review. A second concern was the curious decision of the author to restrict her literature survey to 13 ornithological, ecological, and physiological journals, which ensured that a number of important papers on body condition would be missed. Nonetheless, the review is timely and will be useful to avian ecologists and physiologists faced with the vexing problem of assessing body condition.

Chapter 4, “Avian Chemical Defense” by John Dumbacher and Stephen Pruett-Jones, is a well written and compelling call for more attention to the use of chemicals by birds in defending themselves and their nests. Coming in the wake of the exciting findings of neurotoxins in various species of *Pitohui*, this review could hardly be more timely. The authors pull together a good many cases of known or suspected avian chemical defense in birds. Although they caution readers that many cited examples are anecdotal (e.g. based on unpalatability of birds to humans), the sum of their efforts is convincing: avian chemical defense is a largely overlooked topic worthy of study. This chapter will be of interest to all ornithologists and certainly will inspire rigorous investigation of chemical defense by behavioral and chemical ecologists.

Most distinct from the rest of the volume in terms of subject matter is Chapter 5, “Past and Current Attempts to Evaluate the Role of Birds as Predators of Insect Pests in Temperate Agriculture” by David Kirk, Matthew Evenden, and Pierre Mineau. Every bit as lengthy as its title portends, this article is generally well written but a bit overambitious. It contains discussion interspersed with detailed case histories of economically important pests; quasi-biographical sketches of early students of avian effects on crops; lengthy summaries of the methods, results, and conclusions of some important studies; and even passages dealing with the possible relevance of social dominance and optimal foraging to avian predation on crop pests. Although I found the review to be a hodgepodge, the authors’ historical treatment of

the topic was fascinating and useful. Likewise, their main points—that birds are potentially important consumers of agricultural pests and that farmland should be laid out with this positive influence in mind—come across well. Although this article is more vital to those in the agricultural community than to dyed-in-the-wool ornithologists, it will be eye opening to the latter group as well.

The final chapter of the volume is entitled "An Evolutionary Approach to Offspring Desertion in Birds," written by Tamás Székely, James Webb, Alasdair Houston, and John McNamara. The authors present a clearly written synthesis and critique of theoretical and empirical studies of desertion and offer a number of suggestions for students in this field. Among the most important is their contention that "state-dependent game theoretic" models, which account both for ecological variables and the behavior of mates and other adults in a population, are required to predict whether or not a given animal deserts. In addition, the authors call for more experimentation to examine effects of factors such as food abundance, parasite load, and paternity on the tendency to desert. One might quibble that their definition of offspring desertion is too broad and at variance with conventional usage of the term, because it treats as deserters even males of lekking species that never provide parental care. This minor point aside, the review seems likely to provide a valuable compass for modelers and ecologists currently investigating desertion and might encourage those studying other aspects of nesting behavior to take note of this phenomenon.

In short, this latest volume of *Current Ornithology* continues the tradition of well-conceived and generally well-presented reviews of the ornithological literature and will constitute a valuable resource worthy of inclusion in personal as well as academic libraries.—WALTER H. PIPER, *Department of Biology, George Mason University, Fairfax, Virginia 22030, USA.*

The Auk 115(4):1085–1088, 1998

This is Biology.—Ernst Mayr. 1997. Belknap Press of Harvard University Press, Cambridge, Massachusetts. xv + 327 pp. ISBN 0-674-88468-X. Cloth, \$29.95.—With the collapse of the Cold War, physics is experiencing a shrinking of its funding and, therefore, sees its preeminence among the natural sciences diminished. Biology, having forever suffered from the proverbial physics envy, sees its own fortunes rise as news of possibly large increases in NIH funding reaches us. If Valéry Giscard d'Estaing declared the 20th century to be "the century of biology," Pres-

ident Clinton even more confidently prophesied that the 21st century will be it. Mayr's stand on this issue is more sober; his book, on the one hand, carefully argues that biology is no lesser science than is physics, and, on the other hand, reveals the special beauty, as well as the special difficulties and problems, that are inherent in biology. Mayr is certainly not one of the "modern biologists [who] tend to be extreme specialists," because he has been an empirical and theoretical biologist as well as a philosopher and historian of science. Even more, Mayr is a uniquely gifted synthesizer, having brought together ever-wider circles of science and knowledge at successive stages of his life. And he is a master of words and able to write concisely and with precision. (In April of this year, Mayr was awarded the Lewis Thomas Prize, which recognizes the scientist whose voice and vision can tell us science's aesthetic reflection, even revelation, as does a poem or painting.)

The book has the working biologist in mind, "who does not ask whether he should follow the prescriptions of this or that school of philosophy. . . . He uses whatever method will get him at the moment most conveniently to the solution of his problem." Ornithologists, and biologists in general, are usually firmly rooted in their assumptions, to quote an old adage, and this book provides the opportunity to explore the validity of at least some of our assumptions. Mayr has never been a shrinking violet when it comes to expressing his views and insights, but he is wise and knowledgeable enough to recognize that he cannot cover molecular biology and the biology of mental processes with the same competence we have come to expect from him in other areas of biology. Still, Mayr succeeds in dealing with a substantial part of the life sciences and many aspects of the social sciences and humanities. This book may reveal all its treasures perhaps only to a reader who is willing to work through it several times, because it is written with a Mayrian economy of words and density of concepts and arguments. It is definitely a book to be taken to the proverbial island.

The following summary of the individual chapters cannot do justice to the actual density and multitude of the topics addressed by Mayr, but it is meant to whet the appetite of potential readers. The introduction, unlike so many, is eminently readable and informative. In it, Mayr also discloses what he considers the two *bêtes noires* of biology: reductionism and essentialism. Another black beast emerges ever more clearly as one proceeds through the book: thinking in strict either-or terms.

The actual book starts with the eternal question "What is life?" and right away demonstrates one of Mayr's enduring strengths, namely the uncanny ability to unearth different meanings of a word, such as life as a contrast to either death or lifelessness. Mayr goes on to recount the historical developments of physicalism, which essentially maintains that organ-

isms are nothing but machines, and vitalism, which consists of various antiphysicalist ideas and concepts affirming life-specific properties of organisms. He then contrasts the concept of emergence with that of reductionism and leads us to see that both materialistic/mechanistic and vitalist views of life are partly correct; the synthesis is organicism, which incorporates the concepts of the genetic program and of emergence, and which is antireductionist and yet, mechanistic. The chapter ends with a list and discussion of the distinguishing characteristics of life.

In the chapter "What is Science?," Mayr clarifies that science is both an activity and a body of knowledge. He explores the relationships, similarities, and differences between biology and other sciences and systems of knowledge, such as physics, military science, social science, feminist science, theology, philosophy, the humanities, ethics, art, and music. In one of my many favorite sections, Mayr explains how the Christian faith in an all-powerful God actually helped the emergence and development of modern science, but was also responsible for keeping the life sciences dormant until the mid-18th century. Mayr also establishes theoretical connections between observation, experiment, and natural experiment. And finally, he explores the characteristics and motivations of scientists and what makes a scientist his or her best.

In "How does Science Explain the Natural World?," Mayr shows that the natural world can be given supernatural, philosophical, and scientific explanations. He warns us that a rational explanation is not necessarily a true one. And he provides some useful definitions of frequently heard, but rarely well-understood terms, such as epistemology, logical empiricism, testing, prediction, conjecture, theory, law, etc. Mayr the practicing biologist comes through in this section as he at times quite irreverently strips certain terms of their aura of importance and evaluates them in terms of their usefulness in biology. Yet when it comes to discussing the importance of using language properly for good science, Mayr is unyielding, as one would expect from somebody who had to learn a new language well enough to be able to communicate complex abstract concepts.

In "How does Biology Explain the Natural World?," Mayr makes a strong point for accepting the approach of scenario building or historical narrative as the appropriate method to deal with unique phenomena that are typical for, but not unique to, biology. He shows that in biology it is quite normal to find a plurality of causes for a particular event. He quite correctly feels that narrowly specialized biologists have understandably little appreciation for this fact. He also demystifies cognitive evolutionary epistemology and scientific realism by relating them to what we know about neurobiology. The chapter ends with a demonstration of why the quest for certainty is never ending in science.

In "Does Science Advance?," Mayr discloses that he is an adherent of "The Legend" and, therefore, answers this question with a vigorous yes! He concedes, however, that impediments in further progress in science do exist in the form of moral, fiscal, and practical limits or because the systems under study are too complex to be comprehended by human mortals. Progress in science is illustrated by the historical development of cell biology, systematics, and evolutionary biology as examples. Mayr discusses the merits of the concepts of Kuhnian revolutions and Darwinian processes to explain the development of science and shows that science advances in all kinds of manners. Mayr lists several reasons why consensus in science seems to be so difficult to reach and does not flinch to add among them human, political, and cultural reasons.

In "How are the Life Sciences Structured?," the organization of biology into its subdisciplines, and the classification of these subdisciplines, are discussed. That this is not just an academic exercise becomes apparent when Mayr points out how this classification can influence the organization of funding and advisory agencies and, thereby, the direction of research and science. Several classification schemes are discussed, but Mayr finally advances a new tentative proposal to divide the life sciences into disciplines that ask "how" questions to elucidate proximate (functional) causations, and into disciplines that ask "why" questions to elucidate ultimate (evolutionary) causations. But even this proposal may not be fully satisfactory, as Mayr points out himself. Mayr also provides one of the most lucid and convincing arguments against the assumption that the designation "descriptive" is equivalent to "bad" and the designation "experimental" is equivalent to "good" when it comes to describing scientific approaches. In the section "Power shifts in Biology," Mayr fixes an unblinking gaze on extraneous factors affecting science, such as competitive exclusion practices by new and emerging fields. Mayr emphatically defends classical fields on the basis of the endless unfinished frontier argument. Curiously, he does not mention an even stronger argument, namely that with the advent of new fields and knowledge, there is a continuing need for new syntheses to be forged between the classic fields and the new ones. The next four chapters explore four different fields (systematics, developmental biology, evolution, and ecology) to exemplify the diversity within biology.

In "What? Questions: The Study of Biodiversity," the fundamental value of taxonomy to all branches in biology is established. The three different meanings of the term species (e.g. concept, category, and taxon) are disentangled, and various species concepts (i.e. typological, phylogenetic, and recognition) are discussed. This is followed by an extensive discussion of the relative merits of various approaches to classification.

In "How? Questions: The Making of a New Individual," an excellent historical account of the various stages of developmental biology from Aristotle to developmental genetics highlights the conceptual difficulties inherent in this branch of biology. According to Mayr, it is the richness of factors and causations that is the fascination and beauty of the living world.

In "Why? Questions: The Evolution of Organisms," the reasons for the emergence of evolutionary thought within a Christian framework that views the world as being in a static state are discussed. Mayr stresses that evolutionary change comprises both phyletic evolution and speciation, and he emphasizes the significance of preadaptation for the emergence of evolutionary novelty. Mayr also rescues the adaptationist program from current misleading propaganda by showing that it is a test of the principle of natural selection through the study of individual cases. An excellent diagram of the five facts and three inferences underlying the theory of evolution rounds off a précis of Darwin's theory, which is followed by a useful overview of the synthetic theory of evolution. The synthesis between macroevolutionary and microevolutionary processes emerges from the articles by Mayr (1954) and Eldredge and Gould (1972). One of the most challenging problems still facing evolutionary biology seems to consist of the need to explain the processes responsible for stasis and to find the role of internally cohesive genomes for evolution. After discussing evolutionary progress, the imperfection of organisms, the unit or target of selection, and neutral and group selection, Mayr reminds us that evolutionary biology is so complex because evolutionary change has multiple possible causes and multiple possible solutions.

In "What Does Ecology Ask?," we realize that ecology is one of the most heterogeneous and comprehensive biological disciplines; it is a "self-conscious natural history." The concept of competition is explored, and we are reminded that competition usually cannot be observed and is inferred. Density-dependent mortality, reproduction strategies, life histories, co-evolution, and ongoing controversies in ecology are discussed. The chapter ends with a section on the ecology of human beings, which forms the transition to the next chapter.

In "Where do Humans fit into Evolution?," Mayr shows that the idea of a close relationship between humans and apes predates Darwin. He then goes on to stress the importance of population thinking when tracing human evolution. He reminds us that genomic, physical, and cultural changes do not proceed in tandem and identifies social integration as the most important aspect in human evolution. Social integration is also responsible for the ongoing stasis in the evolution of the human genome and for the human capacity to occupy a large number of diverse environments. Mayr then unflinchingly tackles

and analyzes various hot potatoes, such as racism, eugenics, diversity, equality, polygamy, marriage, and menopause and finally warns us that the deterioration of cultural values is far more threatening to the future of mankind than any possible deterioration of our gene pool.

In the last chapter "Can Evolution Account for Ethics?" Mayr succeeds in a brilliant integration of knowledge from the life sciences, social sciences, and humanities into his credo of evolutionary humanism. In doing so, Mayr is not afraid to step into quicksand territory, such as the evolution of altruism, the acquisition of ethical norms by groups and individuals, the nature versus nurture controversy of human behavior, and to illustrate, if appropriate, his points with examples from current foreign and domestic politics. Mayr also analyzes various reasons for the obvious decay of morality in our society (and in science, I might add) before ending the book with a suggestion on how to reverse this trend.

In the last two chapters that deal with various aspects of the human condition, Mayr demonstrates how science is capable of informing the social sciences and humanities and has, thereby, modeled how bridges can be built between fields of knowledge that traditionally were thought as having no connections. It should come as no surprise that such a genuine integration, instead of a takeover or merger of all fields of knowledge under the umbrella of science, has been achieved by Mayr, *the* master of synthesis and integration.

Are there any improvements possible for the next edition of this book? Few, if any, I think. The index may need to be expanded to be more useful for retrieving information. And some disciplines are left that wait to be integrated with evolutionary biology besides molecular biology and neurobiology. Two examples come to mind: (1) physics, which describes and explains the physical laws and phenomena that represent the strictest constraints for the evolution of all organisms; and (2) morphology, the science of biological structure, which has been left out from Darwin's theory and the synthetic theory of evolution.

Who should read this book? Definitely all biologists and, in particular, ornithologists who want to understand the significance of their research within the greater framework of science. Mayr himself demonstrates that even bird watching during one's childhood is part of and can grow into a broader intellectual activity. Furthermore, graduate students, either for quiet study by themselves or in a graduate seminar, will profit from and enjoy reading this book. The style and organization of this book ensure a didactically most satisfying experience. Mayr is in a position to say what is on his mind without having to care about possible consequences, and thus, he often spells out what graduate students may have dimly perceived but may have been too insecure to voice. Thus, this book

may also serve as a bridge between the old and the young, who sometimes have more in common than either has with the middle aged. My copy stands between *Animal Species and Evolution*, which motivated me as an undecided student to become an evolutionary biologist, and *The Growth of Biological Thought*, which motivated me as a searching scientist to gain a broader understanding of science. *This is Biology* reinforces both motivations, but it is a book that needs to be approached repeatedly. I did not particularly like it the first time I read it; I was too enmeshed in my own arguments. The second time I was more patient and receptive. The third time I was able to savor the book, and I discovered passages I had missed before. I am already looking forward to reading it again.—DOMINIQUE G. HOMBERGER, *Department of Biological Sciences, Louisiana State University, Baton Rouge, Louisiana 70803, USA.*

The Auk 115(4):1088–1089, 1998

The Bird Collectors.—Barbara Mearns and Richard Mearns. 1998. Academic Press, San Diego, California. xvi + 472 pp., numerous black-and-white photographs, 4 maps, 3 tables, 1 appendix. ISBN 0-12-487440-1. Cloth, \$49.95.—Barbara and Richard Mearns will be familiar names to readers of their previous books, *Biographies for Birdwatchers* (1988) and *Audubon to Xántus* (1992), which presented fascinating, carefully researched details of individuals for whom birds of the western Palearctic and North America were named. *The Bird Collectors* considers people who collected birds from the late 18th century up to the present day. In addition to the biographical content, the book offers some philosophical reflections on the killing of birds for food, sport, and science. As stated in the Preface, "Neither of us has ever killed a bird for a collection and we have no intention of doing so. . . . We have no vested interest in arguing either for, or against, the continuation of collecting." Yet, the final chapter offers a welcome rationale for the continued practice of collecting specimens.

By design, the book devotes little attention to oologists, paleontologists, and collectors of skeletons and spirit specimens, concentrating instead on those who collected and preserved study skins. The book departs somewhat from the previous works of the authors in that most of the chapters center on people of particular occupations (e.g. chapters entitled "Bird Artists as Collectors," "Army Officers," "The Medical Profession," "Clergymen and Missionaries," and "The Professional Field Collectors") rather than focusing on individual naturalists. Thus, for ex-

ample, Richard Meinertzhagen is mentioned no fewer than 19 times in 10 different chapters, providing a minor inconvenience for those searching for information on a particular person.

The earlier chapters include "Hunting and Harvesting" (with a section on the reasons for extinction), "A Bird in the Hand" (including information on the development of scientific collections, both public and private), and "The Practicalities" (specimen preparation, labeling, curation, etc.). Chapter 15, "Women in the Field," includes thumbnail sketches on Amalie Dietrich, Pat Hall, Martha Maxwell, Annie Meinertzhagen (wife of Richard), Emilie Sneathlage, and Brina Kessel, among others. This chapter was especially interesting given that so little attention has been devoted to women naturalists.

The historic meat of the book begins in Chapter 4 ("Collecting Gathers Momentum"), which summarizes the proliferation of museums in the 17th and 18th centuries and continues through the 19th century boom in collecting activities. Chapter 5 ("The Early Scientific Voyages") includes a 10-page table that provides summaries of notable voyages of the 18th and 19th centuries and their contributions to ornithology. Another extremely useful tabulation is the 11-page Appendix that lists the world's largest collections and the main collectors who contributed to each. An unfortunate slip in the Appendix is that the Delaware Museum of Natural History, with 150,000 egg sets, is credited as having "the largest egg collection in the Americas." In reality, of course, the Western Foundation of Vertebrate Zoology in California, with some 180,000 egg sets and nearly 1,000,000 eggs, contains by far the largest collection of eggs in the New World.

The authors admit up front that their approach has "been rather Anglo-centric." True, there is a bit of a British bias, but it would serve no point to list the prominent collectors who receive little mention or none at all. We were pleased to see the attention devoted to Rollo Beck, who certainly was the most indefatigable collector of seabirds the world has ever known. Others receiving prominent mention include some familiar names (e.g. Baird, Cassin, Coues, Sharpe, and Wallace) and some perhaps not-so-familiar names (e.g. Emin Pasha, T. Gilbert Pearson, Henry Seebohm, and Henry Tristram).

To be sure, a few readers will find at least one of their favorite personalities missing. But just as surely, every reader will learn something new. For example, we were interested to learn that Audubon gave a few Passenger Pigeons (*Ectopistes migratorius*) to Lord Stanley, the 13th Earl of Derby; they first raised young in 1832 and subsequently became such a prolific nuisance that the Earl set them free on his estate near Liverpool (the year of the release was not provided). A quote from Elliott Coues is especially priceless: "Never put away a bird unlabelled, not even for an hour, you may forget it or die." So, too,

is an anecdote about the great artist, Louis Agassiz Fuertes, who was so serious a bird collector that "...he once risked his life climbing so far down a cliff... after a shot Zone-tailed Hawk that he had to be rescued. Even riskier, he went collecting on his honeymoon."

Compilations of history often contain a few shortcomings, and *The Bird Collectors* is no exception. Somewhat annoying is the occasional exclusive use of surnames so that one learns of a collector's first name or initials only by consulting the index (e.g. Hardwicke on pp. 197–198, and Kozlov on pp. 272–274). Even worse, many of the collectors mentioned here and there in the text are not listed in the index (e.g. Vernon Bailey, p. 157; Ludlow Griscom, p. 314; John Gundlach, p. 313; Major General Hutson, p. 201; David Lyall, p. 215; J. Alden Loring, p. 223; Harry Oberholser, p. 157; Alexander Whyte, p. 414). Lapses of this sort severely compromise the usefulness of an historic work. Omissions include the two pages devoted to the eminent 19th century artist Joseph Wolf without mention of his two greatest works, namely *A Monograph of the Phasianidae* (1870–1872) and *A Monograph of the Paradiseidae* (1873), both of which were published by Daniel Giraud Elliot. Outright errors include the statement that R. B. Sharpe completed John Gould's monograph of the pittas (that work was never completed by anyone!), that Gould shot a Chestnut-breasted Whiteface (*Aphelocephala pectoralis*) in South Australia in 1871 (Gould did not set foot in Australia after April 1840), and that the last record of a Passenger Pigeon nest occurred in Michigan in 1878 (later records include 1891 in Manitoba and 1895 in Minnesota). Typographic errors are few but include misspellings of appeared on page 160, inadvertently on page 254, and the last name of Jed Burtt on page 443. On page 156, the ICBP is referred to as "The International Committee for Bird Protection" instead of The International Council for Bird Preservation (now BirdLife International).

Although *The Bird Collectors* does not quite meet the high standards of the Mearns' first two books, it is a wonderful collection of information that will be read with interest by anyone with a passion for the history of ornithology. Nowhere else will one find such a nearly complete world list of scientific voyages, of surgeon-naturalists of all nationalities, of collectors who perished during their pursuits, or of scientific collections lost to fires and shipwrecks, to name but a few of the book's valuable contributions. We recommend this book for university and municipal libraries and for anyone with more than a passing interest in the history of natural history.—JEFFREY S. MARKS, *Montana Cooperative Wildlife Research Unit, University of Montana, Missoula, Montana 59812, USA* AND C. STUART HOUSTON, *863 University Drive, Saskatoon, Saskatchewan S7N 0J8, Canada.*

The Auk 115(4):1089–1091, 1998

Endemic Bird Areas of the World: Priorities for Biodiversity Conservation.—Alison J. Stattersfield, Michael J. Crosby, Adrian J. Long, and David C. Wege. 1998. BirdLife International, Conservation Series No. 7, Cambridge, United Kingdom. 848 pp., numerous maps, tables, and photographs. ISBN 0-946888-33-7. Paper, \$60.00.—Our planet's biota is facing an extinction crisis: because of human transformation of ecosystems, species are being lost at a rate 10 to 100 times higher than the natural background extinction rate. We also know that species loss is greater in some regions than in others. Regrettably, decision-makers are frequently faced with the question of which regions need to be conserved, and which do not. Or, in other words, which regions are priorities for conservation? *Endemic Bird Areas of the World* is an attempt to answer this question. To do this, Stattersfield et al. subscribe to the hot-spots approach. The idea for hot spots was first proposed by Norman Myers as a way of analyzing distribution patterns of biodiversity around the world and setting priorities for conservation (*Environmentalist* 8:1–20, 1988). The basic idea is to identify areas with high concentrations of restricted-range species, those that may be expected to be most vulnerable to extinction by chance alone. Thus, by ensuring the conservation of these endemic-rich areas, it would be possible to reduce the extinction process drastically.

This book is the result of a long-term project started by BirdLife International in 1987. It is the first analysis of the distribution patterns of endemic birds of the world with standardized methods. Preliminary results of this project were published in 1992 in the book *Putting Biodiversity on the Map*, which was a summary of the project results.

The task undertaken by Stattersfield et al. was not an easy one. They mapped the distribution of all the world's birds, identifying 2,623 restricted-range species (defined as species whose breeding ranges cover less than 50,000 km²). Overlaying these distributions, they identified 218 areas throughout the world that include the complete ranges of at least two restricted-range species. They call these endemic bird areas (EBAs). Taken together, these 218 EBAs include the ranges of 93% of all restricted-range bird species and 74% of the species classified as threatened in only 4.5% of the world's land surface. Although sharing the characteristic of covering at least the complete ranges of two or more restricted-range species, the EBAs vary greatly in terms of the number of restricted-range species they have and the taxonomic uniqueness and degree of threat to the species. With this in mind, Stattersfield et al. ranked the EBAs in three priority categories so that EBAs with the high-

est biological importance and current level of threat would have the highest priority. They also identified "secondary" areas that held one or more restricted-range species but did not qualify as EBAs because they did not have at least two species entirely confined to them.

As might be expected, the conclusions reached in this book do not differ largely from those in *Putting Biodiversity on the Map*, and the overall distribution of EBAs remains basically the same. However, the work carried out by BirdLife after the publication of the 1992 book enabled them to reanalyze the distribution of restricted-range species and to map more precisely the boundaries of the EBAs. This exercise led not only to changes in the EBAs boundaries, but to completely new EBAs as well as to the elimination of some of them. Additionally, some of the EBAs identified in 1992 have been split into two, and some pairs have been combined into one. A detailed description of all these changes is presented in Appendix 4 of the book.

The first part of the book introduces the problem of biodiversity loss, presents the methods used to identify and to prioritize the EBAs, discusses the relevance of EBAs for biodiversity conservation, and gives a general overview of the EBAs for the different regions of the world. At this point, some readers may notice that these were, although less colorful, the contents of *Putting Biodiversity on the Map*. What, then, is the novelty of the new book, apart from the aforementioned changes? Some of the EBAs were redrawn, split, fused, dropped, or added, but the most obvious and important difference is a new section with a description of different aspects of each EBA. In this section, which constitutes almost two-thirds of the volume, the authors present information on each of the 218 EBAs detailed enough to cover all the relevant issues, but concise enough not to be transformed into a series of endless, unreadable volumes. They provide information, in the form of both text and tables, on the general political and ecological characteristics of each region, its overall biological importance, and its current level of threat, as well as on the restricted-range species present, their habitat requirements, and their degree of threat. A map of the EBAs, unfortunately lacking geographic coordinates, and a picture of a conspicuous endemic bird or the most characteristic habitat, also are included. In the last part of the book, five appendices list restricted-range species by family and country, compare the EBA codes of the previous book with those of the new one, show (as I mentioned above) the changes between analyses, and give a selection of publications in which data from EBAs have been used. An extensive reference list closes the book.

As a whole, *Endemic Bird Areas of the World* is an excellent attempt to identify centers of endemism of birds around the globe. Paying special attention to these centers and making them a priority for conser-

vation undoubtedly are wise actions that will help us save a large proportion of the earth's bird species. Where the argument is less convincing is when the EBAs are thought of as targets for the conservation of biodiversity as a whole, not just of the class Aves. As we can see in the subtitle of the book, the authors imply that EBAs are a priority for biodiversity conservation, not just for birds. The key question here is whether areas of endemism of taxa other than birds are well represented within the EBAs. As Stattersfield et al. point out (p. 49), the factors determining the patterns of endemism for a given taxon (birds in this case) are not the same as those determining the patterns of endemism for other taxa with different habitat preferences, dispersal abilities, and ecological specializations. Here, they make an important point: EBAs are probably also centers of endemism for other taxa because the barriers that prevent mobile organisms like birds from dispersing are probably also good barriers for other, less-mobile organisms. However, the opposite is not necessarily true, and areas that are not important as centers of endemism for birds may be important as centers of endemism for other taxa. To test this hypothesis, Stattersfield et al. analyzed the overlap between centers of plant diversity (CPDs) and the EBAs around the globe. Although many CPDs totally or partially match the EBAs, many others do not, and vice versa. However, in spite of the relevance of this important issue for the direct consequences of the EBA analysis on biodiversity conservation, it is not treated with sufficient depth in this book. First, the authors compared the EBAs with centers of plant diversity and not centers of plant endemism. Second, even when we can accept the use of the CPDs, their comparative analysis is far from being thorough. Finally, comparisons with taxa other than plants are lacking.

Other studies have shown that, at least for some regions in the world, little or no correlation occurs between the centers of species richness or endemism of different groups. For example, the distributions of rare species of different taxa in South Africa have a very low degree of overlap (van Jaarsveld et al., *Science* 279:2106–2108, 1998); a similar result was obtained for the distribution of species richness across different taxa in Britain (Prendergast and Eversham, *Ecography* 20:210–216, 1997). Thus, the statement that there is "a high congruence of endemism between birds and other life forms, so that it is reasonable to propose that EBAs should be used as guides to general centers of endemism" (Long et al., *Global Ecology and Biogeography Letters* 5:281–304, 1996) is not necessarily true. Using EBAs as guides to general centers of endemism surely will include centers of endemism for many other taxa, but also will miss many others. The necessity of comprehensive research on the distribution patterns of earth's biodiversity is evident. Before we can conclude that birds or any other taxon are good indicators of the rest of the living

groups on earth, we need more research, particularly comparative studies of species distributions across taxa. Only then shall we be confident that we are not missing important priorities for the conservation of our vanishing biodiversity.—DIEGO P. VÁZQUEZ, *Department of Ecology and Evolutionary Biology, University of Tennessee, Knoxville, Tennessee 37996, USA.*

The Auk 115(4):1091, 1998

Atlas of the Breeding Birds of Maryland and the District of Columbia.—Chandler S. Robbins (Senior Editor) and Eirik A. T. Blom (Project Coordinator). 1996. University of Pittsburgh Press, Pittsburgh, Pennsylvania. x + 560 pp., numerous line drawings and maps. ISBN 0-8229-3924-1. Cloth, \$55.00.—The excellent quality and comprehensive scope of this volume are not surprising considering that its senior editor, Chandler S. Robbins, is the grandfather and guiding light of breeding bird atlases in North America. This volume is a fine addition to the growing number of state and provincial bird atlases and will be an essential part of the library of every professional and amateur ornithologist interested in the status, habitat, and distribution of North American birds. This publication brings the number of these volumes to 15: Vermont (Laughlin and Kibbe 1985); Ontario (Cadman et al. 1987); Maine (Adamus 1988); New York (Andrle and Carroll 1988); Ohio (Peterjohn and Rice 1991); Michigan (Brewer et al. 1991); Alberta (Semenchuk 1992); Maritime Provinces (Eskine 1992); Pennsylvania (Brauning 1992); Connecticut (Bevier 1994); New Hampshire (Foss 1994); West Virginia (Buckelew and Hall 1994); Saskatchewan (Smith 1996); and Iowa (Jackson et al. 1996).

This volume begins with a comprehensive overview of the grid-based atlas system used worldwide, including history, goals, procedures, and methodology, thus placing the Maryland and D.C. atlas in perspective. In accordance with preceding atlases, the Maryland Ornithological Society sought to document the distribution of breeding birds throughout their region "... so that our avian resources would be known and future changes could be detected." Secondary goals were to provide detailed information on the breeding distribution of rare species, to identify sites with special wildlife values or unusually high wildlife diversity, and to provide information usable in diverse ways (such as identifying the effects of habitat fragmentation and educating the public about the birds of their state).

The book contains comprehensive data on the 199 species of birds that breed in Maryland and Wash-

ington, D.C. Each species account contains information on the species' history, habitat requirements, distribution, abundance, and nesting; is illustrated with an excellent line drawing; and contains a distribution map (showing possible, probable, and confirmed breeding blocks) accompanied by statistics. This is the usual atlas format, but the Maryland-D.C. atlas gives even more by including (where appropriate) maps of relative abundance from breeding bird survey routes conducted during 1982 to 1989, comparative field maps of breeding distribution from the 1958 book *The Birds of Maryland and D.C.* by R. Stewart and C. Robbins, and trend graphs of Maryland Breeding Bird Survey data from surveys during 1966 to 1989. It would have been very interesting to have had a discussion in the text of the comparison between the 1958 data and the 1983 to 1987 data; however, having the information alone is valuable.

The Maryland-D.C. atlas project was a remarkable feat of field work, with observers attaining 99% coverage of the blocks, a feat made even more remarkable by the fact that in some counties, the survey units, at 1.5 km per side, were much smaller than the standard eastern United States block of 1/6 of a 7.5°-block (5 km per side). This project was unique in North American atlases in using these quarter-blocks for recording purposes (the species maps melded the data into the standard block size of 25 km²).

The introductory section is excellent. In particular, the section on "The Environment" gives an in-depth understanding of the Maryland-D.C. topography, habitat, and climate, and sets a high standard for future atlases to meet. This section covers location, size, soils, physiographic regions, history, land use, human population, and climate!

This well-organized atlas project has now culminated in a handsome and well-written volume. In my opinion, no one who has not undertaken organizing an atlas survey and then compiled and published the data should be able to comment on the length of time between the close of the field work and the publication of the volume. The 100,000 hours involved are difficult to comprehend otherwise. This volume was well worth the 10-year wait.—SARAH B. LAUGHLIN, *P.O. Box 157, Cambridge, Vermont 05444, USA.*

The Auk 115(4):1091–1092, 1998

Field Guide to the Birds of the Middle East.—R. F. Porter, S. Christensen, and P. Schiermacker-Hansen. Illustrated by A. Birch, J. Gale, M. Langman, and B. Small. 1996. T & A D Poyser, London. xv + 460 pp., 112 color plates, 722 distribution maps. ISBN 0-

85661-076-3. Cloth, \$29.95.—Birders preparing for a trip to the Middle East previously have had to buy guides focused on European birds that add a few species from the Levant so that that region could be added to the title of the book. To date, no field guide did real justice to the birds of the Middle East, and the only previous attempt (*The Birds of the Middle East and North Africa*, 1988) was by P. Hollom and the first two authors of *Field Guide to the Birds of the Middle East*. Having used the old guide in the field for several years, and the new one for several months, it is inevitable that comparisons are made between the two.

I consider the present book to be a very good upgrade wherein the text is considerably improved, the illustrations are of superior quality, the distribution maps have been updated, a greater number of relevant species is addressed, vocalizations are described, and yet it is "pocketable" in size. The format of the book is unusual in that the plates (illustrating more than 700 species) form the first half of the guide with facing-page breeding distribution maps and descriptions of the status in the region and the habitats frequented. The second half of the book presents identification details for each of the species, with the important identification points stressed in italics and a descriptive note of the voice. At the end, a selected bibliography for each of the countries included in the guide, an index of the species list, and indices for English and scientific names are presented.

The identification section ranges from 10 to 12 lines per species to a half page for species with several different subspecies, or morphs, in the region. The terminology is concise and accurate. On several occasions I have found the sections on the *Phylloscopus* and *Hippolais* warblers to be especially helpful in separating the different species in the hand at the Eilat banding station. Another positive strategy apparent in the book is that of having similar species in column-like comparisons with the same posture, morph, or sex on the same plate, which easily allows one to see the differences in the field. However, the lack of size data for comparison could be misleading for some birders.

One of the few criticisms I have of the book is that most of the species are shown most conspicuously in their breeding plumage. This can be misleading in the Middle East, where most of the Eurasian birds are in transition or wintering. During this period, plumages are different in many species, making it difficult for the novice or first-time Middle-East birder to correctly identify the species. Also, the distribution maps illustrate only the breeding areas so that one has to read through the text to find information about the migratory corridors and wintering areas. Another problem arises when one is unable to identify a species from the illustrations: the separation of the plates from the identification text requires one to

leaf back and forth in the field guide and to lose valuable time in the field.

However, all of the objections pale in comparison to the advantages, and I suspect this will be the sole, all-species field guide to be used in the Middle East for the next several years. Although the price may seem a bit high for the birder's purse, its compact size, appealing art, and identification hints in the text make it the most practical book for birding the Middle East.—REUVEN YOSEF, *International Bird-watching Center in Eilat, P.O. Box 774, Eilat 88000, Israel*.

The Auk 115(4):1092–1093, 1998

A Century of Bird Life in Berks County, Pennsylvania.—William D. Uhrich (Ed.). 1997. Reading Public Museum, Reading, Pennsylvania. 335 pp., 9 color plates, 22 tables, 1 map. ISBN 0-9654594-1-1. Cloth, \$40.00.—Berks County is a roughly diamond-shaped piece of land in southeastern Pennsylvania. Near the northern apex, along the Kittatinny Ridge, lies its most famous birding spot, Hawk Mountain. Just south of its center lies Reading, the county's largest city. *A Century of Bird Life* recounts the rich ornithological history of Berks County and documents the current abundance and breeding status of its birds.

The book honors the work of Earl L. Poole, a former curator of the Reading Public Museum, a founding member of the Baird Ornithological Society, and an early supporter of the Hawk Mountain Sanctuary Association. In 1947, he published *A Half Century of Bird Life in Berks County, Pennsylvania*. Between 1947 and his death in 1972, Poole continued to compile information that until now has remained largely unpublished. In the early 1960s, he completed *The Birds of Pennsylvania*, an unpublished manuscript of 2,500 typewritten pages, that is archived at the Academy of Natural Sciences of Philadelphia. Portions of that manuscript and the extensive field notes that Poole kept throughout his career have been incorporated into *A Century of Bird Life*. His color artwork and handsome line drawings are also showcased here.

The Introduction highlights the history of ornithology in Berks County and includes profiles of some of its most prominent practitioners. The two pieces written by Poole are the introduction to his 1947 book and a biographical sketch of his mentor, Levi "Doc" Mengel, who founded the Reading Public Museum. An appealing figure, Mengel was a collector of many things, especially butterflies, an interest that led him to regularly correspond with some of the world's leading collectors, including Al-

fred Russell Wallace. Mengel first took an interest in Poole after seeing some of his early illustrations. Poole's later work would appear in publications as diverse as *Birds of Colorado* and *Birds of Malaysia*. Also reprinted in this section is Michael Harwood's personal and inspiring account of Maurice Broun's work at the Hawk Mountain Sanctuary, which originally appeared in *American Birds*.

Following the introduction is a section that includes a set of guides for birding sites throughout Berks County. This part of the book was contributed by local ornithologists, both professional and amateur. Each site guide includes detailed directions to the site, as well as a description that highlights the species most likely to be encountered there. Those planning to bird in Berks County will want to consult this comprehensive set of guides beforehand. Together, the site guides and introduction occupy about one-quarter of the book.

The remainder of the book is devoted to species accounts of the 330 species whose presence in Berks County has been well documented. Beneath the heading for each species is a term describing its abundance (e.g. very common, uncommon, accidental). Where appropriate, other descriptors (e.g. resident, visitor, migrant) are included in the subheadings. Slightly more than half of all accounts are accompanied by one of Poole's line drawings. However, as Urich notes in the Introduction, *A Century of Bird Life* is a field companion, not a field guide. Thus, species accounts in this coffee-table-sized book do not include a description of field marks. Rather, they emphasize the habitat affiliations, nesting sites (if applicable), and seasonal occurrences of a species and summarize its sighting history in Berks County. A typical account occupies about two-thirds of a page, but this varies considerably from group to group. Not surprisingly, the species accounts for birds of

prey average slightly more than one and a half pages. Included in the accounts for most of these 20 species are tables summarizing the annual Hawk Mountain counts from 1934 to 1996. For completeness, the species accounts are followed by a Supplementary List that catalogues 47 additional species whose status in Berks County is listed as hypothetical, escaped, introduced, or extinct.

Although the species accounts carefully document historical trends in species abundance over the past century, the book includes only a passing description of land-use and other changes that have affected birds in Berks County over the same time span. Moreover, the two-page Berks County Overview (from the Berks County Planning Commission) that ends the Introduction is a poor substitute for the detailed descriptions of the region's physiography and vegetation types needed to complement the species accounts. I would agree, as the Introduction touts, that this book has the potential to "serve as a valuable conservation tool" and that it "offers an opportunity to understand the effects of all these [land use] changes," but only if the data it presents are eventually linked in a meaningful way to data on habitat loss and alteration. Such an analysis would provide a benchmark for understanding further changes that are certain to be documented in the Berks County avifauna during the next century of bird study.

Despite this shortcoming, *A Century of Bird Life* is both an excellent account of the region's ornithological history and a comprehensive companion guide whose species accounts are chock full of valuable natural history observations. It is likely to be of most value to those interested in the history of bird study and to those working in the region.—JOHN F. MULL, Department of Zoology, Weber State University, Ogden, Utah 84408, USA.