



EDITED BY ROBERT M. ZINK

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The Migration of Knots.—T. Piersma and N. Davidson, Editors. Wader Study Group Bulletin 64, Supplement, April 1992. ISSN 0260-3799. 28 contributed papers, foreword and introduction, 209 pp., 25 photos and cover, 41 maps, 72 figures, 35 tables. £15.—This volume is a supplement to the *Wader Study Group Bulletin* that resulted from a workshop on “Recent Advances in Understanding Knot Migrations” held 21–22 September 1989 in Ribe, Denmark. Editors and workshop convenors, Nick Davidson and Theunis Piersma, brought Knot (*Calidris canutus*) researchers together to summarize what is known about Knot distribution and migration, as well as to identify future directions for research and conservation. Among shorebirds, the Knot is one of the most spectacular and best understood migrants. Yet, there is a surprising paucity of knowledge regarding such basic factors as breeding status, habitat needs, and population-specific movements throughout the annual cycle. Considering so much of what has been learned about Knots has been attained as a result of major collaboration of scientists and amateur banders across several continents, this book provided a much needed avenue for summarizing published and unpublished research.

The book is a series of contributed papers organized into five sections: origins and distributions of subspecies (4 papers), migration systems reviews (4), *Islandica* Knots in spring and summer (12), autumn and winter in Europe and Africa (6), and a synthesis (2). In the first section, P. S. Tomkovich describes a new subspecies (*C. c. roselaari*), the fifth for Knots, which breeds on Wrangel Island and Alaska and migrates along the Pacific coast of North America. Godfrey identified the subspecies breeding in northwestern Canada as *islandica* and not *canutus*. Furthermore, the subspecies *islandica* (i.e. breeds in Greenland and northeastern Canada, winters in western Europe) and *canutus* (i.e. breeds in central Siberia, winters in Africa) were differentiated using mercury and selenium profiles (Goede). Finally, Allan Baker summarized allozyme results for 13 species of *Calidris* and mitochondrial DNA of five Knot populations. These studies indicated that Knots are similar to other calidridine shorebirds in that the species is well-differentiated from others, but interspecific genetic variation is low. It was clear from these papers that we need more than traditional banding efforts to monitor movements of birds over great distances. Further development of population-specific molecular markers may expedite resolving this problem.

In the migration systems review, authors provide a helpful and thorough summary of what is known about distribution, migration, molt, morphology, and fat deposition in European wintering Knots (subspecies *islandica*, Davidson and Wilson), Afro-Siberian Knots (subspecies *canutus*, Piersma et al.), Siberian birds migrating through the East Asian-Australasian flyway (subspecies *rogersi*, Barter), and New World Knots (subspecies *rufa*, Morrison and Harrington). These reviews will be most useful for anyone trying to sort through the maze of papers that focus on local, rather than global, patterns for Knots.

The third and fourth sections detail analyses of specific sites and studies from throughout the annual cycle. Although many of them represent data from long-term studies, it is difficult to draw new, general conclusions about Knot migration pathways from any one study. This is not unexpected nor a criticism, but rather a statement about the status of information known about Knot movements and condition. Obviously, the best way to make major headway is to bring workers together, as is done in this book, so that information gaps can be identified. Thus, the synthesis section of the book is most helpful and will be the most important contribution of the book.

In their synthesis, Piersma and Davidson recognize five subspecies of Knot as described in the first section and outline the ways various authors have portrayed relationships among the subspecies. All Knots breed in the High Arctic and, after undertaking extensive migration routes (2,000–6,000 km), winter much farther south in all continents. The editors note that there appears to be much more available habitat throughout the year than is currently occupied by Knots; however, current understanding of Knot habitat preferences may need fine tuning. The largest breeding estimates are for the subspecies *islandica* and *canutus*, which number 345,000 and 516,000 birds, respectively. The rarest subspecies appears to be *roselaari* where the population estimate is approximately 20,000 birds. However, this estimate may rise as more detailed censuses are carried out. Most helpful in this section are the details, including changes in mass and molt, of the annual cycle summarized for each subspecies. The editors conclude that we need more distribution and life-history information for the subspecies *rufa*, *roselaari*, and *rogersi*. Finally, they cite the need to quantify and evaluate the resource base available to all subspecies throughout the annual cycle.

In assessing conservation needs, Davidson and Piersma stress that, because Knots have widely-spread populations and are such long-distance migrants, habitat will have to be protected on all continents.

Clearly, this is a daunting task, especially considering the status of many estuary and coastal ecosystems throughout the world. Their summary of current conservation efforts points out where major gaps need to be filled or current efforts strengthened.

In summary, this book serves an important function in drawing general conclusions from the many studies that have been carried out on Knots. The effort put forth by the editors to identify future research and conservation needs serves as a positive example for species where many researchers have carried out a diversity of studies, yet general conclusions have not been reached. This book is not fancy, nor expensive; it is just a meeting summary. However, it will be an important document for Knot research and is a model others can follow.—SUSAN M. HAIG, *Forest and Rangeland Ecosystem Science Center, National Biological Service, Oregon State University, 3200 SW Jefferson Way, Corvallis, Oregon 97331, USA.*

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Manual of Ornithology, Avian Structure and Function.—Noble S. Proctor and Patrick J. Lynch. 1993. Yale University Press, New Haven, Connecticut. 340 pp., numerous illustrations. ISBN 0-300-05746-6. \$40.00.—When I first heard about a new ornithology book, I jumped at the idea of having a new text to use in my ornithology class. I have always preferred Pettingill's text that combines laboratory exercises with textual information, and was looking forward to another laboratory oriented book. This book is in fact laboratory oriented and filled with a unique presentation of visual stimuli for the student. However, because of the emphasis on morphology, it will not be used in most ornithology classes, at least not as a required text for students. Seven of the 12 chapters (146 pages) detail skeletal, musculature, digestive, circulatory, respiratory, urogenital, endocrine, and nervous-system anatomy. The detailed drawings are superb, but the detailed information is unlikely to be taught in a general ornithology course. Two of the remaining chapters are on topography and feathers, covering (no pun intended) most of the same material that would be found in other texts. Again, the illustrations are large, detailed, and stimulating. The remaining introduction and chapters on systematics and field techniques provide general information on these topics.

As is clear from the subtitle and the preface, this book is not intended as a general ornithology textbook. However, at \$40.00 I also doubt that it will be used as a supplementary laboratory book with a more

detailed text (the combined cost with either Gill or Welty and Baptista is over \$90.00). For anyone teaching a course in avian morphology, or for the instructor looking for a detailed reference to supplement a morphology laboratory, or for the ornithologist who just enjoys looking at beautifully presented information about birds, this book should be welcomed.—DORIS J. WATT, *Department of Biology, Saint Mary's College, Notre Dame, Indiana 46556, USA.*

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Pheasants of the World. Their Breeding and Management.—Keith Howman. 1993. Hancock House Publishers Ltd., Surrey, United Kingdom and Blaine, Washington. 184 pp., 338 color photos. ISBN 0-88839-280-X. Cloth, \$70.00.—This attractive book is presented in eight chapters with two appendices. Chapter 1 is introductory, and chapters 2 through 6 focus on design of aviaries, husbandry, and captive breeding. Although these chapters relate primarily to ornamental pheasants, the techniques are applicable to most gallinaceous birds. Chapter 7 (pages 72–173) consists of most (275) of the color photographs and a brief synopsis about each of 49 "species" of pheasants featured in the book. Many of the photographs are quite good and some are truly spectacular. However, others are out of focus, some pheasants have poor plumage due to captive conditions, and some artificial settings are not pleasing. Still, obtaining quality photos in the wild of most of the "species" included in the book would be extremely difficult. This is especially true of the ornamental pheasants, many of which are endangered or threatened in the wild because of habitat loss and degradation. This point is repeatedly made in the book with suggestions that captive breeding is the only hope for many species of pheasants. This may be true for certain species, but the emphasis must be on maintenance and enhancement of native habitats.

This book is intended for beginning aviculturalists. It meets its intended goal, as it clearly presents information on how to get started in aviculture. It is not a scientific book, but presents practical information that has been derived from years of keeping and rearing pheasants in captivity. Although costs are rarely mentioned, proper aviculture can be very expensive in time and money. Thus, it is an expensive hobby, which may have financial and conservation rewards.

Although *Pheasants of the World* is attractive, it is not without some problems. It is not tightly edited and readers will learn new words ("lowish"), and use

of terms such as "hen birds," "cock birds," and "off the lay." A portion of one sentence on page 69 repeats the last sentence on page 68. Also, there is an abundance of blank space in the right and left margins, especially in chapters 1 through 6. I found no typographic errors, and the use of both English and metric units is a step forward for a book intended for beginning aviculturalists. The book is current and refers to CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora). However, it is clear that CITES is considered an impediment in obtaining new stock and in moving captive-reared, endangered species among breeders and countries.

No literature is cited in the book, but there is a list of 20 references under "Further Reading." There is a useful table of contents and an index for the "species" included giving both common and scientific names.

Pheasants of the World will be useful to those interested in getting started in aviculture, those interested in improving their captive-rearing techniques, and those interested in pheasants. It will also serve as a source of general information on 49 "species" and for reference photographs as to the appearance of ornamental pheasants. I cannot recommend it for serious students of Phasianidae, but do recommend it for those interested in aviculture of gallinaceous birds. It is an attractive and useful primer.—CLAIT E. BRAUN, *Colorado Division of Wildlife, Research Center, 317 West Prospect Road, Fort Collins, Colorado 80526, USA.*

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In Search of Sparrows.—J. Denis Summers-Smith. 1992. T & A D Poyser, London. vii + 141 pp., 69 text figures, including 31 black-and-white photographs. ISBN 0-85661-073-9. Cloth, \$39.00.—Denis Summers-Smith started watching House Sparrows in Britain in the late 1940s as an avocation (professionally, he was a mechanical engineer). The results of more than a decade of observations led to *The House Sparrow* (1963). His interests and efforts expanded to include all Old World sparrows in the genus *Passer*, culminating in the recent publication of *The Sparrows* (1988).

The present book is an intriguing sort of travelogue, memories of events experienced in sparrow-seeking trips spanning three decades and 50 countries on four continents. The author tells us that his ambition was to see all 20 species of sparrows in the field (he managed to see 19). Yet, this is not really a book from which one gains much information about the biology of sparrows; Summers-Smith's other books and articles provide that. Here, the author wanted to "convey something of the pleasure, even excitement, to be obtained from watching birds with an objective, rather than merely ticking off species identified on a list"

Nonetheless, Summers-Smith does make the point effectively that animal populations and species ranges are dynamic in ecological time, as populations expand, contract, colonize new areas, and even become extinct. The extraordinary colonizing success of some of the sparrows (occasionally with human help) makes this a particularly good group in which to document such dynamism. One senses Summers-Smith's excitement upon finding small populations of sparrows at the edge of a species range or, indeed, far beyond what were thought to be the locations of outermost populations of a species.

So, what happened to the author on his journeys to watch sparrows? Quite a bit, actually, including: being roughed up by an English farmer as a binoculars-toting Peeping Tom; prevented by the Russians from sparrow-watching (or was it spying?) near the rocket-launching station at Baikanour in Turkestan; unknowingly pitching his tent on the hippopotamus nocturnal highway at the shore of Lake Baringo in Kenya; and spending a night in wonderfully deep sleep atop a pile of sacks he suspected of once containing opium (where else but near Chiang Mai, Thailand, in the Golden Triangle).

It seems that Summers-Smith and his wife seldom travelled first class. Therefore, for readers who have similarly travelled in less-developed countries in the tropical regions of the world "on a shoestring" (as I have), the author's stories will evoke memories such travellers share. Surely, this list includes national and local government bureaucracies, seedy hotels, plans that go amiss, dense human populations, interesting foods and customs, and, in nearly all countries, armed soldiers at borders, airports, and elsewhere. Summers-Smith brings realism to these accounts; one has little doubt that he really did find himself being observed through the sights of a soldier's rifle as he, in turn, observed sparrows.

I recommend this book to all travellers. And, let me remind you to bring along your atlas. You'll need it to answer the question, "Where in the world is Denis Summers-Smith?"—RANDALL BREITWISCH, *Department of Biology, University of Dayton, 300 College Park, Dayton, Ohio 45469, USA.*

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The Wild Turkey: Biology and Management.—James G. Dickson, Compiler and Editor. 1992. Stackpole Books, Cameron and Kelker Streets, Harrisburg, Pennsylvania. xv + 463 pp., 41 color plates, 35 text figures, 76 tables. ISBN 0-8117-1859-X. \$59.95.—The restoration of Wild Turkey (*Meleagris gallopavo*) populations in North America ranks among the most successful accomplishments of modern wildlife science

and management. This book represents the most recent, comprehensive effort to summarize the Wild Turkey management success story, and provide an up-to-date assessment of what we know about wild turkey populations, habitat, biology, and management.

At a first glance, this is an impressive volume not only for its size (22 × 29 cm format that weighs over a kilogram), but also for its breadth. All of the figures, graphs, and tables are arranged well and are easily understandable. The numerous black-and-white photographs, however, are overused in many places. For example, half-page photographs of a person sitting at a computer, or of a former turkey roost usurped by an interstate highway add nothing to the text, and merely take up valuable page space.

The book is organized into four sections that correspond to: (1) introduction, history, and taxonomy; (2) biology; (3) habitat relations and management; and (4) the future of the Wild Turkey. There are 24 chapters written by a combination of 24 different authors and coauthors.

The introductory section (chapters 1–3) on history and taxonomy provides a brief overview of the early, misguided efforts to use pen-raised stock for Wild Turkey restoration efforts. Systematics and population genetics also are covered briefly in this section. Several tables summarize a vast amount of morphological data in relation to geographic variation. The overview of efforts to assess genetic variation in Wild Turkey populations focuses on differences between pen-raised and wild stock, and provides a summary of work on genetic variation of turkeys from two sites in the Southeast.

The section on Wild Turkey Biology (chapters 4–12) forms a key part of the book. This section discusses basic physical characteristics of the bird, its behavior, diet, and physiology. These four chapters provide good, basic coverage of their respective topics without getting caught up in unnecessary or arcane details.

The next five chapters (8–12) on aspects of Wild Turkey population ecology are more problematic. Five different aspects of population ecology are addressed: (1) influences of diseases and parasites, (2) influences of predators, (3) environmental influences, (4) population dynamics, and (5) population management. In general, the coverage of each of these topics is relatively complete, and written at a level understandable to anyone who has taken undergraduate biology and ecology. My major criticism is that these five chapters on population seem somewhat fragmented and are not tied together by a unifying theme or style. With the exception of Miller and Leopold, who start their chapter with a brief primer of predation theory, none of the authors of the population chapters seized the opportunity to synthesize how the study of Wild Turkey population ecology relates to modern theoretical ideas about population dynam-

ics. In my view, this is a missed opportunity. For example, a synthetic, comprehensive overview of rates of Wild Turkey population increases after successful reintroductions would have added an interesting dimension to this section.

The section on Wild Turkey Habitat and Management (chapters 13–22) provides a wealth of information on habitat relations of this bird across a wide geographic range. However, it too suffers from the same type of problem that I noted in the section on population ecology. Although the information is sound and in general interesting, there is no attempt to synthesize what we have learned about Wild Turkey habitat ecology, or how such studies have contributed to the development of habitat as a concept in both wildlife management and ornithology. I was pleased to see a chapter on Wild Turkeys outside their historic range. Such information makes me wonder, however, if we have been too successful in Wild Turkey restoration efforts. Perhaps the resources humans have devoted to expanding artificially the geographic range of this bird might have been better spent on other projects? Discussion of hard questions like this is conspicuously absent from the final two chapters that make up the section on the Wild Turkey's Value and Future (chapters 23 and 24).

I make these points not because I feel a need to be critical at any cost, but because the massive amount of data that has been collected on Wild Turkeys can teach us many more lessons than the ones outlined in this book. This information, either in the form of case histories, or in broad syntheses, has the potential to further our understanding of how birds perceive and interact with their environment, and how biotic and abiotic factors interact to limit the distribution and abundance of populations.

Yet, the message I take away from the book is quite different. This message has three components: (1) We brought this bird to the brink of extinction. (2) We brought it back to levels of relative abundance. (3) Isn't it great that we now have Wild Turkeys in more places than we did in pre-Columbian times? By stopping here, the authors and editor missed an opportunity to enhance the level of ecological and ornithological understanding of many laypersons who will buy this book.

Despite my minor misgivings about some missed conceptual opportunities to synthesize the wealth of information on Wild Turkeys in the context of modern ornithology, I really liked this book. It is easy to read, is remarkably free of typographical errors, and has an outstanding literature cited section that allows the interested reader direct access to the primary scientific literature. This book is clearly targeted at people who hunt Wild Turkeys and want to learn more about them. It meets this goal admirably.—LEONARD A. BRENNAN, *Tall Timbers Research Station, Route 1, Box 678, Tallahassee, Florida 32312, USA.*

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Lista in Lingua Italiana degli Uccelli di Tutto il Mondo.—Renato Massa, Luciana Bottoni, and Carlo Violani. 1993. Università degli Studi di Milano, Italy. IX + 156 pp. Cloth (No ISBN number; no price or address given.).—Following the recent trend to publish lists of birds of the world in various languages, our Italian colleagues Massa, Bottoni, and Violani have coauthored a book giving the Latin and Italian names of 9,672 species recognized by Sibley and Monroe (1990, *Distribution and Taxonomy of Birds of the World*, Yale Univ. Press). Massa et al. prepared their list with the following three goals (p. V): first, to propose an Italian-language name for all living bird species of the world; second, to mention in abbreviated form the geographical distribution of each species; and third, and most importantly, to “use and popularize” in Italy Sibley and Ahlquist’s classification based on DNA-DNA hybridization (1990, *Phylogeny and Classification of the Birds of the World*, Yale Univ. Press).

Italian names were selected on the basis of names already in existence in the Italian-language ornithological literature or invented when unavailable. During their selection process, the authors have tried to avoid obscure or obsolete names, and have opted for relative simplicity and ease of pronunciation. New names were coined from scientific names or on the basis of the species’ aspect or behavior. It seems to me that the names in this book vary quite a bit. Some are indeed simple, such as “Fratino” for *Charadrius alexandrinus* or “Shikra” for *Accipiter badius*. But what about “Corriere dell’I. di S. Elena” for *Charadrius sanctahelenae* or “Sparviero dal collare del Sudamerica” for *Accipiter collaris*? In some instances the Italian names would appear rather ill-chosen. Thus, our own *Buteo jamaicensis* is called “Poiana della Giamaica” (why not simply “Poiana codarossa”?), and its close relative, the southern South American *B. ventralis*, is “Poiana codarossa americana” (why not “Poiana codarossa sudamericana”?).

The geographic distribution is indicated for each species by letters that summarize biogeographic regions, 17 in total (e.g. PA = Palearctic, Et = Ethiopian region, Msc = Madagascar and other islands in the Indian Ocean, Au = Australia and Tasmania). These regions vary from huge (SA = South America) to very small (G = Galapagos Islands). Although extremely “compact,” in the authors’ own terminology, the geographic distribution is practical and easy to use, and a commendable feature of the book.

In a way the main goal of Massa, Bottoni, and Violani is to use their list of Italian bird names as a tool to introduce Sibley and Ahlquist’s classification to Italian-speaking ornithologists. In less than two pages Massa et al. review Sibley and Ahlquist’s methodology and use of a complex hierarchy including many levels from subclass down to subtribe. Massa et al. clearly subscribe entirely to Sibley and Ahlquist’s

views when they write: “the new classification of birds should, in our opinion, be promptly adopted in all ornithological publications . . .” (p. VIII). The authors believe that Sibley and Ahlquist’s classification is superior to previous ones because it is “based on strictly quantitative and objective criteria . . .” (p. VII). This view is debatable and has been debated elsewhere abundantly.

The book itself (pp. 1–142) consists of a list of species names (in two columns). Each species is given its Latin name (in Roman typography, not italics, surprisingly), Italian name (in parentheses to right of scientific name), and abbreviated geographical distribution. There are no notes or other entries. The families are numbered but not, curiously, the species. An alphabetical index to Latin names of genera (pp. 143–156) completes the volume. The book is handsomely produced and the typeface user-friendly. Even assuming that Massa et al. followed exactly Sibley and Monroe’s sequence and nomenclature, the lack of an index of English names is a serious drawback, one that will make it difficult for non-Italian speaking ornithologists to use the book. On the whole, my assessment of this volume is that it is an interesting undertaking, but one with a limited value. Irrespective of the merits of the Sibley-Ahlquist and Sibley-Monroe volumes, I strongly believe that a practical book such as the one just published by Massa et al. should not adopt these authors’ schemes. Massa et al.’s potential users would have been far better served if they had been given a list of Italian names of birds of the world in a traditional sequence (e.g. Peters, which is available everywhere; interestingly, the work by Peters is not cited in the bibliography pp. VIII–IX), and had been given a more complete introduction to Sibley-Ahlquist and Sibley-Monroe, including some cross-references. Italian ornithologists, especially nonprofessional ones, will probably have a rather difficult time reconciling the literature they are used to (old and not so old, alike) with this new list. Italian-speaking users of this new book who are not ornithologists will probably believe that Sibley-Ahlquist and Sibley-Monroe are the last word in classification and nomenclature of birds of the world, which is possible but, given the history of our science, quite unlikely.—FRANÇOIS VUILLEUMIER, *Department of Ornithology, American Museum of Natural History, Central Park West at 79th Street, New York, New York 10024, USA.*

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Ecology and Management of the Mourning Dove.—Thomas S. Baskett, Mark W. Sayre, Roy E. Tomlinson, and Ralph E. Mirarchi, Editors. 1993.

Stackpole Books, Cameron and Kelker Streets, Harrisburg, Pennsylvania. xxi + 567 pp., 323 black-and-white photographs, 14 drawings, 73 text figures. ISBN 0-8117-1940-5. \$44.95.—The Mourning Dove (*Zenaidura macroura*) is the most important game bird in North America. The species also is one of the most widespread and numerous birds on the continent. Thus, it is amazing that this volume is the first comprehensive text devoted to the biology and management of this important species. The book is part of a series produced in collaboration by Stackpole Books and The Wildlife Management Institute, a private non-profit organization dedicated to the conservation of natural resources.

The intended audience of the book includes "biologists, sportsmen and women, bird watchers, and others." Consequently, the book is profusely illustrated with artwork, photographs, and figures. The artwork is nicely done by Harold D. Irby (14 drawings using a "pointillism" technique) and Francis E. Sweet (a stunning dustjacket in scratchboard medium). In my opinion, at least half of the photographs are not necessary (i.e. they are redundant, superfluous, or of poor quality). The figures are informative and of high quality.

The four editors contribute to 15 of the 29 chapters. In some ways, their extensive contributions argue for a text authored solely by the editors. The reliance on so few individuals (even though these persons are acknowledged leaders in dove research and management) limits perspectives and analyses of the data. For example, the fact that very little discussion of evolutionary ecology is woven into the fabric of the book (the chapter on reproductive strategy by Blockstein and Westmoreland is a notable exception) will be a disappointment to ornithologists. In addition, the "foreword" is written by the senior editor. Even though the foreword is correct in its assessment of the contribution of this work and of some future research needs, its impact would have been greater if written by an external reviewer. Perhaps the volume would never have been completed without the contributions and obvious leadership of the editors. If so, it is a sad commentary on the status of research and management of the Mourning Dove.

The book is organized into four main sections. The first section provides a general overview (importance, historical perspective, classification and distribution) of the Mourning Dove. The discussion of Mourning Dove classification is classical and limited to short discussions of geographic variation and subspecific characters. However, very limited morphological data are presented (i.e. either samples are small or no sample sizes are presented) to support the discussions.

The second section contains 10 chapters devoted to "life history" and biology. Ornithologists would refer to much of the information presented in this section as "natural history" (e.g. food habits, migration, nesting, behavior). The dove crop gland rates an entire

chapter itself, rightly so in my opinion. This section lacks a chapter on habitat ecology, which I believe is unfortunate. Discussion of dove habitat, habitat characteristics, changes in habitat, threats to habitat, etc., are scattered throughout the book. Thus, no comprehensive overview of habitat is presented that would allow a reader to easily see patterns or to think about the relationship between continental habitat changes and population dynamics.

The third section is on dove populations. The section begins with chapters on the call-count survey (a national population-trend survey based on counts of singing [cooing] males) and its biological basis. An attempt is made to justify biologically the use of the procedure to monitor continental trends in dove numbers. However, enough unanswered questions are raised about mated and unmated male singing behavior to question some of the survey's assumptions. One common trait in wildlife management is to implement a program because of need without fully testing its efficacy. Once the program is established there is little incentive or desire, because of cost, to continue testing fundamental assumptions. The call-count survey is a classic case. There appear to be fundamentally important questions that remain unanswered even though the survey is over 30 years old. Although some of the potential problems (e.g. differential calling rates of mated and unmated males; variation in ratios of mated and unmated males) are raised in the biological-evaluation chapter, the impact of these potential problems is dismissed. Many of the studies presented to support the inferences about calling behavior are based on extremely meager data. Because of the importance of this bird and the extent of the dove harvest, it is surprising that some basic attributes of natural history are so poorly understood.

The third section concludes with chapters on banding-data analysis and population trends within each of the Mourning Dove management units. The U.S. Fish and Wildlife Service is fortunate to have some of the best population analysts in the country, and James Nichols, who coauthored the analysis chapter, is among this group. Thus, the chapters on populations and banding-data analysis are strong.

As a beginning wildlife summer student, I banded several thousand doves for the U.S. Fish and Wildlife Service as part of a national dove banding program. Yet, I was impressed to learn that over one million doves have been banded over the years. Because banding data are made available to scientists with valid requests, ornithologists studying dispersal, population dynamics, and migration may find the Mourning Dove (and its associated data) an interesting bird to study.

The last section of the book concentrates on research and management. Several chapters, extremely useful for biologists wanting to work with Mourning Doves, discuss many topics from capturing doves to maintaining captive populations. All but one of the

remaining six chapters treat hunting (e.g. from regulations to discussions of regional hunting culture and traditions).

The last chapter of the book concerns research and management needs. Unlike many of the chapters, it is terse and straightforward. However, I believe that it falls short of delineating a truly comprehensive strategy for answering important research and management questions. For example, the use of geographic information systems as a basis for interfacing population trend information with both large- and fine-scale habitat changes is not mentioned, even though much speculation is made about the influence of habitat change on dove populations throughout the book. It is not sufficient to state that studies of habitat need to occur. The authors missed an opportunity to recommend specific research, technology, and experimental designs to wildlife agencies.

Two of the strongest features of this book are the extensive historical perspectives and the comprehensive overview of Mourning Dove management in North America. When appropriate, chapter authors discuss the historical antecedents of current management. Ornithologists and wildlife biologists will find these discussions useful because they provide a perspective found nowhere else in the literature.

Although the book is not meant to be primary literature, several points need to be made. Very little original analysis or reanalysis of existing data is attempted. With over one million doves banded in North America, surely there is some novel information to be gleaned from this vast information base. Even when a reexamination of data is made, the authors fail to capitalize on modern analytical techniques. For example, a reexamination of migration is a statistical assessment of relative proportions of banded birds recovered among management units. Interesting alternative analyses would be the application of circular statistics to the vast dove dispersal data. Perhaps the adherence and acceptance of the current dove "management unit" structure philosophy limits the vision of the book. However, the chapter on analyses of banding data is a notable exception.

The target audience for this book is extremely broad. Thus, it will be hard to meet the expectations of professional ornithologists on the one hand and sportspeople on the other. It is best suited to wildlife biologists who have game bird management responsibility. Nevertheless, it is a major contribution to the literature of the Mourning Dove. As a species reference, this book should be on the shelf of ornithologists. In fact, the combination of the Mourning Dove's extensive banding data, extensive literature (over 1,400 references cited in text), ubiquitous distribution, abundance, and ease of study, as documented in this book, should stimulate ornithologists to consider the species as an attractive research subject.—R. J. GUTIÉRREZ, *Department of Wildlife, Humboldt State University, Arcata, California 95521, USA.*

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Birds of Massachusetts.—Richard R. Veit and Wayne R. Petersen. 1993. Massachusetts Audubon Society, Lincoln, Massachusetts. xv + 514 pp., 21 black-and-white illustrations, 132 distribution maps, 1 text figure. ISBN 0-932691-11-0. Cloth. No price given.—Edward Howe Forbush's *Birds of Massachusetts and other New England States*, published in 1925, was the first comprehensive survey of the Massachusetts avifauna. In 1955, it was followed by *Birds of Massachusetts: An Annotated and Revised Check-List* by Ludlow Griscom and Dorothy E. Snyder. Now, nearly 40 years later, Veit and Petersen continue this venerable tradition with their well-written and salutary treatise on the birds of the Commonwealth. The authors are to be commended for their attention to detail and their ability to present a largely numerical list of species in such a laudable manner.

How fortunate for Veit and Petersen that Massachusetts has had such a distinguished ornithological history. The meticulous record keeping spanning over 100 years by William Brewster, Edward Howe Forbush, and Ludlow Griscom continues today with the activities of the Massachusetts Audubon Society. The sum total of these efforts is a remarkably complete history of the avifauna of Massachusetts. This completeness is evidenced by the book's 460 species accounts that chronicle long-term trends in Massachusetts bird populations.

Examples of range expansions into the Northeast are legion: Blue-gray Gnatcatcher (*Poliophtila caerulea*), Carolina Wren (*Thryothorus ludovicianus*), Blue-winged Warbler (*Vermivora pinus*), and Fish Crow (*Corvus ossifragus*) to name only a few. Examples of declining species are almost as numerous, but not so easily discernable. Veit and Petersen have done an excellent job presenting the available information for both increasing and declining species, and have offered informative speculations as to why some of these changes have occurred (e.g. Eastern Bluebird, *Sialia sialis*, and Sedge Wren, *Cistothorus platensis*). Distribution maps are included for most of the state's breeding species. These maps are easy to interpret and helpful for understanding the complex distributions of some species (e.g. grassland species, such as Grasshopper Sparrow, *Ammodramus savannarum*, and Bobolink, *Dolichonyx oryzivorus*) and are, in general, informative and interesting.

Other fine points of this book include the "Regional Descriptions of Massachusetts" in which Veit and Petersen have logically divided Massachusetts into eight regions. Various local authors contributed these regional descriptions and, being a native of the Northeast, I can attest that these regions are at least as ornithologically interesting as the authors claim.

The authors have also included a helpful chapter entitled "Aspects of Massachusetts Bird Life," which provides basic information on the distribution of pe-

logic and colonial waterbirds in the Bay State, as well as an informative discussion of avian vagrancy into Massachusetts. The entire section is worth reading.

I was particularly impressed with the "Definition of Terms and Abbreviations" section. The authors limit the list of abbreviations to a manageable minimum and have done a fine job quantifying ambiguous, though often used, terms such as common, uncommon, and rare; they have assigned numerical values to each term used.

While reading the "Sources of Data" section, I was impressed by the valuable contributions made by everyday birdwatchers. I find it amusing that at one point in time many professional ornithologists hesitated to use sight records from amateur ornithologists. However, given the nature of today's well-informed birdwatcher and the dramatic increase in quality of optical instruments, perhaps even Ludlow Griscom would have accepted a sight record without having seen or collected a specimen himself.

Contrary to one reviewer's comments on the dust-jacket, I believe specimens are still necessary for documentation (and many other aspects of species' biology). For example, in the account of the Pacific Loon, the authors state that "The acquisition of a Massachusetts specimen would be most desirable in order to positively document the occurrence of this species in the state."

In sum, this is a well-written and informative text that deserves a place in university and museum libraries. I believe anyone interested in the birds of the Northeast will find this book extremely useful. It is a must for anyone, professional or amateur, wishing to observe or study birds in Massachusetts, and would be particularly useful to conservation biologists wishing to target species needing management.—ADAM J. FRY, 100 Ecology Building, University of Minnesota, St. Paul, Minnesota 55108, USA.

estimation of phylogenetic trees. MacClade is capable of conducting parsimony analyses; however, such analyses are not its strength and systematists will be better served by programs focusing on phylogenetic reconstruction. What MacClade does provide is an interactive environment for testing hypotheses about the evolution of characters under a parsimony criterion.

Parsimony analyses may be thought of as addressing two fundamental problems: (1) determining the phylogenetic tree requiring the fewest number of character changes (or "steps") based on the character data at hand; and (2) finding the most-parsimonious distribution of characters on that shortest phylogenetic tree. This second problem stems from the fact that some changes may be placed, alternatively, along several different branches of a tree without changing the length of the tree. Resolving or even identifying these character changes of uncertain location (ambiguous) on a tree is important in understanding the evolutionary origins of particular traits, including the frequency and phylogenetic position of convergent characters. This problem of diagnosing the evolutionary history of particular characters has received much less attention than phylogeny reconstruction, in part because of the tediousness of the "bookkeeping" tasks involved. Enter MacClade, and exit all your excuses for not being able, interested, or willing to assess the complexities of the evolution of characters in their own right! Time spent learning about character evolution should pay off in improved understanding of both evolutionary process and pattern.

In this review I provide only a cursory evaluation of some of MacClade's features in order to give readers a general sense of its capabilities. MacClade includes a most-welcome spreadsheet data editor, which will feel familiar to users of Excel. Data may consist of whatever characters you like: DNA, RNA, or amino-acid sequences (using standard IUPAC codes) or any coded morphological, physiological, behavioral (or other) type of data, using up to a maximum of 26 different states for each individual character. MacClade does not handle distance or frequency data per se, unless it has been "discretized" in some way. The data editor includes many time-saving capabilities for: manipulating rows, columns, and blocks of data; for recoding data; and even for stipulating character-state transformation series. DNA and RNA sequences can be translated into protein data using any user-specified genetic code. Sequence complementing and reversal features are also available. One current shortcoming is the inability to stipulate more than one "data format" (DNA, RNA, Protein, Standard, Extended) at a time, which impedes attempts to pool data types into a single total-evidence data set. Another useful feature that might be included in future versions would be a "search string" command, allowing users to search specified rows or columns for a particular sequence of characters. One particularly

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MacClade: Analysis of Phylogeny and Character Evolution. Version 3.0.—Wayne P. Maddison and David R. Maddison. 1992. Sinauer Associates, Sunderland, Massachusetts. Individual license and manual (398 pp). \$75.00. Requires Macintosh computer, with 2 MB RAM recommended available for the program.—Brothers Wayne and David Maddison wrote the computer program MacClade with the stated intent, "to help biologists explore the relationships between data and hypotheses in phylogenetic biology." The program delivers. MacClade is a great facilitator for studies of evolution. Readers should understand, however, that MacClade is not designed for rigorous

nice element of MacClade is its compatibility with other programs. MacClade reads data files as output by PAUP, PHYLIP, HENNIG86, CLUSTAL V, as well as the common National Biomedical Research Foundation (NBRF) format. Reciprocally, it can provide output to be read by these same programs.

Once the data have been input, you can move to the "tree window" and examine the most-parsimonious distribution of character changes on your tree topology of choice. A variety of "tools" are available that allow you to customize a graphical representation of a tree and then see how those changes affect tree length, tree statistics, and distribution of particular characters. You can reposition branches and taxa, reroot trees, and variously include or exclude taxa or characters. For example, if you wanted to know the number of additional steps required, and the particular characters involved, to support a sister relationship not found in the shortest tree, you could simply reposition the taxa as necessary.

A variety of bar charts, bubble charts, or tables can be calculated summarizing for one or more characters, consistency indices, retention indices, rescaled consistency indices, or numbers of changes by type. This can be done for one or more trees, including stored trees and randomly generated trees. For molecular data, tables may be obtained listing the frequency of possible changes between various nucleotide base pairs, the numbers of transitions and transversions by base position, and the number of changes per codon position, based on any particular tree topology. Another feature compares two trees for the number of steps required for each of the characters. These and additional features not mentioned will be useful in seeing how multiple equally-parsimonious trees differ in their implications about character evolution.

You may readily reweight characters in order to assess potential changes in support for trees when different sets of characters or types of character change are allotted more weight in phylogenetic analyses. For example, measures of congruence among characters, such as the consistency, retention and rescaled consistency indices mentioned above, may be used to

reweight characters, enabling use of a "successive approximations" approach in parsimony analyses.

MacClade has several tools allowing users to compare tree topologies and distributions of character change. It can calculate test statistics between trees based on the observed data and those based on randomized data. Character data may be randomly shuffled preserving the observed frequency of different character states, or data may be randomly generated. You also may specify parameters (probabilities for change from one character state to another) for a stochastic model of character evolution, and allow MacClade to generate change along different branches of a tree at different rates. The relevance of randomization schemes to studies of phylogeny is unclear, as the process of evolution, including functional constraints on characters and numerous forms of character nonindependence (due to phenomena such as pleiotropy and polygeny) is decidedly nonrandom. Nonetheless, MacClade provides the tools to assess the variable degree of departure from random change for characters.

The book accompanying MacClade describes the program's features in detail, and provides an overview of issues and problems in phylogenetic theory. The latter is essential reading for users in seeking to understand the authors' particular approach and to interpret results of analyses using MacClade. Though the authors provide numerous caveats regarding assumptions inherent in various analyses and potential misapplications of the program, users will benefit from consulting the primary literature.

MacClade has been admirably developed since its first release in 1986, and evolutionary biologists will hope that the authors continue to support and upgrade the program. The real significance of MacClade lies in its ability to foster new research, as it is the development of new tools, providing new perspectives, that leads most consistently over time to progress in scientific inquiry.—DAVID P. MINDELL, *Department of Biology and Museum of Zoology, University of Michigan, Ann Arbor, Michigan 48109, USA.*

Announcement



Recent Ornithological Literature Supplement.—Due to the untimely death of Marion Jenkinson Mengel, there is no Recent Ornithological Literature Supplement

with the October issues of the *Auk*, *Ibis*, and *Emu*. Instead, this Supplement will accompany the January issues of the three journals.