

## BOOK REVIEWS

EDITED BY JEFFREY S. MARKS

*J. Raptor Res.* 29(4):286

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**A Photographic Guide to North American Raptors.** By Brian K. Wheeler and William S. Clark. 1995. Academic Press, San Diego, CA. xviii + 198 pp., 377 color photographs, 5 figures. ISBN 0-12-745530-2. Cloth, \$29.95.—Identifying diurnal raptors in the field has just become substantially easier. Wheeler and Clark have met their goal of providing photographs of every diurnal raptor species known to have entered North American air space. Photographs of 43 species are provided, the vast majority of which were taken by the authors. The reader is presented with superb photographs of all races, age classes, sex, and color morph variations of vultures, kites, hawks, eagles, falcons, and caracaras, including vagrants. For most species, several photos of both perched and flying birds are provided. For highly variable species such as the Swainson's hawk (*Buteo swainsoni*), this aspect of the book makes its purchase a must. Virtually all of the photographs are of the highest caliber.

The introduction provides a detailed summary of the photographic equipment and techniques involved, a useful summary of how the guide is organized, and a description of the age terminology employed. Following the introduction is a three-page glossary and a page of five figures depicting raptor anatomy. Species accounts include a description of recognizable plumages, as well as leg, beak, and eye color. Measurements, and a verbal description of each species' range, are also provided. A separate section with the species accounts discusses similarities and differences among similar species. This section should greatly enhance one's ability to more swiftly go through the selection process of field identification, particularly for those people new to the field. The end of the book consists of 28 pages of photographs and text that includes 14 sections on the most difficult raptor identification problems. Each of these sections is actually a short tutorial on how to resolve confusion between the identification of similar species, whether perched or in flight.

The only editorial problems I found were in Fig. 1, where labels for the axillaries and breast are reversed, and in the misspellings of the scientific names for the hook-billed kite (*Chondrohierax uncinatus*), zone-tailed hawk (*Buteo albonotatus*), and red-backed buzzard (*Buteo polyosoma*).

This book would be a superb addition to the library of anyone dealing with diurnal birds of prey, whether they be artists, birdwatchers, rehabilitators, veterinarians, biologists, or simply people who appreciate difficult-to-obtain wildlife photographs. The authors have done raptor aficionados a great service by greatly reducing the problems associated with this often difficult-to-identify group of birds.—**Peter H. Bloom, Western Foundation of Vertebrate Zoology, 439 Calle San Pablo, Camarillo, CA 93010 U.S.A.**

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**Flammulated, Boreal, and Great Gray Owls in the United States: A Technical Conservation Assessment.** Edited by Gregory D. Hayward and Jon Verner. 1994. U.S. Forest Service General Technical Report, RM-253. ix + 213 pp., 4 maps, numerous figures and tables. Available free from: Rocky Mountain Forest and Range Experiment Station, 240 West Prospect Road, Fort Collins, CO 80526.—The flammulated owl (*Otus flammeolus*), boreal owl (*Aegolius funereus*), and great gray owl (*Strix nebulosa*) are listed as sensitive species by the U.S. Forest Service. The goals of this report are to provide managers, biologists, and the public with a thorough review of the biology, ecology, and conservation status of these species and to provide an overview of research necessary to develop scientifically based conservation strategies. Chapters were prepared by six different authors in addition to Hayward and

Verner. As stated in the introductory chapter, the report is limited in scope to critical summaries of the scientific literature and does not provide management guidelines.

In Chapter 2, D.A. McCallum gives a good general outline of habitat requirements, including discussions of habitat preference, fitness functions, and the concept of source and sink habitats. He also points out the strengths and weaknesses of fitness functions. These models are accompanied by many assumptions and uncertainties. Given the scarcity of information identified in this report, it is clear that there are not enough demographic data for any of these species to build such models.

In Chapters 3, 8, and 13, Verner attempts to summarize the distribution, status, habitat associations, and conservation or management programs for these species on national forests. The range maps cover all of the U.S., including Alaska, Hawaii, and the Caribbean, as well as parts of southern Canada and northern Mexico. This coverage seems unnecessary, given that flammulated owls are restricted mostly to the western U.S., whereas boreal and great gray owls occur primarily north of the 49th parallel. Why not include the Canadian distribution for boreals and great grays, and the Mexican distribution for flammulateds? Why include Hawaii and the Caribbean? It is very difficult to see the red distribution dots against the green and tan background, and there is no indication if these dots represent breeding, wintering, or other types of records. The flammulated owl map gives the impression that these owls occur only on national forests with ponderosa pine (*Pinus ponderosa*) and Jeffrey pine (*P. jeffreyi*) (but see pp. 17 and 22). In Montana, where I am most familiar, flammulated owl distribution is not accurately represented (Holt et al. 1987). The boreal owl map shows no distribution dots for Alaska, although they do appear on an addendum map. In Montana, the distribution dots are not entirely accurate (Holt and Ermatinger 1989). Furthermore, a large portion of the distribution shown does not occur in the "forest types where boreal owls most commonly breed." The great gray owl map does not show any associated vegetative types with the distribution dots. Justification for this is that great grays use a "wide range of forest types."

Chapter 4, written by McCallum, includes a review of the current state of knowledge on almost all aspects of flammulated owl life history. McCallum did an excellent job of assembling information, which

was drawn from 115 citations. There are very good discussions on phylogeny, species status, geographic variation, and community ecology. The section on demography takes a more theoretical approach. McCallum admits that vital rates for this species are too poorly known to model but goes on to estimate a geometric rate of natural increase. Furthermore, he seems unwilling to conclude that flammulated owls sometimes eat vertebrate prey, although he provides supporting data. Another minor weakness is the statement that "small carnivorous owls do not migrate." Migration is well-known in northern saw-whet owls (*Aegolius acadicus*) and some boreal owls.

Chapters 5 (by P. Morgan), 10 (by D.H. Knight), and 15 (by J.R. Habeck) present good general overviews of the forest types associated with these owls. I did not feel qualified to evaluate these chapters; however, I wondered why only habitat in the western U.S. was described for great gray owls.

Chapter 6 addresses a series of questions on flammulated owls that McCallum attempts to answer with current knowledge. For example, how will climate change affect forest health and flammulated owls? Are flammulateds vulnerable to habitat change? McCallum also stresses the important point that only a portion of flammulated owl habitat occurs within national forests. Unfortunately, this section repeats information from Chapter 4 (e.g., distribution, abundance, habitat). In Chapter 7, McCallum points out future research directions and outlines a research plan for flammulated owls. There is some repeated information (e.g., distribution and historic patterns), but it does not detract too much from this section. The call for a huge nest box program without an objective review of that management strategy is puzzling. There has been much discussion about the effects of nest boxes on birds. For example, what are the biological, political, ethical, and scientific justifications for erecting or not erecting boxes? These questions need answers before managers begin erecting boxes throughout the forests.

Chapter 9 is a thorough review of boreal owl life history and includes 154 cited papers. Hayward did a very good job compiling information from both North America and Eurasia. The "Envirogram" presented in Figure 5 is an interesting way to look at the species and deserves merit for its presentation. There are particularly good discussions on movements, habitat use, and breeding biology. In short, I found no real weaknesses in this account. In Chapter 11, Hayward asks a number of interesting ques-

tions about boreal owl ecology. Although the questions are addressed adequately, much of the information presented in Chapters 9 and 10 is repeated, and some of the text is overly speculative (pp. 143–145). Chapter 12 offers a number of topics relating to habitat change, demography, modeling, experiments, observations, and gaps in knowledge about boreal owl biology. The idea that many questions should be asked simultaneously at the same site is good. Again, most of these topics were addressed in Chapters 9 and 11, although worded somewhat differently.

In Chapter 14, J.R. Duncan and P.H. Hayward present comprehensive information on great gray owls and list 90 references. The discussions on systematics, population trends, and movements are especially well done, and the information on diet and breeding biology is thorough. The treatments of prey species biology and ecology are important because they point out the need to understand the life cycles of the food sources of any organism under study. The account is concise and well done. One minor point of contention is the statement that artificial nest sites allow new habitats to be settled. Again, I think we need to address both the drawbacks and benefits of erecting artificial structures.

In Chapters 16 and 17, Hayward points out gaps in our knowledge of great gray owls and suggests directions for future research. Although there are several good ideas, the treatments tend to ramble and repeat ideas stated in previous chapters.

Should you acquire this report? The authors are to be credited with drawing together a wealth of published and unpublished information and presenting it well, especially the technical knowledge chapters. These chapters will be useful to graduate students, agency biologists, resource managers, and administrators. The report is long, however, and tautological in some places. Accounts for all three of these species have been published in the *Birds of North America* series. If you have these accounts, then you already have most of the information contained in the report. Nonetheless, the additional treatments in the report will make it a useful reference.—**Denver W. Holt, Owl Research Institute, P.O. Box 8335, Missoula, MT 59807 U.S.A.**

#### LITERATURE CITED

HOLT, D.W., J.A. HOY AND P.L. WRIGHT. 1987. Occurrence and first nest record of flammulated owls in Montana. *J. Raptor Res.* 21:120–121.

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*J. Raptor Res.* 29(4):288–289

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**Handbook of Australian, New Zealand & Antarctic Birds, Volume 2.** Edited by Stephen Marchant and Peter J. Higgins. 1993. Oxford University Press, Melbourne, Australia. 984 pp., 68 color plates, 108 range maps, numerous line drawings. ISBN 0-19-553069-1. Cloth, \$295.00.—This is the second volume of a handbook series on the birds of this region. The series follows almost exactly the format of the *Birds of the Western Palearctic*, also published by Oxford University Press. This volume covers the falconiforms through lapwings. Because this review is for a raptor journal, I will confine my remarks to the first 320 pages, which cover the 28 species of diurnal raptors that occur in the region.

After an introductory chapter of general remarks on the order Falconiformes and the families Accipitridae and Falconidae, the bulk of the handbook consists of species accounts. Each account begins with an introductory section covering taxonomy, ethology, and worldwide distribution. The main text follows under the general headings: field identification, habitat, distribution and status (including world and region range maps), movements, food, social organization, social behavior, voice, breeding, plumages, and a series of short paragraphs entitled bare parts, moults, measurements, weight, structure, ageing, sexing, and geographical variation. Following each account is an extensive list of references, which are usually at least a full page or more of double-column text. The color plates that accompany the text show almost every plumage variation due to age, sex, or color morph for each species.

Direct comparisons of the coverage for two species common to *The Handbook* and *Birds of the Western Palearctic*, peregrine falcon (*Falco peregrinus*) and osprey (*Pandion haliaetus*), show just how wonderfully complete and well-written *The Handbook* is. *Birds of the Western Palearctic* has been the standard.

Now it has been surpassed, and a higher standard has been set. The material and coverage of raptors in *The Handbook* are also far superior to those of the other two major avian handbooks, *Birds of Africa* and *Handbook of the Birds of North America*.

The species accounts are concisely written and packed full of information. Obviously, much time and careful effort went into their preparation and writing. In addition, all accounts include many line drawings to illustrate behaviors, flight silhouettes, and feathers, as well as sonograms to show vocalizations. The color plates are especially accurate and pleasing. They far outshine those in *Birds of the Western Palearctic* and *Birds of Africa*. I am usually highly critical of raptor illustrations, but J.N. Davies knows his raptors well and depicts them accurately, and as a result, earns my approval. Although they were not meant to be field guide illustrations, these illustrations are better for that purpose than are almost any of the raptor illustrations included in dozens of general field guides that I have used for many areas of the world.

In spite of my glowing remarks, I did manage to find a few errors (with difficulty). First, I do not think that harriers (*Circus* spp.) have asymmetrical

ear openings as stated (see Rice 1982). Also, the fact that most raptors have a third molt center in the secondaries at S5 (as described in Miller 1941 and Edelstam 1984) was not mentioned in otherwise fine descriptions of molt.

In summary, the *Handbook of Australian, New Zealand and Antarctic Birds* is a must for anyone working on raptors in Australia and New Zealand, and highly recommended for those whose interest in raptors is worldwide. Admittedly, the price is very steep, but one should be willing to pay for quality, and this quality handbook is well worth the cost.—**William S. Clark, 7800 Dasset Court, Apartment 101, Annandale, VA 22003 U.S.A.**

#### LITERATURE CITED

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- MILLER, A.H. 1941. The significance of molt centers among the secondary remiges in the Falconiformes. *Condor* 43:113-115.
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