BOOK REVIEWS

EDITED BY JEFFREY S. MARKS

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Raptor Migration Watch-Site Manual: A Cooperative Strategy for Protecting the World's Migratory Raptors. Edited by Keith L. Bildstein and Jorje I. Zalles. 1995. Hawk Mountain Sanctuary Association, Kempton, PA. vi + 177 pp. Paper, $20.00. English and Spanish versions available from: Hawks Aloft Worldwide, Hawk Mountain Sanctuary, R.R. 2, Box 191, Kempton, PA 19529.—Pennsylvania's Hawk Mountain Sanctuary has been a leader in the conservation of migratory raptors for more than 60 yr. Recognizing that the need for protection transcends international boundaries, in 1988 the Sanctuary established a cooperative global conservation initiative called Hawks Aloft Worldwide. Two important goals of the project are the identification of raptor migration sites throughout the world and the training of local conservationists to oversee activities at these sites. Toward achieving these goals, the Sanctuary prepared this manual as a guide to operators of hawk-watching sites.

The manual contains 13 chapters, each with a thorough list of references. The introductory chapter provides a brief history of Hawk Mountain Sanctuary, identifies general threats to migrating raptors, and discusses the Sanctuary's upcoming *World Atlas of Raptor Migration Watch-Sites.* Chapters 2–5 are devoted to biological issues. "Raptor Migration and Conservation Biology" (Chapter 2) gives a general overview of taxonomy, classification, migration behavior, and legal protection, and includes a list of globally threatened raptors. "Investigating Raptor Migration Biology and Ecology" (Chapter 3) provides an annotated list of scientific topics suitable for investigation at migration watch-sites. Chapter 4 ("Monitoring the Abundance and Distribution of Migrating Raptors") discusses methodology, including identification, counting techniques, and monitoring population trends. Chapter 5 ("Managing Data") provides a useful introduction to data management techniques.

Chapters 6–10 consider the human aspects, including environmental education, ecotourism, and membership and volunteer programs. The "Watch-Site Diagnostic" (Chapter 11) is a tool for generating "a detailed description of the physical setting, institutional framework, resource base, and overall situation of a watch-site." The closing chapters contain a comprehensive bibliography of papers on raptor migration in Latin America (Chapter 12) and abstracts from seven Latin American projects that were discussed at the recent Hawks Aloft Worldwide workshop held in Veracruz, Mexico (Chapter 13).

Clearly, much care and thought went into producing this manual. It provides an abundance of information that will be of interest to raptor enthusiasts in general, and it will be virtually indispensable to anyone who is contemplating operating a migration watch-site.—**Jeff Marks, Cooperative Wildlife Research Unit, University of Montana, Missoula, MT 59812 U.S.A.**

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The Northern Goshawk: Ecology and Management. Edited by William M. Block, Michael L. Morrison, and M. Hildegard Reiser. 1994. *Studies in Avian Biology,* No. 16. vi + 136 pp., 39 figures, 57 tables, 2 appendices. ISBN 0-935868-76-3. Paper, $16.00.—This collection of papers is the result of a Cooper Ornithological Society symposium held in Sacramento in April 1993 and organized by R.T. Reynolds, D.A. Boyce, Jr., and the above-named editors. The symposium included 31 oral presentations. After peer review, 22 papers were published in the proceedings: six under a section entitled "Research Approaches and Management Concepts," nine under "Resource Ecology," and seven under "Population Ecology." The introduction states: "The current situation with the northern goshawk (*Accipiter gentilis*), a raptor typically dependent on mature

forests, bears an uncanny resemblance to that of the northern spotted owl [*Strix occidentalis*] a decade ago. Within the past five years, evidence has arisen to suggest that populations of northern goshawks are declining, particularly in the western United States . . . This collection of papers represents the current state of knowledge on northern goshawks."

I will start by relating some of the important new information for a range of topics in the proceedings. Owing to space limitations, I will not critique individual papers. I conclude with an evaluation of the degree to which the proceedings represent "the current state of knowledge" on goshawk ecology and management.

Under "Research Approaches," C. Boal offers an excellent and much-needed guide to the appearance and behavior of nestling goshawks at different ages. S. Joy et al. provide a wealth of data and concepts for anyone interested in improving effectiveness and efficiency in surveys of forest hawks.

Under "Resource Ecology," C. Hargis et al. and D. Bright-Smith and R. Mannan reported mean home ranges (95% harmonic mean) of about 15 km^2 during summer. Radio locations were generally in stands that had larger trees with denser canopies than typical for the study area. Unlike some researchers, Bright-Smith and Mannan recognized that their birds were not a random sample of the study population; thus, they compared habitats at radio locations with habitats available within each bird's home range. P. Kennedy et al. present data on movements of young birds in northern New Mexico. They suggest managing for a postfledging area (PFA) of about 168 ha. Theory on the ecological basis for PFAs could be strengthened by a telemetry study that tracked adults and their young simultaneously.

F. Doyle and J. Smith tracked a goshawk population through a "cycle" of prey availability (mostly snowshoe hares [*Lepus americanus*]) in the Yukon. During both nesting and winter seasons, goshawk densities fluctuated by an order of magnitude with the highs and lows of the hare cycle. Fledgling production averaged 2.8 per occupied nest during the apex of prey abundance but dropped to zero after the numbers of key prey species collapsed.

J. Younk and M. Bechard describe goshawk nesting biology in high-desert aspen (*Populus tremuloides*) groves in northern Nevada. The groves averaged 25 ha and usually contained a creek or spring. Unusually high proportions of breeding females were in first- or second-year plumage, perhaps a response to a recent increase in the availability of ground squirrels. It will be instructive if these birds can be monitored throughout the next decline in ground squirrel numbers.

Under "Population Ecology," P. Detrich and B. Woodbridge related that 72% of breeding adults located in consecutive years retained their mates from the previous year. Eventually, 18% of adult females and 23% of adult males were found nesting 4–13 km from the territories where they were marked. In northern Arizona, Reynolds et al. found that mean intraterritory movement between alternate nests in consecutive years was 266 m (range 100–635 m). Nests produced an average of 2.3 fledglings when both parents were in full adult plumage but only 1.1 fledglings when one parent was in subadult plumage.

As evidenced above, this publication presents many important research results as well as theories worthy of testing. However, because the proceedings fail to present information and theories from the full array of goshawk researchers and management agencies, the goal of representing the "current state of knowledge on northern goshawks" is not achieved. One problem is that only two papers are from outside of the contiguous western United States. No European researcher was included, presumably because of the symposium objective "to assemble researchers and managers from across the *country*" (emphasis mine). Yet, I believe that much could be learned by examining similarities and differences in goshawk ecology between continents.

Although several researchers presented papers that were not published in the proceedings, other North American goshawk workers were absent altogether. For example, Arizona Game and Fish Department researchers had studied goshawks for years, and their data (especially on canopy coverage and territory occupancy) would have been a nice addition to the proceedings.

Moreover, during the 2 yr preceding the symposium, the Southwestern Region of the U.S. Forest Service was engaged in acrimonious debate with state and federal wildlife agencies in Arizona and New Mexico over alternative hypotheses regarding goshawk ecology and forest management. Both sides had conducted extensive literature reviews and analyses. Although the views of wildlife agencies were not presented at the symposium, two papers in the proceedings (Graham et al. and Bassett et al.) described and expanded on the Forest Service strategy

for goshawk management in the Southwest (viz., Reynolds et al. 1992, USDA For. Serv. Gen. Tech. Rep. RM-217, Fort Collins, CO U.S.A.). Discussion of forest management for goshawks also would have benefited from participation of scientists who had published journal articles on the subject, as well as biologists funded by the timber industry and those who wrote the petition to list the goshawk as an endangered species in the Southwest. A broader array of opinions would encourage managers and scientists to consider and test alternative hypotheses on goshawk ecology and forest management.

The primary sponsor of the proceedings was the U.S. Forest Service. Also, four of the five symposium organizers were Forest Service employees, and three were authors of the Forest Service strategy. Additional views would have been presented if other agencies and groups had cosponsored the symposium. I am not suggesting any intentional bias on the part of the symposium organizers, but apparently the effort was inadequate to obtain a comprehensive array of scientific opinion.

In conclusion, the proceedings' goal to represent "the current state of knowledge" was not achieved. The effort would have benefited had the proceedings included more papers from beyond the western United States (especially Europe) and presented a wider variety of habitat management opinions. The proceedings also would have been enhanced by three overviews of goshawk ecology and management, one each from western North America, eastern North America, and Europe. Despite my criticisms, *The Northern Goshawk: Ecology and Management* presents significant new research and theories. Given its relatively low cost, it should be acquired by everyone interested in accipiters and made available at most libraries.—**D. Coleman Crocker-Bedford, 243 Wood Road, Ketchikan, AK 99901 U.S.A.**

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Artificial Nest Structures for Ospreys: A Construction Manual. By Peter J. Ewins. 1994. Environment Canada, 25 St. Clair Avenue East, Toronto, ON M4T 1M2, Canada. iv + 41 pp., color cover, 16 black-and-white photographs, 27 figures. ISBN 0-662-22791-3. Paper, available free from above address.—Among falconiforms, the osprey (*Pandion haliaetus*) may be the first species to have benefited from the provisioning of artificial nests. As early as the nineteenth century, farmers in the northeastern U.S. were placing old cartwheels atop poles to encourage ospreys to nest near their homesteads in the belief that these birds would drive away other hawks (Abbott 1911). In recent years, man-made nest structures have become so important an aspect of osprey conservation and management that in some areas, most nests now occur on artificial sites.

With this construction manual, Ewins has produced the most comprehensive compilation of artificial nest platform designs available. He draws not only on published sources, but on some obscure agency reports and unpublished material. The stated emphasis is on designs "best suited to the habitats found in Canada." Some comparisons with an earlier work (Martin et al. 1986) may be appropriate. Ewins incorporates the designs from the Martin et al. publication, but includes twice as many different designs. His "Further Reading" contains 14 references, however, whereas Martin et al. list 49 titles.

A brief introduction is followed by one-page sections on "Site Selection Considerations" and "General Notes on Construction." The main portion describing individual platform designs is divided into three sections according to the type of supporting structure. The first covers single poles (seven designs), and the second deals with "Other Structures" (including tripods, tree platforms, a ring platform, a metal grid, and methods for reinforcing duck blinds that currently support osprey nests). All of these designs are illustrated with detailed drawings and/or photographs, and for some designs the required construction materials are listed in a box. The third section deals with osprey nests on power transmission towers and utility poles. Also included is a decision chart for assisting utility managers in selecting an appropriate course of action when ospreys nest on power transmission structures. Several modifications are suggested to either allow nests to persist while eliminating (or greatly reducing) the incidence of short circuits between live wires, or to prevent nest construction on poles after nests have been moved to nearby sites. Two additional platform designs are shown in this section.

One troubling omission is that no attempt is made to critically evaluate the efficacy and durability of

the various designs. While such information may not be available for all structures, the usefulness of the manual would have been enhanced had more use been made of the practical experience that already exists. For example, the metal-grid platform used by the U.S. Coast Guard on navigational aids in the St. Mary's River has proven to be quite inadequate due to a lack of any means of holding nests in place. Nests on these platforms remain relatively shallow, and several have been blown off entirely. In one such instance, two small chicks perished when their feet became entangled in the metal grid. Although using a wider mesh, as Ewins suggests, would help anchor sticks to the platform, it would also increase chances of finer material in the center of the nest falling through and thus exposing eggs or chicks to unnecessary risk. All platforms must have some structural feature designed to keep nesting material in place.

I have found that ospreys nesting on platforms over water and far from shore tend to build only shallow nests, especially during the first 1–2 yr a platform is used. Apparently, availability of suitable nesting material, and the distance over which it must be carried, influence the size and quality of the nest. On the shallow offshore nests, the eggs in the nest bowl often rest on the bare wood of the platform. Hatching rates of such eggs are low, possibly owing to inadequate incubation temperatures. One would expect that this situation would be at least as severe on wire-mesh substrates. This problem can be alleviated by nailing a piece of carpet (about 30 cm^2) to the center of a solid-base platform. On a metal-grid platform, a similar-sized piece of fine wire mesh can be fastened at the platform center.

Our Michigan platforms (Postupalsky and Stackpole 1974) were initially equipped with wooden dowels to hold nests in place. Because the dowels eventually deteriorated and broke off, they were replaced with upright rectangular boards attached to angle brackets. Similar modifications may become necessary for other platform types that use wooden dowels.

In the preceding paragraphs, I have attempted to evaluate several artificial nest designs, drawing on my three decades of experience with osprey nesting platforms. Others undoubtedly can offer additional suggestions on improving these and other designs. Despite the shortcomings mentioned above, this manual serves its purpose rather well. The manager or osprey enthusiast is offered a series of designs that are appropriate for many different local conditions. Anyone contemplating construction and installation of artificial nest structures, or facing problems arising from conflicts between ospreys and utility lines, will profit from consulting this manual.—**Sergej Postupalsky, 1817 Simpson, Apartment 201, Madison, WI 53713 U.S.A.**

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