

BOOK REVIEWS

EDITED BY JEFFREY S. MARKS

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The Mississippi Kite: Portrait of a Southern Hawk. By Eric G. Bolen and Dan Flores. 1993. University of Texas Press, Austin, Texas. xi + 115 pp., 14 color plates, 3 figures, 2 tables, 3 appendices. ISBN 0-292-75148-6. Cloth, \$17.95.—According to the authors, this book was written because of the Mississippi kite's (*Ictinia mississippiensis*) aesthetic value and as a reminder to readers of the importance of predators to the natural order. An additional goal of the book was to demonstrate that an ecologist and an historian could jointly produce a useful book.

The book begins with an historical account of the first Mississippi kite described in 1806 at Natchitoches, Louisiana by Peter Custis. The authors then describe the Mississippi kite by relating an experience with several kites soaring overhead in west Texas. Personal experiences such as this are integrated throughout the book and serve to enhance its overall readability. Common names assigned to the Mississippi kite in specific parts of its breeding range in the southern United States are provided. Mention is given to the confusion that arises when several different local names are used for the same species. No mention is made of local names assigned to kites on their wintering grounds, however.

The breeding range of the Mississippi kite in North America is clearly illustrated by two maps, one of which shows the bird's westward range expansion in recent years. The authors attempt to integrate other raptors into their explanations and descriptions and thus do not restrict their accounts to Mississippi kites. For example, species such as the peregrine falcon (*Falco peregrinus*), snail kite (*Rostrhamus sociabilis*), and American swallow-tailed kite (*Elanoides forficatus*) are also discussed.

A chapter entitled "Mississippi Kites in History" includes interesting accounts of kites written by nineteenth century western explorers. Specific experiences by such famous naturalists as John James Audubon and Alexander Wilson provide excellent examples of the attitudes toward predators during

that period. The chapter closes with a report on the kites' responses to recent environmental changes, especially those related to shelterbelts. The authors make the point that, due to shelterbelt plantings in the southern High Plains, Mississippi kites now thrive in large colonies not seen by early western explorers.

Mississippi kite migration patterns from their Neotropical wintering grounds to their North American breeding grounds are described. The authors propose three migration routes for the kites but conclude that the overland route through Central America is the one used most commonly.

Breeding biology, including courtship, nest-site selection, clutch size, egg characteristics, incubation, nest defense, and colonial nesting is described. The color plates in this chapter are of excellent quality and enhance the text considerably.

Parental care is considered briefly along with a short discussion on nest helpers. Examples of reproductive success (percentage of eggs hatched and number of young raised per successful nest) in three habitats are reported in a table. A major drawback here is the lack of a clear source for the data used to construct the table. The kite's typical habit of fiercely attacking predators in the vicinity of nests, while allowing conspecifics to remain unmolested, is included along with comments on gregarious behavior.

Feeding behavior is described in some detail. Interesting personal accounts of kites feeding on swarming cicadas (the main food source during the breeding season) are included. Using Snyder and Wiley's dimorphism index, sexual size dimorphism is compared with other raptor species. Measurements of wing chord, bill length, and body mass for both male and female kites are provided in a table. The source of the data, while alluded to in the text, is not provided in the table.

The increasing frequency of large breeding colonies of kites in urban settings (e.g., Clovis, NM and Garden City, KS) is the focus of the next chapter. The problem of kites nesting on golf courses and diving upon anyone near their nest trees is described.

The authors stress that aerial dive-bombing by kites rarely results in injuries to people—on a golf course in New Mexico, 900 attacks resulted in strikes only 3% of the time.

The relationship between predators and people is described using both historical and ecological accounts. The mass slaughter of raptors at Hawk Mountain in the early part of this century is described in the text and depicted in a photograph of several raptors killed by hunters. Bounties offered by several states in the early part of this century are blamed for the deaths of large numbers of raptors. The idea that predators remain hungry most of the time and “rarely live up to their reputations as efficient killers” is stressed. The value of raptors as agents of pest control is provided as one justification for their protection. The loss of raptor eggs and nestlings to “overzealous” egg and specimen collectors is described with reference to detailed (and sometimes gruesome) accounts from the older literature.

Problems with the survival of many species of Neotropical migrants while on their wintering grounds have become the focus of much concern. The authors attribute a majority of these problems to deforestation and use of pesticides by several Neotropical countries. The effects of pesticides and deforestation on wintering Mississippi kites, however, are not well understood. The establishment of protected areas throughout the kite’s breeding range in southern North America is suggested as a way to mollify potential problems faced by the kites on their wintering grounds.

The book contains three appendices. The first lists scientific names of the species discussed in the text. The second describes Snyder and Wiley’s dimorphism index in detail and provides the equation used to calculate the dimorphism index for Mississippi kites. The third appendix lists Mississippi kite sightings during the last 10 yr by each state reporting such sightings. Suggested readings and references are provided both in general and by chapter at the end of the book.

The strong points of this book are many. It provides interesting and entertaining reading, and the color plates are excellent and effective. The wealth of information presented makes the book suitable for bird watchers, amateur and professional naturalists, and ornithologists. The information contained in the book far outweighs its size and reflects the amount of time spent by the authors in uncovering interesting

details, especially historical accounts of the species. An unfortunate shortcoming of the book is a failure to provide citations for data contained in the text and tables. Nonetheless, I recommend this book as an excellent starting place for those beginning research on Mississippi kites and for anyone interested or inspired to learn more about them. This book is especially suitable for both public and university libraries.—**Eugene S. Botelho, Department of Biology, New Mexico State University, Las Cruces, NM 88003-0001 U.S.A.**

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Las Rapaces Ibericas. By J.L.G. Grande and F. Hiraldo. 1993. Aldaba Ediciones, S.A., Spain. 295 pp., more than 290 color photos, 1 color plate, 32 range maps. ISBN 84-86629-73-X (In Spanish). Cloth, no price given.—This is basically a book out of the same genre as *Eagles, Hawks and Falcons of Australia* by David Hollands. Although this book on “The Raptors of Spain” is also principally a book emphasizing photographs, it nonetheless lacks the scientific rigor of the Hollands tome. The photographs are of high quality. Each species is shown in flight, and many are also shown in a nesting setting and with typical prey. It would largely be in vain to try and single out exceptional photographs, but there are especially excellent ones of the griffon vulture (*Gyps fulvus*) and the imperial eagle (*Aquila heliaca*), for example. In all, 25 diurnal raptors and seven owls are treated as occurring in Spain.

As with most books of this type, the treatment of each species varies with the amount of data available. One extensively treated species is the imperial eagle, with section headings on “The Species and its Morphological Characteristics,” “Population and Distribution,” “Habits,” “Feeding and Foods,” “Reproduction,” and “Conservation Problems.” On the other hand, the long-eared owl (*Asio otus*) represents the more average species account and contains only introductory material and sections on “Distribution,” “Population and Habitat,” “Food,” and “Reproduction.”

The distribution maps include the Balearic Is-

lands (three major islands just east of Spain), but to my disappointment, not the Canary Islands, which are also a possession of Spain (but situated off the coast of Morocco). This is unfortunate because both island groups have some curious distributions. Much of the distribution on the islands is a function of the presence of cliffs or other appropriate habitats and thus emphasizes differences among islands. For example, the scops owl (*Otus scops*) occurs on all of the Balearics, whereas the little owl (*Athene noctua*), which is generally as broadly distributed as the scops owl, is absent. Likewise, the barn owl (*Tyto alba*) occurs on two of the three islands, but the long-eared owl on only one of them. This same sort of "fragmented distribution" in raptors occurs on the Canary Islands, and it would have been nice to have shown that.

Overall, this is a great book to have for one's library simply because of the photographs, if for no other reason. I highly recommend it even for those who do not read Spanish. The title page is one of encouragement with the statement "All Birds of Prey are Protected by Law in Spanish Territory by Royal Decree No. 3181, 30 December 1980. Juan Carlos de Borbon, King of Spain" (my translation).—**Clayton M. White, Department of Zoology, Brigham Young University, Provo, UT 84602 U.S.A.**

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Barn Owls: Predator-Prey Relationships and Conservation. By Iain Taylor. 1994. Cambridge University Press, Cambridge, England. xvi + 304 pp., 119 figures, 15 tables, 3 appendices. ISBN 0-521-39290-X. Cloth, \$37.95.—The barn owl (*Tyto alba*) is by far the most well-studied owl in the world. Iain Taylor has added to this bank of knowledge with his long-term study of the nominate race, *T. a. alba*, in southern Scotland. This book is based largely on his personal experiences with these owls. It is written for "researchers, professionals and interested amateurs." The underlying theme is that a thorough understanding of the relationship between predators and their prey is essential to effective conservation efforts. Recognizing that not all facets of the owl's

ecology are directly related to food, however, Taylor also addresses other important life-history attributes. Throughout the book, he compares his findings with those from studies in mainland Europe and from other continents. The result is a well-balanced treatment of the autecology of barn owls.

Each chapter begins with an attractive drawing by Keith Brockie, and all but the final chapter ("Conclusions") end with a concise summary. Chapter 1 presents a brief introduction to the species, descriptions of the four study areas, and a general overview of study methods. The main study site (1600 km²) was centered around the River Esk and its tributaries. Within this area Taylor strived to locate all nests initiated from 1978 to 1992, subsequently trapping and measuring the adults and banding all of the young produced. He also monitored food habits, censused small mammals, and radio-tagged 10 breeding pairs.

Chapter 2, entitled "Distribution and Variation," contains a map showing the distribution of the 36 subspecies of barn owls. Focusing on the *alba* subspecies, Taylor describes and depicts plumage differences between the sexes. Compared with males, females are more richly colored and have more markings on their wings, tail, and venter. They become paler with age, however, such that those ≥ 7 yr old may be as pale as males. Mensural data from 22 subspecies (presented in Appendix 1) reveal substantial intraspecific variation in size. The *javanica* subspecies from Southeast Asia is by far the largest in mass, followed by *pratincola* from North America. The former has shorter wings, however, and hunts more from perches than in flight. The tropical subspecies tend to have longer tarsi, which Taylor suggests is an adaptation for prey capture in tall grasses that are common at lower latitudes. Within subspecies, there is little difference in size between the sexes except that males weigh less than females. Consequently, males should have lighter wing-loading, a point that Taylor neglects to mention. Indeed, there is no discussion of the adaptive significance of sexual size dimorphism (or lack thereof) in barn owls.

Diet and foraging behavior are the topics of Chapters 3 and 4. A summary of 52 studies confirms that mammals are the main prey, constituting 74–100% of the diets. Voles (*Microtus*) dominate the diets in western Europe and North America, whereas mice (*Mus* and *Apodemus*) predominate in Mediterranean climates. Taylor dislikes diversity indices because of their "disadvantages," yet he does not specify these

drawbacks. As an alternative, he calculates the minimum number of prey species needed to make up 80% of the diet. This seems like a reasonable (albeit arbitrary) index of dietary diversity, but I do not see how it is any better than the inverse of Simpson's index or the antilog of Shannon's index.

Thinking that barn owls were almost exclusively active-search foragers, I was surprised to learn that perch-hunting has been observed in many places. Indeed, it is the main foraging technique of barn owls in Malaysia. An interesting exception to the notion that barn owls are strictly nocturnal comes from Scotland and northern England, where they "quite normally hunt during the day" in both winter and summer. Taylor offers the novel suggestion that the white plumage of male *alba* (which is the palest subspecies) could function to reduce conspicuousness of diurnally foraging owls to their prey (p. 51). This may be so, but one wonders how well a vole can see a foraging owl, even in daylight. Moreover, it cannot explain why North American barn owls (which are nocturnal) are also pale. It strikes me that more than any other owl, barn owls nest and roost in sites that are particularly well concealed. Perhaps they are pale simply because they do not require the cryptic plumage typical of species that nest and roost in more open situations.

Taylor presents a succinct review of the behavior and ecology of the prey species in Chapter 5. As such, he sets the stage for subsequent discussions of predator-prey relationships. Trapping data show how the abundance of prey varies seasonally and from year to year. They also reveal that moist grassland habitats preferred by voles in Scotland are restricted to the edges of grazed pastures, farmlands, and fencerows. An unfortunate trend that begins in this chapter (and continues through the literature citations) is the misspelling of the last name of noted owl researcher Erkki Korpimäki.

Chapter 6 is entitled "Prey Selection, Foraging Habitats and Energetics." It begins with a useful review of several field studies that have suggested that barn owls prefer voles over other available species (mostly mice). Two experiments with captive owls corroborate this preference. Taylor suggests that voles are larger and easier to catch than mice and are thus more profitable prey for barn owls.

The section on energetics reviews estimates of food intake and energy consumption measured in captive owls. The thermal neutral zone of barn owls is higher than that of other owls, suggesting that they are

adapted to relatively warm climates. This explains their habit of roosting in buildings and cavities during daytime and of "resting" in buildings between foraging bouts at night. The fact that many owls died during a period of prolonged cold and snow in Scotland suggests that barn owls have difficulty meeting daily food requirements at the northern edge of their range.

Data in "Ranging and Roosting Behaviour" (Chapter 7) are based largely on radio-tagged owls. Home range size was measured for six breeding pairs during a low vole year (1983) and four (see below) during a high vole year (1984). Data are presented for 1983 but not for 1984. Thus, there is no support for the statement that home range sizes were equal in both low and high vole years (p. 100). Moreover, the number of pairs tracked in 1984 is said to be four on p. 98 and five on p. 101. This inconsistency, and the lack of data for all pairs tracked, mars an otherwise interesting account of breeding-season movements.

Taylor spent considerable time watching his radio-tagged birds. Thus, in addition to documenting that foraging areas of adjacent pairs overlapped considerably, he discovered that the owls did not defend feeding territories. Rather, they confined their attacks to intruders that entered occupied nest sites.

Chapter 8 examines molt. Scottish barn owls have the same complex molt patterns documented in mainland Europe and the United States. Complete replacement of the juvenal primaries occurs over a 3-yr period beginning with one or two primaries during the owl's second calendar year. Owls ≥ 5 yr old replace their primaries on a 2-yr cycle, beginning with P6 and progressing in both directions in small blocks of adjacent feathers. About 25% of the females begin shedding primaries during incubation, whereas males do not begin molt until the young are nearly full grown. More females overlap molt with incubation during high vole years than during low vole years, indicating food-based plasticity in energy allocation. Interestingly, barn owls in Malaysia exhibit the same sequence of primary molt as temperate birds but complete the entire molt over a 7-mo period.

Various aspects of breeding biology are covered in Chapters 9 through 12. Laden with information, these chapters contain the meat of Taylor's research. Not surprisingly, the vole cycle influences a variety of reproductive traits including laying date, renesting effort, clutch size, nesting success, and survival of

young. There is also a strong influence of age on timing of nesting, with yearling females laying substantially later than older females. In addition, during high vole years when many yearlings breed, yearling females tend to pair with yearling males.

Taylor states that barn owls do not construct nests. This contradicts several published studies (dating back to the late 19th century) that have documented burrow digging by barn owls in the United States (e.g., Martin 1973, Millsap and Millsap 1987). This minor oversight detracts little from an otherwise thorough review of barn owl nesting sites.

The data on dispersal (Chapter 13) are perhaps the best available for the species. They show that adults are highly faithful to previous breeding sites and that most young settle within 10 km of their natal sites. There is a slight but significant trend for males to settle closer to their natal sites than do females. No cases of close inbreeding were observed.

There was no evidence that Scottish barn owls were migratory. Perhaps for this reason, Taylor is skeptical of reports of barn owl migration in the United States. He suggests that "migratory" barn owls observed at Cape May, NJ were actually dispersing juveniles. Yet, in both Colorado and New Jersey, researchers have documented southward movements by adults (Millsap and Millsap 1987, Duffy and Kerlinger 1992).

Chapters 14 and 15 treat mortality and population regulation, respectively. Annual mortality ranged from 16–55% per year for adults and was closely tied to vole abundance. Similarly, there was a strong positive correlation between vole numbers and the number of nesting pairs each year. Taylor concludes that the upper limit of nesting density is controlled by a combination of prey abundance and availability of suitable nesting sites.

In Chapter 16, Taylor discusses the population declines of barn owls in Europe and the United States that apparently began in the 1930s and 1940s. He also offers some insightful thoughts on conservation via management of foraging habitats, provisioning of nest sites, and control of rodenticide use. This chapter should be required reading for anyone contemplating a management program for raptors. The final chapter is a useful and well-organized summary of the book.

On balance, I liked the book very much. It is attractively produced, reasonably priced, relatively free of typographic errors (I noted only two), and packed with original data. The review of information from other continents enhances the book's value. As a minor criticism, I think that Taylor could have gone further in suggesting avenues for additional research. Nonetheless, the careful reader should have no trouble identifying gaps in present knowledge and devising interesting research questions. *Barn Owls* should be acquired by all university libraries and anyone with a specific interest in *Tyto alba*. It should also be read by anyone interested in long-term studies of raptor populations.—**Jeff Marks, Cooperative Wildlife Research Unit, University of Montana, Missoula, MT 59812 U.S.A.**

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