

## BOOK REVIEWS

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**Raptors of the World.** By James Ferguson-Lees and David A. Christie. 2001. Houghton Mifflin, Boston, MA. 992 pp., 4 tables, 60 figures, 112 color plates, numerous range maps. ISBN 0-618-12762-3. Cloth, \$60.00—For any birdwatcher enjoying a successful trip to a new country, few events are more frustrating than glimpsing an unknown raptor as it flies swiftly out of sight, never to be seen again nor identified with certainty. Diurnal raptors, whether perched or flying, are often difficult birds to identify, even for experts. Fortunately, many regional field guides serve as excellent resources for raptor identification, yet no one has dared assemble a guide to all of the globe's diurnal birds of prey. *Raptors of the World* aspires to accomplish this ambitious goal.

This enormous field guide is organized into a list of species, several chapters of natural history and identification information, color plates, detailed species descriptions, a bibliography, and an index. Following the species list, a brief Introduction informs the reader that 313 species within four orders—Ciconiiformes (New World vultures), Accipitriformes, Falconiformes, and Sagittariiformes—are recognized and treated within the text, departing from the standard treatment that places all diurnal raptors in the order Falconiformes. The next chapter, aptly titled Using This Book, describes the general content and format of the color plates, distribution maps (in three colors distinguishing migratory pathways and seasonal ranges), and condensed caption texts that accompany the plates and maps. This chapter also contains a brief overview of topics included in each of the species accounts.

Several chapters devoted to general identification cover bird topography, morphological measurements, and sex and age differences. The three pages of line drawings within the Raptor Topography chapter are well done and useful. Reversed sexual size dimorphism is treated in some detail and then related to identification, as are wingspan and total length measurements in the next chapter.

Unlike traditional field guides on raptors, the book also includes lengthy chapters on migration, molt, and anatomy.

A brief treatment of taxonomy and nomenclature completes the final two introductory chapters. The authors acknowledge that not all changes in taxonomy stemming from recent DNA-DNA hybridization studies could be incorporated into the book because of time constraints related to publication. Thus, their classification remains conventional aside from the aforementioned division of the Falconiformes into four orders. Use of English names generally follows that proposed by the British Ornithologists' Union's Records Committee, but North American buteos are still labeled "hawks" rather than "buzzards," and "vulture" refers to taxonomically unrelated Old and New World species. In sum, the introductory materials encompass 79 pages.

The most important parts of any field guide are the color plates, range maps, and species accounts. *Raptors of the World* contains an astounding 112 color plates that show 2115 individual birds, more than half of which are depicted in flight. The three artists—Kim Franklin, David Mead, and Philip Burton—illustrated adult and juvenile plumages of perched and flying individuals of each species. Most plates depict three species, but some wide-ranging species with variable plumage command several pages of artwork.

The first three color plates categorize raptors by general size (large, medium, small) and distribution (New and/or Old World) to help the unacquainted birder narrow the bewildering array of species down to genus. Plates of species follow, each identically structured. Preceding the English name is a number corresponding to the list of species at the beginning of the book. Next are the scientific name and a page number referencing the species account in the main text followed by data on total length, wingspan, and tail length in centimeters (with the midpoint of the range in inches). Size of the male in proportion to the female is given as a percentage. Opposite each species plate is a distribution map and condensed text describing overall appearance, flight characteristics, and aspects of general biology that may aid in

identification. A list of similar-looking species is referenced by plate number.

Extensive identification and natural history information appear within the Systematics section, a chapter that spans a colossal 622 pages. At the top of each species account are repeated the English and scientific names and plate numbers. A large map in varying shades of gray accompanies the text and usually provides the same information illustrated in the color maps. Distribution, behavior (e.g., migratory, breeding), habitat, food, and worldwide population are reviewed. Estimated size of the global population is categorized by numbers (1–7) that represent orders of magnitude (e.g., 5 = 10 001–100 000 individuals). The largest subsection describes field characteristics, which are grouped by age, sex, geography, and size for both flying and perched birds. Characteristics helping to separate similar-looking species are also furnished. A list of references, abbreviated by author and year, completes each species description.

The authors and artists completed a formidable project and succeeded in producing an attractive and useful book. However, preparing such a tome means it will be out-of-date and incomplete the moment it is published, mostly because of publication deadlines rather than the authors' inattention to recent advances. Given that the primary purpose of the book is to serve as a *field* guide, I found most of the information in the opening chapters on natural history unrelated to identification and therefore unnecessary. Much of it was also dated, despite the 55-page bibliography. For example, the authors discuss reversed sexual size dimorphism at length, but an important paper on phylogenetic effects is not mentioned. The ability of raptors to see within the ultraviolet range also eludes discussion, and the role of ultraviolet plumage characteristics is stated as unknown, but a wealth of literature chronicles these aspects of natural history.

I studied carefully the plates and text of all North American species, the group with which I am most familiar, and found several significant errors. The most noticeable and troublesome shortcomings concerned the accuracy of the distribution maps, which were produced by relying on previous books. For example, maps for Mississippi Kite (*Ictinia mississippiensis*), Common Black-Hawk (*Buteogallus anthracinus*), Crested Caracara (*Caracara plancus*), and Peregrine Falcon (*Falco peregrinus*) either were poorly done or did not indicate

large areas where these species occur. Although the authors ended literature reviews for most species in the mid-1990s, they should have examined some contemporary sources (e.g., the *Birds of North America* series) to update and verify distributions. A few of the plates also contained errors. For example, age-specific plumages of the Bald Eagle (*Haliaeetus leucocephalus*), leg color of the Turkey Vulture (*Cathartes aura*), and color of the tarsus feathers of the Golden Eagle (*Aquila chrysaetos*) were incorrect. These errors were unsettling because North American raptors are well known compared with species inhabiting remote parts of the globe. The style of the three artists also differed significantly, which, in my opinion, detracted from the consistency in plate presentation.

Despite these errors, *Raptors of the World* deserves a place in the libraries of globetrotting birders who have a deep interest in and appreciation for raptors, simply because it provides so much information in an accessible format. The sheer bulk of this "field guide," however, means that it will rest on a coffee table or bookshelf far more often than inside a backpack. Ornithologists who venture abroad will also find it a handy reference when used in combination with regional field guides. Finally, public and academic libraries certainly should include this book in their ornithological collections to complement texts that focus on raptor natural history.—**Marco Restani, Department of Biological Sciences, St. Cloud State University, St. Cloud, MN 56301 U.S.A.**

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**The Spanish Imperial Eagle.** By Miguel Ferrer. 2001. Lynx Edicions, Barcelona, Spain. 224 pp., 36 tables, 58 figures, numerous black-and-white photographs. ISBN 84-87334-34-2. Cloth, \$28.00—If you are interested in the behavior, population ecology, or conservation of raptors, then you must become familiar with this book. It is a quick and informative (although sometimes tedious) read that introduces you to one of the rarest raptors in the

world. The chapters cover taxonomy, biometry and physiology; distribution and status; feeding; reproduction; the dependence period; dispersal; mortality; population dynamics; population genetics; and conservation. The author draws on his 20 years of experience with *Aquila adalberti* in Doñana National Park to develop these topics and put them into a larger ornithological perspective. His stated objectives are to (1) present all up-to-date information on the species and (2) provide a thought-provoking basis for the conservation of Spanish Imperial Eagles.

Ferrer accomplishes his first objective with a wonderful mix of photographs, line drawings, 36 data tables, and 57 graphs and maps. Methods and statistical analyses are summarized to aid your own interpretation of the results. As an indication of the types of analyses reported, consider these findings that I found most important: (1) blood chemistry (especially urea, a possible indicator of condition) varies with age, hatching date, and many aspects of behavior; (2) using latex gloves while handling eagle chicks reduces staphylococcus infection; (3) apparent increases in reproductive success with breeder age are due to territory quality, not some inherent property of the pair; (4) territory intrusion by immatures correlates positively with territory quality; (5) most of population renewal is due to a few very productive pairs; (6) fledglings in poor nutritional condition remain in their natal territories longer and eventually dispersed shorter distances than fledglings in good condition; (7) wind direction correlates positively with dispersal direction; (8) occasional observations of subadults breeding, that we often dismiss as anecdotal, can in fact represent important population-stabilizing mechanisms (as numbers decline, age of reproduction declines, which increases population growth, which reduces breeding by subadults); and (9) conservation efforts that reduce juvenile and adult mortality are more likely to benefit the population than those aimed at augmenting reproduction.

The strongest part of the book reflects Ferrer's primary expertise in the dispersal and development of independence by juvenile eagles. The 50 pages devoted to these topics are strong and well argued. I particularly liked the conceptualization of these two poorly understood phases of most birds' lives. Dependence was divided into an early stage (fledgling to development of soaring flight) affected by the physical condition of the chick and

a later stage (soaring flight to independence) primarily affected by the physical condition of the parent. Likewise, juvenile dispersal was divided temporally into phases of "local dispersal," "first departure from the natal population," "exploration," "temporary settlement," and "return to the natal population." Such detailed investigation of mobile, wide-ranging birds with clear links between behavioral changes and important mechanisms is especially noteworthy.

I was troubled by the shallow depth of treatment other topics received. There was little quantitative assessment of habitat use or habitat needs of the species. Certainly this should have been a cornerstone of investigation for such a rare species. No rigorous assessment of range contraction was provided (maps are presented but are not tied to habitat changes, habitat quality, configuration, etc.). Despite a rather strong dependence hinted at between rabbits and eagles, no quantitative measures of prey were provided, and no attempts were made to link eagle population dynamics with those of their prey. The behavior of eagles is described, but there are no quantitative presentations of time budgets or relative importance of foraging styles. We are not given a complete picture of how this eagle spends a typical day. Sociality is not mentioned. Home-range dynamics and use of space by breeders are dealt with only superficially. The chapter on population genetics is only five pages long.

The certainty of some findings is also presented a bit too strongly for my taste. For example, Ferrer claims that males and females can be distinguished "with certainty" by morphology, yet he shows that the sexes overlap in all physical characteristics. He also asserts that urea concentrations in the blood indicate the nutritional state of individual birds, but he does not discuss the potential problems with drawing this conclusion. I am not an expert in this area and found the correlations between urea and behavior exciting. However, upon discussing this with several more-knowledgeable colleagues, I found that although urea concentration does reflect protein catabolism and/or degradation that can come from the individual or from its diet, it is tricky with a carnivorous bird to confidently identify the source of variation in the values. Ferrer should have discussed these uncertainties more openly.

The biggest failure of this book is that Ferrer makes no attempt to put the work on Spanish Im-

perial Eagles into the broader context of behavior, ecology, and endangered species conservation. The literature cited is badly dated and heavily skewed toward raptors. Few articles (other than the author's own) beyond 1990 are cited. This may not bother the ardent raptor biologist, but the importance of this story for avian conservation and ecology in general will be lessened by this shortcoming.

Lynx Edicions has attractively packaged this book and done a splendid job reproducing the figures and photographs. However, they have done a poor job in proofreading and finalizing the text. On average, one typo occurs on every page, as do misalignments that confuse some of the tables. Many of the errors stem from translation into English, for which the author and publishers have my sympathy. However, a quick proofing by someone proficient in English would have cleaned up 90% of these issues.

Despite these drawbacks, Ferrer has provided a thought-provoking basis for conservation of Spanish Imperial Eagles. However, I am not convinced that he has provided an action-provoking basis, and in my opinion that is what is really needed. He

has armed those interested in raptor conservation with relevant biological information and shown clearly that simply reducing the risk of electrocution will likely benefit the species. However, he has not given us any insights into the Spanish political system nor any indication of the likelihood that the Spanish people will embrace the changes needed to save this species. We all know that biology is only one side of the conservation equation; social, economic, and political considerations will always be important. As biologists, we must understand all of these dimensions to effectively enter into action-provoking discussions with policy makers, managers, and planners.

In summary, this is a classic case study of an imperiled raptor. Those interested in large raptors, especially eagles, will find it required reading. Those interested in conservation will do well to study the last chapter. Behavioral ecologists and population biologists will find important data to relate to their own studies. It belongs on library shelves, but not on the shelf of every ornithologist.—**John M. Marzluff, College of Forest Resources, University of Washington, Seattle, WA 98195 U.S.A.**