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The Lost World of the Moa

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BOOK REVIEWS

EDITED BY BARBARA E. KUS

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The Lost World of the Moa.—Trevor H. Worthy and Richard N. Holdaway. 2002. Indiana University Press, Bloomington, Indiana. 760 pp., 145 figures, 97 black-and-white photos. ISBN 0-253-34034-9. $89.95 (cloth).

Foreigners treat New Zealand more as a source of familiar anecdotes than as the remarkable evolutionary experiment that it is. Every biologist knows about the remarkable kiwi, the mighty moa, the three-eyed living fossil tuatara, the lost world of Gondwanan relicts, the island ark, the predator-free Eden, and so forth, from the pages of their undergraduate texts. These familiar tales barely scratch the surface, though. New Zealand is, and especially was, a land of surpassing weirdness. Colonies of petrels nested in the mountains above the snowline, where they were attacked and eaten by marauding flocks of alpine parrots. Bats rolled up their wings and scurried about on the forest floor, burrowing into the leaf litter but understandably avoiding the giant flightless crickets that were bigger than they. Flightless ducks jostled with flightless parrots, flightless coots with flightless geese. Most of them only ventured out at night for fear of a 30-pound eagle dropping on them—an eagle, incidentally, that could and probably did kill and eat humans in addition to 300-pound moa.

Why aren't the details of this looking-glass world better known to Northern Hemisphere biologists? Since the nineteenth-century glory days of research into New Zealand's avifauna, when Owen published paper after beautifully illustrated paper on spectacular moa bones, there have been very few avian paleontologists in New Zealand at any given moment—sometimes just one. Papers have been published in relatively obscure New Zealand journals. Popular works have been thin on the ground.

Over the last decade, this picture began to change. A flurry of long, detailed papers have been published, methodically cataloguing and summarizing fossil excavations throughout the country. The end point of this research is the present volume, the first comprehensive, book-length survey of research into the prehuman fauna of New Zealand, most of it conducted by Worthy and Holdaway themselves.

Trevor Worthy and Richard Holdaway, the uncontested authorities in this field, are the beneficiaries of a radical shake-up in New Zealand science that allowed private individuals as well as institutions to compete for funding. Both are independent researchers, unburdened by teaching and committees. Both have extensive experience in stratigraphic excavation of bone deposits from caves and swamps, the usual resting places for the subfossil bones that make up almost all of New Zealand's avifaunal record. This book reads as their conscious effort to set a new baseline for vertebrate paleontology in New Zealand, and identify future research directions.

Worthy and Holdaway's research has reshaped our views of New Zealand's avifauna and ecology. *The Lost World of the Moa* has an arresting observation or discovery every few pages. The whole New Zealand coastline, and hillsides miles inland, were honeycombed with burrows of hundreds of millions of petrels, prions, penguins, and shearwaters, which transferred staggering amounts of nutrients from the ocean to the land. New Zealand was the last major landmass to be inhabited by humans: the ancestors of Maori arrived only 800 years ago, but previous visitors 2000 years ago left no traces but *Rattus exulans*, which had a head start in wiping out the smallest native species. Avian community structure varied dramatically from east to west, and with the rising and falling treeline during and after glaciations. Worthy and Holdaway point out that the largest moa was perhaps not quite as huge as is generally thought, and almost parenthetically, that the Elephant Bird (*Aepyornis maximus*) of Madagascar, for fifty years reflexively cited as the world's largest bird at exactly 438 kg, was almost certainly not that large either.

They also firmly set straight some of the old and hairy anecdotes mentioned above. There is no excuse now for anyone to claim there were more than 11 moa species (at least until mitochondrial DNA is more thoroughly analyzed), or that they survived into European times. The poignant story of *Traversia lyalli* being wiped out by the lighthouse keeper's cat is deflated: forest clearance and museum collectors were equally responsible. And New Zealand is now an even more horrifying case study of human-caused extinction. Two hundred Polynesian settlers led to the extinction of moa in less than a century. ''On the Coromandel Peninsula, the moa population may have survived for less than a decade after human settlement, and perhaps for as few as 5 years,'' they note (p. 546). The slow replacement rate of moa made them a nonrenewable resource for humans. ''Moa were mined, not cropped'' (p. 546).

This research also has conservation implications for extant species. Endangered species like the Blue Duck (*Hymenolaimus malacorhynchos*) are routinely assumed to be narrowly adapted to their marginal, predator-free habitats. Fossil evidence routinely reveals that New Zealand birds were much less fussy before mammals arrived; Blue Ducks were found not only in the fast-flowing streams they now inhabit, but in the forest far from running water. Anyone involved in species

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translocation and captive breeding needs to read and absorb the ecological information provided by fossil evidence.

The book has a few flaws. Sadly, for a work that is of interest to amateur as well as professional ornithologists, the reconstructions of extinct forms are sparse and amateurish. Some New Zealand birds, like *Circus eylesi* or *Capellirallus karamu*, have never to my knowledge been reconstructed. An artist like Chris Gaskin, who has produced arguably the most lifelike illustrations of New Zealand extinct birds, would have been an ideal complement to Worthy and Holdaway's accuracy. Color plates would not have raised this book's substantial price too much. This seems like a wasted opportunity, especially since this work renders the current popular works on prehistoric New Zealand inaccurate or even misleading.

A substantial amount of space is spent on reconstructions of body weight, of eagles and moa, using methods that extrapolate from a single limb bone measurement, either length, diameter, or shaft circumference. Unfortunately, these models are only as good as the dataset used to construct them. In each case, the previously published allometric equations used by Worthy and Holdaway lump together birds of every shape and size, almost all substantially smaller than the species whose weight is being estimated. The allometry of body size in different groups seems to be different, as more recent models that Worthy and Holdaway did not use seem to show. Extrapolating the body size of giant birds from the body proportions of living ones is also fraught with difficulty. A model constructed only from the bone measurements of living large birds such as ratites would be a good start, but no such model exists. As a result we really do not know how big moa were, despite the pages of figures Worthy and Holdaway produce.

These criticisms scarcely detract from the value of this monumental work, however. It is indispensable not only to avian paleontologists, but to anyone writing about the extant fauna of New Zealand. Notably, it contains what is now the only authoritative species list of New Zealand birds, rendering the Ornithological Society of New Zealand checklist out of date. The list includes several undescribed species, mostly from the Chatham Islands, new combinations, synonymies (the two species of *Pachyplicas* are tersely lumped) and elevations, particularly of subspecies inhabiting remote island groups. Any biogeographical or macroecological study using New Zealand avian data needs to be re-examined in light of this.

In many ways this is also an exemplary analysis of a remarkable fossil record stretching back 30 000 years, perhaps the best record of its type in the world. Remarkable fossil middens left by owls and harriers allow dateable, high-resolution tracking of extinction dates and faunal replacement. Huge bone collections allow statistical analysis to reveal guild associations. This book marks the maturing of subfossil paleontology in New Zealand, and the transition between taxonomic and ecological approaches to its fossil record. It is a necessary working tool for anyone who studies the zoology of New Zealand, past or present.—MICHAEL R. DICKISON, Biology Department, Duke University, Durham, NC 27708. E-mail: mike.dickison@duke.edu

The Adélie Penguin: Bellwether of Climate Change—David G. Ainley. 2002. Columbia University Press, New York. 310 pp., 52 text figures, 23 illustrations, 16 plates, 46 tables. ISBN 0-231-12306-X. $59.50 (cloth).

In *The Adélie Penguin, Bellwether of Climate Change*, David G. Ainley summarizes his research of nearly 40 years and brings us up to date on subjects of his previous book, with R. L. LeResche and W. J. L. Sladen, *Breeding Biology of the Adélie Penguin* (University of California Press, 1983). In his final sentence of that book, Ainley pleaded ''*All* we need now is some additional long-term research. . . .'' That has now been achieved. Over the last decade, Ainley has maintained a continuous program at Cape Crozier, the major study area of his original research. Furthermore, he has included studies of the nearby colonies of Cape Royds, Cape Bird, and Beaufort Island. This additional information has made it possible to address broader questions, as reflected in the title of the book and in Chapters 2 (Marine Ecology), 3 (Breeding Populations: Size and Distribution), and 9 (The Bellwether of Climate Change). These chapters alone make the book worth reading. Chapters 5 (The Occupation Period) and 6 (The Reoccupation Period) are nearly the same as in the previous volume, with recent material added. Chapter 8 (Demography) is a reprint of the same chapter from the earlier book, supplemented with new information on space, mating, food limitation, and the risk of predation.

The Introduction is an enjoyable and easy read about what attracts people like the author to Antarctica. We learn about such illustrious names as Roald Amundsen, the famous nineteenth-century Norwegian polar explorer and Ainley's hero; also, that James Clark Ross may be Ainley's relative. There are numerous and lengthy quotations of historic interest. Ainley briefly summarizes the basics of defining a penguin, some of the extensive increase in information about Adélie Penguins (*Pygoscelis adeliae*) over the past few decades, and the Adélie Penguin's place in this era of acute awareness of global climate change. At present, the climate is warming, and how this change influences the abundance and distribution of Adélie Penguins is a central theme of the book. Lastly, Ainley states his goals for the book: to incorporate portions of the previous book, which is now out of print, and more importantly, to summarize the large amount of information that is now available on the Adélie Penguin, which he describes as ''one of the best-studied avian species.'' These goals are achieved.

The environment of the Adélie Penguin is clearly described in Chapter 2, ''Marine Ecology.'' The easy reading of Chapter 1 is over. From here forward, the reader encounters detailed, fact-filled science writing that will be a challenge to absorb by even the most serious student of avian biology. Many subjects are covered; an indication is the breadth of abbreviations ranging from APF (Antarctic Polar Front) to (ADL) aerobic diving limit. Such a comprehensive analysis results not only in the longest chapter of the book, but

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superficial treatment of some topics. Some sea-ice experts may question Ainley's general picture of sea-ice distribution in the Ross Sea, and some physiologists might wonder about the basic responses to breathholding and effects of pressure at depth. This chapter should inspire the reader to learn more about some of these topics. It is an excellent review of the marine environment and the habitat of the Adélie Penguin.

In Chapter 3, ''Breeding Populations,'' Ainley comments on the misused term ''rookery'' and explains why he prefers ''colony.'' He explains what a colony means to him and then gives a complete and useful list of all the Adélie Penguin colonies around the Antarctic coast and offshore islands. The 161 colonies comprise nearly 2.5 million pairs. Despite the common image of this species in vast breeding collections, however, most are small, with nearly 12% consisting of fewer than 100 pairs. Unsettling is the fact that of the six with over 100 000 pairs, several have declined significantly since the 1980s, including the largest of all, at Cape Adare. A substantial decline also has occurred at the Ross Island colonies that are the central focus of this book, and are the study areas for Ainley's continuing research. Unfortunately, the book was published before the most recent environmental events of megabergs released from the Ross Ice Shelf, and their negative effects on these Ross Island colonies.

Chapter 4, ''The Annual Cycle,'' opens with comparisons to the nesting habits of other seabirds, and moves on to much detail about the timing of breeding, arrival dates, shared responsibilities, and related topics. Much of the data are from studies before 1975, and one wonders if during the past two decades of global warming there have been changes in some of these patterns. Completing the description of the annual cycle is a detailed discussion of the molt and some of the risks of this critical process, when breeding adults may suffer their greatest mortality.

Chapters 5 and 6, ''Occupation Period'' and ''Reoccupation Period,'' cover age at first breeding, the spacing of nests, and many other details collected from 1965 to 1975. Chapter 7, ''Predation'' focuses on three species of potential or actual predators. The uncertainties of whether killer whales (*Orcinus orca*) actually prey on penguins are discussed. Leopard seals (*Hydrurga leptonyx*) and South Polar Skuas (*Catharacta maccormicki*) are the primary predators of penguins. It may be a surprise to some that penguins represent a small part of the diet in these two predators. The exceptions may be specialist individuals that establish temporary residency around the colonies. However, Ainley believes that leopard seals may take a substantial number of Adélies during the interval between reproductive periods. He thinks this predation is responsible for the low survival rate of adults. This conclusion is sure to be controversial.

Although the data presented in Chapter 8, ''Demography,'' are not current, it is the most important chapter extracted from the previous book because of the discussion of banding mortality. Banding continues to be used widely to permanently mark penguins, but to my knowledge the only detailed assessment of its effects are those in this and the previous book. Since there has been little progress on the modification of bands applied to penguins, these data are still timely. In brief, there is a detailed discussion of the calculations of mortality in banded and unbanded birds at different ages. The results show that mortality of birds in the first year after banding is 28% higher than in unbanded birds. This result highlights the problem of application of any long-term device to a wild animal, and the potential effects on the resulting data. There are other important discussions in this chapter on the declining population at Cape Crozier during the 1960s to 1980s, and comparison of trends with other penguin species.

The final chapter, ''The Bellwether of Climate Change,'' is the most current and important in the book. There is an excellent summary of figures and graphs published by many authors depicting changes in temperature, sea-ice distribution, and population trends. The Ross Island colonies grew rapidly from 1981 through 1987, followed by a sharp decrease until 1990. These trends are first compared to the trends in the Antarctic Peninsula, and then with patterns of colony establishment since the last glacial maximum in an informative review of the prehistoric record, from the oldest colony established in the Ross Sea over 7700 years ago to the most recent colony of Cape Barne (now extinct) 375 years ago. In Ainley's ''Final Thoughts,'' he concludes that global warming is in progress, and the Ross Ice Shelf, which is in rapid retreat, will affect ocean currents and Adélie nesting distribution. The Adélie Penguin is sensitive to these climatic changes and a valuable biological indicator of their effects.

There are few errors in the book, ranging from semantic quibbles to occasionally ambiguous summaries of other studies. Ainley begins and ends the book by describing Antarctica as ''huge,'' and includes it in descriptions throughout the book. Such frequent use of the word, even for Antarctica, seems to trivialize it. Nevertheless, this is an excellent book on the Adélie Penguin, which I would recommend to anyone interested in megafauna. Even for the mildly interested, this book will hold their attention while reading Chapters 1, 2, and 9. For the specialist in penguin biology, it is required reading.—GERALD L. KOOYMAN, Scholander Hall, Scripps Institution of Oceanography, La Jolla, CA 92093-0204. E-mail: gkooyman@ucsd.edu

North American Owls: Biology and Natural History, Second Edition.—Paul A. Johnsgard. 2002. Smithsonian Institution Press, Washington, DC. xiii + 298 pp., 42 color plates, 12 tables, 76 text figures, 3 appendices. ISBN 1-56098-939-4. $49.95 (cloth).

When evaluating a revision of a book, two questions come immediately to mind: what prompted the new work, and how has it changed from the previous one? In the preface to the second edition of *North American Owls*, Johnsgard states that in late 1999, some 11 years after the first edition appeared, the publisher asked him to write a new edition. At first, he declined. After all, he reasoned, that same year the owl volume from *Handbook of the Birds of the World* (Lynx Edicions, Barcelona) appeared, as did König et al.'s *A Guide to the Owls of the World* (Yale University Press, New Haven, Connecticut). Moreover, the *Birds of North America* series was nearing completion, and the spe-

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cies accounts for the 19 owls in that work would appear before a second edition of *North American Owls* would become available. But the idea kept gnawing at him, and Johnsgard decided that if he included the dozen species of owls that inhabit Mexico north of the Isthmus of Tehuantepec, he would have something unique: an owl book devoted solely to the North American continent. Thus, he began work on the new edition, which, impressively, appeared less than three years later.

Despite the addition of 12 species, the new book contains only three more pages than the first edition. This was accomplished by eliminating detailed plumage descriptions for each species, and by decreasing the text's font size and adopting a double-column format throughout the book. The number of color plates has increased from 33 to 42, and the number of references from 470 to around 900. Curiously, Johnsgard added many new references without citing them in the text, or, as it turns out, discussing the new material.

The introductory chapters cover the same topics as in the first edition: evolution and classification, ecology and distribution, morphology and physiology, behavior, reproductive biology, and owls in myth and legend. Most of the material is unchanged from the first edition. For example, I found fewer than 20 new references in the text of the introductory chapters, despite there being hundreds of papers published on these topics since the first edition appeared. Of the 12 tables in the new edition, nine are virtually identical to the originals, and three include three to seven rows of new information. Similarly, 18 of the 21 figures in the introductory chapters are unchanged from the first edition, and three are new.

New color photographs have been added for nine of the Neotropical species, and two photos mislabeled in the first edition have been corrected. Some of the photos are excellent (e.g., plates 20, 29, 31, 35, and 41), but more than half are of captive birds, including several common species. The Northern Pygmy-Owl (*Glaucidium gnoma*) in plate 23 looks like a taxidermy mount, although the photographer assures me the bird was alive. Why this photo was used, when a lovely wild bird is depicted in plate 20, is beyond me. A similar question could be posed for the author's photos of what appear to be a captive Great Horned Owl (*Bubo virginianus*), Great Gray Owl (*Strix nebulosa*), Long-eared Owl (*Asio otus*), and Short-eared Owl (*Asio flammeus*); surely, many excellent photos of wild individuals of these species are available.

Although little is new in the introductory chapters, by and large the treatment is sound, and the information provides a useful summary of owl biology. The index is especially handy because it enables one to find each place in the text that a particular species is mentioned. An error carried over from the first edition is the statement that owls have a tapetum, a layer of light-reflecting cells on the retina. For the record, the only birds known to have a tapetum are nightjars. The reddish eyeshine in owls that Johnsgard alludes to is not from a tapetum, but rather from light reflecting off blood on the retinal surface (the same ''red-eye'' effect seen in photos of humans taken with a flash). This is explained in Graham Martin's book *Birds by Night* (1990, Poyser, London). Johnsgard cites two of Martin's earlier papers but not the book, and he confuses Graham Martin (an expert on avian vision) with Dennis Martin (an owl expert who does not study vision) when discussing vision on pages 24 and 25, and when citing one of Graham's papers in the references.

What about the species accounts themselves? Of course, information on the strictly Neotropical species is new to the second edition. The treatments for these species are accurate, although Johnsgard relies heavily on several general texts rather than on journal papers. Those who are unfamiliar with these little-known taxa will find the accounts interesting. I enjoyed reading about the breeding behavior of captive Striped Owls (*Pseudoscops clamator*) gleaned from two papers published in *Avicultural Magazine.* A minor quibble is that Johnsgard does not mention that Mottled Owls (*Ciccaba virgata*) and Stygian Owls (*Asio stygius*) have wandered north to Texas in recent years, a fact that seldom is discussed in field guides.

Much of the information for the species that occur north of Mexico is the same in both editions. This is unfortunate given the many valuable papers on owls that have appeared since Johnsgard's first edition. In fairness, Johnsgard makes good use of the species accounts from *Birds of North America,* but he tends to do so without citing the original sources, thus repeatedly crediting BNA authors for work published by others. Why he chose to list new citations in the second edition without discussing the information in the text is a mystery to me. When I first saw the book, I turned to the references and was pleased to see so many recent titles. But then I read the disclaimer that among the references are ''many post-1988 citations . . . not specifically cited in the text but that seem important enough to be included, since no recent published bibliography of North American owls exists'' (p. 267). Yet, the list of owl citations in *Handbook of the Birds of the World* is more complete than that in *North American Owls,* and the *Handbook* discusses much of that information in its family texts and species accounts.

One gets the impression that Johnsgard simply didn't have the time to *read* the new citations and incorporate the information into his text. In some cases, this practice led to mistakes. For example, in the Long-eared Owl account one reads that ''. . . second broods in a single season have been reported several times in Britain . . . but apparently not yet in North America'' (p. 207). In truth, double brooding has been documented in this species in North America (Johnsgard cites the paper) but has not been conclusively proven in the Old World. Also in the Long-eared Owl account, Johnsgard states that ''breeding density . . . is fairly low'' and that the species is ''usually well dispersed and territorial during the breeding season'' (p. 205). Had he digested two of the Long-eared Owl papers listed in the references, plus the information in *Handbook of the Birds of the World,* Johnsgard would have noted that Long-eared Owls sometimes nest in high densities and as close as 10 m from one another. Not cited is Robert Murphy's note on ingestion of nestlings' feces by a female Long-eared Owl (1992, Wilson Bulletin 104:192–193), which probably explains

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the statement that "... nest hygiene may be lacking" in this species (p. 42). Dubious statements include the notion that some Long-eared Owls remain on territories year round and renew their pair bonds annually (p. 207), and that males may incubate for short periods (p. 209). None of these traits has been documented in the wild from marked birds.

Perhaps I'm being unfair in my disappointment in the species accounts based on a taxon that I know especially well. How about a species I don't know so well, the Spotted Owl (*Strix occidentalis*)? Surely, it has been the best-studied owl in North America in the last 20 years. Yet, in the six sections of the species account that focus on biology and ecology, only nine papers are new to the second edition. By contrast, the *Handbook of the Birds of the World*, published three years before Johnsgard's second edition, includes 95 citations on Spotted Owls that were published since 1989. Indeed, omissions of significant new material occur in just about every other species account as well.

On balance, the new *North American Owls* is informative, albeit not without errors and omissions. You can learn a lot from it, but you won't learn much more than you would have had you consulted the first edition, because the ratio of new material to old is disconcertingly small. Consequently, I cannot recommend that someone who owns the earlier book buy the new one unless they feel that the material on the Mexican species is worth the cost of the book. If, however, your collection of owl books does not include Johnsgard's first edition or the lavish and much more expensive fifth volume of *Handbook of the Birds of the World*, Johnsgard's new book will provide an adequate introduction to the biology of North American owls at a reasonable price.—JEFFREY S. MARKS, Montana Cooperative Wildlife Research Unit, University of Montana, Missoula, MT 59812. E-mail: jmarks@selway.umt.edu

BRIEFLY NOTED
Avian Masala—A Mixture of Bird Guides from the Indian Subcontinent

A Photographic Guide to the Birds of India and the Indian Subcontinent, Including Pakistan, Nepal, Bhutan, Bangladesh, Sri Lanka, and the Maldives.—Bikram Grewal, Bill Harvey, and Otto Pfister. 2002. Princeton University Press, Princeton, NJ. 512 pp., 1047 color photographs, 807 maps. ISBN 0-691-11496-X $29.95 (paper).

I am not much enamored of photographic field guides. True, they provide realistic images of the subjects, but they are less successful at highlighting subtle differences and often fail to portray a sufficient range of postures and phenotypic variation. This recent entry into the field guide fray, from Princeton University Press's burgeoning field guide empire, fails to convert me. Don't take me wrong, it is an excellent guide overall ... for a photographic guide. The book presents photographs of 797 (over half) of the species of birds that occur within the broad and complex region covered by the book. Many of the photos are superb, and it is truly impressive that the authors actually obtained images of all 797 species, and nine additional subspecies, some of which are very difficult to photograph let alone photograph well. Nevertheless, examples of my disillusionment with this type of guide include the mottled-brown-on-mottled-brown photo of the Jungle Bush Quail (*Perdicula asiatica*, p. 49), which illustrates little beyond the species' crypticity. Photographs of the Snow Partridge (*Lerwa lerwa*, p. 44), Chestnut-winged Cuckoo (*Clamator coromandus*, p. 100), Nilgiri Wood Pigeon (*Colomba elphinstonii*, p. 130), Common Snipe (*Gallinago gallinago*, p. 151), Grey-headed Lapwing (*Vanellus cinereus*, p. 175), Rusty-flanked Treecreeper (*Certhia nipalensis*, p. 318), and Mountain Chiffchaff (*Phylloscopus sindianus*, p. 352) fail to show much of diagnostic value. Some truly poor images include a very blurred Falcated Duck (*Anas falcata*, p. 64), a presumably nonbreeding-plumaged Pheasant-tailed Jacana (*Hydrophasianus chirurgus*, p. 165), which is not labeled, and an extremely blurry Gould's Shortwing (*Brachypteryx stellata*, p. 279). The introductory sections include information on ornithological history, regional geography and climate, habitats, bird movements, avian breeding ecology, and conservation issues. Accompanying each photograph is a colored range map, symbols indicating abundance and conservation status, and brief information on description, voice, habits, and distribution. Appendices include a glossary, fairly extensive bibliography, useful addresses in the region, and a species list. While conventional photography's uses in field guides are limited, a field guide that creatively integrates digitally enhanced photographs and high-quality drawings could be impressive. The bottom line is, next time I go to the Indian subcontinent, I'll more likely bring Grimmett et al.'s (1999) *Birds of India* (see below) rather than this book.

Birds of India, Pakistan, Nepal, Bangladesh, Bhutan, Sri Lanka, and the Maldives.—Richard Grimmett, Carol Inskipp, and Tim Inskipp. 1999. Princeton University Press, Princeton, NJ. 384 pp., 153 color plates, 1200+ color range maps. ISBN 0-691-04910-6. $29.95 (paper).

Birds of Nepal.—Richard Grimmett, Carol Inskipp, and Tim Inskipp. 2000. Princeton University Press, Princeton, NJ. 288 pp., 110 color plates. ISBN 0-691-07048-2. $29.95 (paper).

These are two more installments of the Princeton Field Guide series, otherwise known as the "Field Guide Lite" series. Like other books in the series, they are condensed versions of more in-depth, authoritative field guides; in this case the 888-page "A Guide to the Birds of India, Pakistan, Nepal, Bangladesh, Bhutan, Sri Lanka, and the Maldives" (1998, Princeton University Press) by the same authors. Although condensed, these two books achieve the high standards one expects from Princeton University Press field guides. All species are illustrated in well-executed color plates with sufficient attention to detail to ensure that diagnostic characteristics are clearly visible and the various pertinent morphs (e.g., sex, subspecies, age) are represented. The larger book (21.5 × 13.5 × 2.2 cm) has range maps for all 1300 species, although they often are not on the same page as the illustration or description, an awkward but space-saving necessity. Unfortunately, the Nepal book lacks range maps for

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the 760 species covered; this detracts some from its usefulness, but does make for a smaller (21.5 × 13.5 × 1.6 cm), more travel-friendly book. Captions are brief, but contain information on status, descriptions, size, and habitat. Bird names are provided in English only. Introductory material in each book covers habitats, conservation, migration, and climate; the books also contain lists of bird-oriented organizations, short bibliographies, and glossaries. Tables highlight diagnostic characteristics for hard-to-distinguish groups such as larks and *Acrocephalus* warblers. Useful to the beginning birder, *Birds of Nepal* has a short section that describes each bird family (and sometimes tribe). These two books are excellent for casual bird enthusiasts and serious birders making short visits to the regions covered; however, the more serious bird student would be better served by the in-depth information available in the larger and more expensive 1998 volume.

A Field Guide to the Birds of Sri Lanka.—John Harrison. 1999. Oxford University Press, Oxford, UK. 234 pp., 48 color plates, 318 color range maps, 2 black-and-white maps. ISBN 0-19-854960-1 $65.00 (paper), ISBN 0-19-854960-X $120.50 (cloth).

Birders in Sri Lanka will much appreciate finally having a modern, comprehensive field guide to the birds of this exotic island, which is half the size of Alabama. Any island that has wild Peacocks (India Peafowl [*Pavo cristatus*]), Malabar Pied Hornbills (*Anthracoceros coronatus*), and Asian Paradise Flycatchers (*Terpsiphone paradisi*) is worth visiting. This book provides well-drawn color illustrations of all 426 species officially recognized as occurring in Sri Lanka and Adams Bridge, the series of islands extending north of the island. Twenty-three species are endemic to this tropical island, including Green-billed Coucal (*Centropus chlororhynchos*), Sri Lanka Whistling Thrush (*Myiophonus blighi*), Chestnut-backed Owlet (*Glaucidium castanonotum*), and Yellow-fronted Barbet (*Megalaima flavifrons*), and all are illustrated. The color drawings, by Tim Worfolk, often show different views of the birds and include sex, season, and age-specific plumages when appropriate. The color range maps, which are on the page facing each plate, are small and lack much detail, but do provide a general sense of each species' range. Descriptions of each species are in a separate section and are more detailed than the brief text accompanying each drawing. They include description, voice, status and distribution within Sri Lanka, and worldwide range. Bird names are provided in English only. Introductory material is disappointingly brief, providing very scant details on Sri Lankan geography and ornithological history. The book provides a useful list of 20 locations recommended for wildlife viewing and some bird species of interest at each. The map showing altitude and national parks is so rudimentary that I am surprised it was printed twice. It would have been much more useful if it showed habitats, major landmarks, and perhaps locations of birding hotspots discussed in the text. All in all, however, this book will be extremely valuable in the field and may also be a useful reference because it concerns an area otherwise uncovered in a single modern field guide.—WILLIAM I. BOARMAN, Western Ecological Research Center, U.S. Geological Survey, San Diego, CA 92123. E-mail: william_boarman@usgs.gov.

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