

cover the full range of these topics, which are already available in the major handbooks covering the region, but presents an accurate and up-to-date overview. The authors adopt a "modern" version of the Biological Species Concept, recognizing some new species splits, as allospecies belonging to super-species groupings. All these sections are both packed with information and highly readable.

The extraordinarily detailed species accounts form the bulk of the book. Each is 20–30 pages in length, and starts with a brief introduction, giving a summary of the species and its systematics. The heading of field identification includes a section on potential confusion species, followed by a detailed "Field characters and plumages" and concluding with a section on major pitfalls. All this is condensed into a box with an identification summary. Voice is then covered, with sections on "Practical use" and main repertoire, and copious sonograms. Identification in hand included a discussion on similar species and a figure showing average measurements and ranges. Subspecies taxonomy includes extensive comments on geographic variation and its associated pitfalls. The section on "Moult, Age and Sex" gives detailed descriptions of each of these [using European terminology], with a box giving a key to aging and sexing

the species, and with an excellent and innovative plate showing the timing and percentages of wing feather replacement at each moult. Finally each account has headings for general biology and ecology, and population size and trends, and concludes with 2–3 pages of biometrical data.

Supplementing this formidable body of text are plates: a figure giving lively vignettes showing the "jizz and movement" of the species; an excellent plate showing plumages of both sexes and juveniles, and different races as appropriate; 3–4 pages of superb photographs — usually 15 to 20 images — and full-page maps showing both breeding and winter ranges. In all, a major *tour de force*.

My only regret is that this is a volume that necessarily will have limited value for a North American user. But for persons working in this field, or for those planning to spend time in Europe, this will be a valuable addition to the already wonderful range of references available to them. Now if only someone would attack some of our continent's problem species with equal thoroughness and vigour . . . !

CLIVE E. GOODWIN

1 Queen Street, Suite 401, Cobourg, Ontario K9A 1M8  
Canada

## Bats of Papua New Guinea

By Frank J. Bonaccorso. 1998. Conservation International Tropical Field Guide Series 2, Washington, DC (distributed by University of Chicago Press, Chicago). 492 pp., illus. U.S. \$40.

This book is the second in a series of new tropical wildlife field guides published by Conservation International. It is a pleasant surprise that the organisms of study are not birds or large mammals, the usual subjects of field guides, but bats! These unique animals are the only mammals that have evolved true powered flight, and a host of associated ecological, behavioural, and anatomical novelties. They are not only interesting from a scientific point of view but also in terms of the conservation of biological diversity and the environment. For example, bats are important components of tropical forest regeneration as seed dispersers and flower pollinators. This is most evident in a developing country like Papua New Guinea, the area of focus for this field guide, which has been able to retain most of its natural and cultural wealth in spite of mounting economic pressure to unsustainably exploit it. This book aims to promote the development of ecotourism and ultimately the preservation of nature.

There are 91 species of bats documented from Papua New Guinea, the country that occupies the eastern half of the island of New Guinea, off the

north coast of Australia. This represents over one-third of the 242 mammal species known from the country, making it a very important group from the standpoint of mammal biodiversity. The field guide begins with a general introduction to the bats of Papua New Guinea followed by a chapter outlining the format of the book. There is a glossary for biological terms encountered in the text, and an identification key to species. The bulk of the guide is devoted to the detailed species accounts for all of the bats found in the country. The accounts are separated into two chapters representing the two suborders of bats (Chiroptera). Within the Megachiroptera suborder there is only one family of Old World fruit bats or flying foxes (Pteropodidae), which is further subdivided into three subfamilies. The last chapter is on the Microchiroptera and it is split into eight sections representing the different families, or subfamilies for vespertilionid bats, found in Papua New Guinea. There is an useful appendix of latitudes and longitudes for the 713 localities mentioned in the book, which is followed by a very thorough bibliography for bats found in this region. The field guide ends with 24 beautifully illustrated colour plates of 58 bat species, 16 head and 42 full-body views, by Fiona Reid, and a checklist of the 91 species to keep track of your own personal life list.



Each species account begins at the top of a new page, which adds to the thickness of the book but speeds-up the locating of accounts, with the scientific and common name. If there is a colour illustration, the plate and page number is referenced. Detailed information is provided in four descriptive sections on species identification, geographic range, natural history, and conservation status. One inconvenient drawback is that the distribution maps are grouped at the beginning of each family or subfamily without any page reference in the species account, or vice versa. The last three sections list the localities where the bats have been found, specimens examined by the author, and typical external measurements taken by field biologists. Where available, measurements are separated by sex and age, which is useful information for understanding variation, but unfortunately the average value is not presented as part of the range of measurements.

One noticeable error in publication is the appearance of a chart for frequency of bats at different elevations (Figure 1.6) instead of a chart for different weights. Notwithstanding the minor aforementioned criticisms, I would highly recommend this field guide to any tourist or biologist heading to Papua New Guinea with an interest in bats. This is one group of animals that has an aura of mystery and intrigue, but with this informative and well-illustrated field guide in hand, it will open up a whole new world of exploration to which most people would never be exposed. I look forward to more books in this series on tropical nature.

BURTON K. LIM

Centre for Biodiversity and Conservation Biology, Royal Ontario Museum, 100 Queen's Park, Toronto, Ontario, M5S 2C6 Canada

### A Field Guide to the Birds of Peru

By J. Clements and N. Shany. 2001. The Ibis Publishing Company, Temecula, California. xvii + 283 pp., illus. U.S.\$60.

Following closely on the heels of *Birds of Ecuador Volume 1* (Ridgely and Greenfield 2001) I automatically viewed this book in comparison to this other guide. The immediate reaction is that *Birds of Peru* is a true field guide, not like the oversized Ecuador version. True, at 23 cm × 15 cm × 3 cm [9" × 6" × 1.25"] it will not fit easily in a typical pocket but, it will go in your pack. Even more remarkably, the authors have crammed all the known birds of Peru into this one manageable volume. Such a huge number of species has never before been included in a single book. We also have to remember that skulking look-alikes or difficult-to-see high canopy dwellers form a large proportion of the birds covered. To put this in a Canadian perspective it is like observing a few hundred species of Yellow Rail type birds or sorting out finches at the top of 200-ft high trees (the average Canadian White Spruce is 80 ft).

The authors have tried to include all the birds of Peru, including the most recent additions and hypothetical species. Indeed, one species of hummingbird may well be new to science (or a hybrid?). The authors have included species that have recently been split, such as Caqueta Seedeater (formerly lumped with Variable Seedeater) and Nazca Booby (formerly with Masked Booby) or lumped like the Variable Hawk. Yet they have retained the old Cuvier's Toucan *Ramphastos cuvieri* instead of White-throated Toucan *Ramphastos tucanus*.

To keep the book size under control the text is very brief. Generally only a single sentence giving

key features is followed by a line on distribution in Peru. World distribution is covered in a single phrase. Where there are difficult identification problems there is additional text; with some of the euphonias and terns for example. There are three maps; one on life zones (in colour), one on protected areas, and a general map. The first two are useful, but you would need a better road map to find the places named in the text. The authors often name specific localities for special birds, but the reader is on his own to find the exact whereabouts (e.g., the Saffron Siskin is at Tumbes). The authors also use the terms parano, puna, varzea, and terra firme throughout. I could not find an explanation of the meaning of these important ecological divisions.

This guide is, like the Ecuadorian one, another important step in bird literature from a neglected corner of the world. Peru is home to 1800 species of birds, an incredible diversity. So this guide is most welcome. The authors were faced with covering a huge number of species while keeping the book to a manageable size. In this they have been most successful. It did, however, mean a number of compromises. The text gives only the key pieces of information on identifying marks, habitat and range. The only biometric given for virtually all the birds is length. There is no attempt to cover song but the catalogue number of an appropriate recording from the American Birding Association's sales catalogue is given (this means you would have to buy 30 CDs or tapes to cover all the birds).

My copy has a photocopy insert listing the over 80 errors in the book. None of these errors are major but they are irritating. For example, the text omits all the references for the plate showing birds of prey in





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