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Ecology and Evolution of Darwin's Finches

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Reviews



EDITED BY REBECCA HOLBERTON

The following critiques express the opinions of the individual evaluators regarding the strengths, weaknesses, and value of the books they review. As such, the appraisals are subjective assessments and do not necessarily reflect the opinions of the editors or any official policy of the American Ornithologists' Union.

The Auk 118(2):564–565, 2001

Stopover Ecology of Nearctic–Neotropical Landbird Migrants: Habitat Relations and Conservation Implications. Studies in Avian Biology, no. 20.— Edited by Frank R. Moore. 2000. Cooper Ornithological Society, c/o Western Foundation of Vertebrate Ornithology, 496 Calle San Pablo, Camarillo, California. iv + 133 pp. ISBN 1-891276-12-3. Paper, $18.00.—Conserving critical habitat for migratory birds is especially complex and challenging. The problems associated with habitat loss and fragmentation on the breeding and wintering grounds are apparent and have received considerable attention from researchers and managers. The stopover habitat ecology of migratory landbirds in the New World, however, is far from clear and fundamental questions must be resolved if we are to understand and conserve this important group of bird species.

In this edited volume of *Studies in Avian Biology,* Frank Moore and his colleagues have done an excellent job of characterizing the scope and complexity of migrant stopover ecology. This volume consists of a short introduction by Moore followed by nine papers that address an appropriately diverse set of topics on biological and political/management issues. Previously published results are summarized in several papers and new findings are also reported. I found the volume to be especially valuable in the articulate presentation of pressing questions that range from individual energetics and foraging behavior to movements of birds at the landscape and regional scale.

In the first paper, Simons, Pearson, and Moore present an interesting set of techniques and modeling protocols for spatial analysis of stopover habitat associations and movements of migrating birds. They present individual-based models depicting the behavior of migrants as they make decisions about where to land and replenish after undergoing a trans-Gulf of Mexico flight. The currencies for those decisions are the individual's condition and the intrinsic quality of a habitat patch or landscape. Those analytical techniques appear promising for developing further explanatory and predictive (simulation) models. A later paper by Moore and Aborn on the mechanisms of *en route* habitat selection is informative and complements the chapter by Simons et al. by summarizing the proximate mechanisms that may underlie an individual's decision to use a given habitat patch.

In another paper, Petit presents a valuable review of what is known about habitat use by passage migrants. Petit poses several basic questions about habitat selection and the types of habitats that birds appear to favor or avoid. Those patterns vary considerably among and within species according to geographic location and season (i.e. spring vs. autumn). Nonetheless, Petit offers the tentative conclusion that management strategies designed for birds during the breeding season will also be useful for *en route* migrants (with special provision needed for critical habitats near geographic barriers such as large bodies of water and mountains). A later chapter by Parrish on foraging plasticity (especially pertaining to switches by ''insectivores'' to frugivory) of *en route* migrants is also relevant to the issue of how breeding-season habitat can accommodate migrants. The management implications of this question are far reaching and merit critical analysis using field data and simulations.

Other papers include detailed analyses of age-dependent stopover behavior (Woodrey), a case history of stopover habitat loss along the northern Gulf Coast (Barrow et al.), and analyses of migrant use of riparian habitats in the Middle Rio Grand Valley of New Mexico (Finch and Yong). The latter paper complements the majority of those in this volume that focused on stopover ecology in eastern North America. Mabey and Watts offer a unique account of how local land-use policy can affect prospects for conserving valuable stopover habitat in Virginia's lower Delmarva Peninsula. The authors illustrate how important the cooperation of private landowners is to the conservation of stopover habitat. In the final paper, Hutto offers an insightful, sometimes personal, overview of migrant ecology and conservation. To those reading the entire volume, I recommend reading this

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paper first as a nice introduction to the major issues and concepts presented throughout.

The volume does not cover all issues in detail and it was not intended to be comprehensive in scope. Urban or suburban areas, exotic trees and shrubs, and new tools such as Doppler radar in the study of migrant ecology, are important topics that were not addressed in detail. Moreover, a critical analysis of the contributions of lost stopover habitat to long-term trends in abundance would have been informative. Many migratory species are decreasing over much of their range whereas others are not, and some are even increasing. Differences in the migratory behavior and stopover ecology of species that are generally increasing versus those that are decreasing would clarify the conservation importance of stopover habitat and demographic events during migration.

Notwithstanding, I recommend this volume enthusiastically to those interested in avian conservation, behavior, and life histories. The volume is an excellent introduction to the ecology of migrants, the price is right, and the compendium of references (through the mid-1990s) is useful.—JEFFREY D. BRAWN, *Illinois Natural History Survey and Department of Natural Resources and Environmental Sciences, University of Illinois, Champaign, Illinois 61820, USA. j-brawn@uiuc.edu*

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Ecology and Evolution of Darwin's Finches.—Peter R. Grant. 1999. Princeton University Press, Princeton, New Jersey. xx + 492 pp., ISBN 0-691-04866-5, Paper, $22.95; ISBN 0-691-04865-7, Cloth $69.50.—In 1986, Peter Grant brought together the results of the massive research effort he, his research collaborator and spouse, Rosemary, and his students had undertaken over the previous decade on the evolutionary ecology of Darwin's Finches. This new book is a reprint of the 1986 publication (the 16 chapters of the original are unchanged), with a new preface and afterword by the author, and a long list of new references. The Grants and their colleagues have been busy in the 13 years since the publication of the original edition. The 142 new references include 45 in which Peter or Rosemary Grant or both are a co-author!

The quality and quantity of the Grants' work with Darwin's Finches is such that the 1986 book was immediately recognized as a more than worthy successor to David Lack's *Darwin's Finches* (1947). Grant concisely explained the ecology and evolution of that famous group of island birds, on the basis of the many impressive data sets collected by the Grants and their colleagues. Grant has shown how one can study avian evolution in the field, documenting natural selection and the evolutionary response to it. Indeed, his work demonstrating generation-to-generation evolutionary change in bill characters in the medium Ground Finches (*Geospiza fortis*), has made its way into several university-level introductory biology textbooks.

Grant's general premise was that the Galapagos environment is notably harsh and fluctuating and that food is frequently limiting. That resulted in rapid evolution of traits, such as bill characters, that are related to feeding. He put forth likely scenarios for past speciation in that group of birds. He also highlighted the current situation involving interpopulational morphological differences within species, the dynamism of morphological evolution across generations, and provided fascinating instances of hybridization between sympatric species. In reviewing his original text, I can do no better than to refer the reader to the review of the first edition by McGillivray that appeared in *The Auk* in 1988.

All new information in the recent edition is contained in the 24 page afterword. This is a chapter-by-chapter update. Some chapters are essentially unchanged, with a single paragraph noting only a few additional findings. Other chapters include multipage summaries of relevant work published over the past 13 years. Those summaries are very helpful, bringing the reader up to date where necessary, and giving Grant a forum in which he reminds readers of the predictions he made in the first edition that have since been borne out by further research.

Grant singles out two topics for discussion in the afterword. Both of these have been the focus of significant research efforts since the first edition, and both are ripe for further research. The first is the continual refinement of finch phylogenies. Grant notes that the finch phylogeny in the first edition (fig. 72 on p. 259), taken from Yang and Patton (1981) and based on protein polymorphisms, has been superseded by the newer phylogeny by Petren et al. (1999) that is based on microsatellite DNA length variation at 16 loci (reproduced as fig. 103 on p. 424). Although the two phylogenies are broadly similar, the new one has revealed a deep split between two populations of the Warbler Finch (*Certhidea olivacea*), with the conclusion that this species is probably best recognized as two allopatric species, *C. olivacea* and *C. fusca.* As a consequence, there are 15, not 14, extant species of Darwin's Finches.

Grant argues that effort should be focused on further elucidating the phylogeny of Darwin's Finches because important questions about their evolutionary change depend upon the best-hypothesized phylogeny for this group. For example, relating the recent phylogeny to bill characters and diet of extant species presents as most parsimonious the hypoth-

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esis that ancestral finches ate arthropods and berries and that granivory evolved later. Clearly, many additional hypotheses about ancestral character states will emerge from carefully constructed phylogenies, and so the direction of evolutionary change will be deciphered. Incidentally, the finch phylogeny has been placed into a new time frame. Recalibration of the allozyme molecular clock shows that finch evolution on the islands has been occurring for at least 1.5 million (and, perhaps, as long as 3 million) years—three to seven times longer than the previous estimate of <500,000 years. Further, the geologic evidence now indicates that the number of islands in the archipelago has increased during the past 3 million years (p. 427), and the number of finch species seems to have increased in parallel.

The second area of interest discussed at length by Grant in the afterword includes some of the recent findings on the paleoecology of the Galapagos archipelago. Grant argues that we need to understand past environments in detail if we expect to understand the past and future evolution of this group of birds. Evolutionary changes and speciation in the finches have been, in Grant's estimation, highly dependent upon past climatic change. In this context, one cannot help but think of the possible negative effect that the increasing frequency of El Niño events might have on the flora and fauna of the Galapagos islands.

I was personally intrigued by the many observations of hybridization among the finches that have been made since the first edition. I recall that many people were initially surprised by the evidence of hybridization, and even more so by Grant's claim that such infrequent hybridization events could be a significant source of genetic variation in finch populations. The Grants have expanded their discussion of avian hybridization (Grant and Grant 1992), providing much-needed evidence that hybridization might be genetically nontrivial in a wide variety of bird species.

Grant ends his afterword with a warning. Loss of biological diversity anywhere on earth is a tragedy, but its loss on the Galapagos would be particularly sad for obvious historical reasons. Unfortunately, the threat is real. Despite efforts at protection, the archipelago's flora and fauna continue to display the vulnerability so characteristic of species on oceanic islands. For example, habitat devastation of the volcanic slopes on Isabela by introduced goats has erased any evidence of possible prior existence of a divergent population of the Sharp-billed Ground Finch (*G. difficilis*) and any influence they may have had on the evolution of the remaining finch species (p. 438). And, what would be the chances of the finches' survival if an avian pathogen, such as avian malaria, was accidentally introduced to the islands?

A small disappointment for me was the reproduction quality of the black-and-white nonglossy photographs, of which there are many. Without exception, each of these (at least in my copy) is noticeably ''muddier'' than the photograph that appeared in the original book. That may be the result of how the book was produced; I am guessing that the original text, including black-and-white photographs, was simply itself photographed for reproduction, resulting in the loss of resolution in the second edition.

Should readers of *The Auk* buy a copy of this new edition? If one already owns the 1986 book, I see little reason to do so. One might be tempted (after considering any relevant copyright laws!) to photocopy the new preface and, especially, the afterword and new reference list, from a library copy, and shove the photocopied pages in one's own copy of the 1986 book. Obviously, if Grant had decided to incorporate new findings into the text of the original book (a much larger task for him), I'd probably recommend that one purchase the new book. But he did not. This is not meant as a criticism, but simply an observation. Having said that, if one does not have a copy of the original one should, by all means, buy the new edition. And, have the university library buy a copy even if it already has the first edition. One could even argue to molecular-oriented colleagues that this book is a worthwhile read because it does, indeed, have some information about molecules in it, besides all that other ''ecology and evolution stuff''.—Randall Breitwisch, *Department of Biology, University of Dayton, Dayton, Ohio 45469-2320, USA. breit@notes.udayton.edu*

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The Auk 118(2):566–568, 2001

Untangling Ecological Complexity: The Macroscopic Perspective.—Brian A. Maurer. 1999. University of Chicago Press, Chicago, Illinois. ix + 251 pp. ISBN 0-226-51132-4. Cloth, $50.00. ISBN 0-226-51133-2. Paper, $18.00.—What patterns exist in com-

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munities? How do they arise? And, how can they be revealed? Those fundamental questions have motivated ecologists for a century, but only recently have the distribution and abundance of individual species across their entire geographic range been the units of analysis. Advocates of macroecology, as this approach has become known, emphasize that the small spatial scale and short duration of most community ecology research miss the processes that occur at larger scales, thereby losing the opportunity to derive generalizations or deduce mechanisms. Maurer has been involved in macroecology since it became a formalized discipline about a decade ago and, together with James H. Brown, has made some of the most important advances in the field. In this book, the author reviews some of those advances and addresses some new areas, but equally presents the philosophy, historical stimuli, and statistical basis for macroecology.

The reader eager to learn the fruits of the macroecologists' labors will need patience through about the first half of the book. The patterns revealed by macroecology are reviewed more thoroughly in Brown's 1995 book *Macroecology*. Maurer's approach is to first show why short-term, local-scale results can be misleading, and why macroecological processes should be expected. Simply put, species behave as statistical entities, making it necessary to back away from individual species or small assemblages to examine top-down processes. In the first five chapters, Maurer performs useful, if zealous, scholarship by using recent empirical data, ideas from the physical sciences, and early models of population and community dynamics to criticize reductionism and support his approach. The theoretician will likely find much stimulating material here, although those who have ever generalized from local data will likely find issues to challenge. But those with local data not agreeing with data from elsewhere (inevitably published by those of greater reputation) may feel vindicated by Maurer's later discussion of how niche variation across space can be expected to alter relative abundance and competitive interactions.

As an empiricist awaiting results, I found more of interest in the second half of the book. Even so, most of the conclusions described in Chapters 6–8 will be familiar to the reader who has followed the development of macroecology. This information is revisited in order to discuss mechanisms and demonstrate that the macroscopic perspective has yielded some important successes. These results will be especially significant to ornithologists because so many such conclusions are derived from analyses of North American Breeding Bird Survey (BBS) data. In fact, it is probably safe to say that the BBS data are the single most important resource in the development of macroecology. The main conclusions here are the following: species tend to reach their maximum abundance in the central part of their distribution; there is a positive relationship between mean local abundance and range size; there is a positive relationship between body size and range size; species with highest densities are those of intermediate body size; and the evolutionary trend within clades is toward larger mean body size. Population processes that could account for these patterns, such as the intuitively attractive idea that optimal environmental conditions lead to overproduction of offspring which will then disperse to peripheral, suboptimal areas of the range, are also considered. Note here that the conclusions come from analyses of multiple species, and are supported by theories of population processes. Interspecific interactions contribute only as part of density dependence. Similarly, Maurer argues earlier in the theoretical part of the book that niche partitioning and assembly rules are evidence only of local processes operating in ecological time.

So, what does determine the specific community in a given place? Based mostly on models, Maurer proposes in Chapter 8 that local communities owe their composition to phylogeny and local geography, meaning the location within the ranges of the species present. He shows that patterns, such as the species–area relationship and nestedness among communities of different sizes, can be explained best by models that incorporate geographic range. Perhaps, but the alternative models in that section seemed like rather frail straw men. To be fair, however, the intent was as much to demonstrate another approach to showing pattern as it was to attack these specific problems.

Chapter 9 is the first look at long temporal scales, in this case whether generalists or specialists are more likely to leave more descendant species. The conclusion, apparently supported by the only appropriate data set (for two clades of foraminiferans) is that specialists speciate more rapidly, but that they also go extinct more rapidly. As such, at any point in time, there are more species of generalists than there are specialists. We can only hope that the fossil record for birds will one day be complete enough to consider this question. Considering extant species, Maurer suggests that the abundance and range size of the specialist and species-poor Phaethornithinae (hermit) hummingbirds will be shown to be lower than for the generalist and species-rich Trochilinae. I doubt it, given that most of the hermits are lowland species with broad distributions, compared to the higher frequency of high-elevation, restricted distribution Trochilinae. But, like so many other questions raised in the book, this one awaits more data and analysis.

The book concludes with a brief chapter on macroecology and conservation. Maurer is optimistic about the contribution that the macroscopic approach can make to conservation, but the news so far is likely to make the job of managers more difficult. We have been shown that short term data are noise, that local demographic or community composition data can not be extended to other locations, and that

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rare species are likely to be doomed to small populations and narrow niches. On the other hand, Maurer neglects to mention that many local problems do not require a macroscopic look—tools such as the proper use of fire, control of alien species, or remediation of disturbance often provide acceptable outcomes. One objective recommendation Maurer makes, which has also been noted elsewhere, is that simple tallies of species richness do not necessarily indicate the most important areas for conservation, as the species total is likely inflated by widespread species or by species on the very edge of their geographic ranges.

Who should read this book? Anyone whose interest in community ecology extends beyond comparing species lists should recognize the potential for macroecological processes. It should be required reading for any reviewer who ever dismissed ecological results that did not match existing data from another location, or for any writer who claimed his or her system was representative of a broad geographical area. Ornithologists have been instrumental in providing the data essential for bringing the study of macroecology to where it is today; we should now prepare ourselves to see if the generalizations hold up. For example, will Amazonian birds, with highly specialized niches and low abundance, show the same patterns of distribution and abundance as revealed by the BBS data? Do generalizations from breeding birds hold up on the wintering grounds? Similarly, although Maurer does not mention it, there are useful contributions to be made from museum collections. For example, how do clinal variation and genetic structure across distributions accord with the niche conservatism that should arise from population processes across a geographic range? This book should provide the rationale and the impetus to take a macroscopic look at what we know about birds. Only time will tell how far macroecology will take us in answering the basic questions of ecology.—PHILIP C. STOUFFER, *Department of Biological Sciences, Southeastern Louisiana University, Hammond, Louisiana 70402-0736, USA. stouffer@selu.edu*

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Atlas das Aves Invernantes do Baixo Alentejo (Atlas of the Winter Birds of Lower Alentejo).—Edited by Gonçalo L. Elias, Luís M. Reino, Tiago Silva, Ricardo Tomé, and Pedro Geraldes. 1998. Portuguese Society for the Study of Birds, Lisbon, Portugal. 416 pp., approximately 180 unnumbered maps, 180 black-and-white drawings, 16 tables and figures. ISBN 972-96786-2-6. Paper, approx. US$40.00. In Portuguese, with English summaries. Available from: Sociedade Portuguesa para o Estudo de Aves, Rua da Vítoria, 53-2°D, 1100 Lisboa, Portugal (contact *spea@ip.pt* for more information).—During the winters of 1992–1995, a large group of Portuguese bird enthusiasts set out to quantify the distribution and abundance of birds in Baixo Alentejo, a region in southern Portugal about the size of Connecticut. Their results are presented in this attractive book that follows the general format of the breeding bird atlases recently prepared for many U.S. states. Indeed, the book is meant to complement the breeding bird atlas for continental Portugal.

The species accounts will probably attract most readers, but the volume also includes four introductory chapters. The first describes the geography, vegetation types, and climate. The second chapter, on methods, allows the reader to interpret the maps in the species accounts. A goal of the work is to present quantitative data on abundance throughout the region, based on 2–4 visits to each of the 166 100 km^2 blocks. This chapter also describes tape-playback methods for surveying owls and the adjustments for species whose detection was highly dependent on the length of the observation period. It is interesting to note that for most species the abundance is presented as birds/visit, without correction for the length of the visit. This is in contrast to analyses of Christmas Count data, which are based on birds/party-hour. Summaries of the data in the third and fourth chapters include patterns of species richness and abundance, distribution of vulnerable species, and designation of areas most important for conservation. Each chapter includes an English summary.

Species accounts form the bulk of the volume, with two pages dedicated to each of 169 species. I could not find the taxonomy explicitly stated, but it appears to follow Cramp and his collaborators' *Birds of the Western Palearctic* series. Abundance is mapped as scaled circles (as percentage of maximum abundance) for each block in which the species was recorded. Obviously, there is no way to judge the coverage of the various habitats within each block, so it is difficult to interpret whether low recorded abundance reflects lower density or just less time spent surveying the appropriate habitat when that habitat is rare. Species accounts also include black-and-white drawings by a variety of artists, and brief English summaries. Many of the drawings are excellent and combine well with the maps to give a certain visual charm to the accounts. Unfortunately, the Portuguese text, presented in a large font, gets reduced to less than a page and includes relatively little information. The species accounts were written by about 30 different authors

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so they vary somewhat in style, but most include a summary of the overall species distribution and their preferred habitats within the study area, the timing of migration, the source of Portuguese birds, and population trends within and beyond the study area. Most accounts include references, although these are usually very general. Each account also includes an English summary. Marine birds and accidental species (with occurrence dates) are considered in a separate section.

Anyone interested in the distribution of Iberian birds will want to have this book. However, it is probably too specialized to become an important resource for most North American ornithologists. The most useful feature is the maps; readers unfamiliar with Portuguese should still find the information useful.—PHILIP C. STOUFFER, *Department of Biological Sciences, Southeastern Louisiana University, Hammond, Louisiana 70402-0736, USA. stouffer@selu.edu*

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Les Oiseaux de France.—Roger Reboussin. 1999 (edited by Pierre Jeanson). 381 pp., 388 color plates. ISBN 2-9514488-0-5. Cloth, in slip case. Distributed by NHBS Ltd, 2-3 Wills Road, Totnes, Devon TQ9 5XN, United Kingdom, and the Association ''Les Amis de Reboussin,'' 164bis, avenue Charles de Gaulle, 92200 Neuilly-sur-Seine (France). Price: 395 FF ($51).—Since his early childhood, Roger Reboussin (1881–1965) held a life-long passion for animals, painting, and hunting, as well as a love for his native countryside. Because he always remained so tied to his birthplace, he is not well known outside western Europe in spite of his abundant productivity. This includes the illustration of more than 20 books (all in French) on hunting, birds, natural history, and related fables and legends. His gouache and water color paintings convey his feelings for nature, his love of life, his intimate knowledge of birds and his acute sense of movements in a way few artists have ever succeeded in doing. As one of France's most famous animal painters, Reboussin won prizes in many exhibitions from 1907 to 1945, retaining to his death the prestigious title of ''Master of Drawing'' at the Paris Museum of Natural History.

Reboussin began his monumental work on *The Birds of France* at the request and under the private commission of his friend and patron, Marcel Jeanson, a great French ornithologist, book collector and hunter. The goal was to portray, in their natural habitat, all bird species recorded in France to date. It took nearly 30 years to be completed. This superb collection of 388 gouaches, the favorite medium of this artist, is now published by Pierre Jeanson, the son of Reboussin's original and faithful supporter. Most of the species are drawn from personal field experience, and the artist succeeded in capturing some of the movement and ''attitude'' typical of each one. Reboussin combined his interpretation of the spirit of life with a rigorous, yet spontaneous way of painting birds, which was in the impressionist style of his time. Nevertheless, he accomplished this with the accuracy of a portraitist combined with the sharpness and realism of a naturalist. The quality of the edition and the size of the reproductions do justice to the artwork, making the volume much more than a simple coffee table book.

The text is limited to draft prefaces written by Marcel Jeanson and Roger Reboussin in the early 1940s, and a more recent introduction. All of the prefaces are in French and English, making the book accessible to a wide audience. The birds, all depicted in color and often covering an entire page, are presented in scientific, systematic order by their French, English, and Latin names. Details on family status, sex and age characteristics, position in the plate, and alternative French names are given in a 12 page appendix at the end of the book. Many plates depict a single species. Sometimes, two consecutive plates are devoted to the same species, whereas other plates illustrate two to four species together. It is unfortunate, however, that in such a high quality publication there are so many spelling errors to the Latin, English, and even the French names. There are few entirely erroneous names (i.e. the Latin name of the Honey Buzzard, *Pernis apivorus,* and an inversion between the identification information of two terns species). Moreover, the specific English names of several species are not given (e.g. the use of ''Buzzard'' for the Common Buzzard, *Buteo buteo*). Fortunately, most errors seem to have been corrected in a second edition now available.

The book would have been better titled ''The Birds of Europe,'' because not only are all French breeding species and regular migrants illustrated, but so too are many taxa that are only rare vagrants in France, leaving very few European species not represented (these are cited in an appendix). Also, from an ornithologist's point of view, the paintings of passerines are sharper and more accurate than are many of those of nonpasserines. In spite of these minor criticisms, this splendid homage to the memory of a great artist is worthy of the book shelves belonging to artists, naturalists, amateur ornithologists, and hunters alike.—JEAN-MARC THIOLLAY, *Laboratoire d'Ecologie, Ecole Normale Superieure, 46 rue d'Ulm, 75230 Paris cedex O5 France. thiollay@biologie.ens.fr*

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The Auk 118(2):570–571, 2001

A Guide to the Birds of Southeast Asia: Thailand, Peninsular Malaysia, Singapore, Myanmar, Laos, Vietnam, Cambodia.—Craig Robson, with illustrations by Richard Allen, Tim Worfolk, Stephen Message, Jan Wilczur, Clive Byers, Mike Langman, Ian Lewington, Christoher Schmidt, Andrew Mackay, John Cox, Anthony Disley, Hilary Burn, Daniel Cole, and Martin Eliott. 2000. Princeton University Press, Princeton, New Jersey. 504 pp., 104 color plates, 2 maps, 1 drawing. ISBN 0-691-05012-0. Cloth, $59.50.—Twenty-five years after the publication of Ben King's *A Field Guide to Birds of Southeast Asia* (1975), a new and improved field guide to the region has hit the shelves. The last decade has seen a proliferation of field guides in this region. Most of those guides deal with individual countries such as Thailand, or smaller, yet ornithologically distinct subregions of Southeast Asia such as Peninsular Malaysia and Singapore. However, for those travelling far and wide in Southeast Asia in search of birds, the unrevised King guide was the only one available until now.

Robson set a lofty goal for himself with this book: to treat all species found in the region as completely as possible while staying within the size limits of a field guide. Considering that this book covered 1,252 species and is, in fact, field-guide-size is amazing. Furthermore, it is even more unbelievable when one considers how thoroughly species are covered. All but 11 species are illustrated and, where necessary, distinct plumage variations (sex, age, and subspecies) are shown. Written descriptions cover plumage, vocalization, breeding, nests and egg information, habitat and behavior, as well as range and status of each species, both within and outside Southeast Asia. As a result, this complete yet compact book is crowded. It is not unusual to see 14 species and up to 36 full and partial illustrations on a single 23 × 15 cm plate. The text is also small (approximately 8 point font).

The crowding, however, is mitigated by a well-organized layout and design. Introductory notes include a map defining distinct ornithological subregions within Southeast Asia, and an explanation of the taxonomy and nomenclature used in the book. Guidelines on how to use species account information, a glossary, avian topography diagram, and descriptions of the various habitats found in Southeast Asia are also provided.

The illustrations are greatly improved over King's guide. Robson's guide illustrates approximately 400 more species than does King's, and, unlike King's, all illustrations are in color. With 14 illustrators contributing to the book, one might expect some obvious discontinuity among plates, but that is not the case. A few criticisms: the spiderhunter (family Nectariniidae, genus *Arachnothera*) bills look a little shorter and fatter than they do in the field, and a few plates (for example, crows and jays [family Corvidae, various genera], and malkohas and cuckoos [family Cuculidae]) appeared slightly washed out in color. Distribution maps would have increased the size of the book significantly, but having some type of code in the plate section indicating ornithological subregions in which a species is found, such as that found in Mackinnon and Phillips (1993), would have helped speed identification.

The species accounts are informative. In addition to the plumage, vocalizations, range (in and out of Southeast Asia) and habitat information also found in King's guide, Robson includes information on status, breeding, nests, and eggs. The plumage descriptions are very detailed and clear, and vocalization descriptions are accurate for the species I know. Subspecific differences are also described in adequate detail in this guide.

In the field, birdwatchers may be bothered by the taxonomic order that Robson chose. The taxonomy, sequence, and nomenclature follow *An Annotated Checklist of the Birds of the Oriental Region* (Inskipp 1996), which is based on Sibley and Monroe (1990, 1993). The author recognizes the controversial nature of this treatment, but felt it was the best sequence proposed at the time. Although many arguments can be made both for and against the Sibley and Monroe taxonomy, my concern is more practical than theoretical. If this book had been designed as a general reference book, then choice of taxonomic treatment would be a matter of educated opinion as to whether the Sibley and Monroe sequence is more reflective of true evolutionary relationship than other taxonomic sequences. However, the author went to great lengths to make this book conform to the requirements of a field guide, and the main purpose of a good field guide is to allow the reader to quickly and correctly identify birds in the field. Most experienced birders know approximately where to turn in a field guide to find plates and species accounts, but the organization of such information in most guides is vastly different from the Sibley and Monroe taxonomy. Despite the initial inconvenience, I was able to learn the new sequence within about a week of heavy use. If one is concerned that the reader might want to know more about true evolutionary relationships, a brief summary of the Sibley and Monroe scheme (or more recent findings) for each family could be placed in another section of the book, as in the Simpson and Day guides to Australian birds published by Penguin Books. Another compromise might be to place the plates in a familiar sequence while leaving the text in phylogenetic sequence.

Any nitpicking aside, this is the best field guide to the entire Southeast Asian region, and arguably one of the most informative field guides around. The de-

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tailed information reflects the author's years of travel through the region as well as his careful planning and organization. It is sure to be the definitive field-guide to the region for years to come.—ALISON R. STYRING, *Department of Biological Sciences and Museum of Natural Science, Louisiana State University, Baton Rouge, Louisiana 70803, USA. astyring@aol.com*

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