REVIEWS

EDITED BY BRUCE M. BEEHLER

The following reviews express the opinions of the individual reviewers regarding the strengths, weaknesses, and value of the books they review. As such, they are subjective evaluations and do not necessarily reflect the opinions of the editors or any official policy of the AOU.—Eds.

Evolutionary Dynamics of a Natural Population: The Large Cactus Finch of the Galápagos.—B. Rosemary Grant and Peter R. Grant. 1989. Chicago, Illinois, University of Chicago Press. xix + 350 pp., 12 color plates, numerous black-and-white photographs, text figures and tables. ISBN 0-226-30590-2. Paper $24.95. ISBN 0-226-30591. Cloth $65.00.—How variation is maintained in natural populations and how similar species coexist are among the most important and pervasive questions in evolutionary biology. Perhaps in no other group of vertebrate species have these questions been investigated more thoroughly than in Darwin's finches. There have been many important works centering on the ecology and evolution of Darwin's finches, but none as significant and comprehensive as Peter Grant's 1986 book "Ecology and Evolution of Darwin's Finches" (Princeton University Press). That is why many may ask how a second book on the subject published only four years later could be as significant. The answer becomes clear before finishing the first chapter. Unlike the first book, which examined the entire ground finch community on the archipelago, this work (whose first author is a research scholar at Princeton and wife of Peter) examines the evolutionary ecology of a single population of the Large Cactus Finch (*Geospiza conirostris*) on Isla Genovesa. Spanning more than a decade, the study investigated in extraordinary detail the life history and evolutionary mechanisms that maintain morphological variation, particularly of bill size and shape, in this isolated population.

The rationale for choosing the population on Genovesa was complex. The population is small and morphologically one of the most variable. Thus the factors that produce variation should be more identifiable there than in other less variable populations. The island is relatively isolated and not influenced by gene flow from other islands. Unlike many of the islands which have experienced significant human disturbance in recent times, Genovesa has remained pristine.

A model of how variation is generated and maintained in populations is presented in Chapter 1. This gives the reader a framework to interpret the empirical results that follow. Given the celebrated unpredictability of environment in the Galápagos, the study had the good fortune to span two El Niño events (including 1983 in which the Galápagos experienced the greatest rainfall in recorded history) and a severe drought in 1985 when no rain fell. Not surprisingly these severe climatic perturbations had dramatic effects on the vegetation, not the least on the cactus *Opuntia*, the most important food of *conirostris*.

The highly readable, often eloquent, chapters which follow explain and interpret demographic changes which result from the high annual variation in rainfall. Demography is examined using life tables, but it is the analysis of individual cohorts that is perhaps most interesting. Annual survival rates differed enormously among cohorts as a function of the variable climate. These differences were presumably due to food supply although there were no quantitative estimates of total food abundance and the reader is asked to accept that food supply was limiting based on concomitant studies on other islands. Despite this possible shortcoming, the avian demographer will find plenty of interest. There are few avian species for which life history is better known than *conirostris*. Some of the more notable aspects of life history are that longevity may exceed 12 years and that reproductive success varies highly. Some females are as much as eight times more productive than the median with interyear differences in mean number of fledglings per pair varying by orders of magnitude. There is also an interesting discussion that contrasts age and experience in determining reproductive success. The final discussion of this section places demographic characteristics in a broader evolutionary perspective by comparing *conirostris* with other tropical and temperate species.

The discussion of demography is followed by an examination of song learning, territoriality, and mate choice (chapters 6 and 7), providing a nice summary of previously published work. Of particular interest to students of sexual selection is the use of multiple regression techniques to untangle direct and indirect (correlated) effects of mate choice on particular characters. The technique (Lande and Arnold 1983, Evolution 37: 1210) is used to determine if the probable targets of female choice were male plumage, territory position, or one of several morphological characters. There is, however, little discussion of some of the important pitfalls (of which there are many) of using multivariate regression to identify targets of selection. Not until much later (p. 209) are some of the "statistical and interpretational problems" mentioned. Nevertheless the discussion and analytical approach to studying mate choice is novel and should be useful to behavioral ecologists.

To the evolutionary biologist the last half of the

book will be of greatest interest (chapters 8–10). Here the Grants address in detail the question of how morphological variation is maintained. This stimulating discussion of the genetic basis of variation highlights several useful techniques which may not be familiar to many avian biologists. The Grants do a superb job of explaining how to calculate heritabilities and genetic variance-covariances from characters measured on parents and offspring in the wild. Most characters are highly heritable, thereby permitting evolutionary change under selection. However, some of the serious problems of estimating heritabilities in the field are dismissed rather rapidly. Heritability measures are easily biased for a variety of reasons, not the least of which are maternal effects which are impossible to control for completely in a field setting. The potential problems of genotype-environment correlations are addressed to some extent but not always convincingly. For instance, it is mentioned that environmental effects are probably not important because the probability of offspring surviving to breed was independent of the experience of the parents. Yet, there remains the possibility of parental effects on the magnitude of morphological characters of offspring. A better method of controlling for environmental effects would have been to switch half of the clutch of one nest to another nest with different parents. Young from a single clutch, but raised under differing parental regimes, could then have been compared. In this way correlations between parents and offspring which were purely environmental could have been detected. However, such experimental manipulations are generally not permitted by regulations governing the Galápagos National Park and, as is pointed out in the preface, may lead to unforeseen changes which could distort the results of future research.

A more fundamental problem with estimating heritabilities in the wild is the question of paternity. It is notable in Table 8.4 that estimates of heritabilities of mother-offspring are higher than father-offspring estimates in eight out of nine cases. Although the differences are said to be nonsignificant, these hint at possible maternal effects or possible misidentification of the true father (or fathers). This latter problem may be remedied by collecting blood samples or feather pulp from adults and offspring and comparing them using DNA fingerprinting to determine paternity.

So what makes the *conirostris* population so variable? The primary reason seems to be hybridization with two other species found on Genovesa, *difficilis* and *magnirostris*. Thus, introgression appears to be the main source of new genetic variation to the population. The Grants support this by showing that when probable hybrids are excluded coefficients of variation decline significantly. However, because hybrids were identified primarily on the basis of being intermediate in size, removing them would most certainly reduce variation. Evidence for introgression would be strengthened if hybrids could be identified by means other than size, such as by genetic markers.

The importance of hybridization may also suggest why the extremely isolated population of Darwin's Finch living on Cocos Island are morphologically less variable. The Cocos Island finch (*Pinaroloxias inornata*) exhibits some of the smallest coefficients of variation in morphological characters, yet it is one of the most behaviorally diverse species. Individuals show a stunning array of different feeding modes (Werner and Sherry 1987, Proc. Natl. Acad. Sci. 84: 5506). Did the population develop a diverse array of complex feeding behaviors because it lacked additive genetic variation owing to insufficient introgression? Or is the population less variable because of an initial bottleneck when the population was founded? Biochemical examinations may again hold the answer.

The Grants' work provides a quantum step forward in understanding the ecological and evolutionary mechanisms that act to maintain variation in Darwin's finches. The next quantum step will be to understand the genetic structure of these different populations and the phylogenetic histories using molecular approaches. The only study to date (Yang and Patton 1981, Auk 98: 230), although inconclusive, in some cases found greater genetic distances between the same species on different islands than between different species on the same islands. This suggests introgression may not only be important in maintaining variation but that defining species from island to island is somewhat fuzzy.

The Grants also found convincing evidence for directional selection and circumstantial evidence for disruptive selection. Although the potential for evolutionary change seems to have been prevented by opposing selection pressures, the potential consequences of microevolutionary change in promoting sympatric speciation is one of the more provocative topics of the book. During 1978 males became behaviorally, ecologically, and morphologically subdivided into two groups. Although this dichotomy did not persist, the study remains one of the few empirical examinations of sympatric divergence in vertebrates. The discussion of sympatric speciation is kept appropriately brief, however, as this topic has been the subject of several other papers.

The final chapters provide a thoughtful synthesis of the main topics of the book by exploring the phylogenetic origins and ecology of the cactus finch within the context of the entire finch community. The Grants stress the importance of introgression and selection to show that the *conirostris* population is structurally complex and dynamic, and is not a homogeneous entity. In so doing they bring into focus potential problems in the captive propagation of endangered species. If introgression is an important source of new genetic material for a species, restricting it in captive breeding programs could have serious consequences. Significant variation that would

otherwise be maintained in the wild would be lost if introgression is prevented.

The level of scientific injury and attention to recent literature is impressive. With over 450 references it is a tremendous resource. The book is also packed with a large number (over 75) of beautiful color and black-and-white photographs, has a helpful appendix, and is well indexed. It should be read by avian biologists interested in life history strategies and anyone seriously interested in evolutionary ecology regardless of the organism they study. For the attractive paperback price, it is a bargain that should not be missed.—THOMAS BATES SMITH.

A Guide to the Birds of Colombia. Steven L. Hilty and William L. Brown; illustrated by Guy Tudor. 1986. Princeton, New Jersey, Princeton University Press, 836 pp., 56 color plates, 100 black-and-white line drawings, 1,475 maps. NPG.—Great books, like fine wine, deserve to be tasted and commented upon not just when they appear, but also as they mature. So it is with this masterpiece, published sufficiently long ago to reveal some historical perspective about its accomplishments.

There have been several milestones in twentieth century ornithology of South America. The first modern catalog of taxa and their distributions was completed in 1949 with the fifteenth and final volume of "Catalogue of Birds of the Americas," a 30-year labor of love by Charles B. Cory, Charles E. Hellmayr, and H. Boardman Conover. Frank M. Chapman (1926) provided some of the first modern insight about the ecological organization of South American birds with his "life zone" concept, in "The Distribution of Bird-Life in Ecuador." Publication of two reference volumes on the birds of South America by Meyer de Schauensee (1966, 1970) provided scientists and birders the first comprehensive guides to this, the world's most immense avifauna.

The most recent milestone emerged with the publication of Hilty and Brown's magnificent guide to Colombian birds, a tome which illustrates and describes biological details of more than half the bird species of the entire continent of South America. Much more than a new field guide, this is a massive and scholarly reference for the scientist as well as the birder. Its accomplishments far exceed the notching of another country for which a bird guide now exists, although with nearly 1,700 bird species known from Colombia that stride alone had been a daunting one. I have now used this book in the field in Central America, Brazil, Ecuador, and Peru. Colleagues and I consult it regularly as a library reference in taxonomic and behavioral research. In awe of its completeness, accuracy, and beauty, ornithologists today can only hope that social conditions will someday again permit the book's widespread use in the beautiful country for which it was written.

No region presents a more formidable challenge for field guide preparation than western South America, where the Andes, the Amazon basin, and seacoasts harbor the richest bird communities known on the planet. Colombia and Peru vie with one another for honors as the country with the longest bird list in the world (Peru is still ahead by a few). In this book 1,695 species are treated in full detail, with an additional 133 expected additions mentioned in notes.

Sheer numbers do not fully reveal the difficulty of the job that Hilty, Brown, and illustrator Tudor undertook. Forested habitats in South America support hundreds of bird species belonging to look-alike complexes that make North American *Empidonax* seem easy. Moreover, many Andean species are fragmented into numerous differentiated forms, or subspecies, distinct enough to demand separate discussion and illustration. Distributions of numerous species are complex, as are the habitat or elevational preferences, which can be critical in making quick identifications in the field. Nuances of behavior are exceedingly important, as are songs and call notes. Songs of hundreds of suboscine passerines are monotonous repetitions of simple notes, which easily frustrate birders as well as any author hoping to describe and distinguish them in a field guide. Most important, essentially none of this critical information on biology of South American species had ever been published at all, let alone summarized in ready references for Hilty and Brown to tap. Remarkably, in tackling such difficulties the authors chose not to cut corners. Instead, with exhaustive scholarship and extensive consultation with colleagues and museum collections, they produced a wholly new kind of guide to regional birds and birding.

Depth and complexity characterize great vintages, and now great field guides. The first page following the Table of Contents presents a map showing the towns, states, major rivers, 25 national parks, and 149 other major ornithological localities of Colombia. A detailed plan of the book is followed by concisely written essays entitled: Topography, Climate, Vegetation, Habitat descriptions, Migrants, Conservation and national parks, and Review of Colombian ornithology. These illustrated treatments offer superb insight into the natural history of Colombia, and they ought to be required reading for any traveler who undertakes a trip to that country, whether or not birding is planned. Professionals and birders will want to study the additional text (Appendix A) entitled "Finding birds in Colombia," pinpointing and describing some of the best or most accessible birding areas and mentioning the highlight birds to be sought at each place.

The habitat descriptions recognize 25 habitat categories, including 10 types of humid forest and several kinds of second growth, clearings, and edges.

These are useful and accurate designations which correspond closely to those used in several technical publications about South American habitat types. They are further tailored to individual bird species in the main text accounts. The discussion of avian migration includes three tables listing north temperate, Middle American, and south temperate breeders that move through or winter in Colombia. The account also discusses the poorly understood seasonal movements of many species, especially water birds, in the llanos and Amazon forest regions. This is an ecological feature of South American birds much in need of further study.

The body of the book consists of individual treatments of all species documented from Colombia as of 1984, plus notes on other species known from the border areas of adjacent countries. Boldfaced headings under each species are: Identification, Similar species, Voice, Behavior, Breeding, Status and habitat, Range, and Note. Range descriptions of 1,475 species are augmented by detailed distribution maps, clumped at the end immediately preceding the two Indexes (to English names and to genera and species). The maps were meticulously constructed from literature and museum data, primarily by Brown. They include individual locality plots for rare species, as well as detailed indication of disjunct distributions on separate mountain ranges and massifs. The complex configuration of Andean ranges in Colombia lead to highly fragmented bird populations, making detailed maps essential. In keeping with the rest of the book, it is no exaggeration to pronounce these the most accurate range maps ever included in an avian field guide, for any country.

My biggest challenge as a reviewer is to convey adequately, to readers unfamiliar with the subject, the enormity of the volume of new and important information on South American birds contained in the individual species accounts. The book is without peer as a straight identification guide to more than half of South America's birds, but this is only the beginning of its strengths. It also is a compendium of modern, largely unpublished information on avian taxonomy, geography, and behavior. The average species treatment is more than 300 words. (With small type the publisher managed to squeeze in about three species per text page.) Preceding each bird family is a lengthy paragraph to summarize the physical characteristics and behavior of the group, and indicate the number of species that occur in Colombia. Excised from the two-pound book and stapled together, these paragraphs can stand alone as a fine synopsis of South American birds.

To identify tiny green flycatchers in the forest canopy, gray antbirds in the dim understory, small brown furnariids in the brush, or sparkling green hummingbirds buzzing into view for an instant, one must quickly assign them to a species-group within which the problem of separating similar forms can be tackled. Sometimes the cues are physical, sometimes behavioral. Frequently the most useful species-group is the genus, and for this reason many genera in the text are preceded by a brief paragraph describing their distinctive characteristics or difficult features. I congratulate the authors for encouraging this taxonomic approach to field identification throughout the book. It is especially crucial in South America, but in my view should become the modus operandi in field guides around the world.

In the Identification section for each species the key features are italicized for quick reference. Hilty's great skill and experience in the field is apparent in extensive discussion of similar species, possibly the most important feature of the text for birders not yet experienced in South American birds. In contrast to several other well-known field guides, this guide pays particular attention to separating confusing species *that are likely to be found in the same places.* Moreover, Hilty and Brown are to be commended for making explicit the numerous species complexes or plumages in which reliable identification in the field is sometimes impossible. Frequently, as in the case of certain *Xiphorhynchus* woodcreepers and *Scytalopus* tapaculos, they discuss the need for additional taxonomic research among extremely similar and confusing forms. Such comments serve both to caution and to stimulate: we are still rapidly accumulating information about South American birds, and opportunity exists for both amateurs and professionals to take part by making careful notes and tape recordings rather than hasty identifications.

Descriptions of voice and behavior are superb, and represent an accumulation of information from a veritable "who's who" of South American ornithology. Hilty himself has spent years in the field in South America, keeping careful notes on bird behavior. In addition, the authors consulted dozens of experienced colleagues in an exhaustive effort to incorporate previously unpublished behavioral information. Consistent with the scholarly approach, they cite the individuals or publications from which descriptions of songs or displays were drawn. For example, accounts on the 24 species of manakins (Pipridae) include references to 25 publications by 16 authors, plus unpublished information from 9 additional colleagues. For cotingas and allies (Cotingidae, 43 species), 40 publications by 30 authors are cited, plus notes from 14 colleagues. These behavioral notes are invaluable and can be of unexpected use in the field. The rare Ocellated Tapaculo is apparently a bamboo specialist, for example, and "reacted strongly to imitation of whistle" by Tom Schulenberg. Such facts do not typically appear in standard field guides, but could be crucial to the birder or scientist inventorying the remote highlands where this species might exist.

The breeding seasons of South American birds are still poorly documented. Even within a species they can vary with geography, elevation, habitat, or rain-

fall. Some species are wet season breeders, others not. Some have short breeding periods, others may breed across most of the year. Therefore, Hilty and Brown summarized all the breeding records they could find, including literature citations and museum specimens indicating breeding condition ("BC" in text). They also describe the nests and eggs in many cases. What an eye-opener it is to browse through these records and realize how little is recorded even for common species! By illustrating these gaps, Hilty and Brown provide incentive and opportunity for visiting birders and Colombian students to add important data from almost any serious fieldwork.

Under Status and Habitat, the authors again present a detailed picture of relative abundance, habitat preferences, and seasonal movements for each species in Colombia. The authors point out numerous cases of interspecific replacements, either geographically or between habitats. Besides being handy as an identification tool, this important information reveals numerous cases of ecological segregation. Because of its huge numbers of ecologically similar species, South America contains exceptionally dramatic cases of elevational or geographic replacements. Virtually none has ever been studied in detail. A Ph.D. candidate looking for interesting research questions in South American birds could find many suggestions in this book.

The Literature Cited section contains approximately 700 references, certainly setting another record for field guides. With extremely few typographical errors, this section alone provides professionals and serious amateurs an important entry into the literature on distributions and behavior of Neotropical birds.

Finally, and hardly deserving last-mention, it is appropriate to savor the superb plates and line drawings by Guy Tudor. When published, these paintings instantly became the definitive illustrations of South American birds. Recent competition for this distinction has emerged, but no others yet published can claim the prize. Most of the 13 black-and-white and 56 color plates are modified versions of those from "A Guide to the Birds of Venezuela" (Meyer de Schauensee and Phelps 1978), with numerous additional species masked in to illustrate the larger number of forms in Colombia. In contrast to some recent field guide trends, Tudor wisely chose to illustrate most species within each plate facing the same direction, in standardized postures, and at accurate size scaling. The challenge of squeezing such a huge avifauna into 56 plates forced Tudor (and the several other illustrators) to minimize portrayal of distinctive behavioral or postural features, but those that are shown are exceedingly accurate (e.g. the three postures of tiger-herons, in Plate 2). Soft-part colors also are thoroughly researched. The result was unprecedented success at presenting the distinguishing field marks among huge assemblages of South American "look-alikes." Surely, for example, the dozens of small, nondescript green flycatchers sympatric in the South American forests must be the worst nightmare for a field guide illustrator. Tudor's Plate 36, therefore, ranks among the greatest historical achievements in field guide art. Forty-eight tiny tyrannulets can indeed be separated by plumage. Tudor's accomplishment in this and other plates is to show, not just how to distinguish such similar species, but also how to illustrate such a feat on one page. Other nominees for field-guide-plate Hall of Fame are Plates 14–16 (hummingbirds), 23 (piculets and woodcreepers), 28 (antbirds, antwrens, etc.), 29 (antshrikes and antbirds), and 37 (tyrant flycatchers). In keeping with the high level of scholarship throughout this volume, Appendix C identifies the subspecies of each form illustrated in the 56 plates—another important first for New World field guides.

Tudor's achievements in these and other plates of this volume have become icons for field guide artists around the world. Although his birds sometimes appear rounded and blocky ("overstuffed"), his bold use of color and contrast are part of his success once the plates are reduced and printed. Simplicity is a key to the most successful field guide illustrations. Tudor shows exceptional insight about where to use individual feathering (e.g. throats of hummingbirds, backs of woodcreepers, faces of wrens), and where to leave it out (e.g. body plumage of tanagers, faces of tyrannulets). One measure of Tudor's impact on other talented bird illustrators is the clearly improved paintings of John Gwynne in this volume, compared with his good earlier works in "A Guide to the Birds of Panama" (Ridgely 1976). Another measure also appears in this volume: the entry of Larry McQueen into the field guide scene. Plates 21 (barbets and woodpeckers) and 40 (swallows) are the first two field guide plates by this outstanding wildlife artist. Although McQueen's plates serve their purpose, in comparison to Tudor's they are shaggy and loose, with distracting, blotchy brush-strokes that diffuse the borders of body parts and color patterns, the critical features in a field guide plate. An instructive illustration of this point is to compare the three adjacent plates 21 (McQueen), 22 (Gwynne), and 23 (Tudor). In contrast, however, I have seen at the Louisiana State University Museum of Natural Science the unpublished plates by Larry McQueen for the still-mythical field guide to Peruvian birds. These are positively stunning in accuracy, biological insight, organization, and simplicity. Although they are distinctively McQueen in liveliness and style, they bear unmistakable trademarks of Guy Tudor: simple definition of the body parts, attention to detail only where essential, bold color, and impeccable formatting across the plate as a whole.

It is fitting that Tudor's patience and brilliance first reached near-perfect stride in the beautiful Colombia volume. Hilty and Brown dreamed of a book that

would be a new kind of field guide, and they created a milestone in both information content and approach. Indeed, there is so much information in this guide—and it took so long to assemble—that Hilty, Brown, and Tudor may actually have defined the limits to the endeavor itself. Could it be that to surpass this guide, in both content and quality, would take infinitely long? The challenge exists, for both Peru and Brazil rival Colombia in both avifauna and our rapidly accumulating collective knowledge about it. 1986 was a vintage year in the field guide trade. It remains to be seen whether there can be another like it this century, or ever.—JOHN W. FITZPATRICK.

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MEYER DE SCHAUENSEE, R. M. 1966. The species of birds of South America and their distribution. Narberth, Pennsylvania, Livingston Publ. Co.

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RIDGLEY, R. S. 1976. A guide to the birds of Panama. Princeton, New Jersey, Princeton Univ. Press.

Vörös Könyv. [Red Data Book of Hungary.] Zoltán Rakonczay (Ed.) 1989. Budapest, Hungarian Academic Press. 360 pp. No price given.—The "Vörös Könyv" is an album-sized book, richly illustrated in excellent color print and black-and-white drawings—the accomplishment of a team of Hungary's best field biologists. This first edition considered only the higher plant and animal taxa of a biota that consists of more than 14,000 plant species and approximately 32,000 animal species known from Hungary. For each species, the book details its general worldwide distribution, and its faunistic or floristic status within Hungary. In addition, known life history data and population size are given, as well as whether the species is common, scarce, rare, endangered, or even extinct in Hungary. For the latter categories the authors report what measures have been taken, or ought to be taken, for species and habitat preservation. A monetary value is assigned to each protected species, which helps to reinforce the conservation laws and regulations of Hungary, because the judiciary uses these values in assessing fines. The values could also be used to assess the importance in monetary terms of certain protected habitats or those that ought to be protected.

The Hungarian breeding bird fauna is estimated at approximately 340 species. Its protection has a long and venerable history, in spite of the hunter-gatherer mentality of an erstwhile feudalistic society where only the game species enjoyed protection. The nongame species were often snared, shot with slingshots, or nest-plundered by young villagers. The first law protecting insectivorous and other agriculturally "useful" birds was passed around the turn of the century, and since the 1970s, more than 90% of the avifauna (320 species) has been protected. Treatment of the most important 82 species is included in this volume, often in masterful color rendering.

Though this book lacks an English or other foreign-language title, it has an extensive summary in English and Russian, with statistical and historical data, and species tabulations. This summary could be extended with distributional and population data, protective steps taken, desirability of further protective steps, etc. Thus a short English edition is warranted. Such was the case of the Finnish Red Data Book which consists of three volumes in Finnish, and one summarizing volume in English.—MIKLOS D. F. UDVARDY.

Catalog of Washington Seabird Colonies.—Steven M. Speich and Terence R. Wahl. 1989. U. S. Fish and Wildlife Service Biological Report 88 (6). 510 pp. (Copies available from the U. S. Fish and Wildlife Service)—This thick volume completes the colonial seabird catalogs of the Pacific coasts of North America north of the Mexican border (for Mexico, according to D. W. Anderson [in litt.], "there is enough information for a catalog for both sides of Baja California."). Up to the middle of this century almost nothing was known about the breeding status of our coastal seabirds. The authors have systematically collected available published data and the results of their own surveys through 1982, as well as field notes and records by others from 1792. The survey methods are not detailed, but possible shortcomings of the results are discussed in a special chapter. The authors intend their work to be used as a baseline of the colony numbers and sizes for future long-term studies, to reconstruct the breeding history of all all marine birds of the area, and to document the present status for administrative and regulatory agency personnel, scientists, bird watchers, and naturalists in general. The species' accounts fulfill these intended objectives. The catalog will also serve as a baseline for future conservation efforts pertaining to seabird resources.

There are 18 seabird species (all but two more or less colonial) that nest on the Washington coasts. Each is discussed in a few pages. The descriptions are complete with a worldwide or North American distribution map, a chart of breeding phenology (including question marks where data are missing), and the text, which adds pertinent life history and breeding biological data. The historical status and future vulner-

ability of each species is also discussed. For the coast of Washington, the recent worldwide increase of the large gull species, as well as the Washington coastal nesting of three new species (Ring-billed Gulls, Caspian Terns and Arctic Terns) are documented.

The bulk of the catalog describes colony data arranged in geographic sequence, mapped on a large scale (1:24,000; i.e. 1 km to 40 mm), and tabulated for each rock, island, or headland colony by time sequence. The detail is extraordinary. For example, in 1979–1982, colonies totaling 181 pairs of Pelagic Cormorant (first specimen collected in 1888), Glaucous-winged Gull, and Pigeon Guillemot nested on Skipjack Island. There are 27 historic records of these species (1888–1978) and the Tufted Puffin was also seen there in pairs on 22 June 1905! It is laudable that even those rocks and islets are mapped and tabulated where no colony previously existed.

The book is practically devoid of typographical errors, but the contention that Captain Vancouver visited Puget Sound in 1972 is an amusing one! One serious and regrettable shortcoming, no fault of the authors, is that the binding is extremely poor. Virtually all the pages fell out when I first leafed through this soft-covered, large-sized book. On the other hand, the technical layout of text, maps, and illustrations is excellent and the kudos for these go to the technical editors of the U.S. Fish and Wildlife Service.—MIKLOS D. F. UDVARDY.

Les Oiseaux des Comores.—Michel Louette. 1988. Musée Royal de l'Afrique Centrale, Annales Serie IN-8. Sci. Zoologiques 255. Pp. 192. No price given.—The Comores form a biogeographically interesting and important link between East Africa and Madagascar. Louette's book appears at the centenary of the first avifaunal treatise of the Comoros (Milne Edwards and Oustalet 1888) and 30 years after the first modern listing (Benson 1960). Now we have a monograph, which serves as a guide to the 60 breeding species and some 40 other species of the islands. Each species is cleverly illustrated by well-rendered line drawings, and black and white or color photographs. In addition to a diagnostic description, details of the taxonomic status and distribution are included. To this "annotated checklist" are added Louette's "multifunctional" tables, which show status, origin, distribution, and endemicity. Other tables list the local and scientific names of the avifauna.

The last chapter of Louette's monograph is an exemplary zoogeographical treatise. Analysis of the species composition reveals little unevenness of the fauna (no kestrel, rail, cuckoo, goatsucker, or cisticolas, as compared with Aldabra Atoll), though the author does not exclude the possibility of hitherto unrevealed man-caused extinctions of forest birds or flightless species. Species richness, as is known today, is relatively high—partly due to two immigration routes to the islands. One third of the land birds are endemic and originated either in one or the other source area. All the endemic subspecies are Malagasy, and lack of endemic genera (there is only one) reveals a relatively recent, post-Miocene or later, immigrational history. Almost two thirds of the land birds originate in Madagascar. Louette believes this is due to lowering of the sea level during the Pleistocene, when the distance between the island group and Africa remained unchanged but distances to Madagascar became substantially shorter (more of Madagascar's "shelf" exposed). This allowed simultaneous immigration of several species. The Comores are the source area of some Aldabra birds, perhaps even of some of the Seychelles. The Comores also furnish some beautiful examples of island evolution, of double invasion, and ecological or geographic separation (parapatry) without competition. Though some of these examples have been published in Louette's research papers, their brief discussion here complements our present understanding of island evolution and should stimulate further field and theoretical research in the islands of the Indian Ocean.—MIKLOS D. F. UDVARDY.

The Editorial Office continually receives material for review. A portion of the material is inappropriate for detailed comment for a variety of reasons. However, because it may be of general biological, but not ornithological, interest or potentially of only limited readership, it is not reviewed. As a service to our readers, these items are occasionally listed.—A.H.B.

Predatory dinosaurs of the world. A complete illustrated guide.—G. S. Paul. 1989. New York, Simon & Schuster (Touchstone Books). 464 pp. ISBN 0-671-68733-6. $12.95.

Bird watcher's life list & diary.—B. A. Fashingbauer. 1989. Minneapolis, Culpepper Press. viii + 232 pp. ISBN 0-929636-03-1. $14.95.

Bird etchings. The illustrators and their books, 1655-1855.—C. E. Jackson. 1989. Ithaca, Cornell Univ. Press. 262 pp., 4 color plates. ISBN 0-8014-9684-5. $19.95 (paper). (Cloth edition reviewed *in* Auk 104: 362, 1987).

The hummingbird book. The complete guide to attracting, identifying, and enjoying hummingbirds.—D. Stokes and L. Stokes. 1989. Boston, Little, Brown and Co. 90 pp. ISBN 0-316-81715-5.

Wild turkey/Tame turkey.—D. H. Patent. 1989. New York, Clarion Books (Houghton Mifflin Co.). 57 pp., ISBN 0-89919-704-3. $14.95.

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DATE OF ISSUE (Vol. 108, No. 1): 13 February 1991