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Birds of the Salton Sea: Status, Biogeography, and Ecology

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BOOK REVIEWS

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Birds of the Salton Sea: Status, Biogeography, and Ecology.—Michael A. Patten, Guy McCaskie, and Philip Unitt. 2003. University of California Press, Berkeley, California. xi + 363 pp., 71 text figures. ISBN 0-520-23593-2. $65.00 (cloth).

Located in the baking Colorado Desert just above the Gulf of California, formed by an engineering accident that flooded a basin formerly inundated by periodic wanderings of the untamed Colorado River, maintained by inflows of agricultural and municipal wastewater, and now the center of an environmental controversy emblematic of water shortages throughout the West, the Salton Sea is a singular water body with a rich and abundant avifauna. *Birds of the Salton Sea* is an important work, as the authors have combined their talents and experience—over 1600 field days since the 1960s—to produce one of few thorough treatments of the birdlife of a major inland lake basin in western North America. The book's strengths are its summaries of each species' patterns of regional occurrence, attempts to place this information in a broader geographic context, and its up-to-date assessments of taxonomy and subspecies status. Its main weakness is in the presentation of quantitative data, particularly of population estimates.

The book is divided into five main sections: ''A History of the Salton Sink,'' ''Conservation and Management Issues,'' ''Biogeography of the Salton Sea,'' ''A Checklist of the Birds of the Salton Sea,'' and ''The Species Accounts.'' Despite the different appellations, these all apply to the more inclusive Salton Sink, the larger basin in which the Salton Sea lies. The first two sections, respectively, provide concise descriptions of the history of the region from the Pleistocene to the formation of the present day Salton Sea and of the threats to the ecosystem and possible remedies. The latter section seems to overemphasize the threat of contaminants, as recent studies, despite expectations, found relatively low levels of pesticides in sediments, and there have been no links to substantial reproductive harm to the area's birds. Not discussed is eutrophication from high nutrient loads of agricultural and municipal discharges to the sea, which causes extensive algal blooms, oxygen depletion, and fish die-offs.

The biogeography section describes the prior fish and avifauna, current conditions (climate, inflow to the sea, fish and invertebrates), links to the Gulf of California, vegetation and habitat, and migratory pathways and biogeographic affinities of birds. Treatment of these topics is uneven. Extreme summer temperatures are emphasized but not the mild winters, which in part explain the abundance of birds at that season. Fish species are listed but not the timing of their introductions; the latter is discussed for some invertebrates, but no mention is made here at all of the introduced pile worm (*Neanthes succinea*), the dietary mainstay of the Eared Grebe (*Podiceps nigricollis*), the sea's most numerous bird. Discussion of the sea's limnology (seasonal patterns of stratification, oxygen depletion, circulation, and faunal abundance and distribution) would have been a valuable addition.

I found the classification of the region's vegetation more confusing than helpful. The book recognizes eight principal vegetation formations (i.e., communities); the names of the five native ones mainly reflect moisture or soil preferences rather than dominant plant species or growth forms. I was baffled by the word *heliophytic*, meaning essentially ''plants flourishing in sunlight'' but here an arcane descriptor for marshes. The prefix would apply equally to all desert plant communities. Also, it was unclear to me why the exotic saltcedar, which most consider primarily a riparian dominant, is described as an important component of three formations. Likewise, I failed to understand why mesquite was included in the xerophytic (drought-tolerant) formation rather than the mesophytic formation, inclusive of riparian, which seems a much better fit given both the authors' assertion that the species was the dominant tree along the New and Alamo Rivers and that other ornithologists consider mesquite a component of desert riparian habitat (e.g., Rosenberg et al. 1991, *Birds of the Lower Colorado River Va*lley, University of Arizona Press, Tucson, Arizona). Perhaps the best gauge of the utility of these formations for describing habitats for birds, though, is their absence from all of the habitat descriptions in the many species accounts I checked.

At times provocative, the discussions of migratory pathways and flyways of waterbirds are occasionally simplistic, poorly documented, and show a northern bias (northern breeding areas emphasized over southern wintering areas). It is claimed as fact (p. 16) that ''most'' northbound waterbirds in spring are funneled through San Gorgonio Pass, ''making it one of the most important migratory corridors in the West,'' yet no data or observations are offered in support. The authors argue that shorebirds occurring at the Salton Sink are ''largely'' from western Canada and Alaska, but there is no discussion in this context of the many species—Mountain Plover (*Charadrius montanus*), Willet (*Catoptrophorus semipalmatus*), Long-billed Curlew (*Numenius americanus*), Marbled Godwit (*Limosa fedoa*), Wilson's Phalarope (*Phalaropus tricolor*)—with breeding distributions centered on the Intermountain West or Great Plains. Perhaps the most interesting discussion here is that of the differences in

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geographic affinities of landbirds: breeding species and subspecies are predominantly associated with the Colorado Desert, whereas migrant and wintering subspecies are mainly from the coastal slope of southern California.

The checklist section provides a handy list of all species and subspecies recorded in the region and includes seasonal status codes and the form of documentation (e.g., specimen, photo) and its depository or reference. This section ends with speculation on the 20 taxa most likely to be recorded next.

The species accounts, comprising the bulk of the book, synthesize a wealth of information to provide excellent summaries of each species' patterns of regional occurrence. Accounts start with a capsule description of seasonal status, followed by details on temporal and spatial occurrence, abundance, and, if known, population trends. Many place the species' status in a broader geographic context using statements of common knowledge. Some specifics about the sea beg for proper citation (e.g., ''the most important wintering site for the Snowy Plover in the interior of western North America''; see *Western Birds* 26:82–98 for such documentation) or for refutation (e.g., the Long-billed Curlew's area of ''greater concentration inland''). For most species the ecology section consists of a concise, informative description of habitat use only. Coverage of other relevant topics is uneven, either because knowledge varies widely across species (e.g., diet) or it is treated inconsistently (e.g., nighttime roosts are discussed for the uncommon Sandhill Crane (*Grus canadensis*) but not for the Cattle Egret (*Bubulcus ibis*) or White-faced Ibis (*Plegadis chihi*), thousands of which fly to relatively few roosts in the Imperial Valley).

The rigorous treatment of subspecies taxonomy is the best currently available for any region of California and often will prove useful to those outside the state; many anxiously await such treatments for all of California and North America, both long overdue. The general reader, though, may find some taxonomic discourses tangential at best (e.g., the lone record of California Towhee (*Pipilo crissalis*) spawning a critique of the validity of all its subspecies north of Mexico).

Although quantitative information can add appreciably to avifaunal works, the documentation of numbers and their style of use in tables and figures often are problematic. The authors did not apply the same scientific rigor to this aspect as to clarifying taxonomic issues or appraising records of rarities. Numbers reported often imply precision that is lacking, and it is impossible to discern what alchemical formulas were used to combine data from different sources to obtain population estimates or to convert anecdotal data to graphs of relative abundance (e.g., Fig. 63) or seasonal occurrence (e.g., Fig. 55). Some numbers in tables or figures conflict with those in the text, are improperly labeled (Table 5; ''nesting densities'' are actually raw numbers), or lack a proper citation (e.g., bird mortalities, Fig. 7).

Most troubling are the ''approximate mean numbers'' of waterfowl, shorebirds, and gulls (Tables 7, 9, 11). Waterfowl numbers are from a short period of aerial surveys (when decades of annual surveys are available) modified by Christmas Bird Count and anecdotal data, with source attributions for individual species lacking. Regardless, the sum of the winter ''means'' for all ducks of about 130 000 (Table 7) conflicts with the text (p. 27) description of wintering numbers being ''in the hundreds of thousands, if not millions.'' Conversely, Table 7 estimates the approximate mean number of wintering Ruddy Ducks (*Oxyura jamaicensis*) at 75 000, yet actual mean numbers from the only available long-term censuses ($n = 16$ years) that include the open water of the sea are double that (R. McKernan in Shuford et al. 2002, *Hydrobiologia* 473:269). For shorebirds, it is unclear if numbers refer to peak single-day estimates or totals for the entire spring migration. Regardless, many numbers for shorebirds and, particularly, gulls appear to be crude estimates. For example, wintering Ring-billed Gulls (*Larus delawarensis*) are estimated at 500 000 in Table 11 vs. ''hundreds of thousands (perhaps millions)'' in the respective species account. Both of these seem at odds with the species' estimated world population of 3–4 million individuals (Ryder 1993, *Birds of North America* No. 33) and with two winter counts of 23 000–29 000 Ring-billed Gulls on the entire sea, exclusive of the Imperial Valley (Shuford et al. 2002, *Hydrobiologia* 473:265). In sum, I urge readers to take most of the book's population estimates with a grain of salt and to look elsewhere for such data.

The captions for the excellent black and white photographs of habitats and birds generally are pithy, though some are incomplete or poorly supported by details in the text. Figure 38's caption incorrectly implies that nesting Snowy Plovers (*C. alexandrinus*) at the Salton Sea are listed as federally threatened (applies to the coastal population only), and that for Figure 71 indicates that the spread of the Bronzed Cowbird (*Molothrus aeneus*) into the region has accelerated with the colonization of an additional host, the Brewer's Blackbird (*Euphagus cyanocephalus*), yet such a relationship is not discussed elsewhere.

Quibbles aside, and population estimates notwithstanding, this book will long remain the standard treatise on the avifauna of the Salton Sea region. It is a must read for anyone seriously interested in the status of birds in western North America and one to return to often. Of greater significance, it will further emphasize the crucial importance of the Salton Sea to birds and draw needed attention to the conservation of this threatened ecosystem.—W. DAVID SHUFORD, PRBO Conservation Science, 4990 Shoreline Highway, Stinson Beach, CA 94970. E-mail: dshuford@prbo.org

Wings across the Desert: The Incredible Motorized Crane Migration.—David H. Ellis. 2001. Hancock House Publishers, Blaine, Washington. 181 pp., 40 color plates. ISBN 0-88839-480-2. $17.95 paper.

Each spring I am asked by student naturalists and scientists for my recommendations on a book or two to read during the summer when they are away from school. In my response, I want my recommendations to demonstrate the excitement of our sciences, the importance of our efforts, and at the same time demonstrate the humanity of the scientist writers. *Wings*

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Across the Desert is now clearly one of the top five books on my list. The book is not about elegant laboratory experiments, major ecosystem studies, or ''paradigm shifts,'' but rather it shows the work and dreams of a naturalist and behaviorist in his efforts to train domestically reared Sandhill Cranes (*Grus canadensis*) to migrate. Most importantly, the book shows the humanity of the scientists traveling this improbable and frustrating journey. Books about science almost always disregard the joys and excitement of our successes, minimize the frustrations of failed experiments, skirt the exasperation we face when our animal subjects do not respond, ignore feelings of respect and sorrow for animals that die as a result of our search for knowledge, or evade questions about our own motivations in seeing the project through. Ellis addresses these emotions head on. I want our students to know that accepting one's humanity as a scientist is okay. I can only hope that they see the joy and excitement of this scientific endeavor.

I feel obligated to ask if the author achieved his objectives in this easy to read publication. The author told us that he simply wanted to tell the tale of two attempts to train Sandhill Cranes to follow a truck across a 400-mile (640 km) migration route from north-central Arizona to the Buenos Aires National Wildlife Refuge south of Tucson. Exercising literary license in a nontechnical manner, the author collapsed 1995 and 1996 migrations into a single story and ultimately succeeded in bringing the tale alive.

These Sandhill Cranes, of course, were surrogates in efforts to produce one or more migratory flocks of the endangered Whooping Crane (*Grus americana*). The history of Whooping Crane conservation will undoubtedly have little to say about these efforts. But this test of motorized migration training using a land vehicle was a logical step. We now know that Whooping Cranes can be trained to follow ultralight aircraft, and that following a motorized truck was not an appropriate technique. The hypothesis had to be tested and it was.

The passion of those on this migration journey clearly caught my attention. I even pulled out an old copy of an Arizona road map to follow the migration from one small community to the next. Where indeed is the small town of Yarnell, Arizona, where not one resident even acknowledged the strange entourage that included a large ''cranemobile'' with two chase vehicles and a flock of Sandhill Cranes flying in formation down the main street? Where indeed was the prison yard that attracted three wayward cranes, and where the warden warned the author that the inmates had grown attached to the cranes and that any attempts to remove the birds that resulted in injury to the cranes might invoke a riot? Where was the fourth grade classroom, including students, where four birds were being kept and where the floor was now nicely covered with fecal matter?

The author clearly goes to great pains to report on the interactions of the team that shared in the great adventure. The tales and color plates in the book show the efforts of the team members that participated in the 400-mile journey. Giving credit to the team, while shouldering responsibilities as team leader, is a lesson we can all learn.

Certainly like all works, this book has its share of shortcomings. Although the author explains that his publisher wanted a chapter on the history of Whooping Crane conservation, and despite the acknowledgment that the chapter interrupts the narrative, the material should have been incorporated into the preface or the ending of the book. Despite a slight exaggeration of the number of Whooping Cranes in the Aransas National Wildlife Refuge flock, I found the book to have few significant shortcomings.

Ellis' book has addressed one of the most difficult problems facing endangered species conservation: How do we teach birds to be wild again? In his attempt to train the cranes, he effectively used anecdotes and story telling, thereby clearly showing his voice. The entire motorized migration research effort begins with, ''Basically, we have no idea what we're doing,'' and the story ends with the admonition for those interested in pursuing land-based motorized migration training, ''Please don't try it . . . but if you do, first give me a jingle.'' After reading *Wings across the Desert* I feel that I understand the author's passion, humor, fears, and frustrations. *Wings across the Desert* is a nontechnical book for ornithologists and behaviorists. I am sure that serious enthusiasts of birds and conservation will find this publication a great read as well. If you are asked for a recommendation from a student of any age, I encourage you to suggest *Wings across the Desert.*—R. DOUGLAS SLACK, Department of Wildlife and Fisheries Sciences, Texas A&M University, College Station, TX 77845. E-mail: d-slack@tamu.edu

BRIEFLY NOTED

Vegemite Sandwich—Birds of Australia, New Zealand, and Antarctica

Birds of Australia.—Ken Simpson, Nicolas Day, and Peter Trusler. 1999. Sixth edition. Princeton University Press, Princeton, NJ. 440 pp., 132 color plates, 1000+ monochrome and color drawings, 770 color range maps. ISBN 0-691-04995-5 $29.95 (plastic).

Birds of Australia, a Princeton Field Guide, is a wonderfully illustrated, beautifully designed field guide that uniquely combines an enormous amount of useful information with an economy of size. Apparently, this is a completely revised version of an earlier volume, but I am unfamiliar with the previous editions. Unlike other books in the Princeton Field Guide series, this one is a complete volume unto itself. Each exquisitely drawn color plate contains one or more color illustrations by Nicolas Day of the species in its natural setting and aspect. Sex and age differences are often included. Facing each plate are species descriptions (including size, plumages, voice, and habitat), color range maps, and often black-and-white drawings highlighting important diagnostic characteristics. Introductory material includes a brief section on how to use the book, suggestions on how to observe and identify birds, and a guide to bird families found in Australia. A ''Vagrant Bird Bulletin,'' which follows the species descriptions, is a series of accounts on 42 bona fide

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vagrant species that have been found in Australia. These 42 accounts follow the same format as the other species accounts, but also include citations to published accounts of the observations. A 122-page ''Handbook'' contains additional useful, though ancillary, information, including an in-depth discussion of how to identify birds, Australian avian habitats, Australian avian paleontology and evolution, and interesting, if brief, discussions of the ecology, behavior, and taxonomy of each bird family found in Australia. There are also checklists to birds of the various territorial islands of Australia (e.g., Norfolk, Christmas, Macquarie Islands). The book is plastic, which protects it from water and makes it more durable. The book is slightly too wide (16 × 22.5 × 2.5 cm) to fit in most pants pockets. Whereas the more traditional *Field Guide to the Birds of Australia* (Pizzey and Knight 1996, Harper Collins, Sydney), with its greater depth of information, is an essential reference book, Simpson et al. (1999) is invaluable for serious and beginning birdwatchers visiting or living in Australia.

The Hand Guide to the Birds of New Zealand.—Hugh Robertson and Barrie Heather. 2001. Oxford University Press, Oxford, UK. 168 pp., 74 color plates, 194 color range maps. ISBN 0-19-850831-X $39.50 (paper).

This condensed guide covers 381 species of birds found in New Zealand and its offshore islands, including the Ross Dependency, Antarctica. The vivid watercolor illustrations, by Derek Onley, include various views of some of the birds and show many within their typical habitats. Illustrations and descriptions are provided for the five species that have gone extinct in New Zealand in the past century. Each color plate, which generally includes five species, is accompanied by a short description of size, weight, appearance, vocalizations, and breeding season. Range maps are provided for half of the birds, but the maps are quite small and lack detail. The paperback book measures (16 × 22 × 1.2 cm) and comes with a clear plastic dust jacket. The format of the book makes it fairly well suited for taking into the field as an aid to bird identification, but more serious students of New Zealand's avifauna would be better served by the parent volume, *The Field Guide to the Birds of New Zealand* (Heather and Robertson 1996, Viking, Auckland).

Handbook of Australian, New Zealand and Antarctic Birds. Volume 5 Tyrant-flycatchers to Chats.—edited by P. J. Higgins, J. M. Peter, and W. K. Steele. 2001. Oxford University Press, Oxford, UK. 1269 pp., 44 color plates. ISBN 0-19-553258-9. $250.00 (cloth).

This is volume five out of a planned seven-volume series containing comprehensive information on the birds of Australia, New Zealand, and Antarctica. Like its predecessors, this book is well conceived and beautifully executed. This volume covers 118 species in eight families between the tyrant-flycatchers and chats. The species accounts are quite thorough and many even include spectrograms of typical vocalizations. Color illustrations by six illustrators (P. Marsack, P. Slater, K. Franklin, M. J. Bamford, F. Knight, and D. J. Onley), are of superb quality and show different plumages and sometimes different poses. Particularly striking for their detail are some of the drawings of birds in flight. Unlike *Birds of Africa* (Fry et al. 2000), this volume does not have many pen-and-ink drawings of behaviors and natural history accompanying the accounts. What it does have, however, are spectrograms of typical vocalizations and fairly large-scaled range maps of some of the species. All of the drawings and spectrograms are of high quality and well produced. Accounts include such categories as field identification, habitat, distribution and population movements, migration, food, social organization, social behavior, voice, breeding biology, plumage, and external morphology, and most have an extensive list of references. Some species have rather extensive accounts (e.g., the Superb Lyrebird [*Menura novaehollandiae*] covers 32 pages of exceptional detail and includes 13 drawings, 15 spectrograms, 4 tables, and 1 range map), while others, with narrower distributions and less information available, have quite rudimentary ones by comparison (e.g., Blue-winged Pitta [*Pitta moluccensis*] covers three pages and includes one range map and one table). Although to carry the full set of seven books into the field would require an expedition of Elizabethan proportions, this and its sister volumes are indispensable companions to the library of any ornithologist or serious birder interested in birds from Down Under. Fans of the series may wish to note that Volume 6 (Pardalotes to Shrike-thrushes) is now available, and that a full list of species and families in each volume can be found at http://www.birdsaustralia.com.au/hanzab/index.html

Complete Guide to Antarctic Wildlife: Birds and Mammals of the Antarctic Continent and the Southern Ocean.—Hadoram Shirihai. 2002. Princeton University Press, Princeton, NJ. 510 pp., 35 color plates, 600+ color photographs, 157 color range maps. ISBN 0-691-11414-5 $49.50 (cloth).

I don't know whether this book is an excellent field guide, a superb coffee table book, or a guidebook for natural historians traveling to Antarctica. One thing is clear: the book was truly a labor of love for the author. This book is an excellent source of information on Antarctic birds, mammals, and the ecosystem. The 47 pages of introductory chapters provide good information on the Antarctic ecosystem, which is useful since it is so different from the temperate environments that so many natural historians hail from. There are sections on the physical and biotic environments as well as the conservation and history of exploration. The last 121 pages of the book are a fairly detailed series of sections on the various Antarctic and sub-Antarctic islands of South America, South Africa, the Antarctic Peninsula, and the open sea. They include details on geography, avifauna, marine mammals, conservation, history, and tips for visitors. These sections are very useful to the naïve and experienced visitor (or visitor wannabe) to this fascinating part of the world. The middle section contains species accounts of all birds and marine mammals found in the region. The accounts offer minute detail on distribution, behavior, and taxonomy. Multicolored range maps often include several species on one map, but they are clear and detailed enough to remain useful. Of particular note

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are the exceptional photographs (many by the author) and color illustrations (by Brett Jarrett) that are sure to help field identification. The book is organized like a field guide, but bound more like a textbook (25.5 × 18 × 2.7 cm), making it too large to carry in a pocket or small field pouch. From its size to its 600 photographs to its somewhat overly extensive background material, the entire book feels more like a coffee table book or library reference than a field guide or travel guide. Overall, the book is exceptional, and packed with useful information, but it may have worked better if Shirihai had written two or three separate books rather than combine them into one.—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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