

BOOK REVIEWS

The Biology of a Desert Apparition: LeConte's Thrasher (*Toxostoma lecontei*), by Jay M. Sheppard. 2018. Studies of Western Birds No. 2. Western Field Ornithologists, Camarillo, CA. Xiv + 210 pp. Paperback, \$33.50. ISBN 978-0-9790585-2-3.

This monograph is aptly titled for its ghostly topic, a bird that was largely hidden from science until the 1880s, and that continues to frustrate biologists and birders alike with its disappearing acts and ability to remain out of sight. As the author notes, "pairs would often vanish from view for a month or more at a time and suddenly reappear right where they were last seen." Not only a xerophile, but an extremophile, the LeConte's Thrasher lives in the hottest and driest deserts of the Southwest and spends most of its time on the ground.

Sheppard attempts to shed light on this mysterious and amazing bird by summarizing essentially all that is known about the species and its biology, which is largely thanks to his own study between 1968 and 1971 at a site near Maricopa in the San Joaquin Valley of Kern County, California. That monumental study involved 353 banded birds and about 2000 field hours. But Sheppard also spent 1000 field hours elsewhere in the range making behavioral observations, and examined 650+ specimens and 450+ egg sets.

Much of this information was published previously (e.g., Sheppard 1970, 1973) and also summarized in the *Birds of North America* account (Sheppard 1996), but this 210-page monograph is a gloriously detailed expansion and update on every topic in the bird's biology, from genetics to ecology to behavior. Sheppard includes information from interviews of other biologists and birders, and from the handful of other published and unpublished studies up through 2017. One of the most valuable aspects is his elucidation of the many areas in need of further research, such as the status of the Vizcaino Thrasher (*T. l. arenicola*), movement behaviors that could be revealed through telemetry study, physiological adaptation to desert extremes, and overall conservation needs.

This is a well-written, useful, and successfully thorough account, a must-have for researchers and anyone interested in LeConte's Thrasher, but also for anyone who enjoys the many facets of scientific study of a species. The useful tables (28), figures (89), and variety of light statistics will give ornithology students many ideas for how to approach the study of other species as well.

To summarize the content, I will simply outline the chapters and some of the subchapters below (probably showing my bias toward nesting ecology), but must emphasize the detailed treatment of each topic. There is something comforting about such a thoroughly careful and comprehensive approach. The exhaustive nature could be too much for some readers, but those will enjoy the succinct 6-page summary in the final chapter followed by a summary of topics needing further investigation. Major content is organized as follows: after a brief *Introduction*, *Materials and Methods*, especially regarding the 734-ha Maricopa study area (but some methods are instead included in subsequent chapters). *Systematics*, including interspecific relationships (covering 10 species in *Toxostoma* and with a proposal to resurrect the subgenus *Harporhynchus*). *Intraspecific Variation*, with comprehensive morphological measurements. *Distribution*, including an accounting of questionable records and evidence in support of the idea that LeConte's Thrasher is a permanent resident. *Ecology and Conservation*, with limiting factors (including the possible use of mammal burrows and an interesting suggestion for the design of an artificial nesting structure), habitat, competition, predators, human threats, and a discussion of various survey results and recommendations for survey protocols. *Reproduction*, with timing (triple brooding is possible) and all details of nesting (including the amazing use of an abandoned road

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grader with 5 nests by 3 different pairs). *Development and Molt*, *Reproductive Output*, and *Population Dynamics*, including 4 years of census results and a nice territory map. *Territoriality*, *Movements by Marked Individuals*, and *Pair Bonds*. *Behavior*, including wide array of interactive behaviors and display steps described, such as aggression, courtship, and wing-flashing at snakes. *Vocalizations* grapples with the difficulty of characterizing the vocal repertoire, “a wide variety of forms that will require much more analysis.” Last is *Feeding and Food Preferences*. Appendices, images, recordings, and other information are at www.westernfieldornithologists.org/LThrasher.

Especially useful figures include Figure 13, which shows all distributional records and 9 demes across the mapped range. Tables include outcomes of 165 nesting attempts and 474 eggs (1968–1969). The apparent success rate was surprisingly high, but partly because “many nests were not found until the eggs had hatched.” Throughout, Sheppard compares his results to other, smaller studies. For example, on the basis of 23 nests in Arizona, Blackman and Diamond (2015) found a much higher rate of predation of nestlings. Given the largely banded population studied, Sheppard was able to provide good details on many aspects of breeding biology such as the number of nests attempted per season, roles of females vs. males, growth rates, and dispersal of individuals. Yet the value of extrapolation from the Maricopa study area to the rest of the range may be limited. In many cases where facts are slim, such as our knowledge of predators, speculations and hypotheses are provided, but always supported by good reasoning. Entertaining notes include a detailed accounting of the first specimen collected in early winter of 1850–51 by John LeConte (Lawrence 1851), which involved a deadly Indian attack.

I highly recommend this wonderfully comprehensive life’s work, especially for its thoroughness of detail, clarity of writing, and many useful tables and figures. What a refreshing contrast to the trend toward increasingly abbreviated scientific papers! This manuscript will be highly inspirational to many future ornithologists. And it lays an impressive foundation for the study of this species and its future conservation. In the *Epilogue*, Sheppard sadly describes his return to the Maricopa study area 50 years later, only to find that the thriving population he had once studied is now essentially extirpated, with habitat degraded by drought, overgrazing, and new houses. Hopefully this does not portend this thrasher’s final disappearing act.

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Lori Hargrove

Trends and Traditions: Avifaunal Change in Western North America, edited by W. David Shuford, Robert E. Gill, Jr., and Colleen M. Handel. 2018. *Studies of Western Birds* No. 3. Western Field Ornithologists, Camarillo, CA. Vii + 466 pp. Paperback, \$53.50. ISBN 978-0-9790585-3-0.

That species and communities respond to biotic and abiotic environmental conditions over both short and long time scales and small and large spatial scales is, I would assert, a fundamental tenet of ecology. Describing the nature of the associations of bird distribution and abundance with environmental variables has formed the basis for much of avian ecological research for well over a century, with an increasing focus not just on the correlations but also elucidating the mechanisms (physiological, demographic, etc.) that account for those relationships. Importantly, there is also recognition that the underlying biotic and abiotic conditions that determine a species' distribution are dynamic in space and time, and that because of myriad anthropogenic factors, those conditions are changing at a pace likely unprecedented in the evolutionary history of most avian taxa. It is this recognition that motivates current research in establishing how bird species' abundances and distributions have changed through time, which environmental variables or suites of variables are associated with those changes, what mechanisms appear to drive those changes, and how we can use this knowledge to predict how species might redistribute themselves in response to continuing environmental changes in the future. The 25 chapters in this edited volume fit comfortably within this framework.

An informative introduction by the editors that I found to be an excellent synopsis of the contents of the volume is followed by 25 chapters unequally distributed among four sections: changes in distribution (5 chapters), population trends and changing demographics (10 chapters), response to changes in climate and the environment (8 chapters), and "looking back-looking forward" (2 chapters). Although chapter assignments to sections are not arbitrary, it is clear that many of them cover ground that could easily merit them reassignment to other sections.

"Avifaunal change in western North America" is not a new phrase in the literature. Indeed, this current volume is specifically cast as a follow-on to *Studies in Avian Biology* number 15, *A Century of Avifaunal Change in Western North America* (1994), edited by Joe Jehl and Ned Johnson, and published by the Cooper Ornithological Society. *SAB 15* chapters were mostly in the style of historical narratives (often strongly supported by quantitative data), whereas most *Trends and Traditions* chapters are much more analytically driven. The former lacks terms such as "Bayesian," "AIC," or "R," and the most sophisticated analyses in it relied on step-wise multiple regression, route-regression, and CART (classification and regression trees). This is in no way to imply any lack of robustness in the conclusions presented in *SAB 15*, but rather to highlight the enormous expansion our statistical toolbox has undergone in the last two decades. This is coupled with another distinction between the two volumes: whereas almost all of the chapters in *SAB 15* were "historical" in the sense of comparing current bird abundances or distributions to those of some specified period in the past (then vs. now), most of the ones in *Trends and Traditions* are "long-term," examining data collected more or less continuously (or at least intermittently) over some period of time. Familiar to all of us, the North American Breeding Bird Survey, established in 1966, is a prime example of a long-term data set, and it is used in this volume to explore range shifts in ravens, population trends in gulls, and range-wide declines in the Pinyon Jay. Thirty-six years of Christmas Bird Counts, which began early in the last century, are used to document changes in birds wintering in California's Central Valley. Although of considerably shorter duration, the ambitious MAPS (Monitoring Avian Productivity and Survival) program, started in 1992, shows considerable promise for revealing the demographic mechanisms that may drive population changes. Analysis in this volume shows a significant correlation

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between annual rates of regional population trends estimated from MAPS data and those estimated independently from the BBS.

A number of the long-term data sets analyzed in *Trends and Traditions* stem not from national-scale monitoring schemes like those mentioned above but rather from the continuation of individual projects established decades ago, frequently maintained by the dedication and persistence of project scientists and their students and colleagues. Frank Pitelka initiated shorebird studies at Utqiagvik (formerly known as Barrow), Alaska, in 1951, with subsequent sampling recurring at various intervals at least through 2012. Significantly, since that time temperatures during shorebirds' breeding season have increased approximately 2 °C, about twice the global average. Findings from this study open a window into the future of shorebird distribution and abundance (the winners and losers) under continuing global warming. Two additional Alaska studies come from the Yukon-Kuskokwim delta, where birds' abundances and arrival times have been monitored since the 1960s. At a much warmer site, in 1986 Jared Verner initiated a sampling regimen in California oak woodlands at the San Joaquin Experimental Range near Fresno. That work continues today, and appears twice in this volume with an examination of trends in abundance and relations to changing climate. Analysis of counts of shorebirds on the central California coast at Bolinas Lagoon, counts started by Point Reyes Bird Observatory (now Point Blue Conservation Science) in 1972, reveal how shorebird numbers there are influenced by rainfall and agricultural management in the California Central Valley several hundred kilometers distant.

Whereas the foregoing yield data on the avian community at a site or in a region, some monitoring is directed toward a particular species, usually one of conservation concern. Examples here include examinations of Peregrine Falcon recovery in Alaska (a project started in 1952) and White Pelican dynamics throughout the West, including some surveys dating to the 1950s. At least one species with potentially negative conservation implications has been monitored as well, the California Gull in South San Francisco Bay, whose increase beginning in 1980 has had negative effects on other locally breeding birds.

Although they make up a smaller proportion of the chapters in *Trends and Traditions* than in *SAB 15*, several chapters take a historical approach to their question. Both latitudinal and downslope shifts in the distribution of multiple species are apparent in a comparison of current patterns to those of a century ago. Over a shorter interval (~25 years), both positive and negative changes in the abundance of introduced, naturalized species are documented, including the near extirpation of a few that were formerly considered well established. (As an aside, this is the only chapter that explicitly follows directly from one in *SAB 15*). Over a much longer time span (centuries to millennia), examination of bird bones from archaeological sites substantially expands our knowledge of previous distributional patterns, and effectively connects the historical record with prehistory.

Acknowledging the role of fire in driving environmental change, *Trends and Traditions* includes three chapters on this topic that differ in time scale and number of species studied. These range from how Flammulated Owls use habitat reoccupied 5–10 years after burning, on up to documenting the dynamics of the entire avian community over 5 decades of post-fire recovery. As fires in the western U.S. are growing in size and severity under a warming and drying climate, a chapter reporting surveys taken one to several years after what were then some of the largest fires in recent southern California history provides insight on potential winners and losers as a fire-prone future unfolds.

Three chapters don't neatly fit into the structure outlined above. One chapter describes the importance of systematics and taxonomy for tracking avifaunal changes; although not geographically specific, it is relevant for all species and clades. Another makes predictions about which species are likely to expand their ranges into Beringia,

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the junction between Asia and North America, under a warming climate. A third is a literature review, which comes to the (to me) somewhat surprising conclusion that there is a paucity of publications that actually document observed behavioral (mainly phenological) and distributional changes predicted to occur under a changing climate. This is not interpreted that such changes haven't or won't occur, but rather than more and better structured research is necessary.

Certainly much of the change in species' distributions and abundances is cast in the context of global climate, particularly the warming that seems almost inexorable. But other anthropogenic factors receive full consideration as well. Indeed, habitat loss, whether it occurs slowly as vegetation changes with changing rainfall and temperature, or more rapidly due to the expansion of agricultural and urban/suburban land uses, or even more rapidly under an accelerated fire regime produced by both climate change and human land management and conversion, is still habitat loss. And what is loss for some species will be gains for others; many of the chapters here, as noted above, will help us forecast the winners and losers.

Taken collectively, the chapters in this volume provide ample evidence of the likely trajectories of the changes in bird abundance and distribution that many of its readers will observe during their lifetime should trajectories of environmental variables persist on their present course. Indeed, many of us are old enough to have observed the path many species and communities described in these chapters have already taken. In many respects this volume, with a preponderance of long-term vs. historical studies, is more fine-grained than *SAB 15*, and as such is more complementary to it than repetitive of it. Together, they not only describe trajectories, but they also help establish baselines that we may hope will not shift as successive generations of avian biologists mature.

Perhaps *Trends and Traditions* will indeed start a trend in the sense that it is now a second point that defines a potential series of volumes, produced every 20–25 years or so, that summarizes the continuing changes in the distribution and abundance of birds in western North America. That would be a worthwhile tradition.

John T. Rotenberry

Far From Land: The Mysterious Lives of Seabirds, by Michael Brooke. 2018. Princeton University Press. 249 pp. Numerous drawings, maps and figures, 8 color plates, 13 color maps. Hardback, \$29.95. ISBN 978-0-691-17418-1.

Anyone who spends time working with seabirds inevitably starts thinking about what the birds get up to in the vastness of the sea. Where do they go when they head away from land, diminishing to a tiny speck in the distance? What are they doing out there? How on Earth do they manage to search for food in those trackless blue expanses, braving the winds and the waves, before returning home again? Before the advent of tracking devices, the majority of a seabird's life at sea remained a mystery, but now—with the availability of an array of data loggers, satellite tags, geolocators, and other electronic devices—these mysteries are revealing themselves at a staggering pace. This new information forms the crux of *Far From Land: The Mysterious Lives of Seabirds* by Michael Brooke.

Armed with a formidable and first-hand knowledge of seabirds, Brooke tackles the topic in an accessible and readable style. Drawing from his own experiences and those of researchers from across the globe, he considers in detail a range of topics related to seabird tracking and seabird behavior at sea. *Far From Land* is also liberally dotted with fine illustrations by Bruce Pearson, whose art evokes the majesty and beauty of the subject matter, along with eight color plates and 13 color maps that help to bring

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these studies to life. The book also includes numerous figures and maps replicated from wide-ranging scientific publications. It is perhaps the latter that constitute the real strength of the book, as they make the results of scientific studies accessible to general readers, regardless of the depth of their seabird knowledge.

The book starts with a broad-brush summary of the world's seabirds. The next three chapters dive right into the tracking studies and their insights into the life stages of seabirds. We learn about the remarkable journey of male Thick-billed Murres as they swim (swim, not fly!) for 3000 km with their newly fledged chick on their first autumn migration. We are walked through the challenges of studying immature seabirds and the tantalizing information we are now learning about their formative years. Brooke then considers adults' migration, detailing seabird journeys as diverse as the pole-to-pole migration of the Arctic Tern, the fascinating east-west migrations of the diminutive Red-necked Phalarope, and patterns of movement of species breeding in areas as diverse as Réunion, New Zealand, and Hawai'i. This portion of the book is neatly tied up with a chapter on adults' movements during the breeding season, detailing where adult birds forage and considering some of the differences between males and females.

With seabird movements eloquently tackled, Brooke then moves onto a consideration of exactly how seabirds manage to undertake such incredible journeys and the adaptations required to do so in an energy-efficient manner, regardless of conditions (and even, in the case of the Great Frigatebird, when they are fast asleep). This is followed by chapters on foraging strategies and techniques. The book finishes up with "The Clash," a consideration of how seabirds interact with people, more often than not to their detriment. This chapter, though short, provides a summary of threats including introduced predators, overfishing, power-line collisions, and climate change.

I found *Far From Land* easy to read; Brooke's style is engaging. The pages are filled with factual information, seasoned with humor. It is rare that a book on a topic such as this could reach such a wide range of audiences, but I think that it should appeal to everyone from a beginner starting to explore the fascinating world of seabirds to a grizzled researcher with a lifetime of experience under his belt.

André F. Raine