settlement, was caused by habitat loss and hunting. Plain Chachalacas, abundant in the early years, suffered a serious population decline: Irby Davis could find only a single nest in 1940. Now, with the protections Santa Ana offers, that species has made an amazing recovery. The author uses the example of *Dicliptera vahliana*, a native wildflower with delicate red blossoms, to demonstrate the effects of flood and drought cycles on plant life. I wish she had brought in more examples of insect life, as Santa Ana has produced so many important butterfly and dragonfly records, with at least seven new species of dragonflies for the U.S. just since 2004.

The book makes good use of photos and maps. The pictures of the refuge at the time of its establishment are sobering, particularly the illustrations of savagely overgrazed grasslands. The extensive notes whet my appetite to delve further into the history of this area.

Unfortunately, I found *Border Sanctuary* a slow read, with a lot of repetition; it was difficult to follow at times, particularly the family histories. On occasion I felt that the book might have been better as a couple of lengthy articles.

I value accuracy, especially when it comes to birds, and so I found off-putting such statements as the following: "The acreage holds cuplike bearded flycatcher nests and the heavy stick nests of red-billed pigeons protecting but a single pure white egg." I have to assume that Morgan is speaking of the Northern Beardless-Tyrannulet, though even that really doesn't make sense. Red-billed Pigeons are no longer known to nest at Santa Ana, and as far as I can determine, haven't done so in quite some time.

In spite of my criticism, I think the book is worth owning. As birders, we need to have a deep appreciation for those who fought for land preservation. We also must be aware that the same dangers that almost took Santa Ana from us persist today, and some are perhaps even more pressing.

I visited the refuge recently. As I walked the trails and saw the damage caused by the massive flood of 2010, I was struck that this habitat is still at risk. Floods have always occurred, but dams and other human-caused changes to the river have created a new dynamic. The area nearer the headquarters has changed much since my first visit years ago: Invasive grasses have taken over large areas, there are fewer trees, areas that were once in dense shade are now brightly lit. As birders, we understand the dire need for conserving habitat. Santa Ana deserves to be near the top of the list.

Listening deep to the diversity of America's birds

• *a review by* **Ernie Jardine**

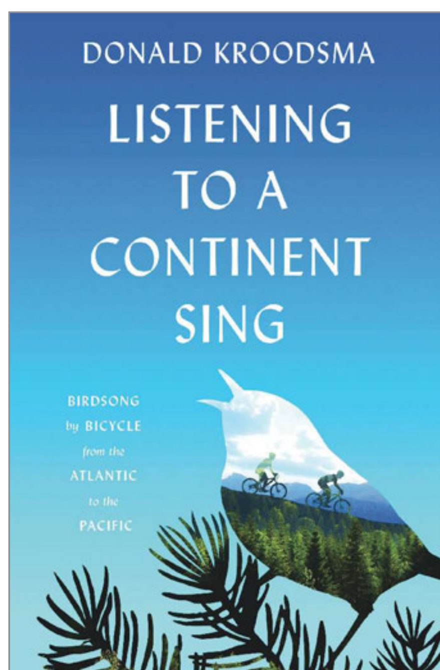
Listening to a Continent Sing: Birdsong by Bicycle from the Atlantic to the Pacific

by Donald Kroodsma

Princeton University Press, 2016
336 pages, $29.95–hardcover
ABA Sales #14636

Anyone for a bike ride? How about a 4,200-mile bike ride across the continent? Count me out—I can feel that bicycle seat right now!

The ride alone would justify the writing of a book, but the biker in this case happens to be Donald Kroodsma, the greatly respected author of *The Singing Life of Birds*, *Birdsong by the Seasons*, and *The Backyard Birdsong Guides*. The title of this most recent book provides some clues about its content. Anyone familiar with Kroodsma and his work must know that the focus of the book can only be birdsong—and not just comments about birdsong, but a detailed analysis of each song, down to notes, patterns, repetition, and duration.



Kroodsma refers to his approach as "deep listening," a way to get to know the bird's personality. He would encourage the reader not to use "superficial tricks" just to identify a song. Yes, birding deals with species, but Kroodsma asserts that each individual of a species has something special to say. Why does it sing this way, and what is the bird expressing with its song? Why does it switch to another song after repeating a particular version 10 times? Get to know each individual.

This kind of close observation, according to Kroodsma, is the best way to learn birdsong.

The author applies this approach during each stage of his journey when he comes across new birds or encounters new songs from already familiar birds. He compares dawn songs to daytime songs and western songs to eastern versions; he opines on splits and lumps; and he muses about hybrid flickers, dialects in Red-winged Blackbirds and Black-capped Chickadees, speciation in the "Western" Flycatcher and Warbling Vireo, and the always-confusing question of Yellow-breasted Chat taxonomy. We discover each new bird and each new song along with Kroodsma, and witness his passion to understand more.

Early on in the trip, at 5:29 one morning, Kroodsma is listening to an American Robin. Unlike most of us, he doesn't just hear the caroling phrases and high, squeaky *hisselly* notes. He wonders why the bird sings such disparate sounds, the reason for two different phrases, and their different purposes. Then he compares the robin to the cardinal singing at the same time. Northern Cardinals repeat one song many times before switching to another, often countersinging, unlike this robin or a Wood Thrush, where each successive song is different. Kroodsma counts the songs before his cardinal switches to a new one, wanting to discover the pattern. After recording a specific song, he will view it on his computer, slow it down, and analyze its elements to his heart's content—a regular activity that is part of his own deep listening.

As the author himself admits, this approach to birdsong has led to disagreement with other scientists in his field. He sums up this friction by commenting that "I take birdsong seriously," maybe implying that his critics don't look or think deeply enough. For instance, Kroodsma's research has refuted the generally accepted notion that the more songs a male bird sings, the better his chances of attracting females and breeding. Kroodsma seems particularly disgruntled that his research on Three-wattled Bellbirds in Costa Rica was not well received. Bellbirds are closely related to the "hard-wired" flycatchers, which do not learn their song but sing genetically encoded songs; however, Kroodsma's research showed that not only do the bellbirds learn songs, but they also change them from one year to the next to match whatever the other local males are singing. They're still learning, even as adults.

While birdsong is the primary focus of the book, Kroodsma also offers interesting historical, geographic, and human sidelights from his travels. He visits sites connected to the U.S. Civil War and the American Revolution, ponders the ancient seas of Kansas and the geysers of Yellowstone, and tells the stories of interesting people and their dialects.

Donald Kroodsma has a 24-year-old son named David, and it just so happens that David rides the second bike on this fantastic journey. It is emphasized that he is not a morning person, while it's not unusual for the elder Kroodsma to be up and about by 4:00 a.m., organizing his audio gear and venturing out to do some deep listening and recording even before the sun comes up. Kroodsma is a proud father, but the tension that develops at times between the two illustrates the effect of 24-hour contact, face to face, day in and day out, month after month—not to mention sharing a tent.

Despite the pressures of life on the road, father and son also share an admiration for each other. We travel along with the two as they suffer through rain, wind, flat tires, phlebitis, and unruly dogs, and we revel in their highs and successes when karma balances things out. At one point, Kroodsma reads a comment in a log book at a biker hostel in Kentucky: "Enjoy every minute. It'll soon be over." He realizes that it's not just the bike ride this comment refers to.

An accompanying website, ListeningToAContinentSing.com, provides 381 very good recordings of over 200 bird species. It can be accessed directly from the internet or with an app on your smart phone that scans the bar codes in the book. The recordings, all downloadable, can be listened to in the order in which they appear in the book or browsed by location or taxonomy.

Each recording is accompanied by a picture of the bird, a usually quite detailed song analysis, and a list of the birds heard in the background. The analyses amplify what is being described in the text. While some are fairly straightforward, many take a more involved approach, analyzing patterns, repetitions, song sequence changes, and duration. Some songs, such as those of the Red-eyed Vireo and the Say's Phoebe, are analyzed in great detail, and I can't help but think that these discussions might be more useful to someone studying or conducting research on birdsong than to the average birder. To be fair, Kroodsma does emphasize that he is not simply teaching song identification, but rather a method for deep listening, and his explanations do illustrate this unique approach.

This is a fun book to read, especially if you enjoy birdsong and want to learn more about our North American birds. The adventures and stories along the way are a bonus. Nancy Haver's many fine drawings add further depth and

enjoyment to the book. The index, an important feature that is often underappreciated, is very well organized and helpful, and makes finding specific topics and references simple.

Birdsong transports Kroodsma to a more spiritual state at times. In a reflective moment, he quotes Emily Dickinson: "I hope you love birds, too. It is economical. It saves going to Heaven," then adds that "Yes, Heaven is now." Many of us would agree.

Limericks, landscapes, and lorikeets, by Lear

• *a review by* **Rick Wright**

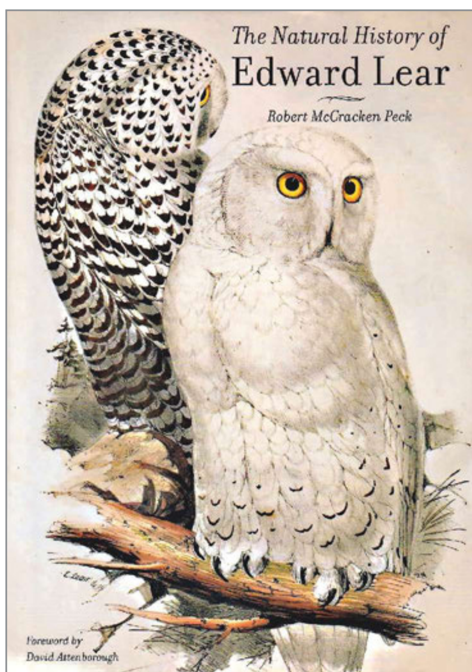
The Natural History of Edward Lear

by Robert McCracken Peck

David R. Godine, 2016

224 pages, $40–hardcover

It took me years to figure out that there was only one Edward Lear, that the brush responsible for some of the finest natural history illustration of the nineteenth century was wielded by the same gifted hand that sent that owl and that pussycat to sea. Now, in this elegantly written and handsomely illustrated new book, Robert McCracken Peck introduces us to Lear and his manifold talents, from the famous nonsense verse to the much less famous landscape paintings, and shows how the Victorian polymath's contributions continue to influence art, literature, and even politics down to our own day.



Lear was born near London in 1812, the twentieth of his fecund parents' twenty-one children. From the age of four, he was raised by his older sister Ann, who with another sister, Sarah, provided the young Lear with the only artistic training he would ever have. By the time he was 15, Lear was working as a commercial artist and anatomical illustrator. At about the same time, he began his regular visits to the natural history collections and menageries of London, where he first encountered some of the people—and animals—that would help make him the most sought-after natural history illustrator in Britain through the entire decade of the 1830s.

It was the London Zoological Society, its members, and its collections that gave Lear's career so promising a start, and Peck's book is at its most eye-opening in its discussion of the far-flung connections Lear made through his work at the zoo. The eighteen-year-old's first known published illustrations—wood engravings of a lemur and a macaw—appeared in a zoo guidebook, and Lear was soon hard at work on a complete portfolio of lithographed menagerie portraits, a project that, though never finished, would deepen his relationships with influential contemporaries. For the decade to come, Lear was busy with work commissioned by such natural history luminaries as Prideaux John Selby, William Jardine, Thomas C. Eyton, and John Gould

Gould's is the name perhaps most closely associated with Lear today, and Peck devotes an entire informative chapter to their collaboration. The two met at the London Zoo, where Gould held the positions of curator and preparator. When Lear found himself with 50 unsold sets of his magnificent monograph of the parrots, Gould bought them and sold them—more than 2,000 individual plates in all—at a profit. He also engaged Lear to help Elizabeth Gould, the elder man's wife, in her work preparing paintings and lithographs, and to produce new plates of his own; among Lear's contributions to the Gould enterprise were nearly 70 plates in *The Birds of Europe* (including the Snowy Owls on the dust jacket of Peck's book) and ten in the *Monograph of the Ramphastidae*.

Gould did not always fully acknowledge the artists responsible for the plates he published. Peck explains that that lapse, even if "insensitive," was not unusual by the standards of the day and should not be used to explain what appears to be their falling out in later life; instead, Gould's treatment of Lear was simply in keeping with the way he dealt with the rest of his employees (and perhaps even with his wife), and an association begun in those terms could not