

he could gather on each species. This includes anecdotal evidence from voyagers, particularly from the early years, as well as more structured scientific studies. The most recent studies use electrical, radio, and satellite detectors to give some information on the birds' activities away from the nest.

While the author devotes considerable attention to the bird's breeding history I found the information on geographic distribution of more immediate use. The island location is given for each colony and the colony positions are pinpointed on each island. An appendix gives the size of the population over the years for which data are available. This enabled me to compare my own estimates with more rigorously conducted counts. Typically my assessments were very low. This was truer where the terrain was rocky and birds could be hidden from the viewer. These chapters also contained information on albatross habits that challenged long held beliefs. Wandering Albatross that were tracked by satellite did not go around and around the world but made a series of erratic zigzags to and from feeding areas. Albatross do not always nest on the windy side of the island. Another interesting aspect of albatross behaviour is their partition of the sea's food resources. While they all feed on fish, krill, and squid, they do so in a way that reduces unwarranted competition.

The writer includes a fascinating chapter on albatross flight. They are such impressive, graceful birds on the wing that you are forced to wonder how they do it. The author has summarized what is known (or

speculated) so far. In reality a little magic still remains in the albatross's flying skill. The following chapter on behaviour absorbed me less. Not that albatross behaviour is dull; far from it. I admit I have given descriptions of some incidences of behaviour in similar terms to the author. Reading about behaviour, even with neat line drawings is, however, a bit dry.

A little more unusual in a book of this type is a chapter on the poetry written about the albatross. I was surprised to learn that Samuel Taylor Coleridge who wrote the classic "Rime of the Ancient Mariner" never saw an albatross. Such is the romance of these birds.

This book will be primarily of interest to scientists and the more serious visitors to albatross islands. It is written in a scholarly style, but is easily read by the non-scientist. The text is well supported by numerous charts, graphs, maps, tables, and drawings. There are several black-and-white photos, including some taken in the late 1800s, scattered throughout the text and a special section of modern, high-quality colour photos at the back. The 21-page bibliography must contain over 1000 references. This book is a good reference source for both naturalists and historians.

ROY JOHN

2193 Emard Crescent, Beacon Hill North, Gloucester, Ontario K1J 6K5 Canada

The Nature of Frogs: Amphibians With Attitude

By Harry Parsons. 2000. Douglas & McIntyre Publishing Group, Vancouver. x + 102 pp., illus., Cloth \$34.95; paper \$24.95.

One of the perennial questions in conservation is how to inoculate the unenlightened with a passion for biophilia. Gesticulating one's arms wildly while effusing about the endearing qualities of a particular species rarely is an effective strategy. For the most part people need an emotional connection to something before they can embrace it more intellectually. Books lavishly endowed with colour photographs are one way to try and capture the hearts and minds of people and *The Nature of Frogs* succeeds admirably well at this task.

Almost every other page of the book is devoted to a full-page, colour photograph. Not surprisingly, many of the photos are of colourful tropical species, but in addition many North American species are featured. Photos are also used to illustrate various activities (e.g. calling, amplexus, feeding) as well as life stages (e.g. egg mass and tadpoles). The images are crisp, the colours are rich and the quality of the photos ranges from good to exceptional.

The accompanying text provides a broad introduction to frogs, but of necessity it skims over most topics. The text is divided into five chapters. "Consider the Frog" introduces amphibians, frogs and the major groups. "Kermit and the Devil" deals with the role of frogs in human societies. Reproduction and the anuran life cycle are examined in "A Frog He Did A-Wooing Go." "Food or Foe" deals with frogs as predators and prey. The last chapter, "The Future of the Order Anura" discusses amphibian decline.

The text is filled with many little gems. For example, according to Parsons the Egyptian hieroglyph for 100 000 is a tadpole. Readers are also introduced to the Paradoxical Frog (*Pseudis paradoxa*) whose tadpoles are larger than the adult. Inevitably, with so many examples mentioned in such a short text, the reader is left wanting to know more about particular topics. According to Parsons there are tropical bats which specialize on frogs, but no other detail is provided. On rare occasions, the text becomes little more than a list: one short paragraph covers cultural

roles of frogs in Nepal, Korea, Vietnam, Australia, and New Zealand. For the most part, Parsons has skillfully skimmed the highlights of anuran biology, weaving his own experiences into the text, adding a personal touch to the many topics. Equally important, his passion for frogs and his concern for their survival is evident throughout the text. It's hard to

imagine anyone reading this book and not coming away smitten with frogs.

DAVID SEBURN

Seburn Ecological Services, 920 Mussell Road, RR 1, Oxford Mills, Ontario K0G 1S0 Canada

Gatherings of Angels: Migrating Birds and their Ecology

Edited by Kenneth P. Able. 1999. Cornell University Press, Ithaca, New York. 193 pp., illus. U.S.\$29.95.

Perhaps once every five years I read a book that presents scientific facts in such a rivetting way that one wonders why other writers fall so far short. Able offers such a winning formula. His book provides insight into the complexities of bird migration, one of the most "extraordinary of natural spectacles."

Ken Able, a biology professor at the State University of New York, Albany, has devoted his life to the study of bird migration. He has contributed two introductory chapters and one concluding chapter, together with a short essay to introduce each of the other chapters: two on trans-gulf migration and six about migrations of eight bird species, the Rufous Hummingbird, Blackpoll Warbler, Broad-winged Hawk, Sandhill Crane, White-rumped and Baird's Sandpipers, Dunlin and Western Sandpiper.

Readers cannot help but be impressed by the "immensity, elegance and inherent risk that attend the great migrations" described by Able and his eight collaborators. For some species, challenges to a species' survival may be greater during migration than on either the breeding or wintering grounds. To understand the complex, multi-factorial, interacting pressures that weigh on the survival of each individual migrating bird it is "critical to keep a clear view of what we know, ... the degree of certainty with which we know it, and the inferences that can confidently be made." Nor should we, Able suggests, "rely too heavily on strictly economic arguments," for this dooms us to "the bean counter's dilemma — knowing the cost of everything but the value of nothing."

Radar studies have helped to confirm that Blackpoll Warblers, after building up body fat in Massachusetts, wait for a cold front and then fly over ocean for about 85 hours, passing over Bermuda, and not landing until they reach Northern South America; the hazardous but largely predator-free trans-oceanic route is 1500 miles shorter than the land route via Florida. Flocks of Broad-winged Hawks time their migrations to take advantage of topography and sunny

days to soar, with low energy consumption, 80% of the way to Colombia. Near the Platte River in Nebraska about 500 000 Sandhill Cranes during each spring migration benefit from the 6 to 8% of corn kernels left in fields after harvest; they gain sufficient fat there to aid their reproduction when they reach their breeding grounds farther north. After putting on fat at Cheyenne Bottoms, Kansas, and a non-stop flight of 2000 miles from there to the arctic breeding ground, White-rumped Sandpipers lay four eggs equal to 90% of the female's body weight. Two species arrive in the Cooper River Delta of Alaska with their energy reserves depleted: the long beak of the Dunlin gives it access to tiny clams deep in the mud, with which it can satisfy its energy needs in a few hours; the smaller Western Sandpiper, in contrast, must feed almost continuously to satisfy itself. In terms of body lengths (almost 49 million), the Rufous Hummingbird makes what is relatively the longest migration of any bird, in spring up the Pacific coast from central Mexico as far as Alaska, and in fall down the alpine meadows of the Coast Range or the Rocky Mountains; nectar from flowers may increase their body mass from 2.7 g to 5.7 g, but to get it they must hover, the most energy-intensive form of flight.

Each chapter is illustrated with appropriate photos and each migration is illustrated by a superb map. It is a treat to read a book that is coherent, understandable, and almost free from mathematical formulae, with each chapter written by a single author. Complicated scientific hypotheses are distilled into understandable English, reminiscent of the prose of men like P. A. Taverner and A. C. Bent in the first half of the 20th century. What a striking contrast to the typical heavy, overwhelmingly scientific ("technospeak") papers in some ornithology journals today! I recommend this book to *everyone* with an interest in birds.

C. STUART HOUSTON

863 University Drive, Saskatoon, Saskatchewan S7N 0J8 Canada



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