The Migration of Birds: Seasons on the Wing

By Janice M. Hughes. 2009. Firefly Books Ltd., Richmond Hill, Ontario. $40.00, 207 pages.

"Birds travel because they must, they go because they wish to, and they journey because they can" – a neat description of bird migration by the author. If you are looking for a book for a birdwatcher friend, consider this one. It summarizes what is known today about migration and how that knowledge was accumulated. The author prepares the ground by first giving the history of what is known about the evolution of birds and the archaeological finds. She covers the science of flight, ancient legends, "hibernation" (particularly that old myth of hibernating swallows, postulated first by Aristotle and not laid to rest – reluctantly – until the 19th century), and the early printed books which speculated on why birds migrate. One was a book by Linnaeus in 1757 entitled *Bird Migration*, another was by Gilbert White.

It has been a long, slow search to plot migration routes, to map wintering and breeding grounds, and the different paths used are well described and illustrated. As technology has advanced in the fields of climatology and telecommunications, so has knowledge about migration. A new hazard for some birds on migration is that with the warming climate, flower and insect food peaks and have completed their cycles before the migrating birds arrive at their nesting grounds.

In the laboratory, scientists have analyzed the hormonal changes which trigger migration and the subsequent minute changes in the bird brain. These changes also initiate accelerated weight gain needed to sustain the bird's body on long flights. "Bird brain" as a taunt is a misnomer, since in fact these small brains are complex – among other substances, they contain magnetic crystals, a compass, and memory. The tiny crystals are magnetite, a type of iron ore. It is now well known that direction-finding on migration depends primarily on the geomagnetic fields of the earth which are relayed to the bird brain. Solar and stellar positions as internal compasses are secondary aids to navigation and all three methods help a bird to plot origin, stopover, and destination positions and to follow a strict path, with one or other of the three used to recalibrate direction when the bird goes off course.

Another, less important, aid to navigation is provided by some long wavelength infrasounds generated in the jet stream which create landmarks audible to migratory birds. Homing pigeons have been important laboratory subjects in providing scientific knowledge about migration because their navigation instincts have been heightened by the selective breeding of pigeon fanciers. Carrier pigeons were used by Genghis Khan, Charlemagne, Reuters, and even modern armies to carry messages. Memory also plays a role in navigation. Many bird species have demonstrated memory such as Blue Jays and Clark's Nutcracker which cache food and remember their larders. Some birds have shown evidence of genetic memory – a Whooping Crane which was born and spent its life in Florida was transported in spring to Manitoba (by plane), released there and returned alone to its birth place in the fall.

The author discusses the hazards of migration – loss of staging grounds, collisions with office buildings and communication towers, predation by cats, and adverse weather. There are excellent and helpful two-page profiles of some individual migratory species which include: Chinese cranes, Phalaropes, Shrikes, Arctic Terns, Wheatears, Dippers, and birds of prey. These individual accounts describe in detail the life story and particular migration of that species and include a map showing its breeding, wintering grounds and the migration routes.

Throughout the book there are excellent photographs, and illustrations of radar tracking – a credit to the Chinese printers. There is a glossary, a general index and a species index but, unusually, there is no information about the author.

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A Photographic Guide to Seashore Life in the North Atlantic – Canada to Cape Cod

By J. D. Sept. 2008. Princeton University Press, 41 William Street, Princeton, New Jersey 08540. 224 pages, 19.95 USD Paper.

I have long believed that a real naturalist is interested in all life. Some of my birder friends refer to the plants that birds perch on as "green stuff." I think that such an attitude is a sad loss because there are many wonderful, non-avian things to see on this earth. There are a lot of top quality choices for books on birds, plants and mammals. There is a more modest choice for reptiles, butterflies and dragonflies. There is not much available however on seashore life so any book is welcome. Sept's guide covers most of the common species found on rocky shores, sandy shores, mud beaches, and floating docks.

This guide covers a wide range of organisms from worms, jellies and sea anemones, through clams and crabs, to seaweeds, lichens and seashore plants. Indeed the author portrays examples from 15 phyla. With the introductory section it is a Course 101 for shore life. Each species is illustrated with high quality, clear

photographs, supported with well-written text. The author often uses the correct scientific term but adds a simple explanation in parentheses [phycoerythrin (algal red pigment)] making the text easy to follow.

This book brings back memories of many old "friends." The Moon Jellies and Beroe's Comb Jellies I saw floating off shore, the limpets, sea-snails and whelks in the tide pools and the Knotted Wrack cascading off the rocks. It reminded me of one of the most fascinating presentations I ever experienced. It was an explanation of the sex life of seaweed given in a swirling rock pool just behind the Peggy's Cove lighthouse. While the author does not give this complex story *per se* there are hints in some of the algae accounts.

The book includes about 225 common species. I estimate that if you walked for an hour along a typical Nova Scotia beach you could find 20 to 30 species with ease. As the book is only 21.5 × 14 × 1.5 cm it would be easy to carry along. For the Common Periwinkle [a very tasty little beast] the photographs give a good sense of size, colour, shape and variability. These are easy to compare with the those of the Smooth and Rough Periwinkle. Nearby you might find a beige "seaweed" made of felt. Look up Leafy Bryozoan. Push through the wrack and you will likely find a few scud, little shrimp-like critters. Keep going and you will surely find some young Rock Crabs or one of the hermit crabs. Now I have an urge to get to a beach and try poking around with this book in hand. The trouble is I am off to the Pacific next.

The author gives a brief overview of various intertidal habitats, such as sand beaches, mud flats, rocky shores and other micro-habitats. He also includes a guide to the best places in Nova Scotia, Prince Edward Island, New Brunswick, Newfoundland, and Labrador, Maine, New Hampshire and Massachusetts. While the locations given are very good almost anywhere along the coast will have a good range of species.

As much as I enjoyed this book, there is one disappointment. The author did not include any plankton. The zooplankton from the Bay of Fundy are among the most beautiful creatures on earth. Surely some one can buy one of the new digital microscopes and create a book on this neglected part of wildlife.

For $20 this book is a great buy. Useful and useable, it will be an asset to any naturalist who wants to understand shore life in full. Better yet take a child along and get them interested – tidal pool creatures are easier to observe than flying birds or diving mammals.

A visit to Sept's website at http://www.septphoto.com is also worth the effort.

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Turtles of the United States and Canada

By Carl H. Ernst and Jeffrey E. Lovich. 2009. Second edition. Johns Hopkins University Press, 2715 North Charles Street , Baltimore, Maryland 21218-4363. 827 pages. 95 USD.

The first edition of *Turtles of the United States and Canada* by Carl Ernst, Jeffrey Lovich, and the late Roger Barbour was published in 1994. With its detailed species accounts it became the definitive reference on the turtles of North America. Is this new edition required? Absolutely. The first edition cited approximately 3000 publications on turtles, while this new edition references more than 5000 – an indication of the explosion in scientific research on turtles in the last 15 years.

The format is almost identical to the previous edition. One change is that each species account begins with an introductory paragraph, putting the species into context. Information on the species is then provided in the following categories: Recognition, Karotype, Fossil Record, Distribution, Geographic Variation, Confusing Species, Habitat, Behavior, Reproduction, Growth and Longevity, Diet and Feeding Behavior, Predators and Defence, Populations, and Remarks. Each species account is accompanied by a shaded distribution map and colour photos of each species (generally one shot in nature, one of the plastron and one of a hatchling). One unfortunate change to the new edition is that species accounts no longer always start on a new page. The species accounts within a given genus begin immediately after the previous species account ends. One change not made from the last edition is the content of the index, which is only indexed on the names of the turtles. Want to know which species have been reported killed by boat propellers or have experienced necrotic shell diseases? Good luck. You'll have to read the population section of every species account.

Any volume attempting to summarize such a huge amount of scientific literature is bound to include some errors. There are enough careless errors to make one want to double check any unlikely "facts" in the book. For example, it is stated that a Snapping Turtle died of *hypo*thermia before nesting, when it should be *hyper*thermia (page 117). The authors also claim (without any supporting reference) that the diminutive Spotted Turtle can lay up to 14 eggs (page 218). I can find no evidence of a Spotted Turtle laying more than 7 eggs and the average is much below this. I may be