

Review—

***Invisible Connections: Why Migrating Shorebirds Need the Yellow Sea* by Jan van de Kam, Phil Battley, Brian McCaffery, Danny Rogers, Jae Sang Hong, Nial Moores and Ju Yun-Ki, CSIRO Publishing, Melbourne, 2010. Softcover, 160 pp. RRP \$49.95.**

The first thing that strikes the eye about this book is the stunning photographs taken by Jan van de Kam. The pictures themselves are more than pretty pictures; they tell an intriguing story of bird migration between the two ends of the earth, each end providing benefits and threats to the survival of these long-distance migrants. The staging areas in between are no less challenging. Together with the text by seven of the foremost experts on shorebirds in the East Asian–Australasian Flyway, the book provides the most complete story on migratory shorebirds that I have ever had the pleasure of reading.

Invisible Connections: Why Migrating Shorebirds Need the Yellow Sea was originally produced as a tri-language hardbound book, its launch timed to coincide with the 2008 Ramsar Convention on Wetlands of International Importance in Chignon, South Korea. The three languages (Chinese, Korean and English) run parallel throughout the book, which is appropriate at a time when the world is focussed on the devastating loss of tidal mudflats in the Yellow Sea, between China and the Korean Peninsula. The single most devastating loss has been the 400 km² reclamation of Saemangeum in South Korea, no doubt the trigger for the production of this book.

This paperback version, reduced in size but not in content, is produced solely in English, and is the only version widely available for sale. There are three forewords, appropriately by champions of wetlands and shorebirds: Alison Russell-French, Birds Australia; Prof. Chen Kelin, Wetlands International China; and Prof. Chul-Hwan Koh, Professor of Marine Ecology, Seoul National University.

Brian McCaffery has been a dedicated shorebird worker of three decades or more, now working for the United States Fish and Wildlife Service at the Yukon Delta National Wildlife Refuge. McCaffery leads with Chapter 1, ‘Time is Running Out’—a very apt title at a time when shorebirds are declining like never before and nowhere more than in the East Asian–Australasian Flyway. The reasons for these declines are most likely varied, with no single threat accounting for the decline of all species of shorebirds reaching our shores.

McCaffery sets the scene for a migration that to most of us is invisible, high above, or in remote landscapes that few of us visit. The ‘connections’ are between non-breeding sites in Australia and New Zealand, through staging sites along the flyways, to the breeding grounds. They are also between the people of these countries and the habitats that they share with shorebirds for their livelihoods, as they have done for thousands of years. They are affected by the same threats as those of migratory shorebirds.

‘Shorebird Lifestyles’ are aptly covered by Phil Battley and Danny Rogers, two of the world’s experts who are familiar with all aspects of the lifestyles of a varied mix of shorebirds. Shorebirds tend to work to tidal cycles, rather than the diurnal clock that influences humans as well as other terrestrial and avian predators. Shorebird populations vary from 50 000 Great Knots in a single flock, down to species such as the critically endangered Spoon-billed Sandpiper, perhaps numbering less than 100 pairs globally.

Ruddy Turnstones, which can turn their attention to a whole variety of habitats and adapt to changes thrust upon them, survive much better than highly specialised species unable to adapt to modern threats to their world. However, just about all migratory shorebirds face dramatic changes to their surroundings and habitats throughout their yearly lifecycles. 'Gone are the coastal beaches and tidal flats, the immobile bivalves, the crabs and polychaetes; instead they find themselves inland in habitats varying from scorching high-altitude deserts to Arctic tundras where the temperature may hover just above freezing.' Lifestyles vary greatly between small sandpipers, such as the Red-necked Stint or Dunlin, and the larger Bar-tailed Godwit or, the largest migratory shorebird, the Eastern Curlew.

Phil Battley covers the 'Flyways' used by migratory shorebirds. Such flyways at first seem impossibly hazardous, because of the vagaries of the weather and lack of food stops along the way. However, Battley suggests that they may be a distinct advantage, for example there are no predators at such high altitudes or so far from land. Figuring out why birds do these things of course provides researchers with a challenge as well. How do the birds do it? How do they manage such long non-stop flights without food, rest or water? How do they navigate weather fronts with nowhere to shelter? Battley answers many of these questions, but leaves some open for further investigation.

A pre-migratory shorebird appears impossibly fat when starting out on its migratory flight from Australia or New Zealand, but it is already shutting down its digestive system, which is not needed during the flight. It arrives at the end of its arduous flight a very gaunt bird; by this stage it has even partially consumed its flight muscles and other body parts. But now the bird has to bring these functions back on line immediately, usually after a 24-hour sleep (with one eye open for predators, of course). After this the process is repeated over again before the next leg of migration.

When the first shorebird migrants arrive from the Yellow Sea, the tundra has just started to emerge from its icy winter shell. McCaffery talks about the birthplace of so many shorebirds—so different from the world they live in for 9 months or so of the year. The breeding season is contracted but bountiful. The timing of the hatching of shorebird chicks matches the hatching of a myriad of insects that the young birds are feeding on within hours of hatching. Adult birds have their own time schedule, leaving young by the time these are able to fly, to start their preparation for their southern migration. In their own time the juveniles move coastward where they have to become comfortable in a marine environment, quite different from the Arctic tundra. From here the young birds take to the wing to track the curve of the earth ever southward without parental guidance, some through the Americas but others, such as the Bar-tailed Godwits, across a featureless ocean to an unknown destination nearly 12 000 km away.

The southern migration to the 'bottom' end of the world includes amazingly long flights with no refuelling stops but with abundant food awaiting their arrival. It is here that the birds have a long break from the rigours of migration, whether in the tropics of the north of Australia, or cooler climes of southern Australia, or New Zealand.

A high priority for adults is repairing tattered flight-feathers after a round trip of ~25 000 km and a hectic breeding season. This is a high priority because of temporarily reduced flight performance at a time when escaping avian predators is essential. Even then this is no 'Summer Holiday', with threats from predators, disturbance from people and their dogs, and off-road vehicles depriving the birds

of rest at roost-sites when tidal flats are covered by the sea. A single angler may innocently prevent the use of a major roost-site. Lack of management plans for shorebird habitat in many parts of Australia add to the woes of migratory, as well as non-migratory, shorebirds from human activity and loss of habitat through development.

In Chapter 7 Phil Battley talks about ‘International Partnerships’ between birdwatchers, conservationists and researchers that have helped to put the migration routes of migratory shorebirds on the maps—firstly with banding with numbered metal bands, requiring recapture alive by researchers or capture by hunters to locate their progress; then coloured leg-flags enabling visual confirmation of banding location and movements along the flyways, with engraved flags enabling individual birds to be identified through a spotting scope; and finally the use of satellite transmitters tracking every part of a bird’s progress along its migration route.

Despite partnerships between bird and conservation groups in Japan, Australia, China and Korea (as well as other East Asian countries), there are still mysteries to be solved. Incredibly, refuelling sites hosting tens of thousands of birds continue to be discovered, and migrations of some of the world’s best-studied species are still mysterious. For example, we still do not know where most of the Red Knots in this Flyway refuel during migration. This species has been followed using radio-tracking in north-western Australia in early May, at a time when other species are arriving at their Arctic breeding grounds after a 6-week refuelling stop in the Yellow Sea. Red Knots breed on the New Siberian Islands off the northern coast of Siberia, where snow melt is probably not until June, but how could these birds still reach their breeding grounds in time to breed?

The final chapter of the book, ‘The Heart of the Flyway’, is by Nial Moores and Ju Yung-Ki, both keen advocates for shorebird conservation in South Korea. The ‘heart’ they refer to is, of course, the Yellow Sea, the crossroad for most migratory shorebirds. It is an area under threat as never before, with >40% of the mudflats already gone and huge developments threatening more losses to come.

Tidal mudflats on the surface, at their best, appear barren and lifeless to the uninitiated, especially in the northern parts of the Yellow Sea that are just emerging from their winter, at times frozen, state when the first migratory shorebirds are arriving in April and May. It is then apparent, however, by the presence of huge flocks of shorebirds that these areas are full of life, for the time being at least.

It is evident from the authors of this book that more work is needed by volunteers to solve some of these remaining mysteries and to help in the conservation of these fascinating birds, in all parts of the Flyway. It is up to us all to ensure these spectacular events remain forever.

Phil Straw
Australasian Wader Studies Group