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REVIEW

Homeward Bound: problems waders face when migrating from the Banc D'Arguin, Mauritania, to their northern breeding grounds in spring, by B.J. Ens, T. Piersma, W.J. Wolff & L. Zwarts (eds), 1990. Published for WIWO and RIN by Uitgeverij Het Open Boek, Den Burg, Texel. Softback, 364 pages, ISBN: 90 70292 131. Price, inc. p & p DFL 55.00. Available from Stichting WIWO, U.v. Stuivenbergweg 4, 6644 AB Ewijk, The Netherlands. Text in English.

Also published as *Ardea* 78 (1/2).

The Banc D'Arguin, western Africa (5% of the intertidal land along the east Atlantic), harbours over a quarter of the 7.5 million waders wintering along the East Atlantic Flyway. While by the 1980s the biology of waders wintering in Europe was becoming increasingly well documented, almost nothing was known about the vast numbers of birds wintering further south.

This book presents 22 scientific papers resulting from expeditions to the Banc D'Arguin between 1985 and 1988. The unifying theme is how waders manage to migrate from this major wintering ground to their northern breeding grounds, information essential for the understanding and conservation of the waders and habitat along the Atlantic.

The book is arranged in five sections.

1. *What makes the Banc D'Arguin attractive for waders?* (6 papers).

The physical conditions and benthos are described and the very high feeding densities of waders are discussed. While the biomass of benthic fauna is very low, a high level of production and a stable environment allow the highest recorded densities of waders in the world. Oystercatchers feeding on the huge giant bloody cockle, predation of waders by falcons, and the possibility of heat and salt stresses are also discussed.

2. *Description of migration patterns in space and time* (5 papers).

The areas covered here: geographical origin of waders, spring staging of waders wintering further south, seasonal timing of migratory departures, Dunlin staging in the Dutch Wadden Sea, summering (non-breeding) waders in June.

3. *Migratory behaviour* (2 papers).

The behaviour of waders before long-distance flights is discussed in detail, including flocking, vocalisations, gain of altitude and flight directions, and diurnal timing.

A paper of stopovering Avocets suggests that this may be to regroup into larger flocks, reinforcing the notion that flock size is important.

4. *How to acquire the nutrient reserves necessary for migration* (6 papers)

The Whimbrel features strongly in this section (3 papers). Topics dealt with include the specific component digestibility of fiddler crab parts and the description of a digestive bottleneck caused by the low digestibility of crabs; it is shown that whimbrels can increase their body mass enough to migrate only through the increased availability of crabs during the premigratory period.

Another paper deals with feeding times of waders, showing the seasonal differences in large and small waders and the methods by which they increase daily intake rates.

The energetic requirements of tropical wintering waders are investigated and are shown to be much lower than in Europe, which may be true metabolic differences in the populations.

The final paper in this section covers estimation of fat reserves of waders.

5. *Providing energy budgets of migration schemes* (3 papers).

Migration of Turnstones, energy budgets of migrating Bar-tailed Godwits, and moult, mass and flight range of waders are covered. Godwits are shown to be able to migrate to the Dutch Wadden Sea in a single flight only with the assistance of tail winds. It is suggested that most other waders probably could also, but evidence from Turnstones is unable to confirm this. Problems with current flight-range estimates are discussed.

Homeward Bound provides a wide-ranging description of the factors influencing the wintering and premigration ecology of waders on the Banc D'Arguin and shows how the timetables of the migrants may be constrained by their prey.

This is not a book for the faint-hearted, though. The papers can be quite technical and require a lot of digestion. The numerous figures and tables take time to absorb, and the volume of information can be daunting. The

figures in the paper discussing the geographical origin of waders, for example, can have four scales, scatterplots of two datasets, two bar graphs, measurements of catching casualties, plus around the outside data on both sexes of the two variables of up to six populations of the species.

The main text is in excellent English with Dutch and French summaries. Various black and white photographs are dotted through the book, but the reproduction of these is generally poor. They do convey some impression of a severe habitat foreign to most New Zealanders (the feeding waders with hazy camels walking behind is especially evocative).

Although most of this book covers fields untouched in New Zealand it shows what can be achieved and should encourage similar studies world wide. It is good to see the fusion of pure science with a strong conservation ethic working to document and protect one of the world's coastal treasures.

Overall, this book provides access to part of the leading edge of shorebird ecology studies and should be of much use at universities, both at undergraduate and postgraduate level. It may well prove to be one of the most important publications on wader biology in recent years. It is essential reading for anyone contemplating shorebird studies. For an example of how shorebird ecology studies can and should be done, go no further than *Homeward Bound*.

Philip Battley



The Petrels – Their Ecology and Breeding Systems, by John Warham. 1990. Academic Press, London. Hardback. 452pp., 29 b/w illustrations, 18 tables and numerous figures. UK price £28.

This encyclopedic work on petrels (albatrosses, fulmars, petrels, shearwaters, storm petrels and diving petrels), with 40 pages of references, will prove of great worth to all students of petrel biology. Warham has been a prolific writer on petrels since the early 1950s, with numerous scientific papers and several books to his name.

Some new facts have come to light since its publication, such as the increasing number of Black-winged Petrel breeding colonies and sexual dimorphism in Fairy Prion size. Wandering Albatross populations are thought to be declining because of drownings on hooked longlines, not because of “fishing nets”; contrary to Table 4.2, *Pterodroma externa* and *P. neglecta* don't give a *ti-ti* call but *P. axillaris* does (pers. obs.); Cook's Petrels are likely to have their current breeding distribution because they have been wiped out by predators on mainland New Zealand, rather than because of “sea-level changes” and “vulcanism”; and Kermadec Petrels were most likely eliminated by cats and Norway rats from Raoul Island, rather than by European settlers – although human harvest no doubt hastened the decline of the species.

However, these minor matters do not affect the overall accuracy and detail presented throughout the book.