

ORANGE OMELETTES AND DUSKY WANDERERS: STUDIES AND TRAVELS IN SEYCHELLES OVER FOUR DECADES

Feare, C.J. 2017. Mahé, Seychelles: Calusa Bay Publications. 326 pp., 16 colour plates, 2 maps. Paperback: ISBN 978-9-9931803-9-5. £14, US\$18, €16 (Available at: www.nhbs.com).

One of the memorable experiences of my year in Seychelles was to go on an anti-poaching patrol on Aride Island. Sitting on a clifftop in the post-sunset gloom, I watched in amazement as a small boat loaded with seven Seychellois attempted to land on the rocky shore amid breaking waves. The landing attempt ended when the warden next to me got up, lit up the boat with a powerful flashlight, and started shouting at the would-be poachers. What would make people take such risks in the dark during the windiest season? Sooty Tern eggs.

The widely-scattered islands of Seychelles support 3 million pairs of Sooty Terns, about half the breeding population of the western Indian Ocean. Traditionally, Sooty Tern eggs provided a valuable protein supplement to the Seychellois during the southeast trade-wind season when fishing—in the small pirogues used until recently—became a more hazardous undertaking. Today, most Seychellois get their protein at the supermarket, but the tradition of eating Sooty Tern eggs persists and is strongly defended. There is a government-regulated harvest of several hundred thousand eggs on one or two designated islands, but poaching is still a big problem on many other islands.

Chris Feare went to the Seychelles in 1971 for a three-year study of Sooty Terns, primarily to provide the government with the basic information on breeding and population dynamics of Sooty Terns to allow egg-harvesting to continue sustainably. Returning in the 1990s through to the present, he has continued this research, visiting many of the diverse Seychelles islands. This book is an entertaining and well-written narrative of his experiences there, and a valuable documentation of the recent efforts to manage the egg harvest and other conservation priorities. He writes with wry humour of the joys and tribulations of seabird research in the tropics.

Although sold to tourists as a pristine tropical paradise, nearly all of the 115 islands in the Republic of Seychelles have been highly modified by humans. Feare documents the tremendous damage done to many of the most important seabird nesting islands by decades of guano extraction, deforestation, and coconut plantations. Guano and coconuts are no longer commercial enterprises, but urban spread and development of tourist infrastructure lead to further habitat loss. In the past few decades, Seychelles has done a commendable job of starting habitat and species restoration on many islands, with rigorous protection and re-introductions of the most vulnerable birds and restoration of key ecosystems. One chapter documents the successes in saving some critically endangered birds in the country.

The book includes two maps (with unforgivably tiny labels), thumbnail photos of all the common Seychelles birds, and interesting photos of the field research, egg harvesting, and other aspects of Seychelles life. The appendices include lists of all the bird species and other notable animals and plants. I would have liked to see a list of some of the more important research publications to come from the work of Feare and his colleagues. One irritation I found was the use throughout the book of exclusively colloquial names for the major plant species; this is especially a problem in the chapter explaining the fascinating interactions between the *Pisonia grandis*

and the local seabirds (Burger 2005). There is nothing in the text to indicate to a non-Seychellois reader that the local name *Bwamapou* refers to this pan-tropical species until one encounters the Appendix at the end of the book.

So how are Sooty Terns doing in Seychelles? Because of the remoteness of many colonies and lack of resources, data on population size and trends are somewhat sparse. The overall population appears fairly stable, but it is probably smaller than before eggs were harvested for export between 1928 and 1940, and is almost certainly smaller than before human settlement in the 1700s (there were no indigenous people in Seychelles). Feare's research recommended that no more than 20% of the eggs should be harvested, considering the country's entire breeding population, and that this harvest should be restricted to one or maybe two colonies. He indicates that the government does, in general, follow his recommendations, but with sometimes frustrating deviations in policy. Efforts are being made to encourage breeding in new or previously-abandoned colonies.

The book ends with a tantalizing postscript on the studies being done using geolocators and GPS trackers on Sooty Terns. Some of this research is now published (Jaeger *et al.* 2017, Neumann *et al.* 2018). Understanding the foraging distribution and oceanic aggregations of this species will be essential in ongoing management, especially in relation to the terns' dependence on large predatory fish—like tuna—to drive prey to the surface. Although apparently well regulated, overfishing of Indian Ocean tuna is a constant concern. Overall, the book is an easygoing description of the life of a tropical seabird biologist, the unique managed exploitation of Sooty Tern eggs, and the research undertaken to provide a scientific basis for this management. Along the way one gets insights into the diverse and sometimes imperilled avifauna of the Seychelles, and the country's culture, traditions and politics—where else in the world is a country's independence and a subsequent coup d'état celebrated by relaxing the harvest quota of a seabird's eggs?

Alan E. Burger, Department of Biology, University of Victoria, Victoria, BC, V8W 3N5, Canada, aburger@uvic.ca

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SHOREBIRDS IN ACTION: AN INTRODUCTION TO WADERS AND THEIR BEHAVIOUR

Chandler, R. 2017. R. Scotland, UK: Whittles Publishing. 248 pp., 440 colour illustrations. Softback: ISBN 978-184995-355-9. £21.95.

Shorebirds in Action combines visual storytelling and short text snippets to reveal to us the busy and diverse life of shorebirds. It is written for a general audience with elements appealing to more technical readers. Chandler summarizes the main shorebird groups and the 'how and why' of moult, feeding, plumage maintenance, physiology, and behaviours such as territory defence, migration, and flocking. The book summarizes much of the seminal research on shorebirds, paired with the author's 45+ years of experience. You could read the text in two sittings, but the detailed picture captions are worth reading and will take more time. In turn, the images—the core of the book—promise to give pleasure to all readers for years to come. The book is a valuable reference for anyone interested in bird behaviour, and is organized by behaviours rather than taxonomically, allowing a comparison across shorebird groups.

In the first chapter, "Introducing the Cast", Chandler describes the major shorebird groups. He includes Charadrii (stone-curlews, sheathbills, stilts, avocets, oystercatchers, plovers, lapwings, etc.), Scolopaci (painted snipes, jacanas, curlews, sandpipers, snipes, and woodcocks), and shorebirds in the Lari group (coursers and pratincoles). This is a practical and standard classification, and Chandler is not concerned with having some members of the same lineage outside of the group. Identification and ecological traits are described for each shorebird family. They range from the Old World buttonquails (which, as the name suggests, are more similar to a game bird); to the Snowy Sheathbill, the only representative of the group and occurring in the Antarctic; to the Wrybill, the only bird with an asymmetric bill (curved to the right in case you were wondering); to more familiar groups. Details on geographical distribution and subspecies or races, when present, are also described.

"Dressing for the Occasion" describes the variety of shorebird plumages and the moult cycle with relevance to identification. Chandler describes how plumage varies with age, sex, and breeding condition, but also by race (Dunlin). He differentiates between breeding plumages (e.g., Temminck's Stint and Common Redshank) and supplemental breeding plumages (e.g., Ruff and other species). He describes how eyes, legs, and bills also change over the annual cycle and are part of the identification toolkit.

"Food is Glorious Food" approaches the feeding mechanisms of shorebirds, and how the birds go about feeding: probing, pecking, sweeping, food trembling, feeding by swimming, etc. To illustrate some of this, for example, there is a photo of an adult Whimbrel holding a crab by its claw with its bill, shaking it until both claws and most legs are removed one by one, swallowing the carapace and then proceeding to ingest the leftover pieces. Similar photos illustrate all types of shorebirds handling prey as different as shellfish, ragworms, shrimps, fishes, insects, and prey like biofilm embedded in mud, which they mop up with "brushed-tipped tongues" (Western and other sandpipers). One fascinating tangent of feeding was provided by the several examples of rynchokinesis, or the ability to move the distant tips of the upper mandible, and these are illustrated in several species. I kept returning to this time and again.

The fourth chapter is a rather short one. It starts with plumage maintenance or 'comfort behaviour', including bathing, preening, and stretching routines. The rest of the chapter briefly describes shorebird physiology and miscellaneous adaptations. He discusses webbed and cushioned feet as adaptations to swimming or stability in rocky environments, and also describes the adaptations of salt glands, nictitating membranes, and carpal spurs (lapwings and jacanas). He describes panting in other parts of the book, but this is missing from the extremely short paragraph on temperature regulation in this chapter.

The fifth chapter highlights all the drama of shorebird breeding and territoriality. A short introduction to diverse shorebird mating systems is followed by a good description of breeding displays, lekking and nesting behaviour, and chick rearing. Classical examples include the 'broken-wing' displays of Common Ringed Plover parents, courtship and copulation of avocets, and precocial chicks swimming with their parents. Breeding and territoriality is my field, and I found the excitement of the author contagious as he witnessed the establishment of a Banded Stilt breeding colony on a former dry lake in Australia that is suddenly filled with water. Banded Stilts only nest when the arid Australian interior receives rain, an event that only happens sporadically and can take decades to repeat, so indeed, this is a rare event and he was lucky to witness it.

In Chapter 6, Chandler captures the gist of shorebird migration. He outlines the navigation methods used by shorebirds to find their way, and the methods used by shorebird researchers who follow their migrations. He discusses ringing studies as well as more recent tracking systems, and how these methods have revealed hitherto unknown behaviours. These include fidelity to precise sites, and how birds use different non-breeding locations according to age and sex. He describes how these methods have revealed local and regional movements, paths of long distance continuous flights, and cross-flyway migrations. Chandler gives examples—such as Latham's and Great Snipes, Bar-Tailed Godwits, Red Knots, and Red-necked Phalaropes—as some species that illustrate the diversity of such strategies. The chapter closes by presenting the importance of maintaining connections across flyways, with examples from the Yellow Sea and Delaware Bay, two of many critical stopovers.

The seventh chapter, "Safety in Numbers", presents the flock, the quintessential feature of shorebirds. It discusses flocking, roosting, and antipredator behaviours. Accompanying the good descriptions are pictures of massive aerial flocks, roosting birds, and birds crouching ready to take off. The visual effect of the 'usual suspects', the falcons and other aerial predators, is striking. Chandler also describes other potential predators, and habitat features important in predator avoidance. He does not go into detail about how aerial predators affect flocking behaviour, however, or how shorebirds might cue on habitat features to gauge the risk of predation danger at a particular site.

This book covers a lot of ground, from essential natural history to current conservation issues. In doing so, it sacrifices some

depth, but this deficiency is well-compensated by the abundance of images (> 400), clearly curated to go hand-in-hand and to flow with the text. The book is not intended to be an identification guide, but with 180 of 226 extant species illustrated, it makes for a great identification companion. Bonus points to the author for an appendix listing the 226 shorebird species and 58 genera accepted by the International Ornithological Union, and tables with classification of mating systems and moult schemes and timing.

I study shorebird antipredator behaviour, and the book arrived with perfect timing. As soon as I saw the book, I was so excited I forgot about my task of reviewing it and started to flip through the pages frantically while adding post-it notes to dozens of the

images. After having exhausted classical sources and scattered online resources, I was eager for examples of behaviours that allowed me and my team to catalog video footage in a systematic way, and this book helped tremendously. As we discussed 'over-tilting', 'head up', vigilance postures, roosting, and everything else, we realized the importance of reference resources such as this book to prevent the subjectivity of classifications. There is not a definitive encyclopedia of shorebird behaviour, but this book by Richard Chandler serves as proof of concept of one.

Richard Johnston, Asociación Calidris, Cali, Colombia; and Simon Fraser University, Burnaby, BC, Canada, richardj@sfu.ca