COMMON & SPOTTED SANDPIPERS

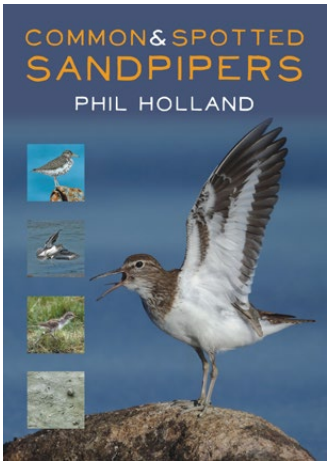
Holland, P., 2018. Whittles Publishing, Dunbeath. 168 pp., 60 figures including colour photographs, line drawings, graphs, and maps. Paperback: ISBN 978-1-84995-361-0, £18.99.

Common & Spotted Sandpipers is a must-read for sandpiper biologists and for the general public—anyone who is interested in shorebirds. It is a delightful combination of old fashioned natural history, including field notes, plus a review of research that has been conducted on both Common and Spotted Sandpipers. It is published by a small press on the northeast coast of Scotland's Highlands that only prints selective titles in small batches (see www.whittlespublishing.com for more information).

Interestingly, until very recently (1970s), Common and Spotted Sandpipers were considered to be one species. This is surprising, since the behaviour of the two is so vastly different. The Common Sandpiper *Actitis hypoleucos* have typical mating systems—with the male setting up a territory, attracting a female, and raising a brood. In contrast, the Spotted Sandpiper *Actitis macularius* has strayed far from the norm and the female is serially polyandrous. She establishes a territory, finds a male with whom she mates, then leaves him to raise the chicks and continues on to the next territory and male, and the next, and the next. Why this unusual behaviour was not discovered until recently is not explained, but the detail in which Phil Holland describes every aspect of both species is superb.

At the outset, Holland honestly states that he is not a professional, and that he and the late Derek Yalden from Manchester University (a mammologist by profession) spent 40 years observing the Common Sandpiper as a hobby, rather than a scientific study with clearly defined hypotheses. However, this is the beauty of this book—Holland records many anecdotal observations that might be relegated to memory or to old field notebooks by someone aiming to answer a scientific question. The fact that Holland and Yalden took copious and detailed notes on these birds is fortunate because those notes and incidents have turned into a very readable book. The lack of a well thought out study plan may annoy more academic readers because of the folksy narrative, but someone who wants to learn about Common and Spotted Sandpipers in great detail will enjoy it.

Holland compares the two species, drawing mainly from three sources: 1) for Spotted Sandpipers, Lew Oring's long term study at Little Pelican Island on Leech Lake in the Ojibwe Indian Reservation in Minnesota (1972-1990); and for Common Sandpipers, 2) Holland and Yalden's study at Peak District near Manchester/Sheffield/Leeds in England (1977-2016), and 3) Dougall and Mee's site in The Moorfoot Hills just south of Edinburgh, Scotland (1993-present). The three sites are compared in much detail, including photographs, maps, and tables in Appendix 1. Having these descriptions and data all together in an appendix made it very easy to visualize the study sites as you read the rest of the book.



You can pick up Common & Spotted Sandpipers and start reading anywhere, depending on what you want to learn. Chapter 1, *Breeding Behaviour*, compares breeders and non-breeders, and describes courtship displays, mate bonding, time budgets, nests and eggs, breeding success, chick behaviour, and hormones. Tables of data and graphs complement the photos and line drawings. Chapter 1 sets the tone for the rest of the book with "Boxes" scattered throughout the chapter. These are short descriptions of individual or groups of sandpipers at a study site. They read as if they were lifted from field notes, and thus place the reader alongside the researcher, observing the birds.

Chapter 2, *Southwards Migration*, is densely packed with excellent maps, graphs, and data tables of migrants, with places birds were caught, years trapped, and median dates and weights. Holland examines migratory sites from the UK and Europe, North and South America, Morocco, Africa, Asia, and Australia. Sample sizes in the listed studies are often large, and this chapter is a good place to begin for anyone interested in the effect of climate change on migration. Holland addresses important questions such as quality of stopover sites, flight performance, and food consumed for migration. Chapter 3, *Behaviour in their Winter Home*, covers topics from moult to overwintering grounds, complete with tables, maps, and photos. Holland compares habitat types around the globe, distribution by sex, and recaptures of birds ringed as chicks.

Chapter 4, *Northwards Migration*, complements the previous two chapters, including information from geolocator and banding studies, again with migration dates, locations, and bird weights. He also addresses the important topic of match-mismatch (the difference between the timing of birds' arrival and the timing of peak prey numbers) due to climate change on his account of the northward migration.

Chapter 5, *Feeding*, is a quick summary of what these sandpipers eat, accompanied by photos, line drawings from field notes, and again, data tables. Energy budgets are presented, including energy needed for production of eggs, growth of chicks, and migration. Holland describes the content of the stomach vs. fecal pellets, laboratory feeding experiments, food availability over seasons, and much more. Referencing Appendix 2, which provides details on each species diet, helps round out this chapter.

Chapter 6, *Predation, Competition, and Other Nuisances*, discusses depredation of adults and eggs in the breeding area, and adults and fledglings during migration and in wintering areas. It touches on predator avoidance, human disturbance, toxins, parasites and disease, and competitors.

Chapter 7, *Populations*, is a broad summary of world populations and trends of both species, which are of "Least Concern", even though numbers have been dropping at the edges of their ranges. Holland takes time to explain how population dynamics are derived from banding/ringing data, examining return rate and its relation to adult survival, mortality, movement, survival, and productivity. He adds data and descriptions from research studies, as well as two Boxes describing three individual birds' lives.

The final two chapters, *Longer-Term History of Common Sandpipers* (Chapter 8), and *Their Place in the World* (Chapter 9), are ambitious summaries. Chapter 8 covers natural history of the Common Sandpiper with general descriptions from the past 2000 years. He concludes the chapter with a quick summary of the sandpiper fossil record and evolution, and a number of paragraphs about anthropogenic effects on these species, including urbanization, pollution, agriculture, forestry, pollution, and climate change. Chapter 9 attempts to pull together the ecological pressures that have made these two similar-looking species evolve widely differing breeding strategies, which Holland suggests is driven largely by habitat choice.

The myriad of data that Holland interlaces throughout the book and presents in the appendices are thought provoking and provide substantial material for further research. The data and maps are not comprehensive and beg completion from a long term project.

Appendix 2 lists every major group of prey consumed for both Spotted and Common Sandpipers, with genus and species when known, habitats and seasons when prey were documented, and whether data were collected from direct observation, deduction from observation, stomach contents, pellets, or feces. A list of over eight pages of references can be found at the back of the book, which is an asset for anyone studying shorebirds.

Appendix 3 compares biometrics of the two species from a number of datasets, including linear dimensions of wing, bill, and tail length, egg dimensions, and mass. Holland goes a step further by presenting a table of ratios of these measurements between species (i.e., "male to male," "female to female," and "egg to egg"). From these, the reader can draw interesting conclusions, provoking the need for further research, such as "the Common Sandpiper's eggs are 30 % bigger in mass, yet the female is only 15 % bigger in mass than the Spotted Sandpiper. Thus proportionally, the Spotted Sandpiper lays smaller eggs, which might be expected from a serial layer."

Someone expecting a scientific account of the two species may get frustrated at what might seem to be randomly chosen data tables and maps, as well as Holland's tangential asides. However, I found the way that Holland develops each section with data from various research projects enhanced my comprehension of the general ecology of these two sandpipers. One issue that made me stop to see which chapter I was reading was what I perceived as repetition or redundancy. However, Holland introduces former topics in context of the new chapter, and as soon as I understood that, I was not concerned.

The general public as well as scientists and managers interested in sandpipers will enjoy this book and will learn a lot about the two species. Those who study sandpipers will benefit from the detailed field notes and many table and graphs, as well as the myriad of ideas that Holland presents in the book. The photographs, maps, graphs, tables, and line drawings fill up the book in a good way, so that concepts, ideas, and places are integrated in one's mind. *Common & Spotted Sandpipers* was a pleasure to read, and another fine example of what a good job Whittles Publishing does when selecting books to acquire for publication.

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FAR FROM LAND
THE MYSTERIOUS LIVES OF SEABIRDS

Brooke, M. 2018. Princeton University Press. Princeton and Oxford. 264pp., 29 B&W illustrations, 21 colour plates, 8 maps. Hardcover: ISBN 978-0-691-17418-1, £24.00.

In Far From Land, Brooke explores the lives of seabirds at sea thanks to the incredible diversity of data that has been obtained from tracking seabirds with various devices in recent decades. He gives an incredible account of the discoveries this technology has uncovered about the movements of individuals throughout the year. Anyone with an interest in birds, the sea, and natural history general would enjoy, and benefit, from reading this book.

The author has vast experience working with seabirds across the globe, making him well placed to synthesise the large amount of often quite complex information that recent technology has revealed about seabird populations and their ecology. This results in a book which is both accessible and engaging, combining science with personal perspectives and fieldwork anecdotes (including how difficult it can be to obtain seabird data). Throughout, Brooke provides examples from a large number of species from every corner of the globe, from the tiny Red-necked Phalaropes *Phalaropus lobatus* migrating between Shetland and the Pacific Ocean to the once-thought-extinct New Zealand Storm-petrel *Fregetta maoriana*, whose breeding colony was found near Auckland after following radio-tracked birds caught at sea from a 3.5 m inflatable!

The first chapter provides a brief introduction to the world's seabirds and the state of knowledge from traditional observations on land and boats, before technology broadened our knowledge of seabirds' lives at sea. Brooke then introduces an array of devices that can be deployed on seabirds to help answer questions that even 20 years ago would have been unanswerable. These devices include GPS tags that can send location data to a researcher's mobile phone,

geolocators that weigh less than a gram, and accelerometers that reveal an individual's movement and behaviour above and below the water. Then there are stomach temperature loggers and Hall sensors (to detect when a bird is opening and closing its beak) to reveal when an individual is actually capturing prey.

Chapter 2 and 3 focus on juvenile and immature seabirds. It is challenging to retrieve data from juveniles and immatures as they may not return to the breeding colony for several years, or they might not return to breed in the same colony where they fledged. Therefore, we actually know very little about this important stage of a seabird's life. This lack of information is disconcerting given that half of all seabird individuals are likely in their pre-breeding years. It is thus intriguing to read what has been discovered about juvenile departure from the colony and their activity during the years before they become adults and begin to breed, where they may refine their foraging strategies and prospect several potential breeding colonies.

The following chapters focus on adult seabirds and cover their migration (Chapter 4), including a short but fascinating section on how seabirds navigate in what is a rather featureless oceanic environment (to our eyes at least). Chapter 5 covers what additional knowledge technology has revealed about breeding seabirds, when birds have to return regularly to land, and thus where most research has traditionally occurred. The huge foraging trips that some species make during this period are incredible—Murphy's Petrels *Pterodroma ultima* in the South Pacific can make 15 000 km trips during incubation. Many species travel these lengths by exploiting the prevailing winds, with winds and waves discussed further in Chapter 6. Many seabird species exploit the energy of winds and waves, effortlessly travelling huge distances though dynamic soaring. In Chapter 7, Brooke discusses how consistent, or not, individuals can be in where they forage or spend the non-breeding season. Chapters 8 and 9 explore how seabirds find food at sea, and how they catch it once they've found it – in some cases thanks to miniaturised cameras attached to the birds. The final chapter covers how seabirds clash with people, providing a summary of the main past, present and future threats. It is interesting that climate change is likely the biggest threat to seabirds globally, yet renewable energy installations, specifically offshore windfarms, can cause problems for seabirds through displacement and collision, with devices increasing our understanding of these interactions. Devices are also revealing useful information about clashes with fishing activities through bycatch and competition for food, and where fishing could be restricted where there is a clear danger to seabirds. The vast amount of location data collected by devices have also been collated to identify areas of high seabird activity and conservation importance that have been proposed as marine Important Bird Areas.

Each chapter begins with a beautiful illustration by Bruce Pearson, with others scattered throughout the text. The selection of maps highlighting the data obtained from tracking seabirds are excellent, from the single, nearly 15 day long foraging trip of a male Northern Fulmar from Orkney, to the multiple foraging trips of Northern Gannets from around the British Isles exposing the largely mutually exclusive foraging ranges of neighbouring colonies.

I thoroughly enjoyed reading this book and it provides an excellent overview of what recent advances in technology have revealed about seabirds, covering a wide range of their ecology. It is a good introduction for anyone wanting to learn about this field, with plenty of references to investigate the research further. One reason I enjoyed this book so much is that even as a seabird ecologist I learned a lot, especially regarding tropical and Southern Hemisphere species – such as the high altitude breeding Barau's Petrels *Pterodroma baraui* of La Réunion, or the Great Frigatebirds *Fregata minor* that can maintain flight control even when both halves of their brains are asleep! It is exciting to contemplate what future technology will reveal about this wonderful group of birds.

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SEABIRDS BEYOND THE MOUNTAIN CREST: THE HISTORY, NATURAL HISTORY AND CONSERVATION OF HUTTON'S SHEARWATER

Cuthbert, R.J. 2017. Otago University Press, Dunedin. www.otago.ac.nz/press/books/otago660480 212 pp., numerous colour and some black & white plates; *Notes* and *Bibliography*. Paperback: ISBN 978-0-947522-64-3. $NZ 45.00

This is a personal account of Richard Cuthbert's three years studying the biology and conservation of the endemic inland-breeding Hutton's Shearwater *Puffinus huttoni* in the steep alpine zone of the Kaikoura Mountains in the northeast corner of the South Island, New Zealand. The first specimen of Hutton's Shearwater was collected at sea in 1890 (described by G.M. Mathews in 1912), yet mystery surrounded the breeding place of this species until the discovery of breeding birds by naturalist and climber Geoff Harrow in 1965. Almost the first 75 pp. of this book is devoted to this complicated story, although interposed chapters describing the author's own experiences make for a choppy read. I would strongly recommend this book to seabird biologists everywhere because it provides an accurate summary of all that is known about Hutton's Shearwater. I very much doubt that a better book will appear in my lifetime, where Cuthbert's description of Geoff Harrow's determined efforts alone in the mountains with the shearwaters are invaluable accounts, unpublished elsewhere, and very accurate.

This book is not a straightforward biological account of the species and its conservation but a personal account of the author's experiences. *Seabirds Beyond the Mountain Crest* is informative and makes for enjoyable leisure reading, rather than an academic style. For example, readers may find the complete absence of scientific names in the text a problem, especially for plants and mammals. However, the *Notes* and *Bibliography* provide comprehensive references and the *Index* is very useful. The book is well-produced, but the binding is glued, not

sewn, and so it will not stand up to intensive use over a long period, should readers wish to reference the bibliography.

Palaeontologists have described that, prior to Polynesian colonisation of New Zealand some 500 years ago, at least eleven other burrowing procellariid species nested on the New Zealand mainland in very many places, probably numbering in the hundreds of millions (Worthy & Holdaway 2002, p. 454). Of these once huge populations, only Hutton's and Sooty Shearwaters *Ardenna grisea* remain today, along with some Grey-faced Petrel *Pterodroma gouldi* and the large endemic Westland Petrel *Procellaria westlandica*. Predation by humans, dogs, and Polynesian rats *Rattus exulans* together with fires is believed to have caused an immediate steep past decline in procellariid numbers. With European colonisation in the 1800s, pigs and many other mammalian predators were introduced, rapidly became feral, and accelerated the decline of mainland seabird populations (Bull & Whitaker 1975). Today, in sanctuaries enclosed by predator-proof fences, some locally extinct populations have now been successfully reintroduced to the mainland.

Thus, Richard Cuthbert's work on the endangered and declining populations of Hutton's Shearwater in the mountainous mainland of New Zealand's South Island is of very great interest and conservation value. Does this book do it justice? Probably not, although buried in the account is a very great deal of accurate and useful information, both historical and modern. But personally I found the popular style and structure submerged this information; you cannot just dip into this book as a reference—you must read it all. For example, the informal chapter headings were uninformative, where you have to read each chapter (all 21 of them!) plus the Prologue, Epilogue, and Postscript to find what they are actually about. I would have appreciated key word summaries of chapter contents under the chapter headings. These issues are likely the result of modern publishing fashions and may be, in part, personal stylistic affectations.

Great credit must go to the author and publisher for including a fine selection of recent and rare historic photos. These provide the reader with a valuable insight into the difficult-to-reach habitat occupied today by Hutton's Shearwater. However, the absence of any map, even a sketch-map, is very trying for readers not familiar with the area and is a most disappointing omission.

The book is very up-to-date and comprehensive, and the author is to be congratulated on providing a personal account where science and impressions blend seamlessly—so seamlessly, that it is difficult to work out why Richard, a British scientist, took on this research so far from home, high in the crumbling Kaikoura Ranges on a Commonwealth Scholarship. Conservation issues are mentioned as an immediate motivating force and are specifically addressed throughout the book. The quote from British mountaineer Eric Shipton at the start and much mention of mountaineering equipment and techniques provides a clue as to the author's main motivation for undertaking this study.

R.M. Lockley (1942) and James Fisher were forthright about the factors that motivated them; few biologists are, E.O. Wilson's *Naturalist* (1994) being an outstanding exception. When biologists have the chance to write a personal account of seabird or conservation research, they do young folks a favour by explaining *how* they became interested in the topic in the first place. The psychology and sociology of ecological research is a black hole for data. Scientific editors keep their red pens ready to delete anything "personal", but a book like this misses a fascinating opportunity to learn more about the motivations of a dedicated researcher.

As Himalayan adventures get extensive mention in *Seabirds Beyond the Mountain Crest*, I'd like to observe that George Mallory's famous justification in 1923 for his fatal ambition to climb Mt. Everest was simply "*because it's there*", which seems to me a poor justification for human endeavour. The famous New Zealand climber Edmund Hillary, who did get to the top with Sherpa Tenzing Norgay 30 years later, remarked that we "*knocked the bastard off*". Other famous climbers like Eric Shipton were more reflective about their motivations. It is a pity that Richard Cuthbert does not tell us why he chose to study Hutton's Shearwater in this otherwise good book.

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