and powerful references. Perhaps the best thing about the book is its vivid portrayal of the sparkling wonder of marine life, which makes the greedy and ignorant things humans are doing all the more shocking. If only those self-centred and callous people who populate fisheries management forums and international gatherings on climate change would read this book. If more scientists took the time to produce books like this (or web-pages, blogs and newspaper articles for general readership) we might change the way people view the oceans.

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

A FIELD GUIDE TO THE WILDLIFE OF SOUTH GEORGIA

South Georgia Heritage Trust (Burton, R., ed.; Croxall, J., ed. consultant). 2012. Princeton, NJ: Princeton University Press. 200 pp., 368 photographs. Paperback: ISBN 978-0-691-15661-3. US$24.95.

If I were making a trip to South Georgia, as increasing numbers of eco-tourists are doing these days, I would be sure to have in my possession a copy of this book. Further, I would expect that by trip's end it would be dog-eared and coffee-stained, strong evidence of what I believe to be its indispensable nature in such an endeavor. Its heavy paper and rugged assembly are assurances that it would withstand hikes and landings on South Georgia. Except for its initial 7 pages of title and contents, and its 12 final pages of taxonomic notes, photo credits and index of English and scientific names, every page is graced with exquisite photos — oftentimes more than one. In fact, there are 368 photos including those of 180 species taken to exhibit identifying characteristics.

This is a handbook — a tool — for learning firsthand about the natural history of South Georgia, one of the most important sub-Antarctic islands by virtue of its size and climate, giving it a capacity to hold many habitats and thus many dozens of species. It covers both flora and fauna, with the latter extending to invertebrates as well. The one item that this book sorely lacks is a map, other than one depicting the 200 nautical mile exclusive economic zone (EEZ) around South Georgia, its offshore rocks and islets, and the somewhat nearby South Sandwich Islands. In other words, the book actually is about the South Georgia and Sandwich Islands Overseas Territory of the UK. Perhaps it lacks a map for geopolitical reasons?

Except for invertebrates and plants, for which there is usually one paragraph and photo to provide clues to identity, a full-page species account, which includes distribution, identification, voice and behavior, is available for most bird and mammal species. What I really like are the discussions of the history of exploitation of the islands and surrounding waters (an activity that has been and continues to be huge) and of attempts to restore island habitats affected by human activities and by introduction of animals and plants (also shown in species accounts). Really nice are the full-page photos of island habitats, which seemingly could have further graced that missing map showing where these habitats occur. In any case, if you're going to South Georgia or vicinity, get this book!

David Ainley, H.T. Harvey and Associates, Los Gatos, CA, USA

EFFECTS OF CLIMATE CHANGE ON BIRDS

Møller, A.P., Fiedler, W. & Berthold, P.J.A. (Eds.). 2011. Oxford, UK: Oxford University Press. 344 pp., 75 black and white illustrations, and a 4-page color plate section. Hardcover: ISBN13: 978-0-19-956974-8, £72.50. Paperback: ISBN 978-0-19-956975-5, £39.00.

Based on the current and predicted rate of global climate change, the 21st century will be dominated by increases in atmospheric temperatures, disrupted patterns of precipitation and increasing sea levels and storm intensity, all of which will have major impacts on the world's ecosystems — as well as on human infrastructure. Current best estimates of global surface temperature increase during this century are 1.1 °C to 2.9 °C for a low carbon-emission scenario and 2.4 °C to 6.4 °C for the highest emission scenario. In coming decades any ornithologist studying birds in the wild, and indeed anyone studying anything in nature, will have to consider how their findings are affected by or related to the changing climate.

The editors of this volume, in anticipation of these impending changes, have assembled a book that discusses the current evidence for climate change affecting avian populations, anticipated future effects and the techniques used to measure them. They recognize, however, that their book is published at a time when recent climate change has been relatively slight, as has been the evidence that this change is affecting the world's bird populations. They acknowledge the emerging status of their volume's subject by stating their desire is to allow the reader "to approach climate change research with the best possible tools."

The book is divided into three main sections: climate, methods for studying climate change effects and biological consequences of climate change. The first of these is a single chapter written by two prominent climatologists, James Hurrell and Kevin Trenbeth. This sets the stage for the chapters that follow by discussing the importance of anthropogenic carbon emissions in changing climate, how those emissions are expected to persist and the range of environmental impacts that will occur as atmospheric CO_2 increases. Their chapter concludes by stating that the projected rate of climate change far exceeds anything seen in the last 10 000 years and is "therefore apt to be disruptive in many ways."

The many ways in which bird populations and life histories can be disrupted by the anticipated changes are presented in the section on the biological consequences of climate change, which makes up the majority of the book and includes 11 chapters on specific components of avian ecology or life history. These chapters vary widely in length and information content. For some topics there is sufficient information on recent climate change effects, either due to the length of a study or the severity of impacts, to allow a discussion of both ongoing and predicted effects. More common are chapters that attempt to predict future responses using observed annual variation in life history parameters in response to variation in meteorological and oceanographic conditions. The editors admit that some chapters in this section are "short and based on relatively little knowledge." Furthermore, those chapters addressing genetics, sexual selection and host–parasite relationships admit the consequences of climate change on those topics are uncertain.

A relatively short section on the analytical methods one could use to examine avian responses to climate change contains eight chapters ranging from habitat modeling to inferring evolutionary consequences. Detailed descriptions of worthwhile analyses and techniques are presented but seem to be most useful to the amateur or those with little knowledge of data analysis and modeling. Their inclusion appears to be due to the editors' stated desire to provide the "tools" to an intended readership of "interested amateurs, students and professional scientists."

The value and use of this volume to marine ornithologists will depend on their area of research or interest. Many seabird biologists are currently examining how seabird populations are affected by annual variation in the marine environment, and the book might help them think of their work in a longer temporal context. The chapters on subjects frequently studied by seabird researchers (timing of breeding, food availability, predator–prey interactions and populations) allow the reader to consider how predicted climate changes will affect those phenomena. Other chapters provide the volume a good overview of the range of ways in which avian life cycles and populations will be modified and disrupted in the coming decades, and they permit an appreciation (if that word can be used in this context) of what is about to occur globally. Marine-centric readers may find themselves wishing for a chapter on how anticipated increases in sea surface temperature, sea levels, ocean acidification and storm intensity will affect the world's seabirds. Such a chapter would not have been too narrow in focus, given the amount of the earth's surface dominated by oceans and the abundance of seabirds.

A concluding chapter on conservation in response to climate change demonstrates the difficulties of studying the avian responses to a threat as large as global climate change and assessing impacts caused by something as universal and entrenched as the primary energy source utilized by humans. Over the next century, climate change, driven by the emissions of greenhouse gases, will cause seabirds to experience breeding failures, shifting ranges, population declines and extinctions. All of these events may be well researched as they occur, but the utility of the findings to seabird management will contrast sharply with past research on threatened seabirds. In the latter 20th century, identification of decreases of seabird populations could be addressed by a range of management recommendations, including eliminating DDT, maintaining old-growth forests or decreasing fisheries bycatch, all of which government agencies had the power and resolve to regulate. In the future, researchers, finding that seabird populations are being diminished by the effects of climate change, will be unable to see their discoveries result in regulations that mitigate the primary perturbation affecting the population, but instead will be left to suggest ways to reduce less important but manageable stressors.

The futility of trying to effectively manage seabird populations in a rapidly warming world is demonstrated by the two "case studies" that address seabirds in the book's chapter on conservation consequences. After a discussion of climate change effects on Marbled and Kittlitz's Murrelets (which unfortunately contains misinformation on the status of both), there is a suggestion to mitigate effects of climate change by minimizing camping in nesting areas (people camp in Kittlitz's Murrelet breeding habitat?) and to manage fisheries to increase food supplies. While that recommendation may appear to be a trivial effort in the face of a threat as large as global warming, it is more optimistic than what is offered for Emperor Penguins, where extinction in the wild is considered to be a "real possibility," due to melting ice, and the authors suggest "that their continued existence may require managed captive colonies."

Those whose research or interest involves climate change and its current and predicted effects on birds will benefit from reading this book. Others may want to wait for the volumes that will appear in coming years documenting the response of birds and ecosystems to a warming world. The magnitude of that warming depends in large part on humans being able to reduce greenhouse gas emissions, as is pointed out in the chapter on the physics of climate change. I was disappointed that the editors did not emphasize that a reduction in the use of fossil fuels would lessen the effects of climate change on birds in this century.

George J. Divoky, Friends of Cooper Island, Seattle, WA, USA, divoky@cooperisland.org