



RECENT LITERATURE

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BOOK REVIEWS

Winged Sentinels: Birds and Climate Change

Janice Wormworth and Çağan Şekerciöğlü. 2011. Cambridge University Press, New York, NY. 296 pages, 24 color photographic illustrations. ISBN 978-0-521-12682-3. \$40 (Paperback).

There is a good reason why canaries were the proverbial caged animal in the coal mine instead of some other creature—being highly visible, mobile, and responsive to their environment, birds are ideal candidates for an early warning system to environmental change. This set of characteristics has made birds, along with butterflies and plants, one of the best-studied groups of organisms to document the long-term effects of climate change. Over the last two decades, ornithologists have assembled a sizeable library of literature showing changes in avian biology in response to shifting climatic regimes. Given that we are poised at a critical point in planning for the conservation of species as climate changes, now is an appropriate time to reflect on this body of literature to begin to assemble a cohesive portrait of how climate change affects birds.

The authors of *Winged Sentinels: Birds and Climate Change* bring a unique combination of knowledge and skills to the task of synthesizing the expansive collection of avian climate change studies. One half of the writing burden is borne by Janice Wormworth, a professional journalist and freelance writer with a background in climate change communication. The other half comes from Çağan Şekerciöğlü, a faculty member at the University of Utah who has a strong background in climate change, avian extinctions, and, as the director of the conservation nonprofit KuzeyDoğa, needs to make climate-informed conservation decisions in his native Turkey. Together, the authors bring a dynamic and colorful writing style as well as scientific and

intellectual rigor to a topic that, at times, could risk being purely academic.

Prospective readers might wonder how *Winged Sentinels*, published by Cambridge University Press, compares to the recent publication by Oxford University Press of a similar-sounding compendium *Effects of Climate Change on Birds* (A. P. Møller, W.F. Fiedler, and P. Berthold [eds.]. 2010. Oxford University Press, New York, NY). Although both volumes are built on the same source material, each tackles the issue in a unique manner, resulting in two books with significantly different audiences. Whereas *Effects of Climate Change on Birds* is a dense, edited volume that will serve well as a reference volume or textbook, *Winged Sentinels* is a more manageable size and is approachably narrated. Instead of being thickly illustrated with tables and figures, *Winged Sentinels* contains only three separate 8-page sections filled primarily with winsome pictures of birds mentioned in the text. In fact, only three figures are included: one illustrating phenological mismatch, one showing El Niño Southern Oscillation (ENSO) effects on coastal food chains, and one graphing projected 21st century landbird extinctions due to climate change. The choice to illustrate *Winged Sentinels* with full color photos of birds rather than scientifically oriented figures is indicative of the greater approachability of this book. Indeed, much of what makes *Winged Sentinels* an enjoyable reading experience is that a substantial portion of the text is devoted to detailed descriptions of the ecology of individual bird species and the results of scientific studies of that species. Cumulatively, the assemblage of hundreds of single-species anecdotes paints a comprehensive portrait of the diversity of climate change impacts. These impacts, in turn, are given a distinctly avian face.

That is not to say that *Winged Sentinels* is without intellectual rigor, however. Rather, Wormworth and Şekerciöğlü fill their book

with the fundamental ecology of climate change impacts and illustrate every generality with at least one example taken directly from the literature. Each of the seven chapters is carefully referenced through footnotes, creating a useful bibliography for each major subject area. The authors do an admirable job at referencing not just the big headline-grabbing studies of global climate change impacts that many readers will recognize, but also the species-specific or region-specific research findings that may be less known, but are often more compelling. The depth of the background research that went into *Winged Sentinels* combined with the approachability of the writing means that this book has the potential to find a wide audience, including those new to the subject. Researchers, policy-makers, conservation practitioners, managers, and students can all equally gain from reading it.

The structure of the book follows a logical progression of topics. The effects of climate change on phenology are tackled first, followed by a related, but more specific, chapter dedicated solely to impacts on migratory routes and migratory birds. These two chapters are followed by a discussion of range changes and eventually population change and extinction risk. Interspersed among these expected subjects, however, are chapters more narrowly focused on topics that are often left out of climate change impact surveys due to geographic biases in research. Chapter 4, for example, focuses exclusively on marine birds and the drastic environmental alterations many oceanic species are facing. Using studies chronicling the fate of, predominantly, alcids and penguins, the authors demonstrate how marine birds may be the best examples of climate change impacts on birds due to the close coupling of environmental change and the physiological and ecological mechanisms that lead to population-level impacts. Considering the general landbird bias among ornithologists, this careful survey of marine impacts is eye-opening. Similarly enlightening, Chapter 6 is devoted to tropical birds. Comparatively little research has been done on climate change impacts on tropical birds, but Wormworth and Şekercioglu build upon the principles of previous chapters to put tropical climate change in the context of other threats to the tropics, including deforestation, fragmentation, and fire. The authors should also be lauded for not being afraid to use lessons

learned from other taxa (e.g., plants or insects) to inform the potential impacts on birds when direct research has not yet been conducted.

Arguably the most important part of *Winged Sentinels* is the concluding chapter on conservation. This subject is where Şekercioglu's passion lies, and he deftly demonstrates his experience with the topic. Rather than sink into the gloom of despair, the authors take a proactive stance, outlining the full array of conservation tools available to protect bird species given both environmental change and potentially overwhelming uncertainty. These tools range from the conventional, such as habitat restoration, to the controversial, such as assisted migration. This chapter, like all chapters in *Winged Sentinels*, ends with a subsection called "Unknowns and challenges." Given how much is both unknown and challenging in this field, these brief syntheses usefully define critical research needs and potential stumbling blocks.

Overall, there is much to enjoy in *Winged Sentinels*. Individual readers may quibble that the constant stream of research anecdotes hinders synthesis, that information is occasionally repeated, or that the abundance of subsections and subheaders makes for discontinuous reading. Although grounded in truth, these criticisms are outweighed by the impressive combination of thoroughly researched scientific summaries and colorful, entertaining writing. These two factors, so rarely seen together in academically inspired literature, should bestow *Winged Sentinels* an important spot on the bookshelves of ornithologists or those who simply care about birds.

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The Atlas of Birds: Diversity, Behavior, and Conservation

Mike Unwin. 2011. Princeton University Press, Princeton, NJ. 144 pages, abundantly illustrated with color photos and figures. ISBN 978-0-691-14949-3. \$22.95 (Soft cover).

In true atlas fashion, this book aims to pull together a wide array of information about birds, including bird diversity and its origins, bird distributions, bird habitats, and bird behavior, all with an overall emphasis on conservation. Packing such a diverse array of topics into a