BOOK REVIEWS

Molt in North American Birds, by Steve N.G. Howell. 2010. Houghton Mifflin, New York. 280 pages, 271 photographs. Hardcover, $35.00. ISBN-13: 978-0-547-15235-6.

Feather-Watching: An Interactive CD Guide for Studying Birds in the Field, by Lisa Hug. 2009. 80 minutes. www.Lisahugnorthbaybirds.com. $24.75.

A lot of birders know very little about molt, even though for a bird molt is as fundamental a part of the life cycle as breeding. Two recent publications attempt to help one better understand this tricky topic. The goal of *Molt in North American Birds* is to be an easy-to-read reference explaining the patterns of molt by family. Although the title says "North American," the book covers molts of only species occurring north of Mexico, though much of the information on families also applies to many Mexican species. *Feather-Watching* attempts to explain feather terminology and molt in an interactive CD format.

The question "what is molt?" could fill an entire book and is beyond the scope of these publications, though Howell gives an excellent, if brief, answer to this very complex and not fully understood question. Instead, the book focuses on the various "strategies" or patterns of molt in each family of birds and how these fit within their natural history. Though much of the information is a summary of previously published work from many sources (see Plan of the Family Accounts, p. 2), the way in which it is organized and presented here is new.

Howell is directing this work at an audience that has at least a basic familiarity with molt and feather tracts, but the style is understandable even for those whose knowledge of the topics is rudimentary. The audience is the birder who wants to understand the patterns he or she is seeing in the field, as well as those who want to improve their ability to identify birds. Though the book is directed more toward birders, professional ornithologists will be interested as well, as the book is a summary of what is known of each family's molt. It helps that the book is very well written with only a few minor typographical/grammatical errors.

In *Feather-Watching*, Hug attempts to make the terminology and process of molt understandable to beginning birders and ornithology students, through an interactive Power Point presentation. The CD runs for 80 minutes and includes several quizzes. The presentation starts with an excellent overview of feather tracts, then continues with an overview of the Humphrey–Parkes system of plumage-cycle terminology (Humphrey and Parkes 1959). It compares the life-history system and the Humphrey–Parkes system without going into detail of the uses of each (something Howell does not cover at all). It ends with a brief coverage of seeing molt in the field. The Power Point style makes it easy to pause and go back and review slides that you may want to see and hear a second time and so is a productive way to teach molt, especially to those who are more auditory learners.

Molt in North American Birds starts with a long introduction, 77 pages, which should be read first, even by those who already have an understanding of molt. It is formatted as a series of thought-provoking and wide-ranging questions and answers, a must read for every birder that helps explain birds' appearance in the field. For example, how molt and pigmentation of feathers are not necessarily linked, how to see molt in the field, and why one should care about molt. The terminology follows the Humphrey–Parkes system as modified by Howell et al. (2003, 2004). Because these modifications have been much debated, a summary of the reasons for them could have added value. Instead, Howell states that this debate is beyond the scope of the book and interested readers will have to turn elsewhere for a discussion of the topic (Howell et al. 2004 and references therein). He does, however, give an excellent overview of the chosen system as well as molt strategies and how they may have evolved. These sections are brief and not overly detailed, an approach that generally

works, but I would have liked to have seen a little bit more on the causes of wear, something I think birders don't always understand.

The family accounts that make up the bulk of the book are, like the introduction, well written. Following the classification of *Handbook of the Birds of the World* (del Hoyo et al. 1997–2007), these accounts vary from 11 pages (sandpipers) to under a half a page, in which case the accompanying photo may take up as much room as the text. This discrepancy arises because each account varies in content, though each follows the same basic pattern. Each account begins with a header which includes the family name, subgroups within the family, what molt strategies the family follows, and how many species occur in the area covered (if only one species is represented, sometimes that species is named but sometimes it's not, e.g., "Northern Jacana" vs. "flamingoes"). The text contains a brief overview of natural history, followed by the patterns of molt within the family, and ends with a longer discussion linking molt and natural history. These longer discussions are often omitted from families with "simple" molts and on occasion even ones with more complex molt, such as the oystercatchers. Given that the oystercatchers' molt strategies aren't well known, a longer discussion could have worthwhile.

The natural-history information is usually brief and covers how long birds take to mature, migration patterns, and, where relevant, family- or species-level taxonomy, and sometimes distribution. The familial relationships of the Wrentit aren't discussed, and there were a few mistakes with respect to distribution.

Discussion of the actual molt varies from a single paragraph to multiple pages under various headings for each molt. Confusingly, the preformative molt is sometimes under its own heading or, in some accounts, in the section on first-cycle molt. These accounts can be extremely informative and often suggest areas of further research. The accounts of the waterfowl and game birds highlight the strengths of this book, managing to sort through the confusion these families have caused over the past 100 years and inform the reader of what is now known (and how little that really is). This confusion has arisen from ignorance of the number of molts a bird has each year; before a bird's life cycle can be understood, this basic point must be clear. Although Howell addresses these unknowns, at times it is confusing why he describes a family as following one molt strategy and not another. For example, the oystercatchers are said to have a preformative molt, and the possibility of a prealternate molt is briefly discussed, yet the family is identified as following the "simple alternate" strategy, which does not include a preformative molt. If a species has both an alternate and a preformative molt, shouldn't its pattern be "complex alternate," as with some grebes? This possibility is not mentioned at all, though Howell does mention the possibility of the "complex basic" strategy (in which there is no prealternate molt). Although the information and confusion originate from Pyle (2008), I would have expected some discussion. These inconsistencies recur in a small number of accounts (e.g., pelicans, flamingoes, swifts).

The photographs (important for a book on molt) are almost all of high quality, and the author should be congratulated for choosing photos that illustrate his points so well. The illustrated differences in feather wear, for example, can actually be seen in all of the photos in my copy! This is not always true in articles discussing molt. The large size of the photos used in this book certainly helps, though I could see how a magnifying glass and a strong light might help with some photos, such as those of the frigatebirds (p. 108). However, a few photos appear to have been chosen only because they are aesthetically pleasing, such as those of the California Quail (p. 86) or Chestnut-backed Chickadee (p. 196) and not because they illustrate the author's point. Unfortunately, a couple of photos are of poor quality (though some may at least be on point), and I find it hard to believe that better photos couldn't have been found (e.g., Olive Warbler, p. 220). The captions expand on points in the text or give interesting facts. Each caption also gives the photo's *exact* date and location, information that should accompany all published photos and is especially critical to discussion of molt. Again, these captions are well written, and I found only two mistakes in them.

In *Feather-Watching*, unfortunately, the photos illustrating various points are generally mediocre to poor, and in several I had trouble actually seeing the feathers being discussed. While species (not all are identifiable from the photos) and dates are given for every photo, locations are not.

As *Molt in North American Birds* is largely a summary of previous work, not a presentation of original data, the book is peppered with citations. As the introduction states, the references cited are not an exhaustive list of papers and books on molt (for which see Pyle 1997 and 2008), but still cover 11 pages. A more complete bibliography might have made the book more useful to professional ornithologists and might have improved the family accounts. For example, a possible answer to questions about buntings of the *Passerina* (p. 234) may be found in Greene et al. (2000). The book also has a nice glossary in the back, giving concise definitions, which should help most readers.

Although I liked the style of *Feather-Watching* and the good-natured narration by Lisa Hug (including her playing music), the CD tries to cover too much too quickly, even if the presentation is broken into multiple viewings, as she suggests. Having the script in front of you will help, but I'm afraid that a beginner will still throw up his hands in defeat. I also felt the quizzes weren't utilized to their fullest and add little to the work's overall effect. The graphics are amateurish and, while correct, are at times misleading. Despite this, the information given is generally excellent and informative. The narration was well done, and I found only one mistake in the presentation.

While *Molt in North American Birds* could have been more complete, which would have added value to researchers, its main audience of birders will find all the information, they need, and some may appreciate the brevity of the book. It would have been even more valuable overall had Howell been clearer in some accounts why he says a family follows one strategy of molt rather than another. Nevertheless, *Molt in North American Birds* is unique in summarizing what's known (and not known) in one convenient book. Again, the introduction should be read by every birder. This book should help birders understand molt as an important aspect of a bird's natural history and may inspire some field ornithologists to study it.

My minor quibbles with the book should by no means detract from what it does accomplish: it is an-easy to-read reference on molt, for which it isn't necessary to have read technical papers on the subject. *Molt in North American Birds* deserves a place on the bookshelf of every birder and ornithologist. On the other hand, while I enjoyed the style (very useful for teaching a class) and information in *Feather-Watching*, the execution just wasn't what I hoped for.

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David Vander Pluym

Effects of Climate Change on Birds, edited by Anders Pape Møller, Wolfgang Fiedler, and Peter Berthold. 2010. Oxford University Press, Oxford, England. 321 pages, 71 figures (black and white, with 9 also as color plates), 20 tables. Hardback, $117.00. ISBN 978-0-19-956974-8. Softback, $62.95, ISBN 978-0-19-956975-5.

The topics of global climate change and its potential effects on species and ecosystems have recently entered a major spotlight of public attention. Research in these areas has also recently surged. My search of the ISI Web of Science (available at university libraries), with the simple search criteria "birds" and "climate change," yielded 592 journal articles relating to birds and climate change published in the last 4-year period, 2007–2010, compared to only 32 from 1997 to 2000. Because of the many variable ramifications of climate change and complex interactions, however, it's exceedingly difficult to link climate change to measurable effects on particular species. *Effects of Climate Change on Birds* is an edited volume that gives an overview of our current level of knowledge and current research on the biological consequences of climate change on birds. Although the take-home message is that we have much yet to learn, the editors suggest that birds may serve as a useful model for climate-change effects because of the large amounts of historical data, continuing monitoring, and the sensitivity of birds to environmental change. The book attempts to take a synthesis approach with the aim of stimulating future research, and the target audience is the next generation of ornithologists.

The papers included in this book are intended to cover our knowledge of changes (due primarily to contemporary climate warming) already observed and all levels of associated causes and consequences. The editors admit that it is necessarily biased toward a few well-studied species and sites, and there is definitely an emphasis on migratory passerines in Europe. The book begins with a brief introductory chapter, followed by a very detailed chapter on the science of climate change, including natural cycles such as el Niño–Southern Oscillation, and evidence for human acceleration of global warming. That is followed by a section of six chapters on the methods for studying climate-change effects on birds, with somewhat cursory reviews of available datasets and analysis techniques. The final, largest section includes 11 chapters that cover our current knowledge of the biological consequences of climate change, followed by a brief conclusion. Coverage of topics includes the effects of climate change on timing of breeding and reproductive success, population consequences, range shifts, sexual selection, complex interactions, community-level effects, and evidence for evolutionary responses (or lack thereof).

The volume is similar in style and content to a special-topic work published six years ago by the same editors and including papers by some of the same authors: *Birds and Climate Change* (Møller et al. 2004). The current volume builds on the contributions of the previous volume and also adds many new chapters and perspectives. In the previous volume, the editors listed 16 areas most in need of research relating to the effects of climate change on birds, but in the current volume the same editors state that hardly any of these recommendations have been pursued, and they trim the list to five areas in need of special emphasis for future research. The current volume is essential to any student or researcher interested in studying the effects of climate change on birds because there are so few other published books. There have only been a few texts published recently on the biological effects of climate change, including *Wildlife Responses to Climate Change: North American Case Studies* (Schneider et al. 2001), *Climate Change and Biodiversity* (Lovejoy and Hannah 2006), and *Climate Change Biology* (Hannah 2010), and only one other recent book on birds and climate change, *Bird Migration and Global Change* (Cox 2010).

Despite the emphasis on Europe and migratory passerines, this volume makes an impressive attempt at broad coverage of the topic, with the chapters mostly complementary, and is sensibly organized. However, the chapters are also very independent

in that there is some overlap, little cross-referencing among chapters, and a few contradictions. For example, after Chapter 12 demonstrates that evidence of evolutionary response to contemporary climate change is lacking, the opening sentence of Chapter 13 states: "Global climate change is rapidly altering natural selection on living organisms, and there is mounting evidence that a range of taxa have responded with adaptive change at least to some degree." The brevity of the introduction and conclusion and separate reference lists for each chapter make this volume much more a series of papers on a related topic rather than a synthesis.

There are many interesting chapters with some novel and creative ideas and concepts, and much useful information. For example, Table 8.1 lists all of the published software packages for predictive modeling of habitat suitability, with reference papers and web links, and Table 10.1 summarizes the changes to dates of egg laying of 68 species of birds from long-term studies. However, the chapters vary in quality and usefulness, with some poorly written and plagued with typographical errors. Some of the reviews of methods for analyzing effects of climate change are rather cursory and vague, with presentations of theoretical models and equations lacking in sufficient detail or references. For example, when "path analysis" is mentioned as a useful way of analyzing causation chains, no specific examples of studies or references are given.

Some of the chapters boldly tackle complex topics that are lacking in research but have little to offer beyond speculation. For example, we often see conclusions such as the one at the end of the chapter on host–parasite interactions and climate change that "Our current knowledge of the effects of climate on host–parasite interactions is extremely limited." Much space that is devoted to speculation on ways that climate change could possibly affect birds would be made more useful with more specific examples of successful studies and methods used. The broadness and complexity of the topic is part of the problem, leading to an overly cursory review. Without focus, asking "What are the effects of climate change on birds?" starts to become "the possible effects of everything on everything." We have long understood the general importance of climate and its effects on species, so perhaps the questions would be more practical if focused, such as on the magnitude, scale, and variation in effects among species and populations.

Despite these shortcomings, this volume is essential to students and researchers interested in studying the effects of climate change on birds. It certainly provides a broad array of papers with some good summaries of useful information, stimulating perspectives, and ideas for future research. We are left with the impression that there are large quantities of unused information that could be analyzed in the context of climate change, and that there is much research yet to be done.

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Lori Hargrove