

**BOOK REVIEW**

Molt in Neotropical Birds, Life History and Aging Criteria. Erik I. Johnson & Jared Wolfe (2017). *Studies in Avian Biology* 51. American Ornithological Society & CRC Press, Boca Raton, Florida, USA. Hardback, 400 pp. Print ISBN-13: 978-1-4987-1611-6. Costs: US\$161 (eBook) and US\$179 (Hardback).

The 'Biological Dynamics of Forest Fragments Project' (BDFFP) is a well-known, large-scale effort to understand the effects of habitat fragmentation in tropical rainforests. Located in the Brazilian Amazon, the BDFFP was originally conceived to shed light on many relevant ecological debates and incidentally has provided basic information on the biology of understudied groups. In this sense, this volume is a great contribution to the study of Neotropical species, providing detailed and comprehensive information on molt and breeding, making it a key reference for population studies in the region and elsewhere.

This volume is a field ornithologist's dream come true, as it is the result of nearly three decades of gathering and organizing data from the BDFFP. To be specific, information from over 66,000 captures and over 1,000 specimens provide the basis for this work. Given the extensive effort from the authors and collaborators, this book goes through some previously unknown aspects of molt (i.e., age-specific molt sequence, extent, and seasonality) while providing estimates of breeding seasonality for most of the 180 South American species belonging to 37 families that are included.

What kind of book it is? As pretty much every book dealing with molt, this volume is to be used as reference material. Also, as previously published books on molt (e.g., Pyle 1997, Guallar et al. 2009), the printed, hard cover version of this volume might be uncomfortable to bring to the field (17.8 x 2.5 x 25.4 cm; 1.1 kg). Nevertheless, the size of the book is understandable given the amount of detail covered (e.g., it includes colour pictures and graphs depicting the phenology of molt and breeding for most species). The authors are well-known for their previous, thorough work on the molt of Neotropical species, and this volume is a game-changing contribution in the field. The downside of a work of such magnitude and quality is the price, which will, in my opinion, make it unreachable for many people in Latin America. Although the electronic version might increase the book availability in this region, it has limitations for field-use.

General contents. This volume of *Studies in Avian Biology* is the combined result of many years in the field that led to one of the most (if not the most) complete and comprehensive publication on molt and breeding biology of Neotropical species. The book layout is overall well thought, as the authors start by leading the readers through the basic concepts needed to fully use and understand the contents of the book and other related works. This introductory section is followed by more than 370 pages of species accounts that could be overwhelming for those unfamiliar with the updated molt terminology. Thus, I truly encourage readers to first go through the introduction if they plan on using the book in the field.

Book structure and contents. The book is structured in two main parts. The first part of the book includes two chapters, starting with an introduction to basic molt concepts and terminology. A major asset on the first chapter are the clearly written definitions of the four molt strategies that could be present in birds worldwide with some examples and their graphic representation. Finally, this section includes an introduction to the cycle code system for aging birds, tips for aging Neotropical species, a brief description of the study area, and the methods used to gather information (mostly derived from BDFFP long-term monitoring).

The second chapter is a much needed "How to use this guide" section in which the authors provide all the necessary information to properly identify and determine the age and sex of birds captured, according to Humphrey & Parkes (1959) and Howell et al. (2003) terminology. As the following section of the book is arranged taxonomically, this section includes general information on the structure and contents of the Family and Species accounts. The former being a brief summary of previously known information regarding each taxonomic family covered in the guide; and the latter is a detailed description of each species account. Finally, this section provides information on band size, a visual explanation of how birds were and should be measured for consistency, and the use of the phenological graphs and abbreviations.

Each *Family Account* indicates the number of species in South America and how many were captured during the covered sampling period. This is followed by morphological and natural history information, most of it

focused on plumage or relevant cues to be used in the field, such as known molt strategies, number of flight feathers (primaries, secondaries, and rectrices), brood patch and skull ossification development, potential secondary aging characters (e.g., iris color), and additional notes. As expected, common understory species are covered in greater detail since they are more frequently captured in mist nets.

The *Species Accounts* section is comprehensive. The amount of information provided for most species is overwhelming and at times difficult to follow since all sections within each account use the same font. Nevertheless, once you gain experience in the use of the book, age/sex determination becomes quite natural. For this purpose, each *Species Account* starts with the English and Latin names, and sex-specific band size and measurements (wing, tail, mass, bill, and tarsus). Following this, similar species, skull, brood patch, and sex identification information is provided. In a bold move, the authors tackle the molt issue by assigning each species to one of the four general molt strategies, providing the molt extent for each molt episode, thus clearly telling users what to look for when examining birds. Finally, Wolfe et al. (2010) cycle-code specific information is provided, a great aid for age determination (extended wing pictures and phenological graphs are extremely helpful).

What contribution does the book make to the field?

Back in 1987, Peter Pyle, a leading author on the subject, stated that North American ornithologists were about two decades behind on the understanding of molt when compared with European counterparts. Thus, *Molt in Neotropical Birds, Life History and Aging Criteria* by Erik I. Johnson and Jared Wolfe, along with the papers included in this Special Issue and the Manual by Pyle et al. (2015), represent a major breakthrough in our understanding of molt and natural history of South American species, with many further research potential, and set a baseline of quality for those that intend to publish in the subject.

Who should buy this book? *Molt in Neotropical Birds, Life History and Aging Criteria* is a book that every field ornithologist would like to own. Probably many North American ornithologists working in the Neotropics will get a copy, but as a Latin American

field ornithologist, I must say that I would not be able to hold it in my hands if it wasn't a complimentary copy for reviewing purposes. Yes, the book is great, superb printing quality, the introduction is the closest to a text book on molt (with up-to-date terminology review and clearly written), but the price is prohibitive for most researchers outside developed countries. I'm also troubled because the book is in English when it is intended to be used in a non-English speaking region. Nevertheless, I have reviewed manuscripts in which molt terminology is misused, thus this book comes very useful to aid in the standardization of such terms (e.g., molt timing and extent, molt pattern). I would really like to see a copy of this book in each library of Latin American Universities in order to boost interest for the research on molt in Neotropical Species and spread the proper use of terms before we come with a Spanish/Portuguese version of the book.

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