

BOOK REVIEWS

Avian Invasions: The Ecology & Evolution of Exotic Birds, by Tim M. Blackburn, Julie L. Lockwood, and Phillip Cassey. 2009. Oxford University Press. 305 pages, numerous figures and tables. Paperback, \$55.00. ISBN 978-0-19-923255-0.

Over the past 20 years, there has been an explosion of interest in the ecology and evolutionary biology of introduced species, particularly birds. The aim of *Avian Invasions: The Ecology & Evolution of Exotic Birds* is to summarize the current state of knowledge of birds introduced outside their native range. Given the large number of papers that have been published on this topic during the past few decades, this goal is ambitious.

As the cover states, the target audience is “professional avian biologists and ornithologists, invasion ecologists, and graduate students of ecology, evolution and conservation.” *Avian Invasions* is essentially a short textbook on the biology of non-native birds that focuses on identifying areas of agreement (and disagreement) in papers published in this field over the past few decades. Unlike Long’s 1981 *Introduced Birds of the World*, *Avian Invasions* does not provide a catalog of introductions around the globe. Instead, it describes our current state of knowledge on the patterns and processes of avian introduction, establishment, and (for some species) range expansions. It cites numerous studies of established exotics in the Hawaiian Islands, for example, but offers little detailed information on introduced birds on the mainland of western North America.

The book is divided into ten chapters. The first briefly introduces the topic of exotic birds and explains why studying non-native species is of interest. The second discusses patterns of transport and release of exotic birds and discusses in some detail the role of acclimatization societies in introducing and establishing them. Chapter 3 discusses how sporadic events such as unusually high mortality caused by an unusually cold winter may interact with the number of individuals introduced and the number of repeated introductions to help explain why some introductions succeed while others fail. Chapter 4 examines which traits of a species affect the success of establishment, while Chapter 5 examines whether traits of a locality can help predict that success. Chapter 6 discusses mathematical models of spread. Chapter 7 looks at patterns of species richness and diversity in space and considers whether islands are more easily invaded than the mainland and whether biotic resistance may limit an invasion’s success. Chapter 8 addresses the extent of genetic diversity in introduced species, while Chapter 9 focuses on evidence for microevolution in introduced populations. The final chapter summarizes the highlights of each of the nine preceding chapters and suggests that a coherent picture of the biology of avian invasions is beginning to emerge.

Overall, the book does a nice job of discussing numerous studies of avian ecology and summarizing areas of agreement. In particular, I was impressed that the authors reiterated multiple times that the number of individuals introduced into an area (what they term “propagule pressure”) needs to be controlled for when other factors that may influence the introduction’s success are examined. I also liked how they broke invasion ecology into four stages: (1) transport, (2) introduction, (3) establishment, and (4) spread. This framework is useful for several reasons, not least because it helps identify characters that may influence an invasion’s success at each stage. The authors also do a good job of describing potential avenues of research for other investigators at each stage.

The authors are to be commended for mentioning important papers and concepts without going into too much detail in each chapter. I found Chapter 6 a bit weak, however, as it contains only a cursory overview of some of the more recent advances in mathematical modeling of range expansions (for example, hierarchical Bayesian models receive only a sentence in this chapter).

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Each chapter is methodical and well researched, although the prose is generally a bit dry. Nonetheless, I found a few sections that elicited a smile. For example, in the concluding chapter the authors wrote, "In other words, the study of the early invasion stages is ecologically boring and nearly impossible to obtain funds to explore from basic science initiatives that value experimental scientific approaches." While this may be a bit of an overstatement, there is a substantial body of literature on the variables that influence an introduction's success.

Overall, this book does a good job of summarizing areas of agreement, disagreement and avenues of potential research on introduced birds. It will be a valuable reference for anyone who is interested in studying the ecology of avian invasions.

Chris Butler

Birds of the US–Mexico Borderlands: Distribution, Ecology, and Conservation, by Janet Ruth, Tim Brush, and David Krueper, editors. 2008. 165 pages, over 60 black-and-white photos, tables, maps and figures. Three color maps and figures. Paperback, \$20.00. ISBN 978-0-943610-84-9. Order through <http://cooper.org>.

Birds of the US–Mexico Borderlands: Distribution, Ecology, and Conservation is the latest *Studies in Avian Biology* from the Cooper Ornithological Society. This volume is an assemblage of the papers presented at the North American Ornithological Conference held in Veracruz, Mexico, on October 2006. It is organized into four sections of two to four papers addressing the topics of changes in distribution and abundance, population trends and ecology of riparian and wetland birds, population trends and ecology of grassland birds, and new technological applications and bird-conservation planning.

The preface provides an excellent overview of the geography, human population statistics, and bird and other biotic communities of the borderlands region. The section includes two maps of the region, one general and the other in color, of the biotic communities. The preface also lists the species recognized as being of concern in the region. It also clarifies one important question: what defines the "borderlands region"? The inevitably arbitrary definition is anything within 325 km (202 miles) of the US–Mexico border. The selection includes all of the habitats typifying this region.

The first two papers in the first section describe the recent shifts in the breeding status of the avifauna of the lower Rio Grande Valley and Big Bend National Park, respectively. Surveys in the lower Rio Grande Valley by Timothy Brush from 2003 to 2007 revealed that populations of 19 breeding species have increased whereas 9 species have declined, ceased breeding, or have been extirpated. The paper on Big Bend National Park presents similar results for an additional 30 species found there. The third paper is a more complete overview of the bird life of northern Sonora, and the last documents the long-term declines, along with the recent increase, of breeding Royal Terns along the Pacific coast of southern California and Baja California.

In the second section, addressing riparian and wetland species, two of the papers are somewhat general analyses of avian habitat use and interactions, one of wintering birds in riparian habitat of Sonora, and the other of all species using riparian habitat along the lower Colorado River, site of some of the region's worst man-made environmental disasters though also some recent limited regeneration of native riparian vegetation. The third is a more detailed analysis of trends in the population of the Yuma Clapper Rail (*Rallus longirostris yumanensis*) along the Colorado River, and another paper looks at how granivorous birds such as sparrows are exploiting seeds during the winter in the deserts of southwestern New Mexico. The final paper in this section reports the results of surveys in New Mexico and Arizona of the Arizona

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Grasshopper Sparrow (*Ammodramus savannarum ammolegus*), a subspecies listed as endangered in New Mexico.

The study reported in the first of the two papers in the final section takes advantage of the recent technological advances in surveillance of weather by radar, using data from weather stations to monitor the direction, speed, and altitude of spring and fall migrants and inferring routes of passerines migrating over the borderlands region. The last paper provides a comprehensive conservation plan for the Chihuahuan Desert Ecoregion, which extends from Guanajuato in the south to New Mexico in the north and includes the enigmatic and threatened Worthen's Sparrow.

The paper on the status of the birds of the lower Rio Grande valley will be of interest to readers in the ABA area: it presents updates on the current status of a number of Mexican species that barely make it over the border in this region, including recent colonists such as the Ferruginous Pygmy-Owl, Tamaulipas Crow, and Mangrove Yellow Warbler. On a more serious note, the paper on Big Bend National Park documents the recent and precipitous decline of park's population of the Montezuma Quail, the causes of which are unknown. Along the Colorado River, sporadic floods and inflows of fresh water have allowed for the recovery of some native riparian vegetation, and Hinojosa-Huerta et al. demonstrate that certain vulnerable riparian bird species have been able to recolonize this habitat, providing some hope for this severely threatened ecosystem.

Although the two sections on specific habitats cover what are arguably the region's most threatened habitats, grasslands, wetlands, and riparian, the borderlands encompass many other habitats, some also threatened. The partiality to certain habitats is no fault of the authors but instead highlights the work yet to be done on the other endangered species and habitats of the borderlands region. It is in fact this incredible variation in habitats of the borderlands region that is highlighted in figure 2 of the preface, and along with the species of concern also listed in the preface, illustrates the damage that has been inflicted on the habitats of this area.

Being a detailed examination a few selected topics, this publication is directed to an audience narrower than the general birder. But for those with an interest in conservation and ecology, or who are looking to do research in this region so changed by human activity, its baseline data on birds' status, distribution, and ecology are an essential resource. With any luck this publication will provide a greater incentive to protect this unique region.

Oscar Johnson

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