



Conservation of Tropical Birds

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knowledge has been generated. As a consequence, a synthesis was urgently needed. Fortunately, four authors with field experience in different portions of the tropical world combined their efforts to produce this book, the first of its kind covering all major issues on conservation of tropical birds.

The book is organized in 10 chapters, with 12 color plates with figures and pictures. The book begins with a synthesis of the state of tropical avian biodiversity. Of the 1,227 bird species threatened worldwide, 79% occur in lowland and montane tropical forests. Habitat loss and degradation are the major causes of bird extinction, but hunting, pollution, invasive species, and disease play a role as well. The second chapter presents theoretical background and empirical data from studies that analyzed the effects of habitat fragmentation on tropical birds. The third chapter presents a good summary on tropical bird extinctions. The current bird extinction rate may be at least 30× more than expected, but conservation initiatives may have slowed the bird extinction rate in the past century. There is some empirical evidence that certain forest bird species may be able to use disturbed landscapes, but it is not clear whether they are able to sustain their populations in those areas.

The fourth chapter is on ecological functions of tropical birds. From an ecosystem perspective, birds are mobile links that are crucial for ecosystem function, memory, and resilience. The roles of birds in seed dispersal, pollination, predation and pest control, scavenging, nutrient deposition, and as ecosystem engineers are presented in some detail. Rapid loss of tropical birds may cause substantial reductions in certain ecosystem processes and services before we have a clear understanding of them. In this chapter, I think that the discussion on the role of birds in the process of restoration of tropical ecosystems could be improved significantly; the subject is very important in conservation biology, and a vast literature on the theme has been produced in the past two decades. The next chapter covers the effects of fire on the conservation of tropical birds. Fire regimes are natural, but humans have altered them in 70% of landscapes. Consequences of fire for bird conservation are highly context specific, depending on a multitude of complex factors, including variability in life-history strategies, the history of fire in each ecosystem, and the spatial and temporal scale of the burn events. The sixth chapter is on biotic invasions and tropical birds. It is estimated that 597 bird species are threatened or have gone extinct owing to the negative effects of invasive species. Cats and rodents are the main culprits in these losses. Several species are deliberately released in regions outside their ranges and successfully establish invasive populations. However, we know very little of how to develop successful management of invasive bird species. In this chapter, I think that a list of birds that become invaders with the relevant sources would help students and researchers to define research priorities on this topic.

The seventh chapter is an interesting synthesis on harvesting of tropical birds. Around 42% of the extant bird species are utilized as pets or hunted for food by humans. A large number of wild birds, 5–10 million, are caught annually in developing countries and exported to developed countries. Although birds may not form a major component of the bush meat trade, large frugivore birds may have populations affected by hunting and their decline may, as a consequence, severely affect forest dynamics. The next chapter covers the effects of climate change on tropical

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Conservation of Tropical Birds.—Navjot S. Sodhi, Çağan H. Şekercioğlu, Jos Barlow, and Scott K. Robinson. 2011. Wiley-Blackwell, Chichester, United Kingdom. 312 pp. ISBN 9781444334821. Hardcover, \$129.95.—In the past three decades, the study of ecology and conservation of tropical birds has increased exponentially. With more and more researchers dedicating their lives to understanding the evolutionary and ecological dynamics of tropical avifauna, a completely new body of

birds. It is expected that 2,500 land bird species will go extinct by the year 2100, and most of these are expected to be tropical birds. Tropical mountain birds, species restricted to flat lowland areas, coastal forest birds, and restricted-range species are especially vulnerable to climate change. Climate-change effects will be especially exacerbated by ongoing habitat loss in the tropics. Networks of protected areas need to be designed with climate change in mind, given that 92% of the current protected areas are likely to become unsustainable in a century. Recommendations on how to design protected areas to face climate change are provided. The ninth chapter covers the conservation of migratory birds. There are more than 500 species of birds, numbering in the billions of individuals, that spend the non-breeding season in the tropics. These birds occur in virtually all habitats and play crucial roles in tropical ecosystems. Conservation recommendations for these species are outlined. My major criticism of this chapter is that it is biased toward the north temperate–south tropical migratory system and fails to explore the conservation implications of all other migratory avian systems that encompass tropical regions. The last chapter explores the conservation prospects for tropical birds. The authors suggest that Endemic Bird Areas can be a good way to define conservation priorities. I agree, but I think that they could provide a more substantial review on the major lessons learned from the use of birds in systematic conservation planning in tropical countries. Protected areas are considered the most effective way to protect vulnerable tropical birds, but governments and conservation organizations should integrate human livelihoods in conservation programs. The cost of managing all protected areas around the world is \$13 billion per year, but only \$1 billion of this is invested annually. Lack of funds for protected areas is hard to understand because the world spends around \$2 trillion annually to subsidize environmentally destructive policies. Creating economic opportunities associated with bird watching and payment for ecosystem services may be useful at the local scale but difficult to scale up. Improving knowledge on ecology of tropical birds is essential for designing innovative and meaningful conservation strategies.

In general, the book is a remarkable achievement, with all chapters providing a succinct, factual, well-referenced, and state-of-the-art review of all relevant topics. Because the book is multi-authored, some differences in style as well as content redundancy occur among chapters. My major general criticism is that the book lacks two important chapters: one on composition and evolution of tropical birds and another synthesizing the major patterns and processes of tropical avian assemblages. These two chapters plus the chapter on ecological functions will set the stage so that the reader can better understand tropical avifaunas, how they differ from those of the other regions, and how they have been assembled over time. Then, chapters 1, 3, 5, 6, 7, and 8 could compose a second section to present the state of tropical birds and the major factors that affect them. Finally, chapters 9 and 10 could compose a third section that outlines the major conservation strategies for migratory and resident species. I enjoyed reading this book, and I strongly recommend it for all students and researchers interested in the fate of tropical birds. Unfortunately, the price is too high for most of the young tropical ornithologists who could benefit most from the information so well organized by the authors. I urge the publisher to offer a lower price for the ebook format to

tropical ornithologists, to make this important book accessible to a broader audience.—JOSÉ MARIA CARDOSO DA SILVA, *Conservation International*, 2011 Crystal Drive, Suite 500, Arlington, Virginia 22202, USA. E-mail: jsilva@conservation.org.
