



BOOK REVIEW

## Avian Ecology in Latin American Cityscapes

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Published February 13, 2019

**Avian Ecology in Latin American Cityscapes** edited by Ian MacGregor-Fors and Juan F. Escobar-Ibáñez. 2017. Springer International Publishing, Cham, Switzerland. xii + 173 pp., 24 plates, 11 text figures. \$189.00 (hardcover), \$143.00 (Kindle). ISBN-10: 3319634739, ISBN-13: 978-3319634739.

In his classic paper, [Tinbergen \(1963\)](#) established 4 steps for the study of animal behavior at a time when this scientific discipline was in its infancy. The first 2 (immediate causation and development) address what we now consider to be proximate factors, while the latter 2 (evolutionary history and function) delve into ultimate ones. This approach has been emulated in numerous other contexts and continues to serve as a foundational framework to develop emerging fields in ecology.

Urban ecology, at least in the temperate zone, has been viewed as a consolidated discipline since the late 1990s and early 2000s. Pattern and process are understood well enough to give rise to comprehensive paradigms, and the field has seen an enormous growth in recent years. However, the way in which many of the tenets of temperate zone urban ecology translate to the tropics is not always clear. Some of the properties of tropical urban systems, such as different climate and seasonality regimes, higher species richness and ecological complexity, and a mosaic of varying socioeconomic conditions, justify the need to address tropical systems separately.

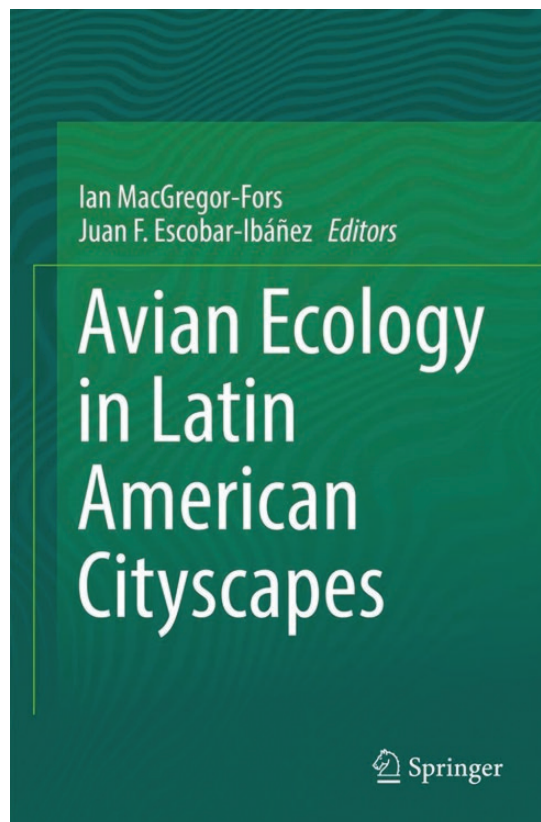
This is the context in which *Avian Ecology in Latin American Cityscapes* is published. This book, edited by Ian MacGregor-Fors and Juan F. Escobar-Ibáñez (research

scientists at the Instituto de Ecología A.C. in Mexico), is a collection of 9 essays that synthesize the growing number of publications of this emerging field in Latin America. Fifteen authors from 8 institutions in 5 countries cover subjects that span from species richness and composition to urban bird conservation.

All chapters are structured similarly: after introductory material, they discuss global patterns, discuss the way in which literature searches were made, present the

Latin American scenario, and end with a discussion of “future directions.” The book starts with an initial chapter introducing the scope of the book in the context of what we know about urban bird ecology in Latin America. The core of the book is 7 extensive literature reviews. Chapter 2 reviews urban bird ecology in Latin America, highlighting 128 peer-reviewed papers between 2011 and 2015 that update 2 reference works. These papers reveal an explosive growth of primarily ecological research. Most papers were published from cities in Brazil, Mexico, Argentina, and Colombia at an annual rate that is 9 times higher than the pre-2011 period. Chapter 3 reviews species richness and composition, noting that species richness increase with patch size, vegetation structure, and complexity. Species

richness also decreases with human activity and infrastructure. Several traits seem to help birds thrive, such as diet (insectivorous, granivorous, and generalist). Bird richness



also increases with native plant species and decreases with an increased abundance of exotic species. The authors recommend more studies of increased temporal and spatial scale, more studies that consider changes in avian communities at city fringes, and how biotic homogenization in cities affects birds. Chapter 4 reviews avian demography and population dynamics, noting that the abundance of specialist species is negatively related to urbanization, that birds exhibit greater survival in urban environments, and sources of mortality associated with urbanization include collisions with windows and vehicles as well as from predation by cats and dogs. Chapter 5 considers urban infrastructure, indicating an unbalanced number of studies that focus on greenspaces whereas only a few studies deal with “gray” infrastructure, and recommend that a “matrix” perspective would greatly enhance understanding of city structure. In chapter 6, the authors look at the behavioral responses of birds to urbanization, noting 4 major gaps in the current literature. Chapter 7 reviews current threats to birds (predation, parasitism, and collisions with buildings and vehicles) in urban environments from a small sample of primary literature. Chapter 8 on urban bird conservation reviews the impact that urbanization has had on species composition, mutualistic networks, distributional patterns, and local extinctions, and reviews alternative approaches to conservation such as the use of flagship species to develop a conservation constituency, the creation of habitat corridors to increase connectivity, and the limiting of human access to sensitive species. It proposes a shift in an urban development vision toward more livable and biodiverse cities with larger, diversified, and ecologically functional greenspaces and water bodies. A closing chapter summarizes the main findings, assesses the major gaps in current literature (e.g., studies at broader temporal and spatial scales, up-to-date analytical procedures, and more information regarding the natural history and distributions of native species and the major determinants of these), and sets an agenda for the future of this field, including building a consensus for citizens and scientists to think of cities as biodiverse spaces and manage them under ecological principles.

Throughout each chapter, there is an emphasis on tallying papers by topic rather than a discussion that clearly identifies pattern, process, or differences from what has been found from similar work done in the temperate zone. I found that most of the chapter contents deal with proximate causes (e.g., mechanisms and ontogeny) with few mentions of ultimate causes such as fitness consequences, evolutionary history, and phylogenetic effects of cities on birds. Unfortunately, the book certainly neglects an unknown number of local bird studies in urban sites from Latin America, because these are just the kind of studies that journal editors reject because they are papers of “local interest.” This creates a problem, as these studies are often

archived in non-peer-reviewed form as gray literature or undergraduate theses that will rarely be known to the public. I do not have an answer to this problem, but perhaps this book will make journals more receptive to considering such works.

The arrangement of chapters, in my perspective, groups the main issues under study in Latin America comprehensively and appropriately. Chapters are compact and to the point (mean length of chapters is 17 pages, range is 9–24). The book, as expected, is well referenced (the mean of references per chapter is 125, range is 56–252). The presentation of the book reveals a heavy-handed editorial style. As examples, the way titles are written and the structure of each chapter are very similar. Some rather uncommon word usage is spread across chapters of different authors (e.g., the words “mechanistic process/study,” “comprehension,” and “worrysome,” are repeated 11, 11, and 5 times, respectively). In contrast, other aspects show a lack of attention to detail (e.g., Figure 1.1 has a wrong sign in the >100 million category and repeats the problem in the >20 million category, the south latitude marker is placed too far south; Figure 2.1 has a south latitude marker north of where it should go; Figure 6.1 is missing arrowheads out of the boxes “Stay” and “Disperse to a non-urban system.” The book contains some factual imprecisions, e.g., in Table 7.1 the numbers do not add up to what is described in the paragraph above it; Xalapa—a city twice as big as Pachuca—is regarded on page 86 as “small” whereas the latter is listed as “medium-sized”; and a few typos can be found throughout the text, e.g. the senior editor’s co-author name Shondube [sic] atop page 91, process instead of processes at the end of the abstract on page 99.

I find this edited volume to be rather endogamic. I recognize it is hard to find experts from a field under development (where papers often do not reach formal publication) and that Dr. MacGregor-Fors is the most published author on urban bird ecology in Latin America, but 8 out of 15 authors (in 6 out of 9 chapters) work or study at the same institution, the Instituto de Ecología A.C. The editors themselves author 4 out of 9 chapters, and representation by country is centered in Mexico (9 authors), with fewer inputs from Brazil and Argentina (2 authors each), and 2 countries represented by single authors (Venezuela and Colombia). I also found it outrageously expensive, inaccessible for most scientists in Latin America.

My impression after reading this book is that the field is not ripe yet to build a comprehensive model of how cities work in Latin America (almost equivalent to Neotropics, but not quite). The closest to this idea is summarized in Figure 6.1, but I do not find it qualitatively different from what one would expect from the temperate zone. As evidence mounts in coming years, it would be great to address data gaps, such as the role of

city size and configuration, meta-analyses of issues only pertinent to bird ecology in Latin American cities, species–area relationships of greenspaces of different types, ectoparasites, the untapped potential of citizen science to accelerate our knowledge of birds in cities, and other issues identified by the authors.

Going back to Tinbergen's (1963) approach, the literature summarized in this book deals primarily with proximate issues, such as mechanisms (immediate causation) and ontogeny (development). Published papers from Latin America only rarely address ultimate issues of evolutionary history and adaptive value. The book often covers ubiquitous exotic species already established (such as European Starlings [*Sturnus vulgaris*], House Sparrows [*Passer domesticus*], and Rock Pigeons [*Columba livia*]). On the other hand, we learn little about the traits that allow the ongoing conquest of the world cityscapes by supertramp colonists such as Monk Parakeets (*Miopsitta monachus*) and Eurasian Collared-Doves (*Streptopelia decaocto*) compared to other possible colonists, such as mynas, canaries, weavers, waxbills, and munias, to name a few.

Cities undoubtedly play a role in forcing evolutionary adaptations. For example, La Sorte et al. (2018) demonstrate cities favor traits such as seed- and fruit-eating birds

that dwell in the understory or feed on the ground, such as passerines and columbiforms (cited by Schilthuizen [2018] as “anthropophiles”). Those traits are deeply rooted in the phylogeny of birds and have an adaptive value.

I found this book illuminating and poised to become a resource that will be of fantastic help to direct the development of this field. I congratulate the editors and authors for putting in our hands a great book: the state of the art of bird ecology in Latin American cities.

#### LITERATURE CITED

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