

GUIDE TO THE ALIEN AND INVASIVE ANIMALS OF THE CARIBBEAN. Arne Witt, Mike Picker, and Kirsty Swinnerton. 2024. CAB International, Wallingford, Oxfordshire, UK. 395 pp. ISBN: 9781800627581 (ePDF). doi.org/10.1079/9781800627598.0000.

This very useful and tremendously valuable book will serve as an introduction to the scope of the problem that alien invasive species pose in the Caribbean region, and as a guide to help land and resource managers begin to think about and communicate around shared efforts in the control or eradication of these species.

As defined here, invasive alien species are “those species that have been intentionally or accidentally introduced through human intervention and that have subsequently established self-sustaining populations to the detriment of biodiversity, crop and/or livestock production, human and/or animal health, and economic development in general.” Species that have spread into an area without the help of people from an area in which they are already exotic are also regarded as alien.

Aside from economic and ecological problems associated with alien invasive species, they have also been implicated in 86% of island species extinctions since 1500 A.D. Management of these alien species could therefore contribute significantly to preventing the future extirpation of many species in our region. However, according to the authors, the management of invasive alien species in the Caribbean region is constrained in part by a lack of awareness, especially including access to critical information; filling this gap is a primary goal of this guide.

The *Guide to the Alien and Invasive Animals of the Caribbean* is comprehensive in that it covers birds, but it also covers all other animal taxa, many of which may impact in some way the species of birds for which the readers of this journal may have the greatest interest. This includes mammals, amphibians and reptiles, fish, echinoderms (starfish, sea urchins, and sea cucumbers), insects, myriapods (centipedes and millipedes), arachnids (spiders, mites, and ticks), crustaceans, annelids (segmented worms such as earthworms), molluscs, platyhelminths (flatworms), and cnidarians (corals).

This comprehensive approach of including coverage of all animals is supported by an extensive introduction. Here, there are long and valuable discussions on patterns seen in the literature around ecological traits of an invasive species, and many examples of what we can do to manage an invasive alien species; this includes discussion of control and eradication methods for each group of species.

The remainder of this review will focus on data presented around alien invasive birds. According to tables in this guide, there are almost 100 alien bird species that have been recorded in the Caribbean. Most aliens are represented by species in the families Psittacidae (parrots and parakeets) and Estrildidae

(finches, mannikins, munias). Of these, 45 species have become established on one or more islands, indicating a population that is successfully reproducing and likely growing in size. Species include the Muscovy Duck (*Cairina moschata*), Helmeted Guineafowl (*Numida meleagris*), Red Junglefowl (*Gallus gallus*), Eurasian Collared-Dove (*Streptopelia decaocto*), Rose-ringed Parakeet (*Psittacula krameri*), Monk Parakeet (*Myiopsitta monachus*), Orange-winged Parrot (*Amazona amazonica*), Brown-throated Parakeet (*Eupsittula pertinax*), Orange-cheeked Waxbill (*Estrilda melpoda*), and Scaly-breasted Munia (*Lonchura punctulata*).

Thirteen of these species were selected for more complete coverage in the guide. These are not necessarily the most damaging species but serve to provide an overview of the range of species that have become established in the Caribbean. For these species, information is included such as habitat, identification, basic biology, origin, distribution, impacts, and control. Perhaps the last two sections are the most interesting and valuable. The impacts section frequently includes detailed data on economic impacts or ecological consequences of each alien invasive species. Unfortunately, though, these accounts most often rely on data from other regions of the globe. Whether or not they are applicable to the Caribbean is unknown since regional studies are lacking. However, at least they can be seen as a strong warning of the potential—if not actual—consequences of uncontrolled growth of these invasive populations.

My primary negative criticism of this important guide is that the list of apparently invasive species too often relies on faulty data gathered from overly broad summaries. I realize that in a single-volume guide that attempts to be this comprehensive across all animals, mistakes will be made. The authors, I think, realize this, as they state that cited references support the view that a species is present on one or more islands in the Caribbean, but that they may not all agree as to which countries the species is present in, if it is native or introduced, and if it is invasive or not. However, there seems to have been little effort to consult more local guides, such as island-specific field guides, to resolve conflicting information on the status of a species. As such, the authors “cannot guarantee the accuracy of every record, especially in cases where there is conflicting information.”

As a result, looking at just birds from Hispaniola, for example, the Caribbean island that I know best (i.e., Latta *et al.* 2022), I see numerous examples of alien bird species attributed to the Dominican Republic or Haiti that do not appear on authoritative lists (i.e., Mute Swan, *Cygnus olor*; Monk Parakeet; Rose-ringed Parakeet) or are very rare accidentals or vagrants (i.e., Mallard, *Anas platyrhynchos* and Canada Goose, *Branta canadensis*). Conversely, there are also species missing from the list in this guide that have actually occurred on the island (i.e., Common or Ring-necked Pheasant, *Phasianus colchicus*).

These are perhaps small errors, although they can affect the estimation of the scale of the problem of alien and invasive

species in an area. More consequential though is the determination of what species are (or are not) considered alien invasives. I am, for example, perplexed and disappointed that the Western Cattle Egret (*Ardea ibis*) is included in their list, and even highlighted in the focal species accounts. The Western Cattle-Egret was not reported in the Americas prior to 1877, but no records exist of human transportation or escapes from captivity in South America, and the expansion of the range of this species is widely attributed to natural events (Massa *et al.* 2014, Telfair 2024). The egret's range expansion has been, in fact, a well-documented celebration (in some sense) of the possibilities for dynamic range extensions, as its speed and scale are among the greatest recorded for any avian species (Massa *et al.* 2014, Telfair II 2024). While the extension of the range of the Western Cattle Egret may have been facilitated by the expansion of preferred habitats associated with agricultural clearings (a pattern seen across many other species too), that does not fulfill the definition of alien species as one that has been intentionally or accidentally introduced through human intervention.

I highlight these errors not so much to disparage what is in my estimation a tremendously useful book, but to highlight a point made by the authors themselves: that is, "it is imperative that before any species is targeted for management that its status in each country be verified by published and unpublished records and expert opinion." Additional, locally verified information is available, and new information will be discovered on species distributions, their ecology, and their impact on other species, human well-being, and our shared environment.

The freely available *Guide to the Alien and Invasive Animals of the Caribbean* provides land and resource managers with critically

important information to begin to ask the questions and seek the answers to identifying and reducing the impacts of alien invasive species in the Caribbean region. This guide also promises to provide a common base of knowledge and a common language by which experts across the Caribbean can collaborate on management, control, or even eradication of alien invasive species. As the authors make clear, managing shared species that can easily move between and among islands and nations requires cooperation across the region, and requires a sharing of knowledge and resources to affect effective management. This guide helps us to take a big step forward in meeting the challenges presented by alien invasive species in the Caribbean.

Literature Cited

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