

# All You Ever Wanted to Know About Anoles — But Were Afraid to Ask

*Lizards in an Evolutionary Tree: Ecology and Adaptive Radiation of Anoles.* 2009. Jonathan Losos. University of California Press, Berkeley. xx + 507 pp. Hardcover – ISBN 978-0-520-25591-3. \$75.00.

Over 350 species of anoles, characterized by colorful dewlaps and toe-pads that allow them to climb just about anything, occur in the West Indies, tropical Mexico, and Central and South America. Jonathan Losos first studied them as an undergraduate, and despite a few forays into other taxa, has remained mostly loyal to this absorbing group. This book is the product of his long-standing fascination with anoles, and draws on decades of his own scholarship and that of others. Every aspect of anole life is covered in this book: where they are found, what they eat, how they reproduce, and lots more. Despite the number of pages and the thorough scholarship, Losos manages to be informative in a candid, humorous, and often entertaining manner. Colorful pictures and graphs illustrate many of the species and subjects covered.

In his first chapter, Losos clearly sets out his basic thesis: “inter-specific interactions — primarily, but not exclusively, competition — among extant *Anolis* species play a dominant role in shaping their ecology and microevolution.” Chapters 2–4 focus on natural history, ecology, and diversity of anoles, and chapters 5–7 on phylogeny and the use of phylogenetic insights in understanding distribution and ecomorphology. The following five chapters deal with anole biology, ecology, reproduction, food and predators, and behavior. Sexual selection, so important in these intensely territorial lizards, receives special notice. Speciation and adaptive radiation are the focus of chapters 14–16, and the final chapter seeks to place anoles in a broader context. Although Losos clearly expresses his own opinion, he is careful to admit the limitations of the available data. *Lizards in an Evolutionary Tree: Ecology and Adaptive Radiation of Anoles* does not contain *all* there is to know about anoles — thankfully, many questions remain — and most of the chapters have a “Future Directions” section at the end.

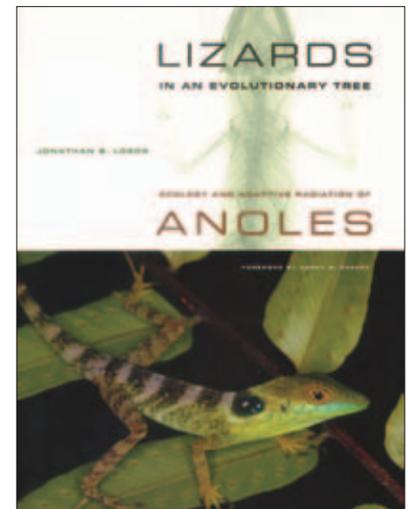
Anoles offer several delightful conundrums. They have extremely conservative reproduction — only one egg per clutch — yet have evolved a set of morphological “types” that allow them to use a variety of habitats. The relevant ecological and evolutionary processes are easy to accept in this setting, given the repeated evolution of particular size and shape categories on some islands. However, those same morphotypes are hard to find on the mainland. Anoles evolved into one of the most diverse genera (with many species occurring in vast numbers) throughout most of their range, yet only one species was found in North America until a growing number of new arrivals became established in Florida and elsewhere, invariably with human assistance. Losos does not claim to have all the answers, but he correctly points out that anoles are not just fun and fascinating, they serve as a natural laboratory in which to explore processes that are likely to be globally important — in effect, they are what biologists like to call “a model system.” Over 70 pages of references attest to both the interest in this group and the author’s painstaking search for published information.

The word “conservation” seldom appears in the book and is absent from the 12-page index. To some extent this is perfectly understandable, since most anoles are quite common in areas where they occur. Yet the habitats on which many species rely are rapidly disappearing. In Haiti, as Losos describes on pages 403–404, less than 1% of forest cover remains. Several species, such as

*A. roosevelti* in the Puerto Rico Bank, have already gone extinct, and global climate change, covered on pages 404–406, promises increasing challenges in the future. “As far as I know,” Losos says, “anoles are not eaten by people anywhere. For good reason, as I imagine they’d be pretty crunchy.” Even though some species are abundant in the pet trade, little evidence suggests a direct impact on populations. The converse, however, is definitely true; anoles are establishing populations in many new locations, and some seem particularly adept at utilizing urban environments.

So, is this book for you? The goal of this journal is to bridge the gap between professional herpetologists and serious enthusiasts. Because our audience is so diverse, a review of this kind always risks missing a large portion of the readership. To provide similarly broad views, one of us (GP) is an academic herpetologist and the other (LG) is not. Luckily, Losos had two audiences in mind for this book, those who have a deep interest in anoles and those who have an interest in biodiversity, evolutionary biology, and ecology. This, the author’s obvious enthusiasm for his subject, and his frequent use of informal language allow the book to appeal to a broad audience. Our verdicts: “Initially, I thought it was too thick and would take a long time to read, but the old cliché fits here, never judge a book by its cover. I glanced through it quickly and saw many large colored photographs, and the print was not tiny. That was encouraging. Whether Losos is discussing the dewlaps or the toe-pads, he presents an image that illustrates that information, making the 400-page book easier to read and comprehend” (LG). “An excellent, exhaustively-researched, yet very accessible and attractive contribution” (GP). If you have any interest in learning about herpetological ecology and biodiversity, this is a great book to buy.

This review is MS No. T-9-1185 of the College of Agricultural Sciences and Natural Resources, Texas Tech University.



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