

THIS BOOK PROVIDES A FIRST SYNTHETIC view of an emerging area of ecology and biogeography, linking individual- and population-level processes to geographic distributions and biodiversity patterns. Problems in evolutionary ecology, macroecology, and biogeography are illuminated by this integrative view. The book focuses on correlative approaches known as ecological niche modeling, species distribution modeling, or habitat suitability modeling, which use associations between known occurrences of species and environmental variables to identify environmental conditions under which populations can be maintained. The spatial distribution of environments suitable for the species can then be estimated: a potential distribution for the species. This approach has broad applicability to ecology, evolution, biogeography, and conservation biology, as well as to understanding the geographic potential of invasive species and infectious diseases, and the biological implications of climate change.

The authors lay out conceptual foundations and general principles for understanding and interpreting species distributions with respect to geography and environment. Focus is on development of niche models. While serving as a guide for students and researchers, the book also provides a theoretical framework to support future progress in the field.

Monographs in Population Biology

Simon A. Levin and Henry S. Horn, *Series Editors*

"A valuable and timely synthetic overview, this volume does a particularly nice job of laying out the conceptual challenges and technical subtleties that need to be considered in order to develop rigorous, niche-based models of species' distributions, and then of illustrating these issues with a wide range of applications. I warmly recommend this book to a broad range of readers."

—**Robert D. Holt**,
University of Florida

"When it comes to explaining the theory and practice of niche modeling and species distribution modeling, this is the right book at the right time by the right authors. The book provides a vigorous exploration of a key concept—the ecological niche—and an equally vigorous discussion of approaches to model niches. Essential reading for novice and expert alike."

—**Robert Guralnick**,
University of Colorado Boulder

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