

THE MAJOR SUBDISCIPLINES OF ECOLOGY—population ecology, community ecology, ecosystem ecology, and evolutionary ecology—have diverged increasingly in recent decades. What is critically needed today is an integrated, real-world approach to ecology that reflects the interdependency of biodiversity and ecosystem functioning.

From Populations to Ecosystems proposes an innovative theoretical synthesis that will enable us to advance our fundamental understanding of ecological systems and help us to respond to today's emerging global ecological crisis.

Michel Loreau begins by explaining how the principles of population dynamics and ecosystem functioning can be merged. He then addresses key issues in the study of biodiversity and ecosystems, such as functional complementarity, food webs, stability and complexity, material cycling, and metacommunities. Loreau describes the most recent theoretical advances that link the properties of individual populations to the aggregate properties of communities, and the properties of functional groups or trophic levels to the functioning of whole ecosystems, placing special emphasis on the relationship between biodiversity and ecosystem functioning. Finally, he turns his attention to the controversial issue of the evolution of entire ecosystems and their properties, laying the theoretical foundations for a genuine evolutionary ecosystem ecology. *From Populations to Ecosystems* points the way to a much-needed synthesis in ecology, one that offers a fuller understanding of ecosystem processes in the natural world.

Monographs in Population Biology

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

"Michel Loreau has bravely, and successfully, built a new unified framework that harmonizes the disparate, and often conflicting, fields of population biology, community ecology, and ecosystem ecology. This book provides an exciting stimulus for new efforts to test and verify the rich array of insights that he provides."

—Harold Mooney, *Stanford University*

"Understanding global diversity has primarily been the business of evolutionary biologists, ecologists, and, only recently, the new breed of ecosystem/community ecologists, with little synthesis. In *From Populations to Ecosystems*, we can begin to see how these might all come together. This book is a valuable contribution, and will garner a wide readership."

—Shahid Naeem, *Columbia University*

"Loreau has crafted a significant volume that makes an important and timely addition to the literature on ecology. He writes clearly, even when he is grappling with thorny theoretical problems. No other author out there could have carried off the synthesis he provides. I predict that *From Populations to Ecosystems* will prove to be an invaluable resource for years to come."

—Robert D. Holt, *University of Florida*

Michel Loreau is professor and Canada Research Chair in theoretical ecology at McGill University. He is the coeditor of *Biodiversity and Ecosystem Functioning: Synthesis and Perspectives* and *Biodiversity, Ecosystem Functioning, and Human Wellbeing: An Ecological and Economic Perspective*.



PRINCETON
press.princeton.edu

ISBN: 978-0-691-12270-0



9 780691 122700

90000