Animal Population Ecology

Animal population ecology comprises the study of variations, regulation, and interactions of animal populations. This book discusses the fundamental notions and findings of animal populations on which most of the ecological studies are based. In particular, the author selects the logistic law of population growth, the nature of competition, sociality as an antithesis of competition, the mechanism underlying the regulation of populations, predator–prey interaction processes, and interactions among closely related species competing over essential resources. These are the notions that are considered to be well-established facts or principles and are regularly taught at ecology classes or introduced in standard textbooks. However, the author demonstrates that these notions are still inadequately understood, or even misunderstood, creating myths that would misguide ecologists in carrying out their studies. He delves deeply into those notions to reveal their real nature and draws a road map to the future development of ecology.

T. ROYAMA is well known for his field studies of great tit and spruce budworm, and his contribution to theoretical ecology through the innovative application of stochastic processes. His previous book, *Analytical Population Dynamics* (Chapman & Hall, 1992), had a significant impact on population ecology. He was also a recipient of a Gold Medal of Entomological Society of Canada in 1994.

ECOLOGY, BIODIVERSITY AND CONSERVATION

The world's biological diversity faces unprecedented threats. The urgent challenge facing the concerned biologist is to understand ecological processes well enough to maintain their functioning in the face of the pressures resulting from human population growth. Those concerned with the conservation of biodiversity and with restoration also need to be acquainted with the political, social, historical, economic and legal frameworks within which ecological and conservation practice must be developed. The new Ecology, Biodiversity, and Conservation series will present balanced, comprehensive, up-to-date, and critical reviews of selected topics within the sciences of ecology and conservation biology, both botanical and zoological, and both 'pure' and 'applied'. It is aimed at advanced final-year undergraduates, graduate students, researchers, and university teachers, as well as ecologists and conservationists in industry, government and the voluntary sectors. The series encompasses a wide range of approaches and scales (spatial, temporal, and taxonomic), including quantitative, theoretical, population, community, ecosystem, landscape, historical, experimental, behavioural and evolutionary studies. The emphasis is on science related to the real world of plants and animals rather than on purely theoretical abstractions and mathematical models. Books in this series will, wherever possible, consider issues from a broad perspective. Some books will challenge existing paradigms and present new ecological concepts, empirical or theoretical models, and testable hypotheses. Other books will explore new approaches and present syntheses on topics of ecological importance.

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Animal Population Ecology

An Analytical Approach

T. ROYAMA
Canadian Forest Service (retired)

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To the memories of my mentors

David E. Lack	Shunro Utida
George, C. Varley	Patrick A. P. Moran
Nikolaas Tinbergen	R. Franklin Morris
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