

Part 1

Microcosms: Concepts and Uses

In Part 1, concepts involved in understanding, developing, and using microcosms are presented with examples. These are the principles and ideas of ecology, a frontier of science to which microcosmology research contributes. In each chapter, simulation models help to clarify concepts and relate mechanisms, patterns of organization, and trends with time.

Chapter 1 defines microcosms, their variety, and some of their theoretical and practical uses. Chapter 2 covers the basic metabolic processes of ecosystems and the way enclosures change them. Chapter 3 describes processes of self organization and succession. Chapter 4 considers biogeochemical cycles in microcosms, the conservation of matter, and limiting factors. Chapter 5 explores the complexity, diversity, and information found in microcosms. Chapter 6 covers food chain hierarchies and oscillation. Chapter 7 considers stress, toxicity, and adaptation. Chapter 8 briefly reviews the early history of microcosms.