1973 *Stability and Complexity in Model Ecosystems*

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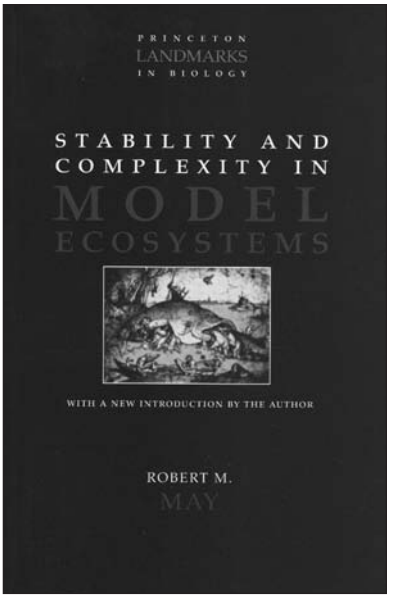
Robert M. May



What makes populations stabilize? What makes them fluctuate? Are populations in complex ecosystems more stable than populations in simple ecosystems? In 1973, Robert May addressed these questions in this monograph that has since become a classic. Trained as a theoretical physicist, May used mathematical modeling to investigate the stability and complexity of a community of interacting plants and animals, following the food web as a clue. Contrary to general biological thinking, he showed in population dynamics models that population equilibrium was less likely to destabilize such ecosystems when the number of species is increased and species interactions are randomly added.

In the quarter century since its publication, the book's message has grown in power. *Stability and Complexity in Model Ecosystems* played a key role in introducing nonlinear mathematical models, along with the study of deterministic chaos, to ecologists—as science writer James Gleick would chronicle in his best-seller *Chaos*. Nonlinear models are now at the center of ecological thinking, and current threats to biodiversity have made questions about the role of ecosystem complexity more crucial than ever. This book launched a career of mathematical insight into some of life's biggest questions.

Robert May has gone on to apply mathematical modeling to other biological problems. He has modeled the current state of biodiversity and extinction patterns, arguing for the necessity of responding immediately to this crisis. He has also developed mathematical models of infectious disease that are now used by governments and NGOs to tackle diseases like AIDS.