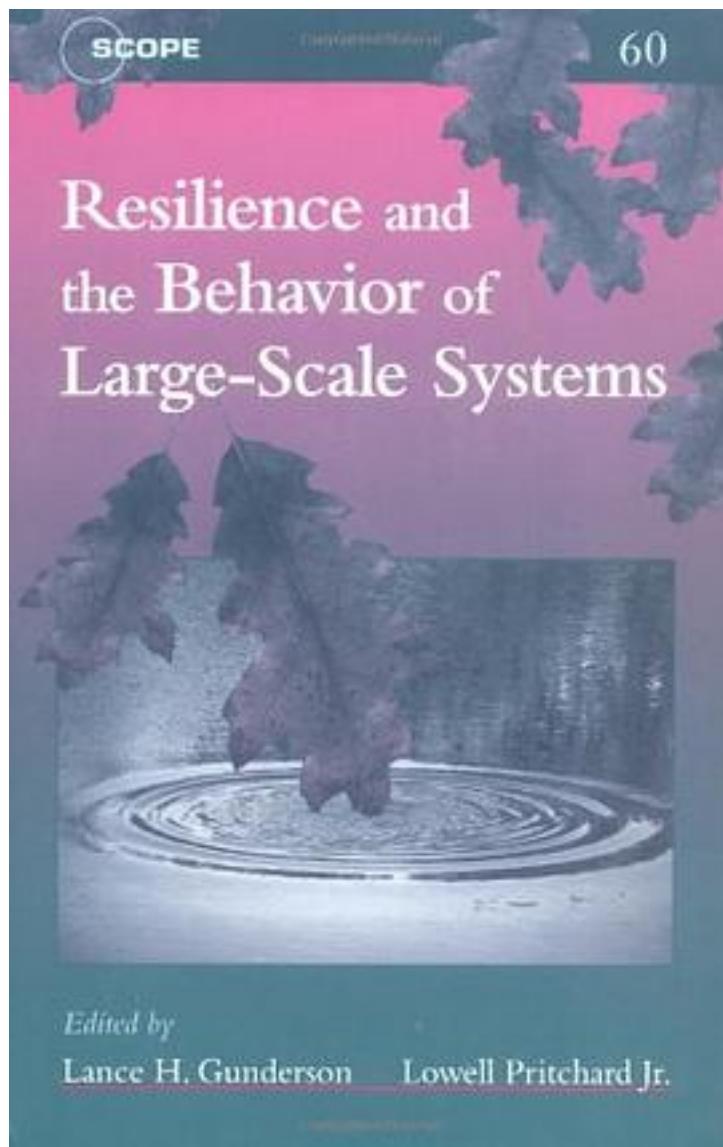


Resilience and the Behavior of Large-Scale Systems (Scope Series)



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Scientists and researchers concerned with the behavior of large ecosystems have focused in recent years on the concept of "resilience." Traditional perspectives held that ecological systems exist close to a steady state and resilience is the ability of the system to return rapidly to that state following perturbation. However beginning with the work of C. S. Holling in the early 1970s, researchers began to look at conditions far from the steady state where instabilities can cause a system to shift into an entirely different regime of behavior, and where resilience is measured by the magnitude of disturbance that can be absorbed before the system is restructured. Resilience and the Behavior of Large-Scale Systems examines theories of resilience and change, offering readers a thorough understanding of how the properties of ecological resilience and human adaptability interact in complex, regional-scale systems. The book addresses the theoretical concepts of resilience and stability in large-scale ecosystems as well as the empirical application of those concepts in a diverse set of cases. In addition, it discusses the practical implications of the new theoretical approaches and their role in the sustainability of human-modified ecosystems. The book begins with a review of key properties of complex adaptive systems that contribute to overall resilience, including multiple equilibria, complexity, self-organization at multiple scales, and order; it also presents a set of mathematical metaphors to describe and deepen the reader's understanding of the ideas being discussed. Following the introduction are case studies that explore the biophysical dimensions of resilience in both terrestrial and aquatic systems and evaluate the propositions presented in the introductory chapters. The book concludes with a synthesis section that revisits propositions in light of the case studies, while an appendix presents a detailed account of the relationship between return times for a disturbed system and its resilience. In addition to the editors, contributors include Stephen R. Carpenter, Carl Folke, C. S. Holling, Bengt-Owe Jansson, Donald Ludwig, Ariel Lugo, Tim R. McClanahan, Garry D. Peterson, and Brian H. Walker.

作者介绍:

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标签

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#参考

评论

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书评

Holling (1973)[1] 这样定义生态系统的 resilience: 系统在发生重构和功能变化之前能够接受的最大扰动。而 Pimm (1984)[2] 在十年之后才提出 resilience 的另一个定义: 系统受到扰动后回到初始状态所需的时间。虽然 Pimm 的定义提出较晚, 但却得到了广泛得多的应用。而对于 Hol...

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