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978-0-521-39190-0 - Plants in Changing Environments: Linking Physiological, Population, and Community Ecology

F. A. Bazzaz

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Forces of nature and human intervention lead to innumerable local, regional, and sometimes global changes in plant community patterns. Irrespective of the causes and the intensity of change, ecosystems are often naturally able to recover most of their attributes through natural succession. With the heightened interest in the fate of the biosphere, the emphasis on sustainable development worldwide and the possible consequences of global climate change, the study of succession and ecosystem recovery takes on added urgency. Successional theory will play a major role in ecosystem preservation, management, rehabilitation, and restoration.

Fakhri Bazzaz takes a broad view of disturbance and recovery, from filling of small gaps to the revegetation after clearing of large areas for agriculture and forestry. The book integrates and synthesizes information on how disturbance changes the environment, how species function, coexist, and share or compete for resources in populations and communities, and how species replace each other over successional time. Furthermore, the book shows how a diverse array of plant species from different successional positions have been used to examine fundamental questions in plant ecology by integrating physiological, population, and community ecology. The basic philosophy of the work is that the physiological activities of individuals and the ecology of populations do not happen in a vacuum. Individuals in a population are imbedded in a community matrix, and are influenced by the presence and activities of other individuals and populations of the same and of other trophic levels. Furthermore, physiological and population processes strongly influence community composition and dynamics. This complexity makes the study of ecosystem recovery at once difficult, challenging, and exciting.

Graduate students and research workers in plant ecology, global change, conservation, and restoration will find the perspective and analysis offered by this book an exciting contribution to the development of our understanding of plant successional change.

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