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MODEL STUDIES OF ECOSYSTEM ENGINEERING IN PLANT COMMUNITIES

*Ehud Meron, Erez Gilad, Jost von Hardenberg,
Antonello Provenzale, and Moshe Shachak*

12.1 • INTRODUCTION

The dynamics and spatial organization of ecological communities are strongly affected by various feedbacks between the biotic and abiotic environments. The realization that organisms can modify the abiotic environment, rather than merely being affected by it, has received much attention since the introduction of the ecosystem engineering concept by Jones et al. in 1994. Numerous case studies of ecosystem engineering have appeared since then, providing data on the engineering process and how it affects organismal, population, community, or ecosystem ecology (Wright and Jones 2006). Feedback relationships between two processes generally imply the inadequacy of studying unidirectional influences alone; the processes are coupled and affect one another at any instant of time. Studying the bidirectional relationships between biotic and abiotic processes, including their large-scale and long-time consequences, calls for the development and study of dynamic models (Ellner and Guckenheimer 2006). Such models can provide powerful complementary tools for unraveling mechanisms of ecosystem engi-