

# ECOSYSTEM ENGINEERS

PLANTS TO PROTISTS

Kim Cuddington, James E. Byers, Alan Hastings & William G. Wilson

The concept of ecosystem engineering is a novel way of looking at species and their ecological interactions. It forces ecologists to recognize that species are not passive victims of environmental conditions, but may also actively influence and modify their physical environment. Moreover, it promises to provide conceptual links between physiological, population, community, ecosystem and evolutionary ecology. However, from its inception, this concept has generated controversy that may lead some to conclude that it has nothing new to offer to ecology. This volume embraces that debate and simultaneously illustrates the value of the ecosystem engineering approach as a means of understanding ecological and evolutionary relationships.

The first book entirely devoted to this topic, *Ecosystem Engineers* begins with the history of the concept, presenting opposing definitions of ecosystem engineering. These varied definitions advance the debate and move past trivial difficulties to crystallize key issues such as the value of process-based vs. outcome-based. Authors include case studies spanning a wide spectrum of species and habitats, including above and below-ground, aquatic and terrestrial, and extant and paleontological examples. These studies enable readers to understand how the categorization of species as ecosystem engineers allows scientists to forge new explanatory generalizations. Key for all ecologists and environmentalists, this book ultimately illustrates how to inform and manage natural resources.

**Kim Cuddington** is a theoretical ecologist interested in the interactions between populations and the environment. She focuses on the roles of environmental variation and feedback in determining extinction risks, the spread rates of invasive species and the dynamics of multi-species systems. She is currently an Assistant Professor at Ohio University.

**James E. (Jeb) Byers** studies marine community and population ecology, with a particular emphasis on biological invasions. He is broadly interested in topics with conservation applications, including the modification of ecological interactions by parasites and the development of biological indicator species. He is an Associate Professor in the Zoology Department at the University of New Hampshire.

**Will Wilson** studies theoretical evolutionary ecology, and pursues questions involving population and community dynamics, consumer foraging strategies, and plant mating systems. A particular focus is understanding how mechanistic processes at one scale produce phenomena at a higher scale. He is currently an Associate Professor at Duke University.

**Alan Hastings** is a theoretical ecologist and winner of the 2006 MacArthur Award from the Ecological Society of America. He has broad interests in ecology, with emphases on questions of spatial and temporal scale. He is currently Distinguished Professor in the Department of Environmental Science and Policy at UC Davis.

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