Invasion dynamics

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Abstrak

Invasion Dynamics depicts how non-native species spread and perform in their novel ranges and how recipient socio-ecological systems are reshaped and how they respond to the new incursions. It collects evidence for grouping patterns of spread into four types and three associated phenomena, discusses candidate explanations for each pattern, and introduces analytic tools for capturing and forecasting invasion dynamics. Special attention is given to the potential mechanisms of boosted range expansion and nonequilibrium demographic dynamics during invasion. The diverse mechanisms that drive direct and mediated biotic interactions between invaders and resident species are elucidated, and triggers of potential regime shifts in recipient ecosystems are identified. It further explores the ways in which local and regional species assemblages are reshuffled and reorganized. Efficient management of invasions requires not only insights on invasion dynamics across scales but also objective assessment of ecological and economic impacts, as well as sound protocols for prioritizing and optimizing management effort. Biological invasions, therefore, involve more than the actions of invaders and reactions of invaded ecosystems; they represent a co-evolving complex adaptive system with emergent features of network complexity and invasibility. Invasions are thus a formidable force that acts in concert with other facets of global change to initiate the adaptive wheel of panarchy and shape the altered biosphere in the Anthropocene.