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ANNUAL REVIEW OF ECOLOGY, EVOLUTION, AND SYSTEMATICS (/CONTENT/JOURNALS/ECOLSYS) Volume 43, 2012

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Climate Change, Aboveground-Belowground Interactions, and Species' Range Shifts

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Changes in climate, land use, fire incidence, and ecological connections all may contribute to current species' range shifts. Species shift range individually, and no t all species shift range at the same time and rate. This variation causes community reorganization in both the old and new ranges. In terrestrial ecosystems, rang e shifts alter aboveground-belowground interactions, influencing species abundance, community composition, ecosystem processes and services, and feedbacks within communities and ecosystems. Thus, range shifts may result in no-analog communities where foundation species and community genetics play unprecede nted roles, possibly leading to novel ecosystems. Long-distance dispersal can enhance the disruption of aboveground-belowground interactions of plants, herbiv ores, pathogens, symbiotic mutualists, and decomposer organisms. These effects are most likely stronger for latitudinal than for altitudinal range shifts. Disrupte d aboveground-belowground interactions may have influenced historical postglacial range shifts as well. Assisted migration without considering aboveground-be lowground interactions could enhance risks of such range shift-induced invasions.

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