Data from: Phenology in a warming world: differences between native and non-native plant species

Zettlemoyer MA, Schultheis EH, Lau JA

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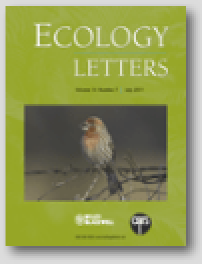

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Keywords biological invasions, climate change, exotic species, geographic spread, global warming, invasive species, invasion biology, native species, phenological

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synchrony, plasticity

Scientific Names Brassica rapa, Bromus inermis, Centarurea stoebi, Dactylis glomerata, Dianthus armeria, Elymus repens, Hypericum perforatum, Lespedeza cuneata, Leucanthemum vulgare, Lotus corniculatus, Medicago lupulina, Melilotus offincinalis, Phleum pratense, Plantago major, Poa compressa, Poa pratensis, Poa trivialis, Rumex crispus, Trfifolium hybridum, Trifolium pratense, Gaillardia pulchella, Achillea millefolium, Symphyotruchum pilosum, Coreopsis tripteris, Erigeron annuus, Euthamia graminifolia, Helenium autumnale, Solidago canadensis, Arabis glabra, Desmodium canadense, Desmodium illinoense, Lespedeza capitata, Andropoogon gerardii, Bromus kalmii, Elymus canadensis, Panicum virgatum, Schizachyrium scoparium, Sorghastrum nutans, Penstemon hirsutus

Spatial Coverage Michigan, Midwest, United States

Abstract

Phenology is a harbinger of climate change, with many species advancing flowering in response to rising temperatures. However, there is tremendous variation among species in phenological response to warming, and any phenological differences between native and non-native species may influence invasion outcomes under global warming. We simulated global warming in the field and found that non-native species flowered earlier and were more phenologically plastic to temperature than natives, which did not accelerate flowering in response to warming. Non-native species' flowering also became more synchronous with other community members under warming. Earlier flowering was associated with greater geographic spread of non-native species, implicating phenology as a potential trait associated with the successful establishment of non-native species across large geographic regions. Such phenological differences in both timing and plasticity between native and non-natives are hypothesised to promote invasion success and population persistence, potentially benefiting non-native over native species under climate change.

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