

Do invasive alien plants benefit more from global environmental change than native plant? (2016).

Yanjie Liu¹, **A.M.O Oduor**^{*2}; Zhen Zhang¹; R. Michelle Leishman³; Xingliang Xu⁴ & Mark van Kleunen¹

Universität Konstanz¹; ^{*2}**Department of Applied and Technical Biology, Technical University of Kenya** Macquarie University³; Institute of Geographic Sciences⁴

Abstract

Invasive alien plant species threaten native biodiversity, disrupt ecosystem functions, and can cause large economic damage. Plant invasions have been predicted to further increase under ongoing global environmental change. Numerous case studies have compared the performance of invasive and native plant species in response to global environmental change components (i.e. changes in mean levels of precipitation, temperature, atmospheric CO₂ concentration or nitrogen deposition). Individually these studies usually involve low numbers of species and therefore the results cannot be generalized. Therefore, we performed a phylogenetically-controlled meta-analysis to assess whether there is a general pattern of differences in invasive and native plant performance under each component of global environmental change. We compiled a database of studies that reported performance measures for 74 invasive alien plant species and 117 native plant species in response to one of four global environmental change components. We found that elevated temperature and CO₂ enrichment increased performance of invasive alien plants more strongly than was the case for native plants. Invasive alien plants tended to also have a slightly stronger positive response to increased N deposition and increased precipitation than native plants, but these differences were not significant (N deposition: $P = 0.051$; increased precipitation: $P = 0.679$). Invasive alien plants tended to have a slightly stronger negative response to decreased precipitation than native plants, although this difference was also not significant ($P = 0.060$). So while drought could potentially reduce invasion, increases in the four other components of global environmental change considered, particularly global warming and atmospheric CO₂ enrichment, may further increase the spread of invasive plants in the future.

Journal of Global Change Biology

See more

at: [https://www.researchgate.net/publication/310902903 Do invasive alien plants benefit more from global environmental change than native plants](https://www.researchgate.net/publication/310902903_Do_invasive_alien_plants_benefit_more_from_global_environmental_change_than_native_plants)