Home and away: How do invasive plant species dominate native species?

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Research in Sevilleta, N.M., shows that plant abundance at home predicts abundance away. Credit: Scott Collins, NSF Sevilleta LTER Site

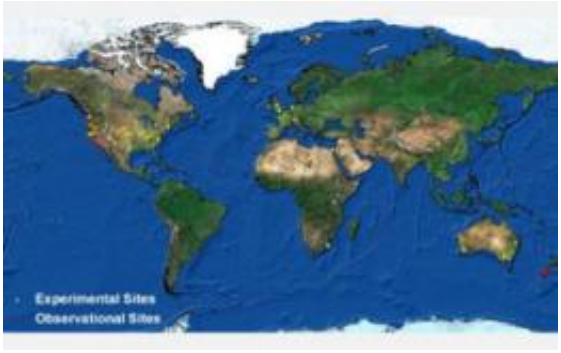
Invasive plant species present a serious environmental, economic and social problem worldwide as their abundance can lead to lost native biodiversity and ecosystem functions, such as nutrient cycling. Despite substantial research, little is known about why some species can dominate new habitats over native plants that technically should have the advantage.

A common but rarely tested assumption is that these plants are more abundant in introduced versus native communities, because they are behaving in special way. If this true and introduced species are behaving in a special way it means biosecurity screening procedures need to speculate on how species will behave once introduced, a very difficult

task to get right.

A global collaboration called the Nutrient Network tested this 'abundance assumption' for 26 herbaceous species at 39 sites on four continents in a recent publication in the journal *Ecology Letters*. The lead author of 36, Jennifer Firn from the Queensland University of Technology and CSIRO, Australia found that the 'abundance assumption' did not hold for the majority of species with 20 of the 26 species examined having either a similar or lower abundance at introduced versus native sites.

"Our results suggest that invasive plant species have a similar or lower abundance at introduced and native range and that increases in species abundance are unusual. Instead, we found abundance at native sites can predict abundance at introduced sites, a criterion not currently used included in biosecurity screening programs. We also found sites in New Zealand and Switzerland for example were similar in species composition sharing in some cases more than 10 species, all with similar abundances" Dr. Firn said.



The NSF Nutrient Network has research sites dotted across the globe. Credit: NSF Nutrient Network

This study is the first to be published from a cooperative global experiment the Nutrient Network (http://nutnet.science.oregonstate.edu). The Nutrient Network is led at the site-level by individual researchers and coordinated through funding from NSF to Dr. Elizabeth Borer and Dr. Eric Seabloom from the University of Minnesota.

"The Nutrient Network is the only collaboration of its kind, where individual researchers have set-up the same experiment at sites around the world. For three years, we have been collecting population, community, and ecosystem-scale vegetation data, including species-specific distribution and abundance data, with standardized protocols across more than 60 sites around the world. The experimental design used is simple, but one that provides a new, global-scale approach for us to address many critical ecological issues such as invasive species and changing climates", Associate Prof. Borer said.

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