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Campbell, S.E., Mandrak, N.E. Dissecting spatiotemporal patterns of functional diversity through the lens of Darwin's naturalization conundrum. *Ecology and Evolution*. 7(11), 3862-3869. 21 April 2017. [DOI: 10.1002/ece3.2618](#)

Identifying patterns of biodiversity have historically been at the core of many studies and continue to remain one of the central goals in community ecology and evolutionary biology. Mechanisms that regulate biodiversity, particularly species coexistence, are often studied at the spatial and temporal scale at which they are quantified. Studies typically focus on taxonomic diversity, measured as species richness but, more recently, functional diversity (i.e. functional, morphological, phylogenetic) have become increasingly important as they may reflect a different response to stimuli of change. The most common method for examining temporal trends of biodiversity has been identified as the use of long-term, large scale, and high resolution data. As such, there is a fundamental need for studies that incorporate multiple spatial scales and temporal replicates to better elucidate the processes responsible for the diversity and distinctiveness of species to be important for establishment.

We examined patterns of species richness and functional diversity over 150 years to test the role of environmental filtering and competitive interactions in community assembly processes at multiple spatial scales at higher temporal periods) than has been previously published in the invasion literature. We found that species richness does not match levels of functional diversity and that the processes regulating community assembly are highly context dependent, it highlights the need for studies to examine patterns continuously through time, choosing appropriate spatial and temporal scales for the question of interest, and to move beyond the use of species richness.



















