Local neighbourhood and regional climatic contexts interact to explain tree performance

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Author:
Jenny Zambrano, Philippe Marchand, Nathan G. Swenson

Abstract

Tree neighbourhood modelling has significantly contributed to our understanding of the mechanisms structuring communities. Investigations into the impact of neighbouring crowding on tree performance have generally been conducted at local scales, missing important regional-scale context such as the suitability of the climate for each species. Favourable climates may enhance tree performance, but this may come at the cost of increased neighbourhood crowding and competition negatively impacting survival and growth. Through the synthesis of continental-scale forest inventory and trait datasets from the northeast USA and Puerto Rico we present an analytical approach that elucidates the important interactions between local competitive and regional climatic contexts. Our results show strong asymmetries in competitive interactions and significant niche differences that are dependent on habitat suitability. The strong interaction between local neighbourhood and regional climate highlights the need for models that consider the interaction between these two processes that have been previously ignored.

Read the article in Proceedings of the Royal Society B [1].

Associated Project:
Spatial Patterns of Demography [2]

Associated SESYNC Researcher(s):
jzambrano [3]

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