

Research Project

Evolutionary dynamics of drift load and its role in species distribution limits

Third-party funded project

Project title Evolutionary dynamics of drift load and its role in species distribution limits

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Why species have geographically restricted distributions is an important unresolved question in biology. Two evolutionary hypotheses about causes of distribution limits have so far attracted little attention in empirical research. The first is how relevant ecological factors change at distribution edges. Theory predicts that if conditions change steeply, populations are unable to adapt. The second hypothesis is that populations at edges of distribution are small and isolated and therefore accumulate deleterious mutations, which lowers their growth rate.

The study organism is *Arabidopsis lyrata*, which has both northern and southern distribution limits that are set by environmental conditions. Steepness of environmental clines will be assessed in a niche-modeling context. Drift load will be assessed based on SNP variation in coding regions, and tested for a geographic pattern of increased load at the distribution margin. Transplant experiments will be set up to assess the impact of load on growth rate.

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