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Can dominance prevent the evolution of assortative mating and sympatric speciation?

Consider a quantitative trait that is under a mixture of frequency-independent stabilizing selection and density- and frequency-dependent selection caused by intraspecific competition for a continuum of resources. The trait is determined by a single (ecological) locus and expresses intermediate dominance, and the population mates assortatively with respect to this trait.

We study weather mutations at modifier loci can invade, which either increase the level of dominance or the level of assortment. From a naïve point of view, complete dominance and complete assortative mating seem to be two alternative mechanisms to eliminate unfit offspring with intermediate traits. However, we will see that the interaction of assortative mating and dominance is rather complex. The two evolutionary responses can promote each other or hinder each other. Overall, we find that dominance might be the more likely evolutionary outcome, and that the evolution of assortative mating in small steps leading to sympatric speciation seems unlikely.