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# When Does Ecology Matter? The Stories of Fisher and Wright

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## Abstract

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Abstract

There has always been discussion on whether ecology was or not part of the "modern synthesis." And the question of the significance of ecology for evolution recurs in the literature. In this paper I explore how ecology matters for evolution by revisiting two influential and widely discussed theories of evolution formulated by R.A. Fisher and Sewall Wright respectively, namely, mass selection and the shifting balance theories.

I argue that they both have a narrative structure, as they provide generalized stories of the evolutionary process. The question then is: what do Fisher's and Wright's stories of evolution tell us about ecology? The answer is: not much but a whole lot! Their stories reveal where ecology intervenes in the evolutionary plot. This leads to two crucial ways in which ecology matters for evolution, or so I argue.

For Fisher, ecology determines whether new mutations will be wiped out by drift or will be the subject of natural selection. And it sets limits on how fitness increases by natural selection. For Wright, the situation is more complicated. Part of his story is consistent with Fisher's, but peak shifts require drift, and further evolution requires selection between groups, in the third phase of his shifting balance story. Further theoretical work has shown that, for this to be a plausible mechanism for the spread of adaptive configurations, explicit models of population regulation have to be considered.

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