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Beyond mutation surfing: adaptation during invasions

We use stochastic simulations to model invasion of new territory by a population that evolves by natural selection to the novel environment, as well as by drift. Previous studies have resulted in competing claims to the effect that the process of invasion may either promote or inhibit adaptation. By comparing adaptation in invading and established populations, we identify conditions under which invasion facilitates adaptation (when compared with evolution in an established population), as well as regimes in which invasion impedes adaptation. We also discuss the extent to which analytical models can provide insight on this problem.