

Cannings models with selection and Haldane's formula

Abstract

We introduce a Cannings model with selection via a paintbox construction allowing a forwards and backwards construction of the evolution of the population. Haldane's formula says that the probability of fixation of a beneficial type with small selective advantage s_N is asymptotically equal to $2s_N/v_N$, where v_N is the offspring variance. In the case of moderate selection $s_N = N^{-b}$, $2/3 < b < 1$, and offspring distribution within Kingman attraction we prove Haldane's formula using the backwards construction of the Cannings model, which allows for a discrete ancestral selection graph.

This talk is based on joint work in progress with Florin Boenkost, Adrián González Casanova and Anton Wakolbinger.