



S1 Figure: *Robust transition from monomorphic to polymorphic populations.* The transition from domination of individuals with $q = 1$ to domination individuals with intermede value of q , s_0 (solid blue line, Eq. (S1)), decreases and approaches zero as $\alpha \rightarrow \infty$. However, the transition from monomorphic to polymorphic populations always appears: s_1 (solid red line) never approaches zero but rather approaches infinity when $\alpha \rightarrow 1$ and when $\alpha \rightarrow \infty$. Note that \hat{s}_1 (dashed red line, Eq. (S6)) well-approximates s_1 for large values of α . Parameters: $F(q) = -q$.