1046-92-1338   **Jordan West Bostic*** (`kjwest@ncsu.edu`), Department of Mathematics, North Carolina State University, Campus Box 8205, Raleigh, NC 27695, and **James H Roberds** and **James F Selgrade**. *Dynamical behavior of a one-island, selection-migration model with partial dominance.* Preliminary report.

Selection and migration influence the genetic makeup and demographics of a population. A one-island model is studied, in which the island population receives immigrants from a continent population. Density-dependent selection takes place within the island population and then population migration occurs. A two-dimensional system of nonlinear difference equations describes the change in allele frequency and population density over generations for this model. A polymorphic equilibrium exists under biologically reasonable conditions for the case of partial dominance in fitness. Conditions on the degree of dominance and the frequency of the gene migrating into the continental population are necessary to show uniqueness and stability of the equilibrium. Some results on the existence and location of attractors are discussed. As genetically engineered crops become more prevalent, the one-island model may be useful for understanding the effects of transgenic invasion on gene frequency in natural populations. (Received September 16, 2008)

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