

Population structure and coil dimorphism in a tropical land snail

Abstract

Tree snails of the subgenus *Amphidromus* s. str. are unusual because of the chiral dimorphism that exists in many species, with clockwise (dextrally) and counter-clockwise (sinistrally) coiled individuals co-occurring in the same population. Given that mating in snails is normally impeded when the two partners have opposite coil, positive frequency-dependent selection should prevent such dimorphism from persisting. We test the hypothesis that a strong population structure with little movement between tree-based demes may result in the fixation of coiling morphs at a very small spatial scale, but apparent dimorphism at all larger scales. To do so, we describe the spatial structure in a Malaysian population of *A. inversus* (Muller, 1774) with 36% dextrals. We marked almost 700 juvenile and adult snails in a piece of forest consisting of 92 separate trees, and recorded dispersal and the proportions of dextrals and sinistrals in all trees over a 7-day period. We observed frequent movement between trees (155 events), and found that no trees had snail populations with proportions of dextrals and sinistrals that were significantly different from random. Upon recapture 1 year later, almost two-thirds of the snails had moved away from their original tree. We conclude that population structure alone cannot stabilise the coil dimorphism in *Amphidromus*.