

Sociality in New World Hystricognath Rodents Is Linked to Predators and Burrow Digging

Luis A. Ebersperger & Daniel T. Blumstein

Abstract

The importance of predation and burrow digging in explaining the evolution of sociality is generally unclear. We focused on New World hystricognath rodents to evaluate three key predictions of the predation hypothesis. First, large-bodied surface-dwelling species will be more vulnerable because they are more detectable; thus sociality should be associated with body size. Second, surface-dwelling, diurnal species would be more vulnerable to predators than nocturnal species; thus sociality should be associated with the evolution of diurnality. Third, species living in open habitats will be more vulnerable; thus sociality should evolve in species living in open habitats. Regarding the importance of burrows, we tested if species that dig burrows can benefit from communal labor; thus, sociality should be associated with burrow digging. All traits had significant phylogenetic signal, thus comparative analyses should explicitly address this. In a comparative analysis on independent contrasts we found that sociality was correlated with body size (larger species were more social), diurnality (diurnal species were more social), and burrowing (burrowing species were more social), but we found no effect of overhead plant cover of habitat on sociality in hystricognath rodents. Somewhat different results were found when we analyzed the raw data. Taken together, our results provide support for a link between predation risk, burrow digging, and sociality in this group.