

# **On the Evolution of Group-Living in the New World Cursorial Hystricognath Rodents**

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## **Abstract**

We used the comparative method to examine the evolutionary causes of group-living in the New World cursorial hystricognath rodents. To do so, we used the available literature to collect information on behavioral (group size, burrow digging), ecological (amount of plant cover in the habitat), and life history (body mass, time to sexual maturity) variables, along with phylogenetic relationships of these rodents. We analyzed these variables in the context of three major hypotheses. A first explanation poses that rodents live in groups to reduce the energy needed in the construction of their burrows. A second hypothesis suggests that grouped rodents increase their ability to detect and escape from predators. A third possibility states that group-living is adopted by rodents to provide extra parental care to their offspring. Our comparative analysis revealed that across species variation of group size is, to some extent, influenced by body size, and by the habit of burrow digging. Thus, large sized rodent species that actively dig their own burrows form larger group sizes than small sized species that do not dig burrows. In contrast, across species variation of group size was not influenced by differences in the amount of plant cover in the habitat (an indirect measure of predatory risk), or by differences in the time to first reproduction (a measure of parental care given). Therefore, group-living among the New World hystricognath rodents seems more linked to a strategy aimed to reduce their burrowing cost than to a strategy aimed to reduce their predatory risk, or to extend their parental investment.