

# **Fitness consequences of group living in the degu *Octodon degus*, a plural breeder rodent with communal care**

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## **Abstract**

The fitness consequences of plural breeding vary considerably among social vertebrates. We tested three hypotheses for the direct reproductive fitness consequences of group living in the degu *Octodon degus*, a social rodent endemic to central Chile. To test the 'benefits of communal care' hypothesis, we determined the relationship between the number of females per group, per capita direct fitness and offspring survival. To test the 'food abundance and quality' hypothesis, we determined the relationship between the biomass of preferred foods at burrow systems, group size, per capita direct fitness and offspring survival. To test the 'predation risk' hypothesis, we determined the relationship between group size, the density of burrow entrances to which social groups had access, per capita direct fitness, and survival of adults and offspring. Group size of core females (i.e. those with 50% or more nightly overlap) was negatively correlated with per capita direct fitness, but not with the number of females per group or total group size. Group living did not enhance the survival of offspring. Greater biomass of food (at 3 m and 9 m) and burrow density were not linked to larger groups and offspring survival. Our results did not support predictions of the 'benefits of communal care', 'food abundance and quality' or 'predation risk' hypothesis. Pending microsatellite analyses, we hypothesize that survival benefits linked to foraging group size and not reproductive fitness benefits may explain the evolution of sociality in degus.