

# **Delayed density-dependent and rainfall effects on reproductive parameters of an irruptive rodent in semiarid Chile**

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## **Abstract**

We examined the influence of density-dependent and density-independent factors on reproductive processes of leaf-cared mouse *Phyllotis darwini* (Waterhouse, 1837) in a semiarid region of Chile subjected to El Niño-driven precipitation. This species undergoes periodic irruptions apparently triggered by unusually high precipitation. The effects of density and precipitation were analyzed statistically regarding the following reproductive parameters: fraction of reproductive females, reproductive number (juveniles + reproductive females), per capita reproductive rates, and reproduction index based on long-term data (10 years). The fraction of reproductive females was affected positively by precipitation during the preceding winter and negatively by population density one year before. The reproduction index and the reproductive rate was positively affected by population density the previous year. In addition, the reproductive number was positively correlated with precipitation levels. The *P. darwini* population studied was affected by delayed density-dependent and density-independent factors in reproductive parameters. We propose that both destabilizing effects on reproductive rates of *P. darwini* may be major factors underlying the frequent outbreaks of this mouse observed in semiarid regions of Chile.