

Energetics and burrowing behaviour in the semifossorial degu *Octodon degus* (Rodentia: Octodontidae)

Luis A. Ebensperger & Francisco Bozinovic

Abstract

The energetics and burrowing behaviour of the semifossorial *Octodon degus* (Rodentia: Octodontidae) were investigated and compared with that of more specialized fossorial rodents. An open-flow respirometry system was used to record energy expenditure of single degus inside respirometers partially filled with soft (moist) or hard (dry) soil. In addition, digging behaviour was recorded in groups of three animals inside a large terrarium under controlled conditions of food, photoperiod and temperature. In the field, the digging activity of degus was monitored, along with seasonal variations in rainfall, content of soil moisture and soil hardness. Mass-specific metabolic rate during digging was found to be higher in animals burrowing in soft soils compared to hard soil. However, animals burrowing in soft soil removed more soil per min than animals in hard soil. Thus, gram per gram, excavating in hard soil was energetically more expensive. The digging cost of semifossorial degus tends to be either similar to or above those of similarly sized, but more fossorial, rodents. In the field, heightened digging activity coincided with the occurrence of rainfall, greater content of soil moisture and relatively soft soil conditions. Degus generally use their front feet and teeth to shear the soil; disposal of accumulated debris being carried out by moving their front and hind feet backwards. We also observed the establishment of digging chains when two or three individuals burrowed at the same site. As far as digging is concerned, the behaviour of degus is similar to that of other fossorial rodents, such as African bathyergids and the more closely related South American ctenomyids.