SCIENTIFIC NOTE

DUNG BEETLES (COLEOPTERA: SCARABAEIDAE: SCARABAEINAE) ATTRACTED TO ROTTEN EGGS IN THE ATLANTIC FOREST IN SUBTROPICAL SOUTHERN BRAZIL

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The subfamily Scarabaeinae (Coleoptera: Scarabaeidae) contains about 7,000 species, and the highest diversity is concentrated in the tropics. This group consists of detritivorous beetles that primarily eat mammalian excrement, carrion, and decaying vegetable material (Halffter and Matthews 1966; Hanski and Cambefort 1991; Simmons and Ridsdill-Smith 2011). These insects store portions of food below the resource in a burrow (tunneler’s species) or roll them several meters to bury them (rollers). Another group nests in and feeds on the resource (dwellers) (Halffter and Matthews 1966; Halffter and Edmonds 1982; Hanski and Cambefort 1991). Some species have other types of trophic and nesting behavior, such as living on snails, in bromeliads, or in ant nests (see Pereira and Martinez 1956; Halffter and Matthews 1966; Cambefort and Hanski 1991; Vaz-de-Mello and Louzada 1997). Due to their behavior, these beetles promote rapid and efficient nutrient cycling, contributing to the improvement of the physico-chemical properties of the soil and pasture, increasing edaphic aeration and hydration, and secondary seed dispersal (Andresen 2002; Vulinec 2002; Nichols et al. 2008).

Scarabaeinae have evolved from saprophagous ancestors, and a large radiation would have accompanied increased availability of dinosaur and/or mammal dung. This resulted in specialization of the group on coprophagy (Cambefort 1991; Halffter 1991; Davis et al. 2002). In Neotropical forests, competition for excrement, a scarce and ephemeral resource, induced some originally coprophagous Scarabaeinae to use carcasses, a process that likely resulted from the mass extinction of large mammals in glacial periods (Halffter 1991; Davis et al. 2002). Saprophagy in current species (Halffter and Halffter 2009) probably reappeared by a mechanism different from that of primitive saprophagy in ancestral species (Cambefort 1991; Davis et al. 2002), due to high availability of resources within tropical forests (Halffter and Halffter 2009).

Decaying eggs may be a resource used by Scarabaeinae, since they have high energy content and are produced seasonally in high abundance by birds and/or reptiles (Louzada and Vaz-de-Mello 1997; Pfrommer and Krell 2004). Typically, not all eggs hatch and some may be ejected from the nest (Macedo et al. 2004). Thus, this resource could be used for feeding and/or reproduction by scarabaeine species.

In this study, we present research on the attractiveness of decaying eggs to Scarabaeinae in a subtropical region of Brazil. Our objective was to test the attractiveness of this resource to dung beetles outside the tropics, as this phenomenon has been reported for some dung beetle species in tropical regions (Louzada and Vaz-de-Mello 1997; Pfrommer and Krell 2004).

The study was conducted in the municipality of Santa Maria (29°41′08″S 53°48′26″W), Rio Grande do Sul, and in the municipality of Nova Veneza (28°33′05″S 49°35′41″W), Santa Catarina, Brazil (Fig. 1). Santa Maria is located in the transition zone between the Pampa (grasslands) and Atlantic Forest biomes. Nova Veneza is located at the foothills of Serra Geral in the southern region of Santa Catarina. The elevations of the sites are 150 and 270 m, respectively. The climate is Cfa according to the Köppen-Geiger classification (Pell et al. 2007), with well-defined annual seasons. Average annual rainfall is about 1,700 mm for both areas. The average annual temperature is about 19 °C (with minimal negative and maximum of 40 °C). Both areas belong to the Atlantic Forest biome.

In Santa Maria, sampling was done during the summer (February 2011) in a forest fragment of approximately 30 ha of deciduous trees with secondary vegetation. The fragment was located on the campus of the Universidade Federal de Santa Maria (UFSM). The areas surrounding the fragment consisted of grasslands and plantations of *Eucalyptus sp.* (Myrtaceae) and *Pinus* sp. (Pinaceae) (non-native trees). Four pitfall traps were installed in the vertices of a square of 50 m inside the fragment forest. Each trap consisted of a 1-L plastic container, with another container of lower dimensions placed above to accommodate the egg bait. Above each trap, we placed a protection