COMPARISON OF GALL SIZE BETWEEN A NATURAL AND A REHABILITATED AREA OF RUPESTRIAN FIELDS AT SERRA DO CIPÓ, MINAS GERAIS, BRAZIL

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INTRODUCTION

Insect galls can be good indicators of environmental quality. Gall formation depends on various factors such as galler activity and the plant response. As the galler’s extended phenotype, gall morphology provide information on the inducer (Stone & Schonrogge 2003). Environmental factors can affect both plant and galler, hence gall size and thickness can be affected. For instance, these features have been tested for reduction in galler mortality (Fernandes et al. 1999). Moreira et al. (2007) found higher gall abundances in areas under an intermediate rehabilitation state in pioneer species. Specific gall systems were previously evaluated for copper and nickel accumulation (Bagatto and Shorthouse 1991) and impacts of urbanization (Sumoski et al. 2009). The galling insect Baccharopelma dracunculifoliae (Hemiptera: Psyllidae) induces foliar galls in Baccharis dracunculifolia (Asteraceae), and is a well studied system in the Neotropics (Espírito-Santo et al. 2012). The plant species B. dracunculifolia has been used in rehabilitation stands in Serra do Cipó, MG, and is considered a super-host for galls.

OBJECTIVES

We aimed to compare Baccharopelma dracunculifoliae gall size between a natural and a rehabilitated area, accounting for the influence of plant height and shoot level of gall occurrence.

MATERIAL AND METHODS

We conducted the study at two rupestrian field areas at Serra do Cipó, Minas Gerais, Brazil; one in a protected area (natural) and the other under recovery for the last two years after a rehabilitation project. The natural area was located at the Serra do Cipó National Park and the rehabilitated at Vellozia Private Reserve. Twenty Baccharis dracunculifolia individuals were sampled (10 in each area). Galls of Baccharopelma dracunculifoliae were collected from plants with more than seven galls. We measured plant height (m), and for each gall we measured gall length and diameter (mm) and registered its shoot level of occurrence (hereafter shoot level). Gall size was obtained from the equation for the volume of an ellipsoid since galls resembled this shape. We adjusted GLMs, with the logarithm of gall size as response variable. Area (natural or rehabilitated), plant height (m), galled shoot level, as well as the interaction terms, were included in the complete model, which was simplified. All analyses were performed in the R environment.

RESULTS

We collected 253 galls, 128 in the natural area and 118 in the rehabilitated area. Gall size varied greatly from 0.6 to
1000.4 mm³ and galls occurred in third to ninth level shoots. Plant height varied from 0.99 to 2.30 m. There were no differences in gall size between the two areas. Gall size varied with plant height (t = 3.43, p < 0.001), shoot level (t = -3.05, p = 0.002), and the interaction between shoot level and area (t = 2.16, p = 0.031).

**DISCUSSION**

Similarity in gall size between areas indicates an equivalent development of these gall inducers after two years of rehabilitation. In spite of this similarity, variation in gall size affected by plant height and shoot level reflects differences in plant size. In another study with *B. dracunculifoliae*, gall abundance was positively related to plant size (Lara & Fernandes 1994). Shoot level varied between areas probably due to differences in plant architecture visually noted in the field. On the other hand, Sumoski *et al.* (2009) found that plant architecture differed between urbanization levels in Florida, but this did not influence gall abundance.

**CONCLUSION**

Natural and rehabilitated areas presented similar *Baccharopelma dracunculifoliae* gall size, which varied with plant height and shoot level.

**REFERENCES**


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