

Invasion of Pastures by "Forest-Associated" Dung Beetle Species (Coleoptera: Scarabaeidae) in Brazil

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As part of their natural history, dung beetles of the subfamily Scarabaeinae have developed close associations with particular regional and local environmental conditions. As an example, some species show close association with shaded areas such as the forest environment, while others conversely have a strong correlation with open ones, pastures. These associations might be influenced by traits such as food (dung) availability and protection from dehydration. These relations are so well established that dung beetles are a very good candidate group of insects to be used as bioindicators to monitor the health of a given environment. In general, one would expect to find typical "forest-associated" species more frequently found in such environment, and only occasionally in open areas such as pastures, while the reverse also holds true. However, over the years this is not exactly what we were observing at the UNESP Farm, in Selvíria, state of Mato Grosso do Sul, Brazil. Since the early 1990's we have been consistently surveying for dung beetles with BL traps, dung-baited pitfall traps and cow pad dissections. Interestingly enough, species typical of forest and only rarely (is ever) collected in nearby pastures, have become more and more frequently trapped in this open environment, in the last ten years. Species which present this behavior are *Canthidium* nr. *breve*, *C. barbaticum*, *Canthon histrio* and *Coprophanaeus spitzzi*. In the particular case of *Dichotomius semiaeneus* and *D. glaucus*, also forest-associated species, their abundance in traps placed in pastures became higher than in its 'natural' forest environment. It is not clear what could be the main reason for this 'pasture invasion', considering that over the years there were no changes in area coverage by both pastures and forest fragments, hunting and cattle stocking rate in the pastures. The only notable change was the invasion of UNESP pastures (not forests) by the exotic dung beetle *Digitonthophagus gazella*.

Keywords: colonization, shaded areas, open areas.