

Partners in biological control of cocoa pests: mutualism between *Dolichoderus thoracicus* (Hymenoptera: Formicidae) and *Cataenococcus hispidus* (Hemiptera: Pseudococcidae)

ABSTRACT

The observed mutualistic relationship between the black cocoa ant *Dolichoderus thoracicus* (Smith) and the mealybug *Cataenococcus hispidus* (Morrison) was examined. The importance of *C. hispidus* to *D. thoracicus* as a food source was investigated by giving *D. thoracicus* access to *C. hispidus* only, to *C. hispidus* and other food sources, and denying access to any obvious food sources. *Dolichoderus thoracicus* was seen to depend on *C. hispidus* alone as a source of food over an eight-week period of observation without showing ill effects. The role of *D. thoracicus* in spreading *C. hispidus* was studied in an experiment consisting of combinations of *D. thoracicus* and *C. hispidus* exclusion. It was shown that *D. thoracicus* was responsible for carrying *C. hispidus* across a mealybug excluder. Data on the frequency and duration of transport of *C. hispidus* by *D. thoracicus* were obtained by direct observation for a total of 90 h over 17 days. Both adults and nymphs of *C. hispidus* were carried by *D. thoracicus* with its mandibles in a brief and erratic manner, in the general direction of the trail. Such transportation is nevertheless considered to be important in view of the large number of individuals of *D. thoracicus* moving along a trail. The close mutualistic relationship between *D. thoracicus* and *C. hispidus* reiterates the necessity to manipulate both organisms for control of cocoa pests.

Keyword: *Dolichoderus thoracicus*; *Cataenococcus hispidus*; Cocoa pests; Mutualism