A possible territorial or recognition behavior of Leptoglossus zonatus (Dallas) (Heteroptera, Coreidae)

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ABSTRACT

The coreid Leptoglossus zonatus (Dallas, 1852) is commonly found in corn (Zea mays L.) fields in Brazil, and it has been observed flying and landing on objects or persons near these fields. During January, 1995, this behavior was studied in corn plantations. Results indicated that the bugs concentrated on objects (plastic cylinders traps) introduced into their habitat and that their number increased during the first 24 hs. However, as time passed (8 days), this possible territorial or recognition behavior gradually decreased, and tended to disappear.

KEYWORDS. Coreidae; defense behavior; flight; Zea mays.
(days) continue, going down to 59 bugs at day 4, and finally, 9 bugs at day 8. The regression analysis performed showed a high value for the coefficient of determination ($R^2 = 0.9979$), demonstrating the tendency of decrease in number of bugs as time progressed in a daily basis (Fig. 1B). The regression analysis for the individual tests indicated high values for $R^2$ (except for test 3), demonstrating a tendency of decrease in numbers of bugs with time passing in days (Table I).

Results of these field tests showed that *L. zonatus* flies from the corn plants and lands on objects introduced in its habitat, possibly characterizing a behavior of territorial defense or recognition. This behavior was also commonly observed with human beings approaching the habitat. Bugs flew to and landed on the body of persons moving or standing near the corn field. As time passed, apparently the bugs got used to the objects introduced in their territory, and “accepted” them as part of their habitat.

Beyond volatile chemicals, visual stimuli are key factors in the process of host-plant selection (Finch & Collier 2000) and defense. Vision may explain how the bugs quickly detected the objects (plastic traps) placed near their habitat. Also, *L. zonatus* adults are known to produce alarm pheromones (Leal et al. 1994), and males of several species of coreids produce sexual pheromones (Aldrich et al. 1993); the bug’s behavior of hanging about on prominent objects could be interpreted as an adaptive behavior related to pheromone production. However, because the sex of the bugs observed on the traps was not recorded, it can only be speculated from the present data that these bugs were hanging on these objects with the purpose of chemical communication.

Territorial defense by males has been reported in several species of coreids (Mitchell 1980; Fujisaki 1981; Miyatake 1995, 1997; Eberhard 1998) and is considered widespread in the family (Mitchell 2000). However, the territorial defense reported by these authors is in a short range, involving male/female aggressive behaviors, and no data were found in the literature regarding the behavior as here reported.

Several adults were observed missing one of the hind legs, which are known to be used as weapons during male contests in another species of *Leptoglossus* (Miyatake 1997). Perhaps, by being large and conspicuous, these legs are easily spotted by predators and, therefore, commonly detached from the bug’s body.

In conclusion, this behavior shown by *L. zonatus* of flying against and landing on objects introduced in its habitat may be used in a way of managing its populations on corn fields. By properly handling objects, bugs can be attracted to concentrate on them and be killed by the use of pesticides on these restricted areas.

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### References


### Table 1.

Regression analysis on the number of *Leptoglossus zonatus* observed on objects (green plastic traps) as a function of time, within a single day (after several intervals of minutes - 5 to 320 minutes) and between days (1 to 8 days).

<table>
<thead>
<tr>
<th>Test</th>
<th>Equation</th>
<th>$R^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>1*</td>
<td>$Y = 4.642 + 0.00055X^2$</td>
<td>0.992</td>
</tr>
<tr>
<td>2*</td>
<td>$Y = 0.0676 + 0.000158X^2$</td>
<td>0.994</td>
</tr>
<tr>
<td>3*</td>
<td>$Y = 3.887 - 10.2207/X$</td>
<td>0.916</td>
</tr>
<tr>
<td>1**</td>
<td>$Y = 61.1642 - 0.9254X^2$</td>
<td>0.999</td>
</tr>
<tr>
<td>2**</td>
<td>$Y = 16.0 - 0.7214X*Ln(X)$</td>
<td>1.000</td>
</tr>
<tr>
<td>3**</td>
<td>$Y = 2.8837 + 33.4666*e^{-X}$</td>
<td>0.736</td>
</tr>
</tbody>
</table>

* Y = number of insects; X = time in minutes.
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