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Attraction of *Helopeltis theobromae** to Live Conspecific Insects⁺

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A joint project was set up in 2008 between Sumatra Bioscience and NRI to search for a pheromone from Helopeltis theobromae (Hemiptera: Miridae), a major pest of Sumatran cocoa. Preliminary experiments were carried out to demonstrate the production of a pheromone by one sex and to gain information on the age of the insect and time of day when pheromone production is maximal so as to optimise conditions for collecting pheromone.

Mating was observed by placing a newly emerged virgin male and female together on a pod enclosed by a muslin cage (25 cm x 11.5 cm), in the field with ten replicates. The male and female of each pair emerged within 2 days of one another. All 10 pairs mated, 1 pair once, 4 twice, 3 three times, and 2 four times. The study continued to the first death of each pair, which averaged 27.5 days (20-38).

Attraction was studied by placing five newly emerged adult females in cages similar to the foregoing, with five replicates in each of two similar experiments. Many males appeared and settled on the cages. In Experiment 1, 414 males visited. The first appeared on day 3, built up to peak on day 14, and gradually declined to day 23 when all the females had died. In Experiment 2, the caged females survived longer. A few males appeared on day 1 and 2 in two of the replicates. In all replicates, visits then rose progressively to peak around day 15 to 18, declining slowly to day 37, when all the females had died (849 visits). The duration of the visits was recorded from part way through Experiment 1 to end Experiment 2 (849 visits). It varied from 1 to 111 minutes (mean c 20 min). Ten females settled on the cages in the two experiments, against 1263 males.

In a parallel trial with caged males, there were a total of 52 visits from males and 16 from females.

There were no visits by either sex once all the virgins had died in the cages. This suggests that random settlement is unlikely.

These experiments demonstrated clearly that adult virgin female H. theobromae produce a sex pheromone that is highly attractive to males, as has been shown for some other species of Helopeltis. Production seems to continue throughout the life of the female although production may be low in the first few days after emergence. The experiments also suggest there may be weak attraction of females by females and of both males and females by males.

