

The Biology of Social Insects

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Charles D. Michener,
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Reproductive Biology in Halictine Bees

Brian H. Smith
The University of Kansas

Male preference for individual females in the sweat bee Lasiosglossum zephyrum was studied using laboratory reared individuals. Males were first exposed to a female for a 10 min. period, and attraction to a second female was then shown to be negatively correlated to the relatedness between the two females. Further experiments show this response to result from an odor; work with animal extracts and synthetic compounds indicates the possible make-up of the multi-component chemical signal and begins to explain the ability of the males to discriminate between different females. This is a learned preference, and it is quite possible that an important learning period in a male's life is in the nest, just after emergence, and before leaving. This is the period where males are exposed to specific females the longest; encounters with females after leaving the nest last, on the whole, less than one minute. Since the females in the nest are likely to be close relatives of the males emerging into that nest, the possibilities for negative assortative mating in these bees must be considered.

The Trail Pheromone of the Red Imported Fire Ant, Solenopsis invicta Chemistry, Behavior and Potential for Control

Robert K. Vander Meer, Clifford S. Lofgren, B. Michael Glancey, and
David F. Williams
U.S. Department of Agriculture

Several components of the trail pheromone of Solenopsis invicta were isolated, identified and synthesized. The component responsible for trailing activity was active at 0.4 pg/cm, but was inactive in an attractant-recruitment bioassay. Other components, less active in the trail bioassay, did elicit a partial recruitment response. Total activity was achieved by the addition of a Dufour's gland (source of the trail pheromone) component that by itself was inactive in both trail and recruitment bioassays. Potential for the use of the trail pheromone in control of fire ants was demonstrated on a small scale by significantly enhanced feeding activity on filter paper disc treated with pheromone plus soybean oil versus soybean oil alone.

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