

Solitary foraging in the ancestral South American ant, *Pogonomyrmex vermiculatus*. Is it due to constraints in the production or perception of trail pheromones?

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Several North American species of *Pogonomyrmex* harvester ants exhibit group foraging, whereas South American species are exclusively solitary foragers. The composition of the secretions of the poison and Dufour glands in the South American species, *Pogonomyrmex vermiculatus*, were analyzed, and the secretions and their components were tested as trail pheromones in laboratory bioassays. The major compounds in the poison gland were the alkylpyrazines, 2,5-dimethylpyrazine, 2,3,5-trimethylpyrazine, and 3-ethyl-2,5-dimethylpyrazine. The Dufour gland contained five alkanes, from tridecane to heptadecane, with pentadecane being most abundant. In behavioral bioassays, poison gland extracts and the mixture of pyrazines produced a trail pheromone effect, whereas the Dufour gland extracts and the alkanes had no effect on ant locomotion. We conclude that group foraging in *P. vermiculatus* does not arise from the inability to produce or detect possible pheromones, but rather, from physiological and/