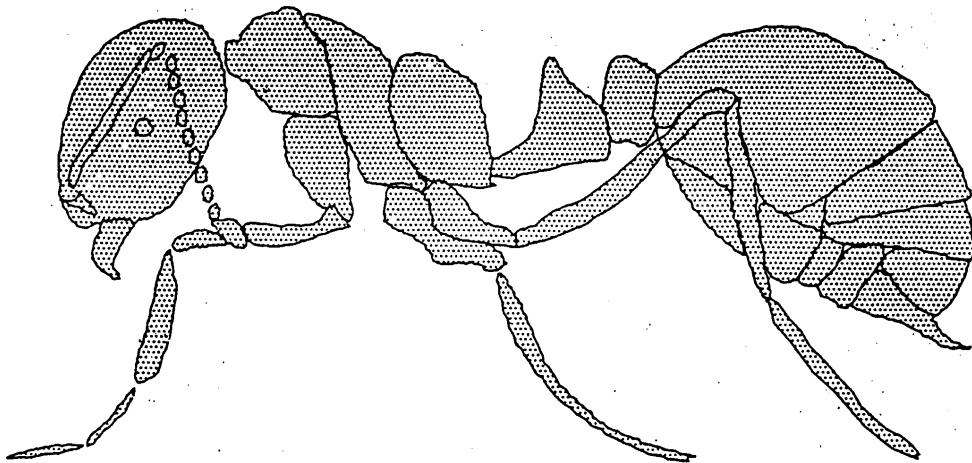


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1997 IMPORTED FIRE ANT RESEARCH CONFERENCE

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IMPORTED FIRE ANT & HOUSEHOLD INSECTS RESEARCH UNIT
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BIOLOGICAL CONTROL OF FIRE ANTS

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Biological control research on fire ants in the USDA-ARS involves 3 highly specific natural enemies that will stress imported fire ant populations sufficiently to allow native ants to better compete. These are, (1) *Thelohania solenopsae*, a microsporidian that kills a high percentage of infected IFA colonies, (2) *Solenopsis (Labauchena) daguerrei*, a parasitic ant that attaches to the IFA queen and redirects IFA workers to tend the brood of the parasite, and (3) *Pseudacteon spp.*, phorid flies that are strong antagonists and parasites of IFA

Laboratory studies in Argentina with *Thelohania solenopsae* showed that healthy colonies lived longer than infected ones. After 12 weeks of artificial rearing, 50% of the healthy colonies died versus 93% of the infected ones. In field studies in Argentina, the size of infected colonies was smaller than noninfected ones and the overall density of the infected populations declined by more than 80%.

The presence of *Solenopsis daguerrei* in fire ant colonies has detrimental effects on colony growth and the proportion of sexual reproductives produced in the colony. *S. daguerrei* queens enter fire ant colonies and attach themselves to the mother queen. Previous studies have demonstrated that this parasite inhibits the fire ant mother queen and her egg production, thus causing the ant colony to collapse and eventually die out. Since *S. daguerrei* queens attach themselves to fire ant queens, this species could be especially useful in controlling the multiple-queen form of the fire ant.

At least 18 species of *Pseudacteon* flies have been found attacking fire ants in South America. Different species attack different sizes of fire ants. These flies are common and active throughout most of the year, but different species are more active at different times of the day. Most species appear to be broadly distributed across a wide range of habitats and climates. The *Pseudacteon* species that attack fire ants appear to be specific to fire ants. The host specificity of several parasitic *Pseudacteon* flies in South America was tested in the field with 23 species of ants from 13 genera. As expected, these flies were attracted only to *Solenopsis* fire ants.