

## Fire Ant Initiative Action Plan – FY 2006-2007

Maximum 500 words, double-spaced, type size at least 12 points, do not exceed boundaries.  
Include statement on anticipated outcomes.

*Pseudacteon tricuspis* is a parasite of imported fire ant colonies. Brazilian stocks of this species are established from Florida to Central Texas, but so far impacts have been impossible to detect against the background of other ecological factors. In FY 04-05, we began introductions of Argentinean stocks of *P. tricuspis* in South Texas, where Brazilian stocks failed, and, at BFL, we added the smaller phorid, *P. curvatus*, into the system. In less than a year, *curvatus* has achieved densities 10X those of *tricuspis*, a five year occupant of the locale. As in South America, we have seen female *curvatus* attacking at disturbed mounds, but also at food sources where they “freeze” workers and at mating flights where they disrupt the entire event. Reducing the pest status of *S. invicta*, will require a complex of complementary *Pseudacteon* species, as found in South America. Thus our efforts will focus on the rearing, release and evaluation of multi-species systems of *Pseudacteon*.

We will concentrate on answering five basic questions. First, do populations of newly established *Pseudacteon* species impact previously established species? Second, what factors regulate the relative abundances of *Pseudacteon* species? Third, what are the direct mortality costs imposed by these phorid

species? Fourth, does attack by multiple phorid species inhibit foraging by *S. invicta* more strongly than attack by any species alone? And finally, do phorid species complexes reduce *S. invicta* population densities?

We hypothesize that relative abundances of *curvatus* and *tricuspis* reflect relative abundance of worker size classes required for each species to produce females. However, there could be a negative impact of *curvatus* on *tricuspis*, if, for example, larger ants scramble for cover when the more common *curvatus* arrives to attack. Given that negative interaction, we expect to see *tricuspis* abundance decline below that predicted from local worker size distributions. This result would strongly suggest the need to seek *Pseudacteon* species with niche separation on dimensions other than size.

Observations in South America have led us to classify *tricuspis* and *curvatus* as “mound disturbance” species. But this is not an absolute category. Another question is whether these species differ in how they exploit mating flights, foraging trails, and ants in differing micro-sites. Do we notice *curvatus* more away from disturbance because it has a wider niche, or because it is 10X more abundant?

In addition to tracking changes in *S. invicta* population densities, we will address impacts on fire ants by estimating the fraction of heads in midden piles that show evidence of phorid emergence. We will measure food discovery and

dominance of RIFA in local communities. We will compare areas with zero, one and two phorid species.

In order to answer scientific questions framed in the proposal, continued lab production, introduction and monitoring of several *Pseudacteon* species across multiple sites in Texas will be accomplished. Currently applications for release of additional phorid species are pending. Thus, by the end of FY 06-07 communities of 2-4 complementary phorid species will be introduced, naturalized and expanding from several sites in Texas.