Spatial analysis of foraging activity of the Polygynous Red Imported Fire Ant *Solenopsis invicta* (Hymenoptera: Formicidae).

I. Abstract: Densities of polygyne *Solenopsis invicta* are higher in the introduced range than the monogyne social form and this might be because the lack of intraspecific aggression, but the mechanisms of how polygyne colonies persist at these high densities are still unknown. Lack of aggression might lead colonies to compete by exploitative mechanisms in which some ants remove food before others would find it. For instance: do they share resources? If so, to what extent? I will answer this question by marking foragers and recruits externally with ultraviolet fluorescent ink. Recapture will allow me to map complete polygyne foraging areas and also observe resource sharing of colonies at baits. Some crucial and basic questions about polygyne foraging organization will be answered: 1) How is the mound volume of a polygyne colony related to its foraging area? 2) How far do polygyne ants forage? 3) Does a colony monopolizes a single bait or does it share with others? 4) Can bait distance and/or colony biomass determine food acquisition success? 5) Do polygyne foraging areas overlap? 6) If so, to what extent?

II. Methods:

1) Gp-9 Protein Method
   - Highly Correlated with Gp-9 allele (a pheromone binding protein)
   - BB Monogyne  Bb Polygyne
   - 10 ants/colony
     - One heterocygote determines polygyny

2) Mark-Recapture Foragers
   - Ether/ Paint
   - Anesthetized Ant

3) Estimate Forager Population, Determine Maximum Foraging Distance and Overlap Area

III. Preliminary Results:

- Polygyne Fire Ants were found at Hatillo P.R. at a cattle area.
- 73.1% of 155 baits around a focal mound contained only *S. invicta*.
- 8% of baits enclosed another ant species among fire ants.
- Maximum foraging distance was 5m away from mound. This is further than reported by Weeks, (2004) (4m).
- Due to low recapture percents, (<10%), maximum foraging distance might be underestimated.
- Only 3 more ants species occurred at baits and were not abundant.
- Three different vectors of ants were seen while capturing from sausages. Six vectors are the maximum reported. (Zakarov & Thompson, 1998).

Data analysis in process.