**Proposers**

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Relevant experience:
- Ecology and statistics coursework
- Acclimated to working outdoors in the heat and humidity of Florida summers

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Relevant experience:
- Ecology, entomology and statistics coursework
- Experience collecting, identifying, and curating ant specimens (through coursework, MS research and informally)

**Sponsor**

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**Species composition and habitat associations of ant communities in the Natural Areas Teaching Lab**

**Project summary**

Because they are diverse, abundant and ecologically important in many ecosystems, ants can be excellent ecological indicators for biodiversity monitoring. In the proposed project, we will survey the ant species present at the Natural Areas Teaching Lab and characterize the habitat relationships for the communities present in different habitats. By sampling the ant community with a variety of standard methods, we will develop a species list for the entire site, compare ant communities of the dominant vegetation types and assess the impact of exotic invasive ants on the distribution of native taxa. We will conduct this project during summer 2005 and expect the work to produce an inventory for the site similar to those that have been conducted for other insects and baseline data on the presence and abundance of ant species that can be used by courses conducting field projects at the NATL.

**Starting date:** 6 May 2005 (Summer A)

**Completion date:** 5 August 2005 (Summer B)

**Objectives**

The overall objective of this project is to survey the ant communities of the NATL and identify relationships between species presence and abundance and habitat type. Specifically, we intend to address three questions in this project: 1) What ant species are present at the site? 2) How are these species distributed in relation to the different plant communities present at the NATL? and 3) Are there community-level effects of exotic invasive ant species (e.g., red fire ant, *Solenopsis invicta*, and Argentine ant, *Linepithema humile*)? Addressing these questions will increase our understanding of the biota associated with the old field, hammock and upland pine habitats present at the site and will generate an annotated species list that will complement the data on other invertebrate taxa that have already been surveyed at the NATL.

**Methods**

We will conduct the field work for this project during the summer 2005 term. Ants are most active during warm, dry days in mid- to late summer, so this period should allow optimal detection of the species present at the site.

Answering the three questions above will require a variety of methodological approaches. First, we will place pitfall traps arranged in grids in each of the five old field successional stages and in the hammock and upland pine habitats. Where possible, we will also extract ants from litter collected from these areas, although this method is most applicable to the forested parts of the NATL. In order to accurately survey the entire community, we will complement the systematic collection of ants from pitfall traps and litter with hand collection in all sites.

The most basic analysis of the collection data will be compiling species lists for each site and comparing the ant community composition of different habitats to one another. We will then use MANOVA to test for the effect of habitat type on the presence and abundance of individual ant species. Analysis will also include specific comparisons of the two forested habitats to one another and the influence of successional stage on ants in the old field habitats. To examine the effects of the exotic invasive ant species that we expect will be present, we will analyze the

species composition of individual pitfall traps in which *S. invicta* or *L. humile* are collected.  If these two species affect the overall composition of the ant community, then we would expect the ants collected in localities where these species are present to be different from those collected where they are absent.

**Expected results and significance**

Previous work conducted in Florida has shown that ant communities of the three major habitat types present at the NATL differ in the presences and relative abundance of many species.  Although the NATL is relatively small, ants often respond to small-scale habitat differences and we therefore expect that the species composition of communities will differ.  In particular, we expect that the two forested habitats will have similar ant communities and that the old field sites will have communities that comprise more common generalist species, including the two most widespread exotic invasive species in this region.

This project will produce an annotated ant species list for the NATL and will provide data on ant habitat associations that can be incorporated into the field experiments that many ecology and entomology courses conduct at the site.  It will also produce a collection of voucher specimens for the site that we will make available at request.  We would ideally like to attach the entire database of our results to the NATL website, as many ecological research stations have done to facilitate long-term and comparative studies.  The results may be especially useful for classes examining habitat selection, interaction between native and exotic invasive species or the effects of ecological succession on insects. Our work will be quite unintrusive and will have no long-term negative impacts on the areas sampled.  If selected to receive this grant, we will use the award to purchase the necessary supplies for collecting and curating ants, some of which (Berlese funnels, mounting supplies, museum-grade collection boxes) can be expensive.

**Signatures**

Student_____          Date_____

Student_____          Date_____

Sponsor_____          Date_____