Kentucky Arboreal Ant Survey

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Objective:

The overall goal of this study is to survey the arboreal (tree-nesting) and semi-arboreal (ground-nesting but tree-dwelling) ants of Kentucky. The project takes advantage of the diverse habitats and broad geographic range offered by the various biological field stations in the state (i.e., the KOFS network). The sampling protocol (see reverse of this sheet) was developed to be implemented quickly and easily by anyone; no specific knowledge of ants is required. The study is limited to ants occurring on tree trunks to simplify the survey protocol while targeting a specific ecological domain within forested habitats.

Research Questions

Data gathered in this study will be used to answer the following basic questions:

1) How many arboreal and semi-arboreal ant species currently occur in Kentucky?
    a. How many are native vs. introduced or tramp species?
    b. What are the major diversity gradients across the state?
2) How do ant assemblages change with habitat characteristics?
    a. Are certain ant species associated with certain tree species?
    b. Do larger trees support more ant species?
    c. Do trees with vines have more (or different) ant species than those lacking vines?
    d. Does ant assemblage structure differ consistently between open/closed, old/young, disturbed/protected, etc. habitat types?
3) How do ant assemblages change over time?
    a. What are the effects of year-to-year climate variation within and between sites?
    b. Are changes in occurrence frequency correlated among species and across sites?

Products and Data Sharing

We intend to summarize the results in one or more publishable manuscripts that focus on the questions listed above. We expect that generation of publishable data will require multiple years of surveys at many KOFS sites. In the meantime, we will make the data gathered at each field station available on a password-protected website to allow students, station managers, and other participants to see the results as they are compiled. This will facilitate generation of site-specific species lists, and will provide the basis for inter- and intra-site comparison over time. Details regarding how to access the data will provided to participants as soon as possible.

Contact Information

Upon completion of the ant survey, please contact Steve Yanoviak at the email address below to arrange for transfer of the collected ants to the University of Louisville. We will identify the ants in your collection and send you the results summary plus a set of voucher specimens (if desired) as soon as possible.

When completed please contact Steve Yanoviak – steve.yanoviak@louisville.edu

Kentucky Arboreal Ant Survey Protocol

Equipment

Essential (* = available on most smart phones)

- Bait = one 3oz can of tuna (drained) + ca. 2 tablespoons honey. Combine in a small ziplock bag and squeeze repeatedly from outside to mix and form a paste.
- Data Sheets & Pencils
- Isopropyl alcohol or ethanol 70-90%
- 50ml Falcon tubes
- DBH tape
- GPS*
- Camera*
- Compass*
- Watch*

Optional

- Plastic spoon (for handling bait)
- Latex gloves (for handling bait)
- Thermometer/RH meter
- Scissors

Procedures (Conduct only between 9:00-16:00 from May-September; not during rain)

Overview

The goal is to place baits on 50 medium- to large-size trees, then collect the ants that are on or near the baits an hour later. Also collect basic data about the trees (size, identity, location). Diversity is more interesting than abundance for this study, so collecting many different kinds of ants is more important than collecting many individuals of a single species.

Protocol

1) Select a starting tree for baiting.
   a. baited trees should be living, healthy trees that are ≥ 10cm DBH (diameter at breast height; ≈1.4m above the ground)
   b. record tree identity (or take a picture including leaves if species unknown)
2) Record on data sheet:
   a. tree number (EX. MAYWOODS-001); date; DBH (cm); temperature (C); relative humidity; vine presence (Y/N); tree species; observer's name; GPS coordinate
   b. record tree number at both locations on the data sheet labeled "Tree"
   c. record GPS coordinates for the first tree and every third tree
3) Place bait on the tree trunk
   a. use a dollop of bait about the size of a quarter or half dollar on the northern facing side of the tree at breast height
   b. Record start time once bait is placed on the first tree
   c. Walk ≈20m and select a new tree (must be ≥ 10cm DBH), repeat steps 2 & 3.
4) Return to first tree 45-60 min after start time
   a. record end time
   b. fill one 50ml Falcon tube with ≈25ml of alcohol
   c. scoop any ants into Falcon Tube (getting bait in the tube is ok)
   d. collect any additional ants (not at the bait) on tree trunk near breast height
   e. tear or cut out second "Tree" label from data sheet and put it into the Falcon tube
5) Repeat step 4 for all trees

When completed please contact Steve Yanoviak – steve.yanoviak@louisville.edu