



Entomology Insect Information Series

Providing Leadership in Environmental Entomology

Department of Entomology, Soils, and Plant Sciences • 114 Long Hall • Clemson, SC 29634-0315 • Phone: 864-656-3111
email: dpento@clemson.edu

Submitting Insect Samples for Identification

The identification of an insect or related pest is the first step in determining whether it should be controlled and in obtaining recommended control measures. Clemson University provides identification assistance when it is needed. A good specimen and supporting information are essential for pests to be correctly identified. County Extension offices furnish information on what is necessary for collecting, preserving, and shipping specimens and the supporting information that should be included. The county offices can submit samples for you. If you decide to submit samples on your own, there are several steps you should take.

Preserving and Packaging. In general, most insects should be preserved immediately after collection. Several specimens should be included if possible. Most specimens can be killed and preserved in glass or plastic jars containing 70 to 90-percent ethyl or isopropyl (rubbing) alcohol. Do not send insects in water.

Large, fragile insects such as butterflies and moths should be killed in a freezer and stored in a crush proof container without alcohol. Tissue paper gently placed around the specimens will keep them from being damaged in the mail.

Pests on plants such as mites, thrips, aphids, scale, and other very fragile insects should be sent in on the diseased plant. These insects are easily damaged by removal from the plant, and their appearance on the plant as well as damage symptoms may be very important for accurate identification.

Small caterpillars, grubs, and maggots should be sent live in a plastic bag with some of the host material, if possible. It may be necessary to rear some of these to the adult stage for positive identification. Place the plastic bag in a container that will not be crushed in the mail. Other types of insects can be kept alive if they are placed in a small, loosely capped container with a

slightly moistened paper towel or a cotton swab moistened with a drop of water.

The following information should be included for each sample submitted:

- Name of collector.
- County and nearest town.
- Date collected.
- Where found, such as host plant, animal, or location in a building. If the host was a plant or animal, give the stage of growth. If the specimen was found on a person, provide the person's name and phone number.
- Degree of infestation (heavy, medium, light) and type of damage.
- Insecticide used for control and results if appropriate.

Electronic Images. It is becoming more common for individuals with digital cameras to send images of specimens by email. This can greatly speed the process of determining the type of specimen and the appropriate control measures if needed. However, identification of insects and related arthropods from electronic images can be challenging. Being three-dimensional, many important characters used to identify insects can be out of focus in an image with limited depth of field. For example, the number of parts on the antennae, placement of hairs and spines on the body, shape of the mouthparts and the number and shape of veins in the wings may all be needed to key an insect to species. It may not be possible to capture all the necessary key characters to fully identify a pest. Fortunately in some situations, the species of a pest may not be necessary to make an appropriate control recommendation.

Before imaging an insect or related arthropod for identification, you should determine the level of identification you feel you need. For example, when concerned about a specific species such as a brown recluse spider or Formosan termite, it may be more efficient to mail the sample by the traditional process so detailed identification can be made. In addition, you

will probably need to mail small arthropods such as mites, larval ticks and minute flies. For more general identifications, large specimens or identifications with pressing time constraints such as structural pests delaying a home sale, digital images may work well.

The following guidelines are designed to help you make decisions about imaging insects, related arthropods and the damage they cause.

- Whenever possible, lay a simple ruler or a common item such as a penny next to the specimen so the relative size of the insect can be determined.
- When possible, take an image of damage or nests. Photograph damage where it interfaces with "normal" plant tissue, lumber, food products, etc.
- Use a contrasting background color to the specimen. If in doubt, default to a light gray background.
- Use an intensity of light that best depicts the accurate color of the specimen.

- When many pests are present, take an image of several specimens in one frame.
- Attempt to select the best preserved specimen to provide a close-up image of the entire top, bottom and head. When imaging the head, try to get the base of the antennae, eyes and mouth in focus. For specimens flattened side-to-side, such as fleas, a side view will be needed.

For other publications in our Entomology Insect Information Series visit our web site at <http://entweb.clemson.edu/cuentres/eiis/index.htm>.

Prepared by Eric P. Benson, Extension Entomologist/Associate Professor and Clyde S. Gorsuch, Extension Entomologist/Professor, Department of Entomology, Soils, and Plant Sciences, Clemson University.

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