

A COLLECTION TECHNIQUE FOR MOUND-BUILDING ANTS (HYMENOPTERA: FORMICIDAE)^{1,2}

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ABSTRACT: We present a simple, fast, and inexpensive method for collecting relatively clean samples of mound-building ants. The method consists of creating a miniature pitfall trap in the mound with a collecting tube.

Over years of collecting mound-building ants, mainly of the genera *Pogonomyrmex*, *Solenopsis*, and *Formica* in North America, we have used a simple, fast, inexpensive method for making relatively clean collections of workers. Since we have found many collectors unaware of this extremely useful technique, it is described below.

The collection method described is as simple and useful as many other ant collection techniques (Clark and Blom 1979; Greenslade 1973; Wheeler 1910; Wheeler and Wheeler 1963). Melander (1902) described a similar method for use with the non mound-building ant, *Pogonomyrmex barbatus* (F. Smith). Our procedure involves pushing an open collecting vial partly filled with alcohol into the earth, gravel, or thatch ant mound and letting the container act as a pitfall trap for the ants. We insert a vial, flag the nest for easy relocation, continue collecting in the area, and return to the mound to recover the vial of ants. Forceps are sometimes needed to retrieve the vial to avoid stings and bites. The nest may be partly opened with a small trowel or other instrument if the ants are not active outside the nest. The ants usually react to the disturbance by increased activity and in the process fall into the open vial of alcohol. Greenslade (1973) described "digging-in effects" and showed that the highest catches of ants occurred immediately after pitfall traps were established. Brood may be collected in this manner as workers carrying immatures to safety frequently fall into the collecting vial.

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If care is taken in placing the vial into the mound, a relatively clean sample is usually obtained. This is a sharp contrast to the cleaning necessary to remove unwanted debris if the ants are collected by aspirator.

This method has apparently been overlooked by myrmecologists and was not mentioned in references for methods of ant study (Donisthorpe 1927; Gregg 1963; Greenslade 1973; Melander 1902; Wheeler 1910, 1932; Wheeler and Wheeler 1963). The Wheelers listed the following methods of collection from an ant colony in a mound of earth or thatch: 1) ants can be scooped up with a trowel and dumped onto a surface to be aspirated; 2) chloroform is poured into the mound and the motionless ants then collected; 3) a portion of the mound is placed into a cloth bag for later sorting; and 4) the ants may be aspirated directly from the mound. These methods require more time and effort than our suggested technique. It may be necessary to dig through a mound to obtain sexual forms, brood, and inquilines though this can be done selectively after a series of workers has been obtained.

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LITERATURE CITED

- Clark, W.H., and P.E. Blom. 1979. Use of a hand sprayer as a collecting technique. *Entomol. News*. 90: 247-248.
- Donisthorpe, H.J.K. 1927. British ants, their life-history and classification. George Routledge and Sons, London. 436 pp.
- Gregg, R.E. 1963. The ants of Colorado. Univ. CO Press, Boulder. 792 pp.
- Greenslade, P.J.M. 1973. Sampling ants with pitfall traps: digging-in effects. *Insectes Soc.* 20: 343-353.
- Melander, A.L. 1902. A new silphid beetle from a simple insect-trap. *Psyche* 9: 328-329.
- Wheeler, G.C., and J. Wheeler. 1963. The ants of North Dakota. Univ. ND Press, Grand Forks. 326 pp.
- Wheeler, W.M. 1910. Ants, their structure, development and behavior. Columbia Univ. Press, NY. 663 pp.
- _____ 1932. Some attractions of the field study of ants. *Sci. Mon.* 34: 397-402.