

## OHIO TERMITE (ISOPTERA) SURVEY: METHODOLOGY and PEST MANAGEMENT INDUSTRY INVOLVEMENT

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**Abstract** An ongoing survey of termites in Ohio was initiated during spring 2001. The pest-management industry contributed substantially to termite-collecting efforts, which were coordinated by the Entomology Department, Ohio State University. This survey effort, including materials and procedures, is detailed herein. During 2001, 22 pest-management companies cooperated to collect specimens from 21 counties in Ohio, 3 counties in Kentucky, and 1 county in West Virginia. A total of approximately 400 termite samples were obtained from 39 Ohio counties. *Reticulitermes* was the prevalent genus found throughout the state. An infestation of the western drywood termite, *Incisitermes minor*, was recorded in Hamilton County.

**Key Words** Subterranean termites Rhinotermitidae Kalotermitidae Midwestern United States *Reticulitermes* spp. *Incisitermes minor*

### INTRODUCTION

Subterranean termites (Isoptera: Rhinotermitidae) are the most economically important structural pests in the United States. They are important pests throughout Ohio and surrounding states, yet there has been no systematic study of the termite species that occur here or in other parts of the Midwest. In Ohio, two species are reported — *Reticulitermes flavipes* (Kollar) and *Reticulitermes virginicus* (Banks) (T.E. Snyder. 1954. Order Isoptera: The termites of the United States and Canada. N. Y. NPCA). However, overlap of these species with others is expected, given the proximity of Ohio to the Northeast and south-central United States. Furthermore, termites are readily transported in infested railroad ties, landscaping timbers, lumber, etc. A comprehensive survey should facilitate documentation of introduced termites, such as drywood termites (Kalotermitidae), dampwood termites (Termopsidae), and other rhinotermitids including the Formosan subterranean termite (*Coptotermes formosanus* Shiraki). In 2001, a cooperative survey with the pest-management industry was undertaken to document the termites found in Ohio. Collection efforts emphasized termites from urban areas, although some rural areas also were surveyed.

### MATERIALS and METHODS

Collection packets were prepared at OSU and distributed to potential participants. Each collection packet consisted of a labeled plastic bag containing an alcohol-filled vial. In order to minimize leakage of the alcohol and vial breakage, we selected a 20ml scintillation vial (Fisher Scientific, Pittsburgh, Pennsylvania) made of high-density polyethylene (HDPE) and fitted with a cap containing a cone-shaped plastic liner. Each vial was filled with approximately 10 ml of 100% ethyl alcohol to preserve termites and minimize DNA degradation (T. M. Jenkins, pers. comm.). The vial was placed inside a re-closeable plastic bag (7.6 x 10.2 cm minigrip, Consolidated Plastics Co. Inc., Twinsburg, Ohio), which had a pre-printed (BJC-5100 Bubble Jet Printer) white label (5.1 x 10.2 cm, Avery, Brea, California) affixed to each side. One label was formatted for the collector to provide pertinent sample data [date, county, address (w/zip code), specific

habitat (in mulch, basement, ceiling, etc.), and collector's name]; the other pre-printed label provided OSU's return address, phone numbers, and e-mail contact information.

Detailed collection instructions were also included with packets given to potential collectors. These procedures indicated that each vial should contain termites from only one site. Also, a minimum of one soldier or alate (swarmer) was needed, but the more the better. We indicated that samples would be cleaned up in the laboratory at OSU, so it would not be a problem if miscellaneous wood debris, soil, or other insects also were put in the vial with the termites. Upon sample receipt at OSU, ethyl alcohol was promptly replaced in order to enhance termite preservation.

Collection packets were distributed to interested parties who were identified through a number of venues, particularly the Ohio Pest Control Association (OPCA) and OSU's pesticide applicator training (PAT) program. Intentions for an Ohio termite survey initially were announced at the 2000 summer meeting of OPCA and mentioned in the OPCA newsletter. The pending survey also was announced at PAT conferences in Toledo, Cleveland, Dayton, and Columbus (November 2000 through January 2001). During spring 2001, a note detailing the termite survey was included in a PAT mailing to approximately 2,000 licensed applicators (general pest and termite categories). Interested parties were asked to contact us via phone, e-mail, or U.S. mail to obtain collection packets. In March 2001, packets were distributed at a monthly meeting of the Columbus Pest Control Association; an announcement of the survey was posted on the OPCA web site ([http://www.ohiopca.com/ohio\\_termite\\_survey.htm](http://www.ohiopca.com/ohio_termite_survey.htm)). A presentation at the 2001 OPCA summer meeting provided an update of survey efforts, acknowledgment of industry participants, and distribution of additional collection packets. Researchers at OSU subsequently focused on collecting termites in several regions of Ohio that lacked relevant data as well as continuing their collection efforts at study sites in the vicinity of Columbus.

## RESULTS

Approximately 400 termite samples from 39 Ohio counties (Figure 1) were collected during the 2001 survey. A total of 103 sample vials were returned from 22 pest-management companies. Pest-management industry collections encompassed 21 counties in Ohio, and also included mis-

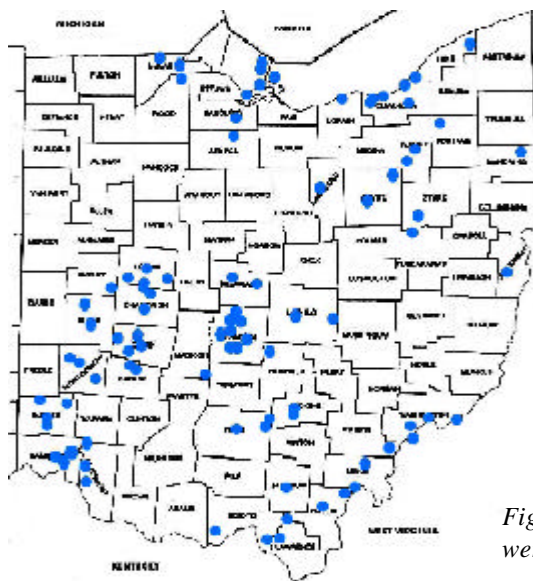


Figure 1. Sites in Ohio where termite samples were obtained during 2001.

cellaneous samples from Kentucky and West Virginia. Collections made by OSU researchers resulted in 295 samples from 25 Ohio counties. Clusters of termite activity in major metropolitan areas of Ohio (Figure 1), including Columbus (Franklin County), Cincinnati (Hamilton County), Dayton (Montgomery County), Toledo (Lucas County), and Cleveland (Cuyahoga County), typically reflect collections made in conjunction with termite-management efforts. Survey efforts typically have not yet extended into additional counties, so the lack of samples from a region of the state (Figure 1) does not necessarily indicate the absence of termites.

Survey results indicate that *Reticulitermes* is the prevalent genus found throughout Ohio. Species determination currently is in progress. An infestation of the western drywood termite, *Incisitermes minor* (Hagen), was recorded in Hamilton County. Microscopic examination of morphological features of soldiers and alates will be complemented by molecular analyses of termite subsamples. Dr. Tracie M. Jenkins at the Griffin campus of University of Georgia is heading this phase of the project.

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