

## **Pine Shoot Beetle (*Tomicus piniperda*) Trapping Method Using Lindgren Funnel Traps and Ultra-High Release (UHR) Alpha-pinene and Ethanol Lures**

**Purpose of Survey:** The Pine Shoot Beetle (PSB), *Tomicus piniperda*, was first detected in the United States on a Christmas tree farm near Cleveland, Ohio in July 1992. Immediately after the identity of the specimen was confirmed, the Animal and Plant Health Inspection Service (APHIS) began working with other plant protection agencies to determine the extent of the infestation. Several years of subsequent surveys demonstrated the presence of PSB in a number of states. Most detections were in Scotch pine stands with a few in Eastern white pine, Austrian pine, red pine, and jack pine. Detections occurred in Christmas tree farms, nurseries, and established ornamental plantings. PSB was first detected in Vermont in 1999 when specimens were collected in traps in Essex and Orleans Counties.

### **Survey Methods:**

#### Equipment

- Lindgren funnel traps (8- or 12-funnel size) with plastic lids and collection jars and screens for dry trapping
- Two UHR alpha-pinene lures per trap
- One UHR alcohol lure per trap
- Killing agent: One half insecticide strip or Vaportape per trap
- Disposable latex gloves for handling lures
- Lab cups and labels
- *Tomicus* Trap Field Sheets
- Paint brush, if desired, for removing beetles from collection jars

#### Note:

Lures should be stored in the freezer until use. Always store them in the pouches provided, and reseal opened storage pouch or fold and then clip shut. Place product in field within 8 months of shipping date. Alpha-pinene lure expectancy, once deployed, is 90 days (weather dependent). Upon deployment, there is no need to unscrew the vial that holds the lure. The product is released through the container wall. The alcohol pouch lasts about twice as long as the alpha-pinene lure.

#### Survey Sites

For most counties included in this detection survey, ten traps are deployed per county. Survey sites should contain hard pines such as red, Scotch, or jack pine. Many species of *Pinus* serve as host for any life stage of this pest, but Scotch pine is preferred. Because this survey is for detection only, stand size is not considered a limiting factor, and any size of stand is acceptable.

#### Trap Placement

Lindgren funnel traps attract target species by lures (olfactory attraction) and by imitating tree



boles (visual attraction). Ideally, traps are hung in elevated shaded positions, usually from a tree branch or suspended from a metal support that can be purchased with the trap or constructed of metal re-bar. Place traps so there is no vegetation obscuring trap; you may need to clip or remove foliage. In windy locations, it may be desirable to secure the trap by fastening a stiff wire to the bottom funnel of the trap and then to a nearby sapling. Hang the trap so the lid is about chest high (4 ft for 8-funnel trap but higher for 12-funnel traps) and the bottom of the collection jar is at least 12 inches off the ground. If starting out with snow cover, you may want to have the collection jar close to snow line initially.

### Lure Placement

The two UHR alpha-pinene lures are fastened in each trap as shown in the illustration. The UHR ethanol is suspended down the middle of the trap from the top and fastened in place with accompanying nylon cable tie. It is recommended that you use latex gloves when handling lures.

### Killing Agent

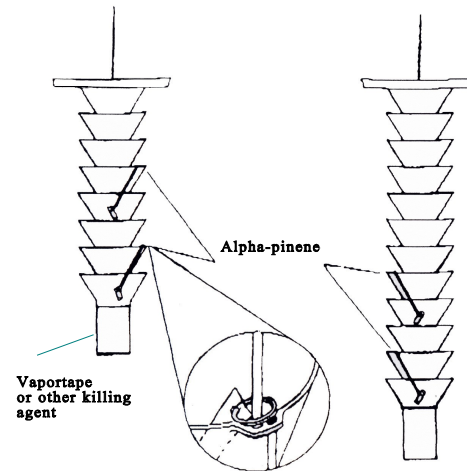
Vaportape or other killing agent is placed in the bottom of the collection container.

### Survey Timing

Traps should be deployed between 1- 15 March and checked every two weeks until the end of June.

### Specimen Collection

Contents of collection containers are emptied into labeled lab cups. Label information should include (1) assigned plot number (eg., C-1 through C-10 for traps in Chittenden County); (2) county and town data; (3) collection date; (4) name of collector. If specimens found in traps are wet, they can be transferred into alcohol-filled vials to halt any deterioration of trapped organisms. A paintbrush or forceps may be useful in transferring trap catch from the trap to the lab cup. To aid in transfer of specimens, some collectors make a funnel by cutting a plastic bottle in half, leaving the spout intact, so that the larger trap collection container can be readily emptied into a smaller container. Fill out a *Tomicus* Trap Field Sheet for each day the traps are checked whether or not any beetles are caught.



### Sample Processing

Store lab cups in the freezer and deliver, along with the *Tomicus* Trap Field Sheet, as soon as possible to the Forest Biology Lab in Waterbury for sorting. In initial screening, suspect *Tomicus piniperda* will be removed and any remaining Scolytids will be stored in separate vials.

### Identification

Suspect *Tomicus piniperda* specimens will be sent to APHIS for species confirmation.