

Detection of *Tetropium castaneum* L., an Exotic Longhorned Beetle in The Dalles, Oregon

Kathleen J.R. Johnson, Alan D. Mudge, James R. LaBonte, and Karl A. Puls

Oregon Dept. of Agriculture, 635 Capitol St. NE, Salem, OR97301-2532

Abstract

Introduction. Concerns about the unintentional introduction of exotic woodboring insects prompted surveys of high-risk sites in Oregon beginning in 1997. Ports, port areas, mills and businesses known to have received imported wood or wood products and urban forests have been monitored statewide. These surveys have produced new state and regional records for exotic woodborers (Mudge et al. 2001).

In 2000, two *Tetropium castaneum* L. (Coleoptera: Cerambycidae) were collected from a Lindgren funnel trap placed at a railroad tie processing mill in The Dalles, Oregon (Wasco County) and identified by Steve Lingafelter (U.S. National Museum). These specimens are the first known records of this species being trapped in the U.S. *Tetropium castaneum* is a Palearctic species known from most of Europe, northeastern Asia, China, and Japan. In Europe, this species attacks stressed, dying, or recently dead spruce, fir, larch and pine. *Tetropium fuscum* (F.), which attacks stressed or dying spruce in Europe and Asia, was recently found to be attacking large numbers of live, healthy red, white and Norway spruce in Halifax, Nova Scotia.

Survey Methods. Lindgren funnel traps and bait logs have been used in surveys for exotic woodboring insects in Oregon since 1997. A set of Lindgren traps (12 funnel) was placed at either end of the mill yard. Trap locations were selected based on proximity to likely sources of introduction, availability of suitable hosts, and lack of interference with mill operations. Each set consisted of three traps, one baited with 3-component exotic bark beetle lure (cis-verbenol, methyl butenol and ipsdienol), one with alpha-pinene and ethanol (AP-EtOH), and a third with ethanol only (PheroTech®). Trap collecting cups contained 50:50 propylene glycol:water. Traps were placed and sampled biweekly from mid-February until mid-October. Each *T. castaneum* was in the same AP-EtOH-baited trap on June 5 and July 5, 2000.

In 2001, Lindgren funnel traps baited with AP-EtOH were placed at the mill site (in mid-March) and in the surrounding two square miles (in mid-April) to determine if a population of *T. castaneum* was present in

this area. Due to lack of suitable hosts and good trap sites, only 15 additional traps outside the mill site were placed. Seventeen sets of sitka spruce bait logs (3 logs/set) were either paired with the additional traps or placed separately, also in mid-April. Traps were checked biweekly until October. Bait logs were removed in September and placed in emergence tubes until September 2002 for adult emergence.

Discussion. Detection of *T. castaneum* is limited by available survey tools. Visual surveys are unreliable, especially for low populations. Spruce bait logs have been used to detect *T. fuscum* in Halifax, Nova Scotia, but are labor intensive and require special rearing equipment and facilities. The lag time between oviposition and adult emergence further delays results. The effectiveness of bait logs and funnel traps as detection or delimitation tools for *T. castaneum* and other cerambycids is unknown.

Answers to several critical questions would help the ODA and USDA address the detection of *T. castaneum* and other invasive cerambycids more effectively:

- 1) *Where did the T. castaneum found in The Dalles come from?* Softwoods from Arkansas, Idaho, Missouri, Texas, Washington, British Columbia and Mexico have all been processed at the mill. In 1998, fumigated softwood railroad ties from Russia were received. Prior to fumigation, the ties apparently had live adult ambrosia beetles, as well as cucujid larvae under the bark of stickers. Apparently, no wood from Europe and Asia has been received within recent years.
- 2) *Are funnel traps effective survey tools?* Bark beetles studies indicate a very low recapture rate (0-10%) for funnel traps. Surveys with large numbers of funnel traps and sorting the resulting samples are expensive and time consuming. Trapping density guidelines and lures for specific species are lacking. Specific kairomones or pheromones will improve the effectiveness of funnel or similar traps. Despite these drawbacks, funnel (or similar) traps are one of the few detection tools available for woodborers.

3) *Were the two individuals trapped the only ones present?* Cerambycids can be captured in funnel traps. Seventy-seven species and 2,977 individuals have been collected in funnel traps in Oregon from 1997-2000. Given the low efficiency of funnel traps in capturing bark beetles, a substantial population may likely have been present for two individuals to be trapped. However, additional traps placed in 2001 caught no more *T. castaneum*. Does this mean *T. castaneum* is not now present? Bait log results will not be available until next summer.

4) *How can the efficacy of bait logs, traps and visual survey be improved?*

Literature Cited

Mudge, A.D.; LaBonte, J.R.; Johnson, K.J.R.; LaGasa, E. H. 2001. **Exotic Woodboring Coleoptera (Micromalthidae, Scolytidae) and Hymenoptera (Xiphydriidae) new to Oregon and Washington.** Proc. Entomol. Soc. Wash. 103(4): 1011-1019.