

A SURVEY OF THREE KEY SPECIES OF AMBROSIA BEETLES IN OREGON'S WILLAMETTE WALLEY NURSERY INDUSTRY

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ABSTRACT

In order to assess various means of monitoring activity of the flatheaded cedar borer, *Chrysobothris nixa*, several monitoring methods were evaluated. Lindgren funnel traps with three treatments: one ethanol lure, four ethanol lures; and alpha-pinene were placed at five nurseries during 2005 in several key nursery production counties in Western Oregon. Additionally one large yellow sticky trap was also placed in production rows. Traps and baits were supplied by PheroTech. The traps were checked weekly beginning June 1, 2005 through September 7, 2005. Collected borers were originally identified by Dr. James LaBonte at the Oregon Department of Agriculture and kept in a reference collection housed at NWREC. None of the trapping methods proved useful for monitoring *C. nixa*. However, the baited funnel trap data provided a third season of consistent and common appearance of the three ambrosia beetles found in 2003 and 2004: *Xyleborus dispar*, the European shot-hole borer; *Monarthrum scutellare*; and *Xyleborinus saxeseni*; as well as two other commonly trapped beetles: *Melalgus confertus*, the branch and twig borer; and *Scobicia declivis*, the lead cable borer.

INTRODUCTION:

There is very little tolerance to the presence of borer damage in nursery stock. Despite the low threshold for such infestations, there is limited research on borer damage in nursery production in the Pacific Northwest. In 2003 a preliminary investigation of borer activity in Willamette Valley nurseries indicated that shot hole borers, flatheaded borers (in particular, the Pacific flatheaded borer, *Chrysobothris mali* Horn and the flatheaded cedar borer, *Chrysobothris nixa*), and clearwing borers were causing economic damage in a variety of nursery sites. Trapping and beetle isolation was conducted from the 2003 through 2005 growing seasons to improve our understanding of the role of borers in Oregon nursery production systems. Monitoring methods for the flatheaded cedar borer were investigated during the 2005 season. In addition a variety of nurseries in the Willamette Valley were surveyed to assess the management and impact of borers in nursery production in Oregon.

OBJECTIVES:

Determine the seasonal activity of key borer species in Pacific Northwest nursery production areas.

METHODS AND MATERIALS:

Trapping:

In order to assess various means of monitoring flatheaded cedar borer activity, several monitoring methods were evaluated in 2005. The trapping concentrated on conifer production sites with a history of flatheaded cedar borer, *Chrysobothris nixa*. Lindgren funnel traps with three treatments: one ethanol

lure four ethanol lures; and alpha-pinene were placed at five nurseries in several key production counties Western Oregon. Additionally one 12" x 15" yellow sticky trap was also placed in production rows. Traps and baits were supplied by PheroTech. The traps were checked weekly beginning June 1, 2005 through September 7, 2005. Additionally arborvitae with suspected borer infestation were collected from a field grown nursery site in fall of 2004, transplanted into containers, and maintained in caged plots through the growing season. Cages were monitored visually and with sticky traps and plants dissected in the late summer to evaluate borer activity. Collected borers were originally identified by Dr. James LaBonte at the Oregon Department of Agriculture and kept in a reference collection housed at NWREC.

RESULTS:

There were three dominant species of beetles found in the funnel traps during 2003 and 2004. Those species were *Xyleborus dispar*, the European shot-hole borer; *Monarthrum scutellare*; and *Xyleborinus saxeseni*. *X. saxeseni* was the most abundant beetle found in traps at most locations. However, *X. dispar* was found to be the most common beetle isolated from damaged nursery stock. Monitoring methods for the flatheaded cedar borer were investigated during the 2005 season. None of the trapping methods proved useful for monitoring *C. nixa*. However, the baited funnel trap data provided a third season of consistent and common appearance of the three ambrosia beetles found in 2003 and 2004 as well as two other commonly trapped beetles: *Melalgus confertus*, the branch and twig borer; and *Scobicia declivis*, the lead cable borer (2005 Trap data in Charts 1 through 6). The continued dominance of the three ambrosia beetles was interesting information as the plot sites chosen were dominated by conifer production with natural forest, riparian, or production hardwood plantings nearby. Occurrence of these specific ambrosia beetles in a conifer nursery would be unexpected based on their plant host range. This highlights the potential influence of nearby vegetation given this type of monitoring method. *X. saxeseni* again dominated the trap counts. As trapping was timed for emergence of an adult buprestid, early season flight data for the shot hole borers is missing.

A monitoring method of the flatheaded cedar borer is still needed. Identifying infested field plants in the fall might have potential for management (PI selected 39 potentially infested plants, 22 were positive for larvae).

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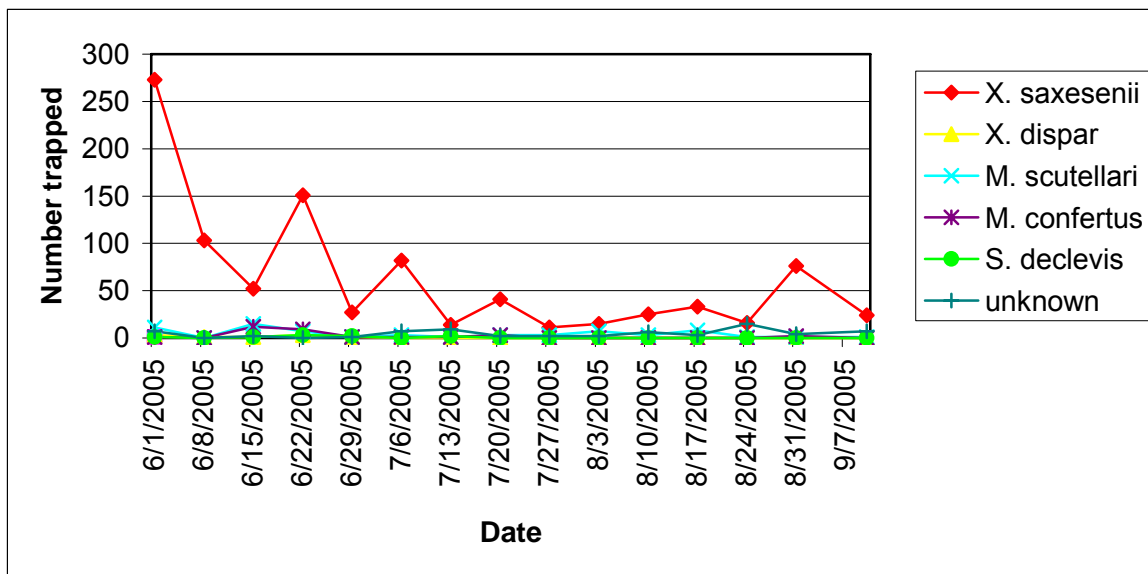


Chart 1. Average number of beetle species collected from five traps in 2005.

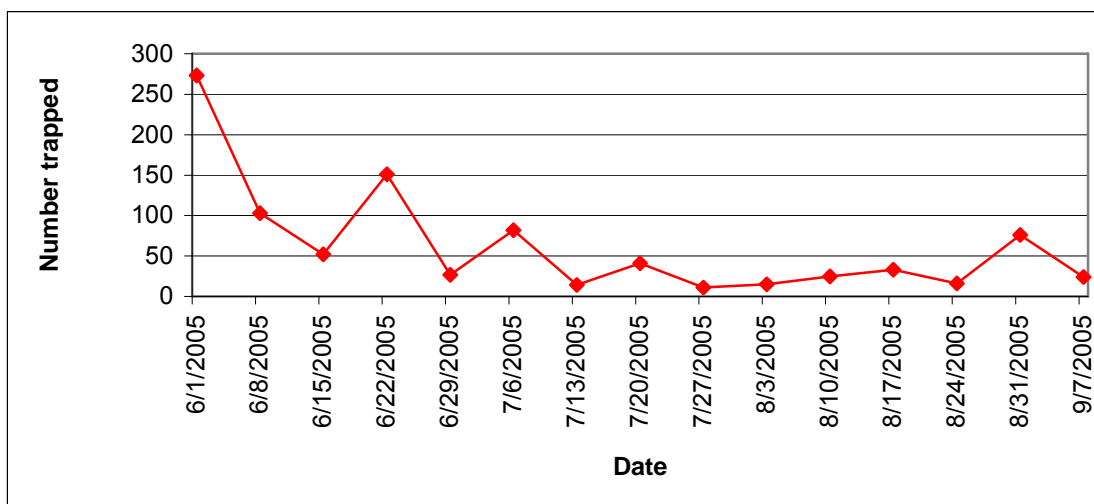


Chart 2. Average number of *X. saxesenii* collected from five traps in 2005.

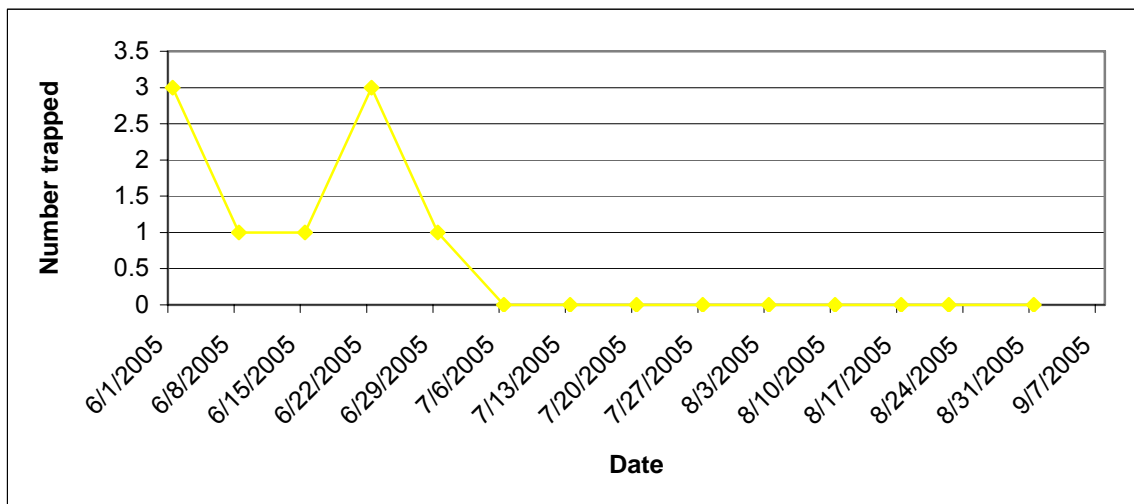


Chart 3. Average number of *X. dispar* collected from five traps in 2005.

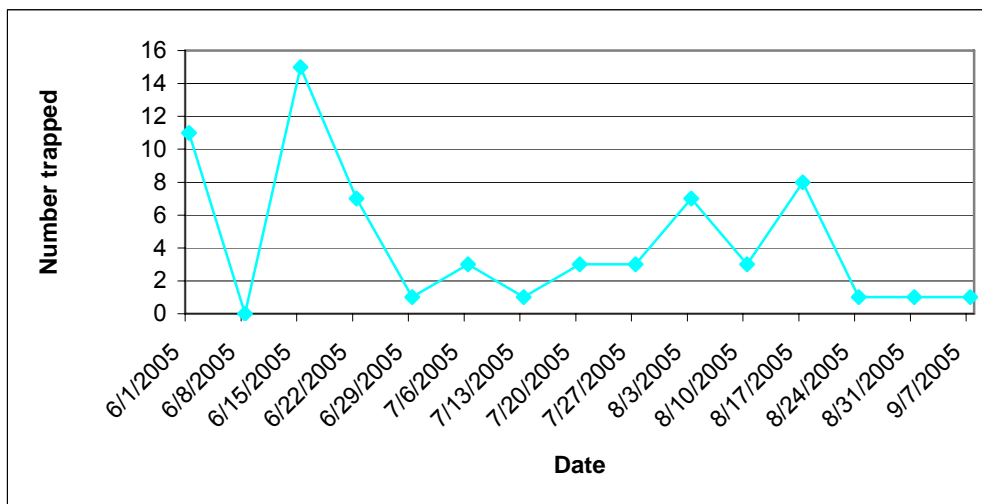


Chart 4. Average number of *M. scutellare* collected from five traps in 2005.

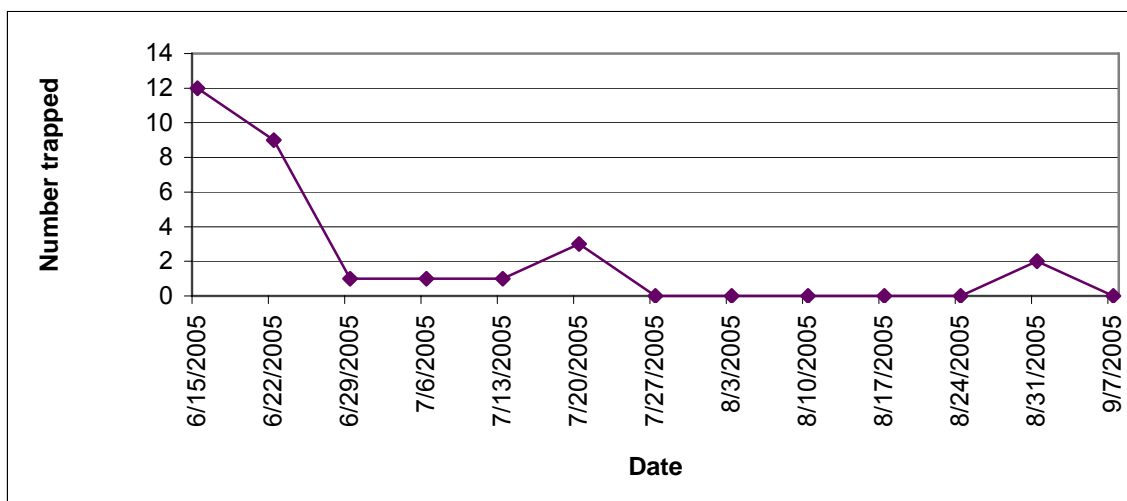


Chart 5. Average number of *M. confertus* collected from five traps in 2005.

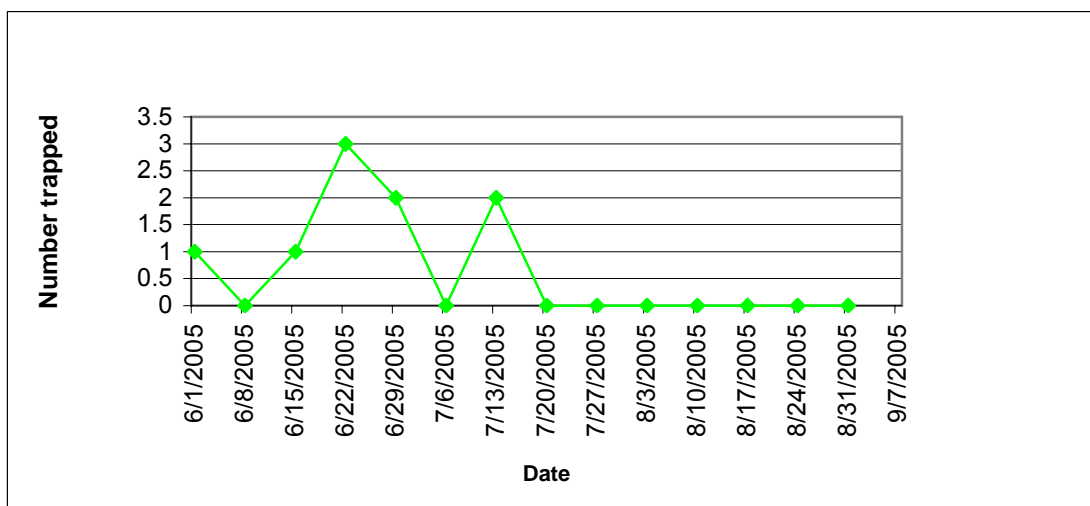


Chart 6. Average number of *S. declevis* collected from five traps in 2005.