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Report 98-3

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USING PHERMONE TRAPS TO PROTECT PINE STANDS FROM PINE ENGRAVER (*IPS PINI* [SAY]) INFESTATION

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Introduction

During November 1996, parts of northern Idaho, particularly on the Fernan Ranger District, Idaho Panhandle National Forests, experienced an unusual winter ice storm. Thick layers of ice covering trees coupled with high winds caused extensive tree breakage and windthrow. The remainder of the winter was abnormally wet with a high snow pack that covered the broken tree tops with snow until spring. This created perfect conditions for increases in many bark beetle species which infest fresh downed timber in which to develop brood. A beetle of particular concern in pines is the pine engraver, *Ips pini* (Say). The pine engraver normally has two generations each year in northern Idaho. Adults which have overwintered fly in early spring and colonize downed tree tops and large limbs caused by winter storms or logging slash. When large amounts of this material are available in the spring, pine engraver populations can increase rapidly. The new generation of beetles that emerge from downed trees later in mid-summer can infest and kill standing trees or tops of trees. Tree mortality usually occurs within one-half mile of a source of downed, infested trees.

Carlin Ice Salvage Sale

On the east side of Lake Coeur d'Alene along Carlin Creek, large amounts of trees, tops, and limbs were broken during the November ice storm. This occurred on both Forest Service and private land. On Forest Service land, approximately 48 mature trees per acre were on the ground. Of those, about 40 percent were ponderosa pine. Knowing the potential for bark beetle problems, Bob Rehnborg, small sales forester on the Fernan Ranger District, set up a sale to salvage the downed and broken trees (Carlin Ice Salvage Sale). Private landowners also planned to salvage trees on their land. The Carlin Ice Salvage Sale on Forest Service land was appealed. An area of particular concern, which had a higher percentage of downed pine and covered approximately 10 acres, was surrounded by private land. It became apparent that the downed trees on Forest Service land would not be salvaged before the second flight of pine engraver beetles. Doing nothing could have resulted in significant standing tree mortality in the area. Adjacent landowners who had judiciously cleaned up the downed timber on their land became very concerned.

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Bark Beetle Trapping

Funnel traps baited with bark beetle attractant pheromones have been used to a limited degree for monitoring beetle populations and, in certain situations, to concentrate beetle attacks in attempts to protect standing trees (Ross and Daterman 1997). Pheromone-baited traps have been used successfully in the Northern Region to protect trees from attack by Douglas-fir beetle (*Dendroctonus pseudotsugae* Hopkins) and spruce beetle (*Dendroctonus rufipennis* [Kirby]) (Ken Gibson, personal communication). Cursory attempts to keep pine engraver beetles out of slash by trapping in early spring were not successful (Ken Gibson, personal communication).

However, efforts to trap pine engraver beetles as they emerge from slash and downed material had not yet been attempted. The delay in logging the Carlin Ice Salvage Sale presented a situation in which we could test the use of traps in attracting and removing beetles emerging from downed trees with hopes of reducing subsequent tree mortality.

On May 13, 1997, 10 Lindgren funnel traps baited with pine engraver attractant pheromones, lanierone and ipsdienol, were placed throughout the 10-acre area at 1- to 2-chain intervals. At that time, pine engravers were just beginning to attack downed trees. Pheromone lures were replaced on June 25. Mr. Gayle Briggs, an adjacent landowner, agreed to collect trapped beetles on a near weekly basis. Only six beetles were caught on May 20 and numbers remained fairly low until July 19 (figure 1). The peak number of beetles caught in the 10 traps occurred on Aug. 7 when nearly 19,000 beetles were caught. The traps were removed on Sept. 23. In total 71,535 beetles were caught throughout the season. Bark beetle predators are also attracted to bark beetle attractant pheromones. However, only 324 pine engraver predators (family Cleridae and

Trogositidae) were caught during the trapping period.

Cool, wet weather in the spring caused initial beetle flight to occur about a month later than normal. Few beetles were caught during the initial spring flight, possibly because beetles are more attracted to downed trees than to the traps. However, large numbers of beetles were caught during the second flight, which occurred from about mid-July through late September.

Ground examinations conducted April 3, 1998 on Forest Service and adjacent private land revealed no fading trees from 1997 pine engraver attacks. Although we did not have an untreated "check" area set aside in which to compare results with the treated unit, in other areas near Lake Coeur d'Alene where much smaller amounts of downed pine trees, tops, and limbs occurred and where management did not occur, tops of trees and whole tree crowns have faded. These results suggest that pheromone traps may be effectively used to trap pine engraver beetles emerging from slash in small areas, thereby reducing standing tree mortality. Additional observations or studies are needed, however, before such treatments will be considered fully operational.

Acknowledgments

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Literature Cited

Ross, D.W., and G.E. Daterman. 1997. Using Pheromone-baited traps to control the amount and distribution of tree mortality during outbreaks of the Douglas-fir beetle. *Forest Science* 43 (1) : 65-70.

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Figure 1. Ips plini Trap Catches
Carlin Creek 1997

