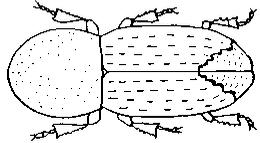


Insects After the Fire

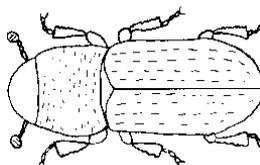
Many wood-boring beetles infest fire-killed timber. Signs of infestation include oval niches chewed into the bark by the females, excelsior-like shavings under the bark, and the crunch-crunch sound of feeding larvae. The pine sawyers, *Monochamus* spp., are of particular concern because adults feed on green twigs and may vector the pinewood nematode, *Bursaphelenchus xylophilus*.



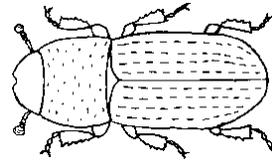
Ips engraver beetles, *Ips* spp., bore through the bark of dead and severely stressed pines to feed on and develop in the inner bark. Signs of infestation include fading foliage, shotholes in the bark, and boring dust. These beetles are 3- to 6-mm-long and are distinguished from other pine bark beetles by having their hind end depressed with stout spines around the margin.



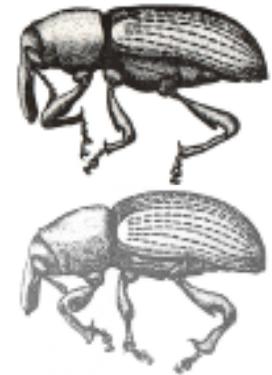
The black turpentine beetle, *Dendroctonus terebrans*, colonizes large roots and the lower stem of dead and dying pines. It is the largest bark beetle and has the hind end rounded and without spines. Infested trees are often scattered throughout a stand and difficult to detect. A careful examination of the base of the lower bole may locate the large pitch masses where they attack the tree.



The southern pine beetle, *Dendroctonus frontalis*, appears similar to but is much smaller than the black turpentine beetle. Signs of infestation are similar to Ips engraver beetles. Because outbreaks are generally associated with large areas of stressed loblolly pine, we expect little activity in the slash and longleaf stands damaged in 1998.



Seedling debarking weevils (*Hylobius pales* and *Pachylobius picivorus*) breed in the roots of dead pines. They cause problems following fires because the long-lived adults feed on the tender bark of nearby pines. Seedlings planted too soon following a fire are likely to be debarked and killed. Insecticides are available to treat and protect seedlings, but most managers prefer to postpone planting until all weevils have developed and dispersed.



For further information contact your local office of the Florida Division of Forestry or Cooperative Extension Service

Internet URLs for additional information:
<http://hammock.ifas.ufl.edu/txt/fairs/39573>
<http://www.ifas.ufl.edu/~eny3541/>

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Insects

and the

Wildfires of 1998



Risk of Additional Losses and Management Strategies for Recovery

Developed by the Southern Pine Beetle Working Group, a committee composed of state, federal, university, private and industrial forestry workers appointed by the Florida Department of Agriculture & Consumer Services, Division of Forestry, to educate and promote good forest stewardship.

Bob Crawford
Commissioner of Agriculture
Earl Peterson
Director of Forestry

Fires and Insects

The Florida wildfires of 1998 caused significant losses on commercial timberland and private property. The effects on forest tree resources will be twofold: the loss of trees directly due to fire and from insects attacking fire-damaged trees and apparently healthy trees. Currently, there is a high risk that several types of insects will successfully attack the vast amount of susceptible pines in residential areas and commercial forest lands.

Generally, the buildup of the pest insect populations will be related to the severity of damage, rate of recovery of tree health and the removal of the fire-damaged trees. The quicker the trees recover, the lower the risk of insect infestation. The timely removal of severely fire-damaged trees and trees already infested by insects is also important. Through the next several months, trees stressed yet again by factors such as drought, poor soil fertility, storms and other disturbances, will remain highly susceptible to insect attack.

The amount of rainfall through the late summer into early winter will be critical in assisting the recovery of fire-damaged trees. Low rainfall will delay the trees' regaining resistance against insect attack. Water-stressed trees are infestation-susceptible to many kinds of insects. Storm events such as tornadoes and hurricanes will further stress fire-damaged trees by weakening root systems and breaking branches.

Purpose of Brochure

In this brochure, we provide general recommendations to alert you to the insect risk factors. We also provide information on how to mitigate the likelihood of insect infestation and loss of trees. Specific strategies are provided for homeowners and timberland managers to evaluate the risks posed by several groups of insects that can infest trees, particularly those trees stressed by fire.

Additional reference material is available by contacting your local office of the Florida Division of Forestry or the Cooperative Extension Service of the University of Florida.

Recommendations

The best way to reduce undesirable insect attacks and associated tree mortality in the aftermath of wildfire is to remove all of the dead, dying, and severely damaged/stressed trees as soon as possible. Expedient removal of trees between now and next spring benefits both the residual forest and landowner by: 1) lowering local pest populations which are currently increasing in affected areas, 2) reducing the availability of highly susceptible hosts for future generations of pests, 3) allowing for possible salvage opportunities before wood becomes unmerchantable, and 4) facilitating successful forest regeneration.

Prioritize removals on the larger, more severely damaged areas of sawtimber first. Work towards removal of smaller patches of smaller trees. In forest settings, it is advisable to avoid harvesting of scattered individual trees in areas which were not seriously damaged by fire. Harvesting in these situations will inflict additional stress and/or injury on surrounding trees and likely aggravate pest problems. Similarly, avoid leaving isolated trees of hopeful survivors, as these will also be impacted by harvesting and serve as foci for future pest activity.

Frequently revisit all remaining areas of burned residual forest. Investigate any new or enlarging pockets of pine mortality, identify the type of bark beetles involved, and adjust management activities appropriate to the threat of further losses. Any infestations involving the southern pine beetle should be given high priority for control, given its potentially aggressive nature.

In addition, delay planting pine seedlings within or immediately adjacent to burned areas until the winter of 1999-2000 unless seedlings are properly treated at the time of planting with an approved insecticide labeled for use against regeneration weevils. Lastly, for the remainder of 1998 and 1999, avoid any type of forest disturbance (e.g. thinning, burning) in and within one-half mile of significant wildfire activity, due to the high risk of undesirable pest activity and associated tree losses that will accompany these perturbations.

Evaluation Guidelines

The variable nature of forests, weather, and fires combine to generate a wide variety of effects on and among individual trees and stands. The direct results range from harmless to tree mortality. There are also sublethal and delayed fire-effects which can increase the immediate and short-term risk of insect attack and future tree mortality.

Correct identification of dead, dying, and soon-to-be killed trees is not necessarily obvious when based solely on readily visible fire effects. Pines often recover from 100% crown scorch if the roots, bole and buds of the crown were uninjured. Entirely green and fully crowned pines will die if significant portions of their basal cambium and roots were damaged by fire. Significant destruction of the vascular tissue in any one of a tree's three main parts (i.e., roots, stem or crown) will be lethal, even if the other two components appear uninjured. The following criteria are guidelines for assessing fire effects on pine trees and should be used as an aid to rendering any management decisions.

Evidence of any one of the factors below is indicative of a dead, dying or soon-to-be killed pine tree

- Bark char is greater than 75% of stem height.
- No green needles present in the crown two months following the fire.
- Resin "weeping" or "bleeding" around the entire circumference of the tree.
- Any sign of ambrosia, wood-boring or bark beetles on or around the bole.

Evidence of any combination of two or more of the factors below is indicative of a dead, dying or soon-to-be killed pine tree

- Bark char is greater than 50% of stem height.
- Resin "weeping" or "bleeding" exceeds 25% of stem circumference.
- All organic matter absent at base of tree creating a sunken ring effect around tree.
- Exposure and charring of large lateral roots in 2 or more quadrants around the tree.