Bark Beetles

They're Back!!

Are Your Trees at Risk?

Nature is constantly changing the environment in which we live. The extensive wildfires of 1988 in Yellowstone National Park are an example of dramatic and rapid change. Fluctuations in insect populations and the regeneration of trees are more subtle changes that occur over several years, but they too can have dramatic results.

In the 1960's and 70's, a mountain pine beetle epidemic caused dramatic changes by killing mature lodgepole pine trees on thousands of acres of the Targhee National Forest (now part of the Caribou-Targhee National Forest). The landscape changed even further when a salvage-logging and reforestation program was implemented to recover economic value from the dead trees and establish new tree seedlings.

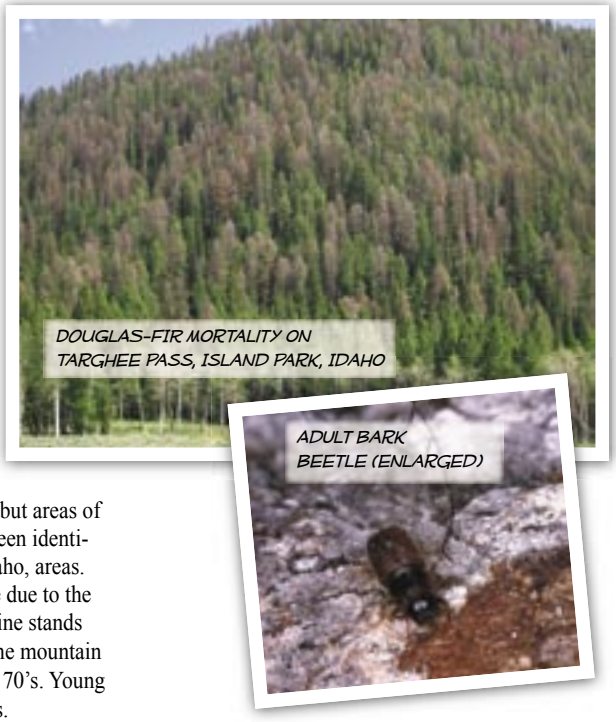
Although sometimes viewed by humans as catastrophic, forest insect epidemics are natural events. Native insects and the plants they use for food and reproduction have evolved together. Unlike some introduced pests, such as Dutch elm disease, native insects kill individuals, but do not threaten the existence of an entire plant species. Native insect epidemics are only a problem when they conflict with values that humans have for an area (i.e., recreation, scenic beauty, wildlife habitat, timber products or property values). A tree in the wilderness does not have the same human value as a tree in your backyard!

Insect populations have been increasing in forested areas of the western U.S., including southeastern Idaho. The primary reason for this increase is the combination of large areas with susceptible stand conditions (mature trees in dense stands) and tree stress caused by drought. High levels of forest insect activity will likely continue if current drought conditions do not improve.

The four insects currently at epidemic levels in the forested portions of southeastern Idaho are all native to the western U.S. These four species are: the Douglas-fir beetle, the mountain pine beetle, the spruce beetle and the western spruce budworm.

Presently, Douglas-fir beetle is causing the majority of tree mortality. Mortality is heaviest in the Island Park, Idaho, area (see map on page 5). The mountain pine beetle is generally confined to high elevation whitebark pine sites; but areas of heavy lodgepole pine mortality have been identified in the Driggs and Swan Valley, Idaho, areas. Low populations in other areas may be due to the fact that many susceptible lodgepole pine stands were harvested and regenerated after the mountain pine beetle epidemic in the 1960's and 70's. Young trees are not susceptible to bark beetles.

Spruce beetle populations are generally low, but foresters in the Driggs and Victor, Idaho, areas have observed some mortality. Western spruce budworm is a defoliator that normally only kills smaller trees, but under severe conditions can kill mature trees also. The heaviest defoliation is currently in the Centennial Mountains in Island Park, Idaho (see map on page 5 for location of budworm defoliation).



DOUGLAS-FIR MORTALITY ON TARGHEE PASS, ISLAND PARK, IDAHO

ADULT BARK BEETLE (ENLARGED)

The Caribou-Targhee National Forest, the Idaho Department of Lands, and the USDA Forest Health Protection in Boise, Idaho, cooperated in preparing this publication. Our objective is to educate the public regarding insect epidemics in southeastern Idaho. With this knowledge, you can make informed decisions concerning protection of your private property and provide meaningful input about proposed actions on public lands.

Representatives from the cooperating agencies are available to assist you with additional information. Please see page 8 for a list of contacts and additional information sources.

Does this affect you? Look inside

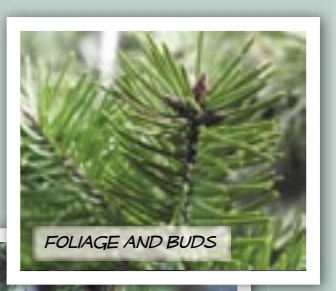
Are Your Trees at Risk to Bark Beetles? What Should You Do?

STEP 1: IDENTIFY YOUR TREES

The first step to knowing whether or not your tree is susceptible to insect attack is knowing what kind of trees you have. Listed below are the major evergreen species native to southeastern Idaho. A catch phrase is listed with each one to help you remember their foliage characteristics.

DOUGLAS-FIR

Needles are flat and about 1 to 1.5 inches long. Cones hang down and are 3 to 4 inches long. The cones have 3-pointed bracts sticking out from the scales. Buds are red and pointy. Catch phrase "flat friendly fir".


FOLIAGE AND BUDS


CONES

ENGELMANN SPRUCE

Needles are 1 inch long, 4-sided, and sharp. Cones hang down, are cigar shaped, 1 to 2.5 inches long (3.5 inches for non-native Colorado blue spruce) and light chestnut in color. Catch phrase "square, sharp spruce".


FOLIAGE WITH CONES


YOUNG CONE

SUBALPINE FIR

Needles are flat and about 1 to 1.5 inches long. Cones are 2 inches long, purplish/brown and upright on the stem. Buds are yellow-green and rounded. Catch phrase "flat friendly fir".


FOLIAGE


CONES

LODGEPOLE PINE

Needles are 1 to 3 inches long and come in groups of two (all pines have needles in groups of 2, 3 or 5). Cones can be open or closed, are about 1 inch long, and sit close to the branch. Catch phrase "pines come in packets".


FOLIAGE WITH MALE CONES


CLOSED AND OPEN CONES

STEP 2: DETERMINE YOUR TREES SUSCEPTIBILITY

Urban Trees: Trees in urban settings, far from forested areas, are generally not at risk. Small-scale mortality in urban areas can occur if firewood infested with bark beetles is brought into the area and trees of a susceptible species are nearby.

Douglas-fir: Douglas-fir trees are susceptible to the Douglas-fir bark beetle. The most susceptible individuals are greater than 14 inches in diameter; more than 120 years old; growing in dense stands weakened by drought, root disease or damage (i.e. lightening, nearby building construction); or are located near existing beetle infected trees.

Lodgepole pine: All pines, native or introduced to the area, are susceptible to the mountain pine beetle. The most susceptible pine trees are older than 80 years; greater than 8 inches in diameter; weakened by drought, disease or damage; or located near existing beetle infected trees.

Subalpine fir: Subalpine fir trees are susceptible to the western balsam bark beetle and the fir engraver beetle, which are currently at low levels in southeastern Idaho.

Spruce: Engelmann spruce is the only spruce native to southeastern Idaho. Many people have planted nonnative spruce, such as Colorado blue spruce, on their property. Spruce trees are susceptible to the spruce bark beetle, which is currently at low levels except in portions of the Driggs and Victor, Idaho, areas. Spruce trees over 18 inches diameter are attacked first. Trees less than 12 inches in diameter are seldom attacked.

STEP 3:
DETERMINE IF YOUR TREES HAVE BEEN ATTACKED

DOUGLAS-FIR BEETLE

Trees that have been infested will generally remain green until the following spring, so you must look for "clues" other than dead foliage. ***These trees become next spring's infection source, so it is important to identify them.*** Fresh-down trees are highly susceptible and should also be examined.

The most reliable external sign that your tree has been attacked is the presence of boring dust (reddish-brown sawdust) in bark crevices or around the base of the tree from April to August. Boring dust is created when the insects bore through the bark of the tree. Multiple pitch streams about 20 feet up on the tree bole may also be an indicator. However, not all pitching means bark beetles are present. Removing a section of the bark may show tunnels creating by beetles in their reproduction process (see "bark beetle" on page 6). Unfortunately, sometimes the tunnels are made at heights on the tree that are beyond your reach.


BORING DUST

MOUNTAIN PINE BEETLE

Pine trees infested with mountain pine beetle become next year's infection source, so it is important to identify newly hit trees. Signs of beetle infestation are pitch tubes or small holes and boring dust. Most beetle-attacked trees will have pitch tubes scattered all over the bole of the tree. These popcorn-shaped masses of pitch and boring dust may be brown, pink, yellow or white. If the tree is extremely water stressed and cannot produce pitch, only small holes and boring dust are visible. Removing a section of the bark should show tunnels created by beetles in their reproduction process (see page 6).


PITCH TUBES

SPRUCE BEETLE

Spruce trees infested with spruce beetles become infection sources in two years. The beetle larvae are present for two summers, then they overwinter the second year as adults. Most of the adults emerge and bore into the bark at the base of the tree to over-winter the second year.

Signs of attack are boring dust (see photo under Douglas-fir beetle) in bark crevices or around the base of the tree from mid-May to July. Masses of pitch may accumulate around the insect boring holes. Also, look for pieces of bark around the base of the tree. Woodpeckers will often flake off pieces of this thin barked tree in order to feed on the beetles and their larvae. Removing a section of the bark should show tunnels created by beetles in their reproduction process (see page 6).


WOODPECKER ACTIVITY ON SPRUCE INFESTED WITH SPRUCE BEETLE

STEP 4: HOW TO TREAT TREES THAT HAVE BEEN ATTACKED

Once bark beetles have attacked a tree, there is nothing you can do to save it. There are no chemical insecticides registered or recommended for killing bark beetles under the bark of infested trees. While some trees do survive bark beetle attack, the vast majority are killed once infested.

To kill the beetles, cut down the infested trees and debark or burn all material greater than 6 inches in diameter. Burying trees is another option. Bucking and splitting infested trees for firewood may kill the beetles if done in the summer and if the wood is located where it can dry out quickly. However, if firewood is stacked or placed in the shade before it dries, the insects may still survive.

If infested trees or slash are not treated or removed, adult insects will emerge the following spring (second spring for spruce beetle) and attack standing trees nearby.

By the time trees have red-brown needles, the beetles have generally already left the tree. Once the needles have fallen off, you can be certain no bark beetles remain under the bark. Other beetles and larvae may be observed, but they are of little concern as they are beneficial wood decomposers – not tree killers. The tree may be cut down for firewood or left standing for wildlife habitat (see page 8). The tree should be removed however, if it has the potential to endanger persons or property.

See Step 5 for how to prevent infestation of trees that have not yet been attacked.

STEP 5: BARK BEETLE PREVENTION

There are several things you can do to protect your trees from bark beetles. Preventing attack is key because you cannot do anything to save a tree once it has been attacked.

1. Remove all trees that currently contain beetles as described in Step 4.
2. Always clean up any recently blown down trees or fresh slash over 6 inches in diameter. Beetles are attracted to and reproduce in large diameter slash material.
3. Thin out dense stands of trees, leaving the healthiest most vigorous ones (contact the State Forester, page 8, for details on proper thinning methods). Trees that have less competition for water, light and nutrients will be better able to fight off beetle attack.
4. Avoid tree damage such as knocking off bark, or compacting or excavating soil near the tree. Injured trees attract bark beetles.
5. Use insect chemical communicators (pheromones) to tell the beetles to go elsewhere.

   MCH is the pheromone used for Douglas-fir bark beetles. This easily applied chemical gives off a "No Vacancy" signal to the beetles, telling them trees in the treated area are already full (see more details on MCH- page 4). The pheromone would need to be applied annually until the epidemic subsides in your area.

   There are currently no pheromones registered for use in repelling mountain pine beetle or spruce beetle in southeastern Idaho.

6. Use chemical insecticides.

   Carbaryl can be sprayed on the bole of pine trees to prevent mountain pine beetle attack or on spruce trees to prevent spruce beetle attack. The spray must reach up to where the diameter of the bole is 5 inches or less. While only labeled for one year of protection, research has shown that it generally provides effective protection for two years (see more details on Carbaryl - page 4). Carbaryl would need to be applied every two years until the epidemic subsides in your area.

   There are currently no insecticides labeled for use with Douglas-fir beetle in southeastern Idaho. Registration of Carbaryl for use on Douglas-fir beetle is currently being pursued.

Chemical Treatments

MCH for Douglas-fir beetle: This insect chemical communicator (pheromone) comes in small bubble caps that are easily tacked up on trees. It is most effective when applied before the beetles begin to fly: April through June, depending on weather and site conditions. The MCH pheromone tells the bark beetles that that tree is already full and they need to look elsewhere for a tree to lay their eggs in. The cap slowly releases the pheromone and is generally good for one season. Application rates should be 30 to 40 caps per acre; a minimum of 16 caps on areas less than ½ acre. Highly valued individual trees can be treated with 2 to 4 bubble caps, depending on their size. The bubble caps are currently only available from PheroTech in British Columbia (phone: (800) 665-0076, e-mail: sales@pherotech.com). Cost is currently $1.87 per cap for orders of 100 or less, decreasing in price with higher volume orders. The company requires the landowner to consult with a forest health management specialist (in southeastern Idaho contact: Rich O'Quinn, Idaho Department of Lands (208) 525-7167).

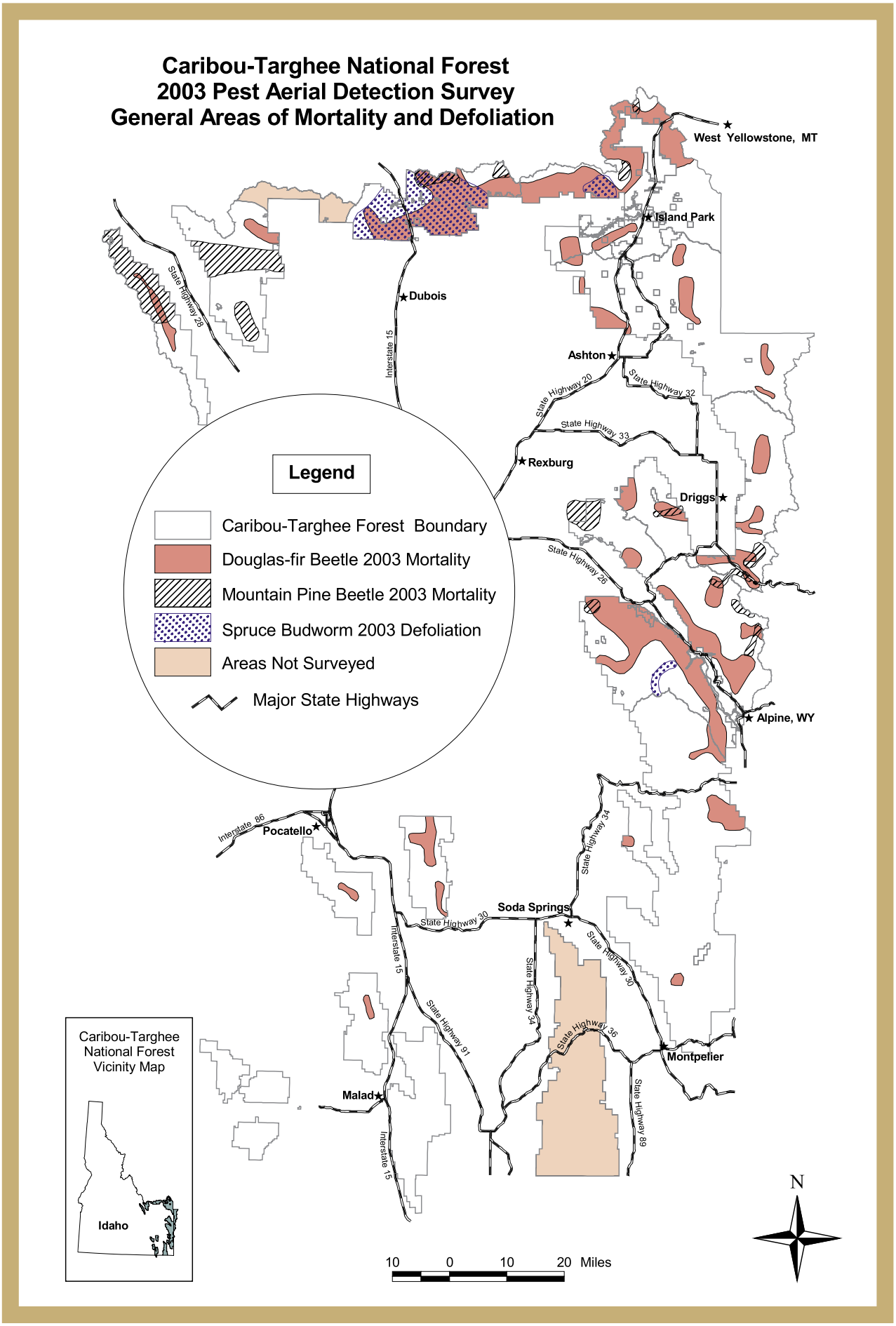
Carbaryl for mountain pine beetle and spruce beetle: Because of the cost and difficulty of application, this insecticide is generally used only for trees with high landscape value. The tree trunk must be treated up to the height where it is 5 inches in diameter. Treating the foliage does not prevent bark beetle attack. Treatments should occur prior to beetle flight in July. Homeowners may find it difficult to acquire spray equipment capable of reaching high enough in the tree. In these cases, a professional applicator should be hired. Professional applicators must have a professional license from the State of Idaho (see page 8 for information on how to find a licensed professional applicator). If applied correctly, Carbaryl is very effective in protecting trees that have not yet been attacked. While labeled as being effective for one year, research has shown that the effectiveness generally lasts for two years.

Other insecticides used for bark beetles: There are other insecticides, such as pyrethroids, that are registered for use against mountain pine beetle. However, the experts we consulted all recommended using Carbaryl.

Systemic treatments applied to the soil around the tree or inserted into holes drilled in the tree have been shown not to be effective in controlling bark beetles.

Pesticide Precautions

- Pesticides used improperly can be injurious to humans, animals, and plants. Follow the directions and heed all precautions on the labels.
- Store pesticides in original containers under lock and key – out of the reach of children and animals – and away from food and feed.
- Apply pesticides so that they do not endanger humans, livestock, crops, beneficial insects, fish, and wildlife. Do not apply pesticides when there is danger of drift, when honey bees or other pollinating insects are visiting plants, or in ways that may contaminate water or leave illegal residues.
- Avoid prolonged inhalation of pesticide sprays or dusts; wear protective clothing and equipment if specificd on the container.
- If your hands become contaminated with a pesticide, do not eat or drink until you have washed. In case a pesticide is swallowed or gets in the eyes, follow the first-aid treatment given on the label, and get prompt medical attention. If a pesticide is spilled on your skin or clothing, remove clothing immediately and wash skin thoroughly.
- Do not clean spray equipment or dump excess spray material near ponds, streams, or wells. Because it is difficult to remove all traces of herbicides from equipment, do not use the same equipment for insecticides or fungicides that you use for herbicides.
- Dispose of empty pesticide containers promptly. Have them buried at a sanitary land-fill dump, or crush and bury them in a level, isolated place.
- NOTE: Some States have restrictions on the use of certain pesticides. Check your State and local regulations. Also, because registrations of pesticides are under constant review by the Federal Environmental Protection Agency, consult your county agricultural agent or State extension specialist to be sure the intended use is still registered.


Caribou-Targhee National Forest
2003 Pest Aerial Detection Survey
General Areas of Mortality and Defoliation
West Yellowstone, MT
Island Park
Dubois
Ashton
Rexburg
Driggs
Alpine, WY
Pocatello
Soda Springs
Montpelier
Malad
State Highway 28
Interstate 15
State Highway 20
State Highway 32
State Highway 33
State Highway 26
State Highway 34
State Highway 30
State Highway 91
State Highway 36
State Highway 89
Interstate 86
Legend
Caribou-Targhee Forest Boundary
Douglas-fir Beetle 2003 Mortality
Mountain Pine Beetle 2003 Mortality
Spruce Budworm 2003 Defoliation
Areas Not Surveyed
Major State Highways
Caribou-Targhee National Forest Vicinity Map
Idaho
N
10 0 10 20 Miles

What is a bark beetle?

Bark beetles are small beetles that bore into trees and lay their eggs under the bark. The eggs hatch and the larvae feed on the inner bark girdling the tree. The shape of the tunnels created by the adult and its larvae as they feed are unique for each species of beetle.

Most bark beetles successfully breed in newly wind-thrown trees, or trees that are severely stressed or dying. These trees have little or no defense capabilities. In epidemic situations, even healthy trees can be killed by mass attacks.

FEEDING LARVAE GIRDLING TREE

DOUGLAS-FIR BEETLE

This beetle is a native to forests of western North America and only attacks Douglas-fir trees. Outbreaks typically occur in areas of wind-thrown trees or at sites damaged by fire or spruce budworm defoliation. The Douglas-fir beetle generally does not cause widespread mortality like the mountain pine beetle. Groups of trees ranging from a few to several hundred trees may be killed.

ADULT DOUGLAS-FIR BEETLE

The current epidemic in southeastern Idaho is related to drought stress and dense stand conditions and, unfortunately, is much more widespread than typical epidemics.

The Douglas-fir beetle generally attacks the largest trees, but they can attack trees with boles as small as six inches in diameter. Depending on weather and elevation, attacks in southeastern Idaho occur from late April through August, with peak flights usually from mid-June to early July.

While physiologically dead within a few weeks, trees typically do not show yellow-green ("fading") or red foliage until 10 months or more after being attacked. Because the trees in southeastern Idaho are so drought stressed, some trees are "fading" in color by the fall following the attack (4 to 5 months).

Adult beetles are brown to black in color and about 3/16-inch long. The larvae are whitish, legless grubs with brown heads found within tunnels under the bark.

DOUGLAS-FIR BEETLE GALLERIES

MOUNTAIN PINE BEETLE

This beetle is a native to forests of western North America and attacks all species of pine. Periodic outbreaks can result in the loss of millions of trees.

ADULT MOUNTAIN PINE BEETLE

During low population levels, attacks are primarily on trees under stress from injury, poor site conditions, overcrowding, root disease, or old age. As the beetle populations increase, attacks may involve most trees 8 inches or more in diameter in the outbreak area, irrespective of their apparent health.

Adults are brown to black in color and about 3/16 inch long. The larvae are yellowish white, legless grubs with dark heads found within tunnels under the bark.

As with Douglas-fir beetle, successfully mountain pine beetle-attacked trees normally do not show red, faded foliage until 8 to10 months after being attacked. Drought stress is causing some trees to start "fading" as early as 4 to 5 months after attack.

Mountain pine beetle adults leave the dead, yellow- to red-needled trees and attack green trees from July through September with the majority leaving in late July (later than Douglas-fir beetle).

MOUNTAIN PINE BEETLE GALLERIES

SPRUCE BEETLE

This beetle is a native to forests of western North America and attacks all species of spruce. Outbreaks typically begin in areas of wind-thrown trees, then move into standing trees. Where spruce is dominant over a large area, extensive mortality can occur. Native spruce (Engelmann) in southeastern Idaho is generally not dominant over large areas; it is most often located in smaller pockets near wet areas or mixed with other species on shaded slopes.

ADULT SPRUCE BEETLE

Adults are ¼ inch long, brown to black in color with reddish-brown or black wing covers. The larvae are yellowish white, legless grubs found within tunnels under the bark.

Unlike the other two bark beetles, the spruce beetle has a two-year life cycle. Infested trees usually do not "fade" (turn yellow-green or reddish) until one or sometimes two years after attack.

SPRUCE BEETLE GALLERY

WESTERN SPRUCE BUDWORM

Western spruce budworm is a small moth. In the caterpillar stage, it feeds on the needles of trees. Populations of this defoliating insect have risen to epidemic levels in portions of southeastern Idaho. Host trees for western spruce budworm are primarily Douglas-fir and true firs (subalpine fir is our only native true fir in this area). Although the insect name implies otherwise, spruce trees are generally not defoliated.

The weather naturally regulates this insect's population. During recent years, drought conditions have left trees severely water stressed and susceptible to insect infestations. Budworms grow more vigorously in stressed trees. If drought conditions continue, budworm populations can increase dramatically where there is an abundance of susceptible tree species. Forested stands, which are densely stocked with predominantly Douglas-fir or subalpine fir and are multi-storied, are at highest risk to infestation.

Tree damage is caused by the budworm caterpillars (larvae) feeding on needles in the early spring through summer. Larvae primarily consume current-year foliage, but can move to older needles in extreme cases. Infested trees will appear to have a red luster when observed from a distance. Upon closer inspection, branch tips will be bare or covered with nests of silk webbing and dead needles. Several years of continued defoliation will reduce tree growth and development, and sometimes cause death. In addition, budworm defoliation stresses the trees and makes them more susceptible to bark beetle attack.


FEEDING LARVAE


WESTERN SPRUCE BUDWORM ADULT AND PUPAL CASE


TREE CROWN DAMAGE FROM FEEDING LARVAE

Western spruce budworm populations can be substantially reduced with insecticides. If you feel spraying is needed, contact your local State Forester (see page 8) for treatment timing, formulations, dosages, and the most current information on registered insecticides. You may also contact a licensed, professional pesticide applicator. Promoting non-host species such as aspen or lodgepole pine will reduce overall stand susceptibility.

CHALLENGES OF A BARK BEETLE EPIDEMIC – WHAT ARE LAND MANAGERS DOING?

FEDERAL AND STATE LAND MANAGERS

Effective management of the bark beetles is a difficult challenge. Federal and State land managers know a great deal about what stand characteristics constitute high risk and susceptibility to beetles and where beetle populations are increasing. Unfortunately, having this knowledge does not mean that they can prevent insect epidemics.

The most effective way of dealing with bark beetle epidemics on large, forested areas is prevention through vegetation management. Treating vast areas such as National Forests with chemicals to reduce bark beetle populations is not practical.

Land management planning is a required process done for all Federal and State administered lands. Public involvement is a required – and encouraged – part of these planning efforts. During the planning process, some areas are excluded from vegetation management or are not assigned the objective of producing wood products (i.e. wilderness areas, roadless areas). Within these areas, managing the epidemic would not meet the land management planning direction developed through this public involvement process.

Where vegetation management activities are permitted, Federal and State land managers can have success in reducing insect-related tree mortality. Examples of management activities that can reduce susceptibility to insects include:

- Remove some of the trees in dense stands through thinning to improve tree vigor to make them less susceptible to bark beetles.
- Promote a diversity of tree species, which is good for overall ecosystem health and also reduces stand susceptibility to bark beetles.
- Promote a diversity of age classes by establishing stands of young trees.
- Remove small pockets of bark beetles when they first appear in an area. This can be an effective way of "slowing" their affect. However, this method is often not effective in eliminating all beetles in an area, because not all of the pockets can be located and removed.

Recent changes through the Healthy Forests Restoration Act of 2003 and the President's Healthy Forests Initiative, have given Federal land managers tools that will reduce delays and statutory barriers for projects which target reducing hazardous fuels and improving forest health. The Federal land managers in southeastern Idaho have already begun using these tools to expedite projects aimed at reducing hazardous fuels and insect related mortality.

PRIVATE LANDOWNERS

Each private landowner has different ideas and objectives for their property and trees. Each will have their own comfort level for when it is time to consider treatment. Some will choose to do nothing; others will adopt aggressive bark beetle suppression strategies.

A neighbor who chooses not to remove beetle-infested trees will increase the likelihood that susceptible trees on adjacent property will be attacked. Obviously, these situations can become complicated. Tree removal options are not equally available to all landowners. Economics of the treatment may be a factor, especially for large properties. Site conditions, such as steep slopes, may make tree removal difficult.

Fortunately, using MCH caps for Douglas-fir beetle or Carbaryl insecticide for mountain pine beetle and spruce beetle can be effective, preventative treatments for your property; irregardless of what your neighbor chooses to do. These treatments should not increase the likelihood that your neighbor's trees will be attacked. There is generally no "halo" effect where infestation levels are greater just outside a treated area.

Treatments will need to continue until the epidemic in your area subsides.

DEAD TREES ARE "HOME" TO MANY FOREST CREATURES

If enhancing wildlife habitat interests you, consider keeping dead trees on your forested lands. Standing dead trees in a forest are called "snags" and many species of wildlife depend on snags for their survival.

Owls, hawks, and eagles use snags to perch and to support their nests. Cavity nesters such as woodpeckers, mountain bluebirds, and chickadees nest in the snag cavities.

Chipmunks, squirrels, and other mammals use snags as homes. Bats use areas under loose bark for roosting. Fungi, mosses, and lichens commonly grow in the decaying wood of a snag.

Insects chew through the decaying wood, creating tunnels and chambers. Moths and ladybird beetles, and many species of reptiles and amphibians, hide under the bark of snags.

With so many animals and plants living on and in a dead tree, other animals frequently come there to feed. For example, many species of woodpeckers depend on snags to provide insect larvae for food.

If a tree on your private land does not have the potential to endanger persons or property, please consider leaving it standing for our animal friends!

WHERE TO GO FOR HELP OR ADDITIONAL INFORMATION

ORGANIZATIONS

- For on the ground technical assistance with insects and forest management on private lands, contact Rich O'Quinn, Idaho Department of Lands (208) 525-7167, roquinn@idl.state.is.us
- For information on professional pesticide applicators, contact State of Idaho Pesticide Applicator Licensing (208) 332-8600, www.agri.idaho.gov
- For general insect information, contact, United States Department of Agriculture, Forest Health Protection, (208) 373-4227
- For general National Forest information, contact Caribou-Targhee National Forest, (208) 524-7500
- For consultation on conservation issues, contact Resource Conservation and Development: High Country RC&D (Idaho Falls-Island Park-Salmon Challis), Steve Smart (208) 356-5213, ext 117; Three Rivers RC&D (Pocatello-Blackfoot), Paula Jones (208) 237-4628 ext 104.

PUBLICATIONS

The following publications can be obtained from USDA Forest Health Protection (208) 373-4227, www.fs.fed.us/r1-r4/spf or Idaho Dept. of Lands (208) 525-7167, roquinn@idl.state.is.us

1. Forest Insect & Disease Leaflets; available for a variety of forest pests. These leaflets are also available on the internet (see below).
2. *Using MCH to Protect Trees and Stands from Douglas-fir Beetle Infestation*, FHTET-2001-09, USDA Forest Service, Forest Technology Enterprise Team.
3. *A Field Guide to Disease and Insect Pests of Northern and Central Rocky Mountain Conifers*, Publication # R1-03-08.

WEBSITES

- Forest and Tree Health Publications and Fact Sheets, including Forest Insect and Disease Leaflets for a variety of forest pests: http://www.na.fs.fed.us/spfo/pubs/fth_pub_pages/fidlpage.htm or www.na.fs.fed.us/spfo/fth_pub.htm
- General Insect Information: www.bugwood.com
- Idaho Dept of Lands: www2.state.id.us/lands/
- Forest Health Protection: www.fs.fed.us/r1-r4/spf
- Phero Tech Inc. (producers of MCH): www.pherotech.com
- Photographs of insects and trees: www.forestryimages.com
- Carbaryl Insecticide: www.infoventures.com/e-hlth/pestcide/carbary.html
- Firewise™: www.firewise.org
- Fire Safe Council: www.firesafecouncil.org
- National Interagency Fire Center: www.nifc.gov

THE ROLE OF FIRE

Fire is a fundamental part of the natural ecosystem. The vegetation in southeastern Idaho has evolved with fire and, in many cases, relies on fire to sustain its health and its presence on the landscape.

Dead trees with red needles are more flammable than live trees. However, once the needles are gone, the standing dead trees generally do not pose an increased risk of wildfire. As the trees eventually fall to the ground, increasing downed fuel loads have the potential to increase fire severity.

Research has shown that the most critical factors for a home surviving a wildfire are the construction of the home and the vegetation near the home.

FIREWISE™ is a multi-agency, non-profit program devoted to helping people and their property survive a wildfire. The program encourages developing a "defensible space" around your home. Information on how to improve the survivability of your home from wildfire can be found on a variety of *FIREWISE*™ websites.

Some general recommendations are:

1. Roofs should be made of non-flammable material.
2. Enclose places where fire embers could accumulate such as soffets and underneath porches.
3. Thin out dense trees or shrubs.
4. Remove brush or dried grasses close to your home.
5. Landscape with fire resistant plants.
6. Do not place flammable material such as firewood or above ground propane tanks near your home.

Firefighter safety is a primary consideration in any fire incident. Creating a "defensible space" will increase the chance that firefighters can safely protect your home.

For more information regarding protecting your home from wildfire, visit the FIREWISE™ website (see box at left) or contact your local fire department.

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