



WILDFIRE, BUGS and YOU

2004

An Informational Brochure

Sawtooth National Forest

Why are the trees dying?

What you are witnessing on the Sawtooth National Recreation Area (SNRA) is a natural event. Forests are constantly changing – new trees germinate and grow, insects and disease take their toll and the older trees die. However, once in a while, due to a number of factors, there is a large scale epidemic of insects or diseases that almost completely and quickly change the forest.

There are two primary reasons why so many trees are dying. One, this area is experiencing the sixth year of a prolonged drought. This is weakening the trees, resulting in their inability to successfully fight off insect attacks and disease.

Secondly, there is one predominate species of trees found on the SNRA – lodgepole pine. Lodgepole pine is not a long-lived tree. It generally matures at 80 years. Just like people, as trees get older, they become weaker and more susceptible to attack by insects and disease. The average age of the trees on the SNRA is between 80 and 120 years.

Dying Trees: Part of Cycle

The large scale die off of lodgepole pine trees on the SNRA is not new.

Early 1900's Stanley Basin suffered an infestation on over 90,000 acres.

1926 Occurrence of another wide-spread infestation.

Early 1980's Thousands of trees were killed by the mountain pine beetle in the Alturas Lake Creek, Champion Creek, Pole Creek, Lost Creek, and Taylor Creek drainages.

1999-2003 Lodgepole pine trees killed by the mountain pine beetle rose from 8,143 to 862,000.

Beetles Cause Red Trees

You may have noticed the red trees. These red trees stand out against the beautiful green trees in the Sawtooth National Forest. These trees have been attacked by beetles. Lodgepole pine dominates the Sawtooth National Recreation Area and has been infested by the mountain pine beetle. The Ketchum Ranger District is experiencing two kinds of beetle outbreaks – the mountain pine beetle in lodgepole pines and the Douglas-fir bark beetle in Douglas-fir trees.

A tree killed by either of these beetles displays a sequence of color changes. Within 1 year of infestation, the tree will fade to a yellow-greenish color and then to an orange color. At about nine to ten months, the tree will become a reddish-brown color, indicating the tree was attacked and killed the previous summer.



Dying trees. Discolored foliage is a sign that these lodgepole pines have been attacked and killed by the mountain pine beetle. Photo courtesy of www.barkbeetles.com

Mountain Pine Beetle

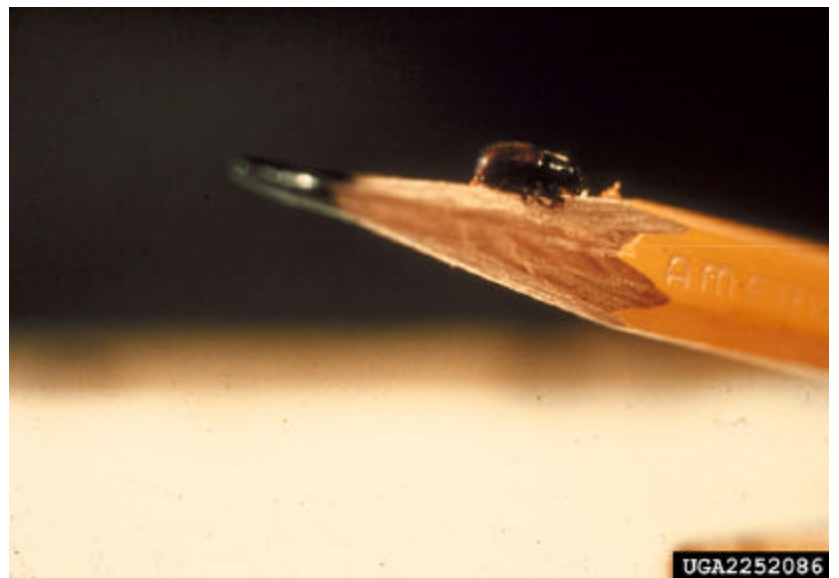
The presence of these beetles is natural for a lodgepole pine forest of this age, about 80 years and lodgepoles greater than 8 inches in diameter. However, the mountain pine beetle is a serious problem for the Sawtooth National Forest where these beetles are feasting on lodgepole and western white pines. The beetle population has progressively increased to its now epidemic levels. Outbreaks of these insects have killed millions of trees annually across the western United States and Canada. The current outbreak within the Sawtooth National Forest has grown from about 8,000 lodgepole pines killed by the beetle in 1999 to nearly 862,000 in 2003. The cumulative mortality over these five years exceeds 1.5 million trees. Mountain pine beetles generally have a one-year life cycle. Adult beetles attack trees in July and August. The adults lay eggs, the eggs hatch into larvae, and the larvae feed over winter. In the spring, the larvae transform into pupae and emerge as adults in July and August to continue the cycle.



Top view of adult MPB (actual size, 1/8 to 1/3 inch). Photo Courtesy of Colorado State University.

Douglas Fir Bark Beetle

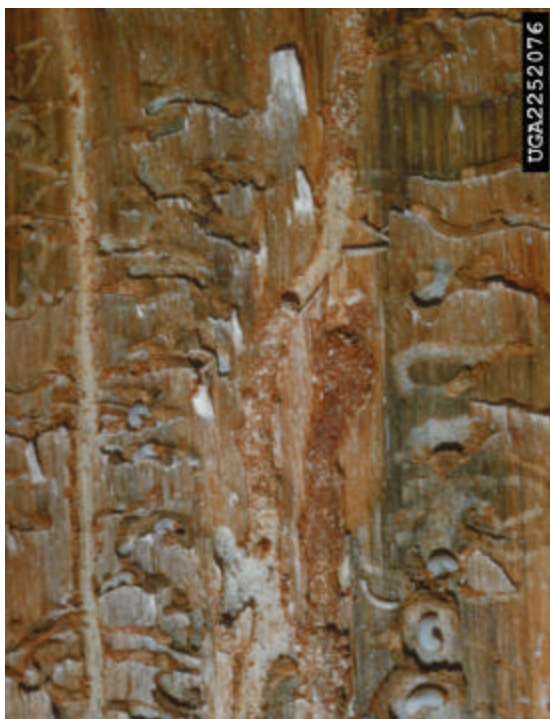
The Douglas-fir beetle is closely related to the mountain pine beetle but feeds in Douglas-fir trees. It too is at epidemic levels throughout much of the western United States, including the Sawtooth National Forest. This beetle attacks diseased, fire-damaged, downed, injured trees or drought-stressed Douglas-fir trees. Due to the increase of the beetle population and the current six year drought, many trees are being infested. Outbreaks are caused by periods of droughts, fire damage, blowdown, or winter breakage. The Douglas-fir beetle has a lifespan of one year and adult beetles grow to about the size of a match head. The beetle adults attack trees in mid- to late-spring and lay eggs. The eggs hatch into larvae and most will develop into adults prior to wintering in the trees. The new adults emerge in the spring and attack new Douglas-fir trees to complete its life cycle.



Douglas Fir Bark Beetle.

Photo by: Jerald E. Dewey, USDA Forest Service.

How Beetles Attack a Tree



Mountain pine beetle larvae create galleries by eating the phloem of a lodgepole pine tree. Photo by: Scott Tunnock, USDA Forest Service.

Some of the first indicators of a beetle attack are orange boring dust in the dark crevices and around the base of the tree and “pitch tubes”, a popcorn-shaped mass of resin on the trunk of the tree.

The beetles bore into the wood creating galleries (tunnels) just beneath the outer bark of the tree bole. Eggs are laid in these galleries. When the eggs hatch, the larvae, on their way out consume the inner bark called phloem.

The feeding by the beetle larvae on the phloem leads to the tree’s death by cutting off the channels

connecting the needles and the roots. By mid-summer, the newly matured adult beetles chew exit holes through the outer bark and emerge from the infested tree, then fly to neighboring live trees and make new attacks.



Orange dust indicates mountain pine beetles have infested this tree. Photo by Boise National Forest, Forest Health Protection.

Slugging the Bug

Through forest management, appropriate actions can and are being taken by the Sawtooth National Forest to protect high value trees and to prevent excessive damage. Once an outbreak starts, it cannot be “controlled.” However, individual trees can be protected by insecticides and, to a lesser degree, by anti-aggregant pheromones that act to “repel” bark beetles.

Preventing large-scale bark beetle outbreaks is much more effective than are attempts to suppress them. Prevention is best achieved through management activities such as thinning, harvesting, or patch cutting live trees to reduce the forest density, improve residual tree vigor and favor non-host tree species. The quick removal of beetle-infested trees can help prevent additional attacks in small areas. These actions can also reduce the risk of wildfire by reducing the amount of hazardous fuels such as dead trees. Patch cutting creates a mosaic of different tree ages, sizes and in some cases, species. Such a mosaic can create a minimum area susceptible to bark beetles as well as creating fuel breaks for wildfires. These are preventative measures to localize and prevent damage by outbreaks. Once a tree is infested by beetles, it cannot be saved.

Why Stop the Bugs?

If fire, disease and insects are all natural and critical elements of a forest’s ecosystem, why should land managers intervene to stop the beetles? First, they cannot be stopped; damage by outbreaks can be minimized in some areas. Second, people who live and recreate in and near the forest, value the forest for its scenic beauty and are concerned about an increased risk of wildfire.

Mother Nature’s Balancing Act: Fire, Disease, Insects and Regrowth

Fire, disease and insects are all part of nature’s way of keeping the ecosystem in balance. Since the forest fires of 1910, fire has been routinely suppressed in the nation’s forests. We now know that fire was nature’s way of cleaning house, naturally clearing the forest floor of brush and limbs and maintaining a healthy number of trees. Without fire, our forests have become overcrowded and susceptible to insects, disease, and wildfire. Insects and disease occur in every forest. In healthy, growing forests, only a few trees already weakened or dying are impacted. Trees in overcrowded forests are stressed and susceptible to insects and disease. After the trees die and the epidemic has run its course, residual trees will continue to grow, new trees will sprout and regenerate in sunlit openings, and wildfire may or may not alter the timing, sequence and overall direction of these events.



Typical dense stand with absence of understory. Photo by Dave Powell, USDA Forest Service.

Fire Danger Increases

Dying trees may increase fuel loads and the risk of fire. The fuel accumulation in lodgepole pine stands varies, resulting in variable fire severity. Changes in fuel loading over time are affected by decomposition of material killed but not consumed by the previous fire, the fall and decay of snags, stand development, and the effects of insects and diseases. Insect infestations and disease set the stage for mixed-severity or stand-replacing fires, where an entire stand of trees burns.

In lodgepole pines, fire behaves in three ways:

- (1) Ground or surface fire moving from log to log in the understory occasionally torching out individual trees.
- (2) Crown fire moving from tree top to tree top. Crown fires spread rapidly during windy conditions and cannot be fought.
- (3) Both.

The lodgepole pines in the SNRA are a climax species with very little understory. The SNRA lodgepole pines are susceptible to crown fires. Because of this, fire danger may be increased while red needles are on the tree. Once the needles fall, the risk of crown fires is decreased. Later, when the trees die and fall to the forest floor, risk of fire may increase again.



An example of a stand replacing fire. By Bill Humphries, Forest Resource Consultants, Inc.

WILDFIRE

Wildfires are a natural and unintended occurrence that can destroy forests, property, and lives. Wildfires occur every year, by forces of nature, like lightning, or by negligent human actions. Unfortunately, humans cause five out of ten wildfires. As more and more people move to forested regions and visit forested areas, more attention is needed to prevent devastating wildfires from occurring. Wildfires cannot be prevented completely; however, we have several tools to combat these disastrous fires and to increase our safety.

Fire 101

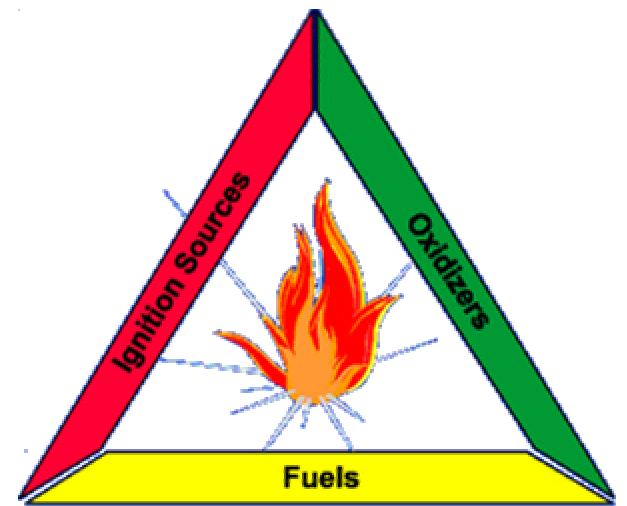
Three elements are required for a fire to start and to burn: fuel, oxygen, and heat. Take away one of the three and a fire cannot burn.

Fuels = trees, shrubs, grasses

Oxygen = air, wind

Ignitions sources = lightning, matches, concentrated sun

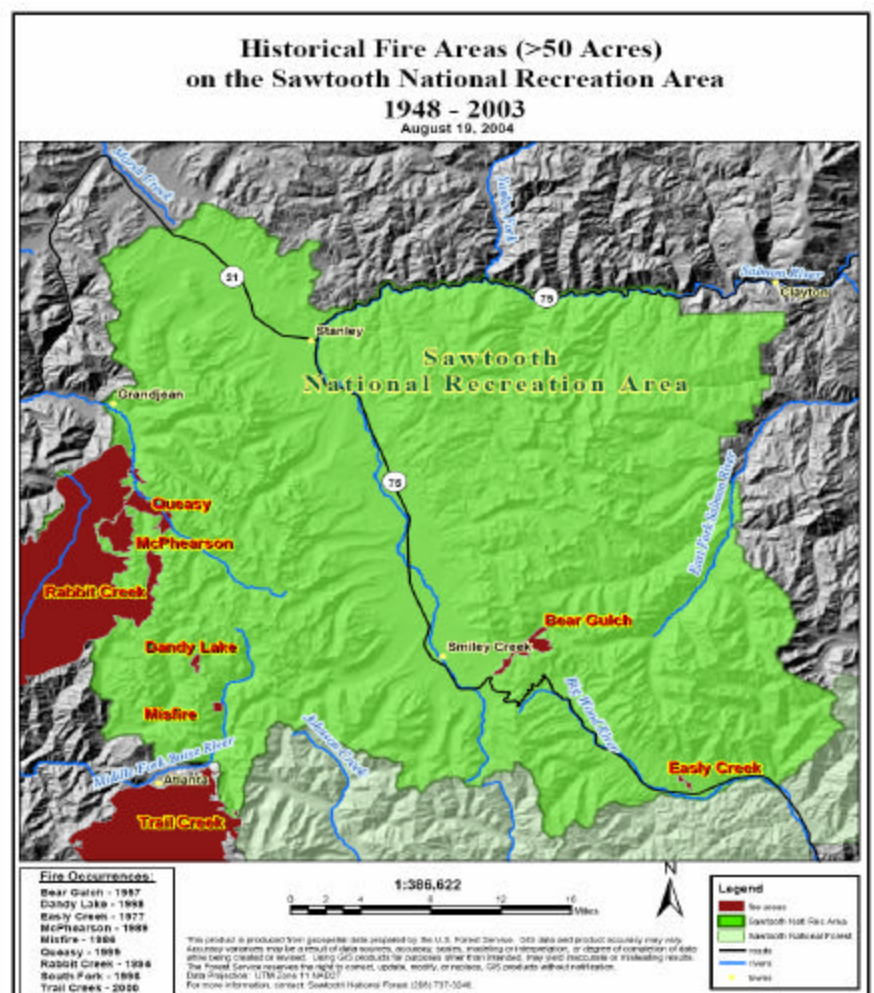
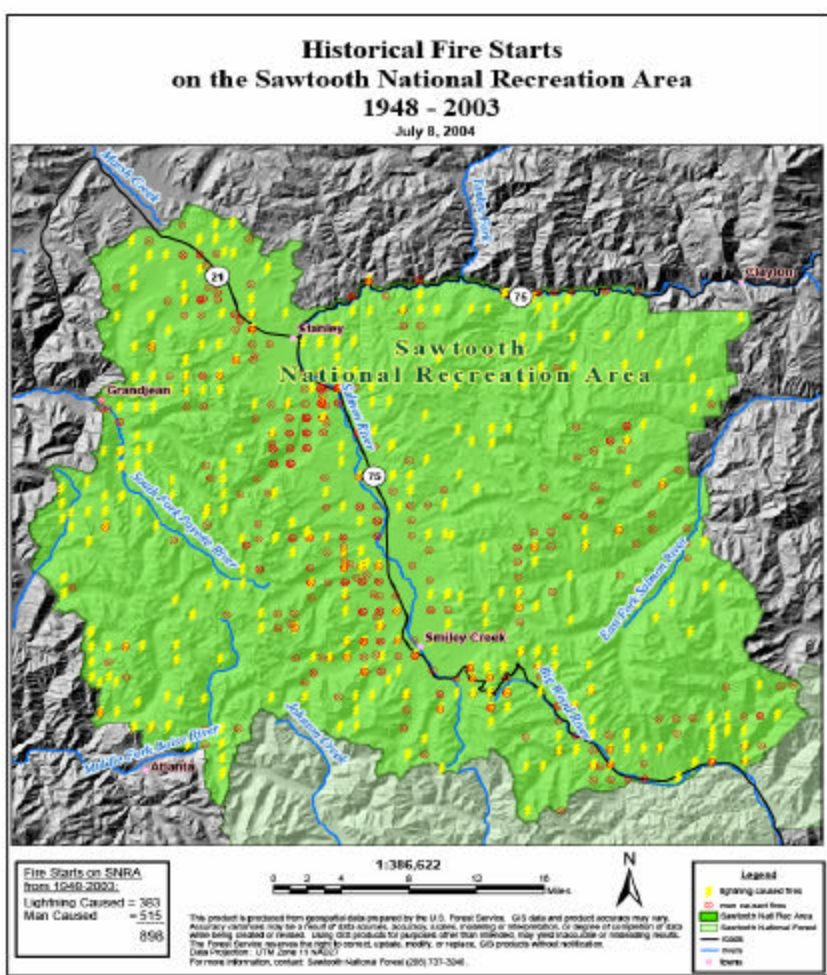
The temperature at which wood will catch fire is 572 degrees Fahrenheit.



Fire History in the SNRA

Since the Sawtooth National Forest began tracking wildfires in 1948, there have been many fires started by people and by lightning. Despite this, the SNRA has only experienced 7 forest fires larger than 50 acres.

It is very difficult to quantify fire risk, but a few general statements can be made. Simply stated, the SNRA does not have a history of large wildfires. However, this does not mean a major fire is due. This also does not mean a major fire will not occur.



To Report A Fire: **Dial 911**

Helping Nature and Protecting Communities

There are several methods by which we can help restore and maintain a healthy forest ecosystem while protecting communities near the National Forest. The goal of management actions is to change the intensity and severity of wildland fire by modifying the fuel load through mechanical treatments and prescribed fire.



Prescribed fires are pro-active, small fires intentionally lit to reduce the danger of uncontrollable wildfires. Prescribed fires clear out underbrush, slash, duff, and densely spaced saplings that have accrued due to the lack of natural fire. This preserves healthy trees and produces vegetation and landscapes that are essential to maintain a beneficial forest ecosystem. Other beneficial aspects of prescribed fires are controlling insects and disease, enhancing the appearance of recreation areas, and providing improved access. Prescribed fires in the SNRA are most needed on south- and west-facing slopes.

Mechanical thinning is a forest management tool to help protect and promote healthy growth of trees and regeneration of new growth for saplings. A selection process determines an area of forest to be treated. Damaged, downed, diseased, healthy and unhealthy trees are removed from the area. This creates distance between trees, allowing sunlight to promote growth, enhances tree vigor, and reduces the risk of insect infestation. Mechanical thinning generates healing in the forests ecosystem.

Forest diversity includes different species, sizes and ages of trees. Diversity is created by harvesting trees in an area and either replanting with a different species or allowing natural regeneration. Having patches of different aged trees means some areas may be less prone to insect and disease than others, so the entire forest will be less likely to be attacked and turn red at one time.

Fuel breaks may be created to contain fires. Fuel breaks are wide strips of land thinned of fuels placed strategically to reinforce defensible locations for fire suppression. Most fuel breaks are located along ridges and upper south and west slopes.



To minimize impact, a small mechanical tree shear is utilized to remove selected trees marked with blue on private lands near Stanley, Idaho. Photo by Jim Rineholt, Sawtooth National Forest.



Photo of Elk Creek Campground after thinning to remove dead lodgepole pine trees.

Managing Lodgepole Pines

Lodgepole pine trees are slender in width and grow tall in height. These pines located in the Sawtooth National Forest are thick and dense. Because the density and thickness of these pines, sun is unable to penetrate areas to provide the nourishment for growth. Due to their slender forms, these pines are not very stable. If thinning is performed on a stand of lodgepole pines, the remaining trees can tumble with light winds. Patch cutting is a more suitable means of managing the promotion of growth and safety for lodgepole pines. Patch cutting consists of cutting blocks from the forest to prevent wildfires, maintain healthy tree growth, and control insect infestation epidemics.

What is Being Done?

As a result of the year 2000 fire season, Congress approved legislation and funding for the National Fire Plan. This Plan set the stage for a number of activities involving federal, state and local agencies. Two key elements of the Plan center on the reduction of hazardous fuels and assistance to local communities. Financial assistance, in the form of grants, to local communities are currently enabling private property owners and communities in Sawtooth Valley and Stanley Basin to work with contractors and the Forest Service to reduce the risk to their homes and properties by reducing the amount of hazardous fuels within these communities as well as on adjacent public lands.

The Forest Service is treating public land areas immediately adjacent to private and high use public recreational sites. Timber sales, stewardship contracts, and service contracts are planned.

Treatments are aimed at reducing hazardous fuels (thinning) and creating fuel breaks (patch cutting), while preserving a high quality recreational experience. The treatments consist of both a prevention/suppression component and a stand health (restoration) component.

Prevention and suppression activities include chemical and mechanical treatments. Chemical treatments will occur at appropriate sites to protect valued individual trees and stands within public recreational sites. These chemical treatments will consist of spraying Carbaryl insecticide and/or placing verbenone pouches on individual high value trees to be retained in order to protect individuals and stands from beetle infestation.

Mechanical treatment operations will consist of the removal of select green-infested trees threatening to accelerate or intensify the infestation within associated developed sites. These trees produce the next brood flight which continues the infestation.

This year's fuels program will have a mix of prescribed fire and mechanical treatments. Due to burning of piles, there is an increased likelihood people will experience nuisance smoke.

With an increased emphasis to reduce wildland urban interface fire threats, managed fires and consequently smoke will be more noticeable for short durations. The Sawtooth National Forest follows Idaho Department of Environmental Quality requirements of smoke emissions



Actions to Date

- Tree spraying with insecticide (Carbaryl) to protect high value trees in developed recreation sites has been ongoing since 1988. To date: 16,385 trees have been sprayed in organization camps and campgrounds. Another 4,443 planned for fall '04.
- Over 8,000 green infested and dead hazard trees have been removed from developed sites for public safety and fuel reduction.
- Slash (tree limbs/tops) was hauled off to burn locations.
- Department of Transportation and the Forest Service worked cooperatively to remove approximately 300 very hazardous dead trees between lower Stanley and Sunbeam that were threatening the highway.

Red Tree Project—Phase I

Red Tree Fuels Reduction Environmental Assessment Decision (phase 1) signed/spring 2003 - ongoing

- Focuses on various fuel reduction treatments in nine urban interface areas on the SNRA. Currently ongoing.
- Treatment acres = 2,465, 3.3 million board feet, or approximately 825 truck loads of timber.
- Treatments = commercial timber sales and service contracts. Thinning, patch cutting, reduction of conifer encroachment.
- Fall '03 – cut and removed approximately 700 dead hazard trees along a mile of powerlines between the Stanley Ranger Station and the Fish Hatchery.

Idaho Department of Lands Forest Health Prevention/Restoration Grant

- \$450,000 awarded to seven subdivision groups within the SNRA.



Photo of thinning at the Chinook Bay Campground by Jim Rineholt, USDA Forest Service.

- 1,300 acres affected.
- Assists landowners to help them find contractors to remove dead and green infested trees, thin, spray and plant new trees to restore private lands.

Existing – ongoing SNRA Timber Program

- Personal use firewood program – removes approximately 2,000 cords per year.
- Stanley Lake - small patch cuts, fire breaks, aspen restoration, age class diversity.
- Personal use post and pole permits.

Fire Education

- Fire prevention teams stationed in Stanley summer '03. Educated homeowners on defensible space and made site visits to assess individual houses.
- Prepared “Wildland Fire Evacuation Plan” for homeowners.
- Red Tree information boards posted at entrances to main subdivisions.
- Red Tree website.

Information about the Sawtooth National Forest and proposed projects may be found at:
www.fs.fed.us/r4/sawtooth

Phase II –

The Forest Service will begin scoping another project this fall with the goal to implement more fuel treatments in the Spring of 2005 and establish a 5-10 year program for fuel treatments.

Protecting Homes and Cabins

- A clearing of at least 30-100 feet around your home is recommended.
- Space the trees you plant carefully.
- Clear around trees to provide distance between grasses and treetops.
- Use an ashtray to extinguish cigarettes/cigars.
- Gravel or concrete driveways and walkways can provide a “fuelbreak” for fires.
- Make sure your generator and/or hose is in good repair.
- Prune tree limbs so the lowest is between 6 - 10 feet from the ground.
- Have a well-maintained irrigation system.
- Keep you roof and yard clear of leaves.
- Mow regularly and dispose of debris promptly.
- Store firewood/combustible materials a minimum of 30’ away from your house.
- Cover vents with wire mesh no larger than ¼ inch.
- Use fire-resistant or non-combustible construction materials.
- Know fire safety equipment requirements. Check your local regulations regarding any vegetative clearances.
- Keep at least two means of escape.
- Driveway and access roads need to be marked clearly.
- Have a least two ground-level doors as safety exits.
- Plan/know your local evacuation plan!

What can you do to help?

Get involved with local planning efforts!!



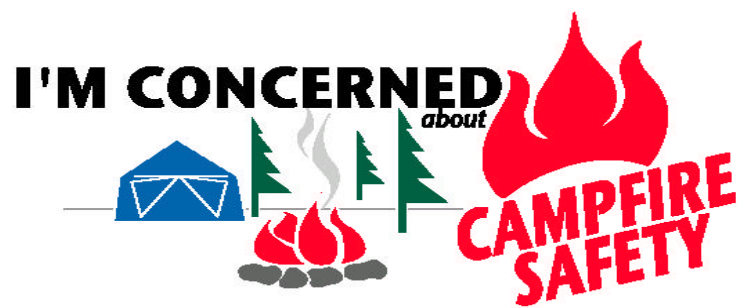
Photo of thinning efforts at Redfish Lake Lodge. By Jim Rineholt, SNRA Staff.

General Fire Safety

- If you are a smoker make sure there is a clearing 3-feet in all directions surrounding you. Extinguish your cigarette appropriately. Never leave your butts lying around or throw out of a vehicle.
- Vehicles can produce fires by sparks when driving or parking on dry grass and sagebrush. BE AWARE.
- If a wildfire occurs, leave the area immediately, call 911 and contact a Ranger to notify him/her of your safety.
- NEVER use fireworks on public land.
- Keep stoves, lanterns and heaters away from combustibles and never use inside a tent.
- Liquid flammable containers should be stored in a safe place.
- Extinguish campfires upon retiring to bed or leaving campsite.

Tips for a Safe Campfire

- ☺ Be aware if fire restrictions are in effect.
- ☺ Build fires away from trees and tents. Be aware of what's above you.
- ☺ Keep campfire small.
- ☺ If an existing fire ring is not available use a shovel to clear debris from a small area until soil is exposed. Position rocks around area to help with as a protective barrier. A fire pan is required on the Sawtooth National Recreation Area.
- ☺ Dead wood lying, small in size, around your campground may be used to fuel your campfire. Remember keep your campfire small.
- ☺ Keep fire extinguishing equipment handy – shovel, extinguisher, and water.
- ☺ **NEVER leave your campfire unattended!**



Putting out Campfires

When you are retiring for the night, completely saturate the fire with water until the fire is DEAD. The fire should be extinguished. Ashes and firewood must be cool to the touch. Just because there is no smoke, doesn't mean the fire is out!



For More Information

Sawtooth National Recreation Area (Headquarters Office)
HC 64, Box 8291
Ketchum, ID 83340
208-727-5000

Sawtooth National Recreation Area (Stanley Office)
HC 64, Box 9900
Stanley, ID 83278
208-774-3000

Supervisor's Office
2647 Kimberly Road East
Twin Falls, ID 83301
208-737-3200

Ketchum Ranger District
P.O. Box 2356
Ketchum, ID 83340
208-622-5371



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Forest Service
Intermountain Region
Sawtooth National Forest

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