

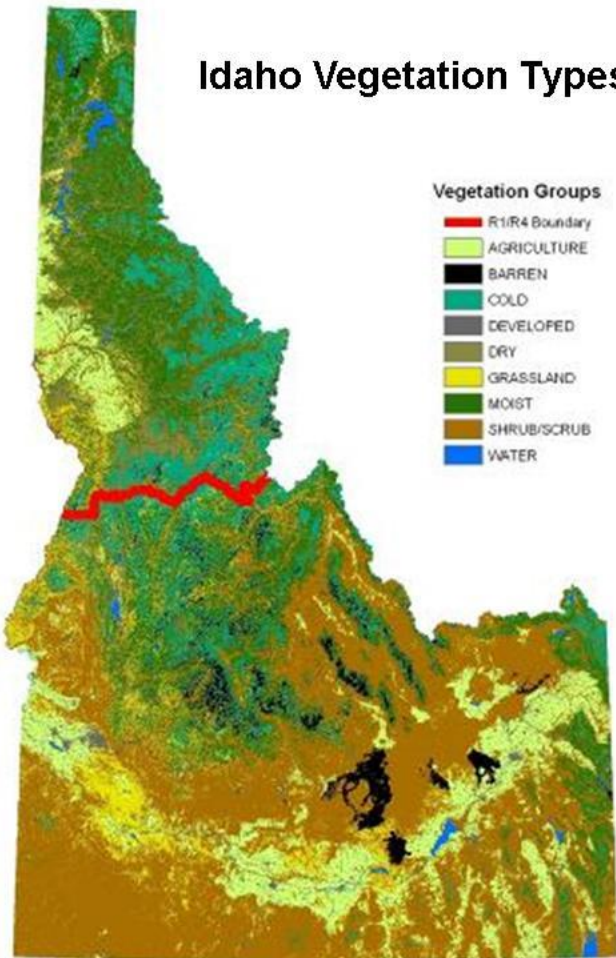
Forest Health Highlights



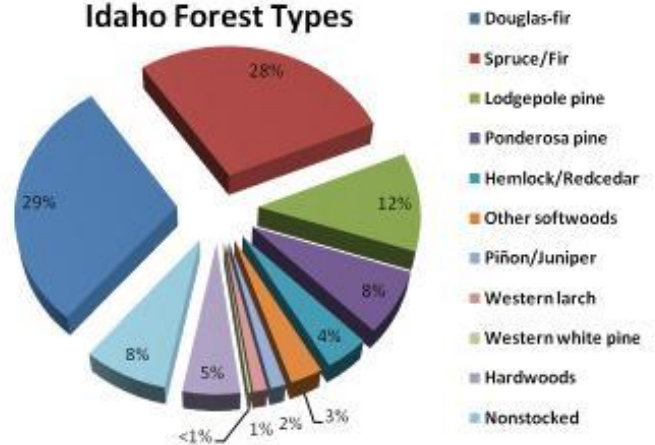
Idaho's Forest Resources

Idaho has over 21 million acres of forest land, from the Canadian border in the north, to the Great Basin in the south. Elevations range from less than 1,000 feet along the Clearwater River valley to over 12,000 feet in the Lost River Range of southern Idaho. The mixed conifer forests in the Panhandle area can be moist forest types that include tree species found on the Pacific Coast such as western hemlock, Pacific yew, and western redcedar. Southern Idaho forests are generally drier, and ponderosa pine and Douglas-fir are most common. Lodgepole pine, Engelmann spruce, whitebark pine and subalpine fir occur at higher elevations throughout the state.

Idaho Vegetation Types



Idaho Forest Types



A Diverse State

The Salmon River Valley generally divides the moister mixed conifer forests of the Panhandle region from the drier forests of southern Idaho. Much of southern Idaho is rangeland with scattered juniper-dominated woodlands typical of the Great Basin. The highest mountain peaks also occur in southern Idaho. Most of the commercial forest land is found in the north, and Douglas-fir, grand fir, western larch, lodgepole pine and western redcedar are valuable timber species.

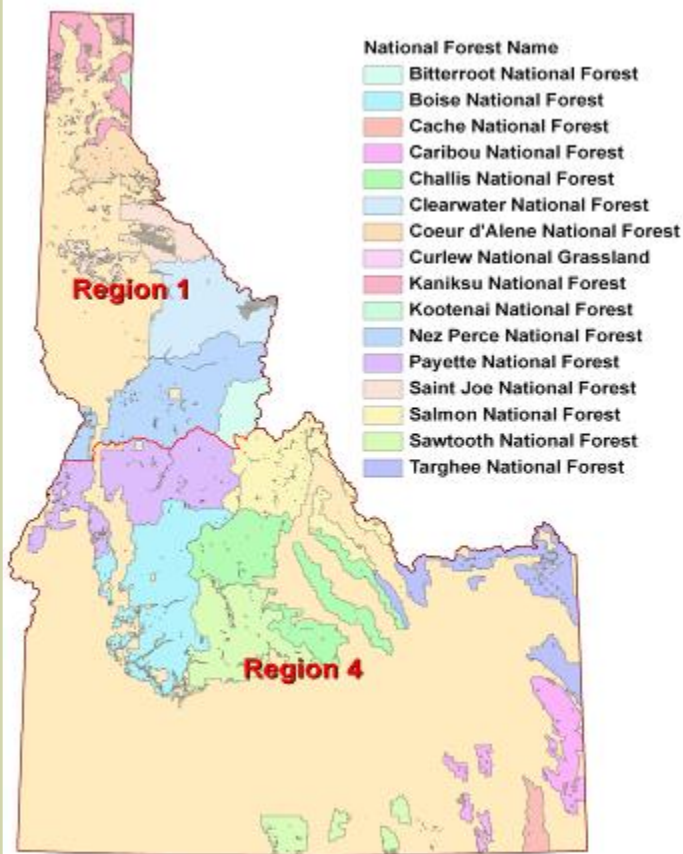
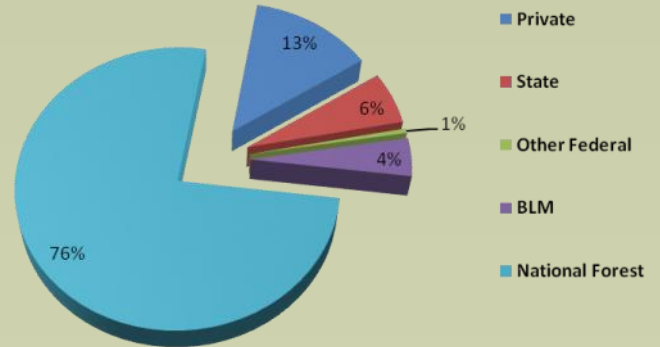
The Importance of Idaho's Forests

Idaho's forests are important for many reasons. Forests are home to wildlife, provide watersheds for drinking water, and protect streams that are habitat for many species of fish, including salmon, steelhead and bull trout. Forests are also important for recreation, and Idaho has over 4.5 million acres of wilderness. Idaho's forests are renewable, and are an important resource for the forest products industry. Maintaining healthy forests is crucial to protect all the things that they provide.

Forest Ownership in Idaho

The majority of forest land in Idaho is owned by the Federal government (> 16 million acres), and of this, most is administered by the U.S. Forest Service. The state of Idaho owns just under 1.3 million acres, and private landowners own an additional 2.8 million acres. The various owners often have different management objectives.

Forest Land Ownership



Idaho's National Forests

Idaho's National Forests lie within two administrative regions. The Northern Region (Region 1) is located north of the Salmon River and is comprised of the Idaho Panhandle, Nez Perce-Clearwater and Bitterroot National Forests. The Intermountain Region (Region 4) is in southern Idaho and includes the Boise, Payette, Sawtooth, Salmon-Challis, and Caribou-Targhee National Forests.

Idaho's Forest Industry

Idaho has a productive forest industry, with 2017 estimated revenues of wood and paper products totaling almost \$2.4 billion. An estimated 14,090 people were directly employed in the forest products industry in 2017. The total harvest was estimated at 1.15 billion board feet of timber. An estimated 65% of this total came from private lands. State land provided 20% and federal lands provided 15% of the total. Most of Idaho's commercial forestland and larger production facilities are located north of the Salmon River. Forest products from Idaho's forests are sold throughout the world. [Link to University of Idaho Policy Analysis Group.](#)



Aerial Detection Survey Results

Bark Beetles

In 2017, mountain pine beetle-caused mortality decreased to 28,000 acres, continuing a downward trend from a peak of 1.9 million acres in 2010. Most of the mortality was in lodgepole pine, but approximately 900 acres of other pine species (ponderosa, whitebark, and western white) were affected in 2017. The decrease is due to host depletion, though large diameter lodgepole pine stands over 80 years old will remain susceptible to attack. Douglas-fir beetle caused mortality on over 49,000 acres in 2017 compared to approximately 30,000 acres in 2016. Fir engraver mortality increased to over 55,000 acres. Western pine beetle mortality decreased to approximately 4,000 acres but pine engraver mortality was recorded at a level similar to last year. The recent droughty conditions contributed to bark beetle mortality.

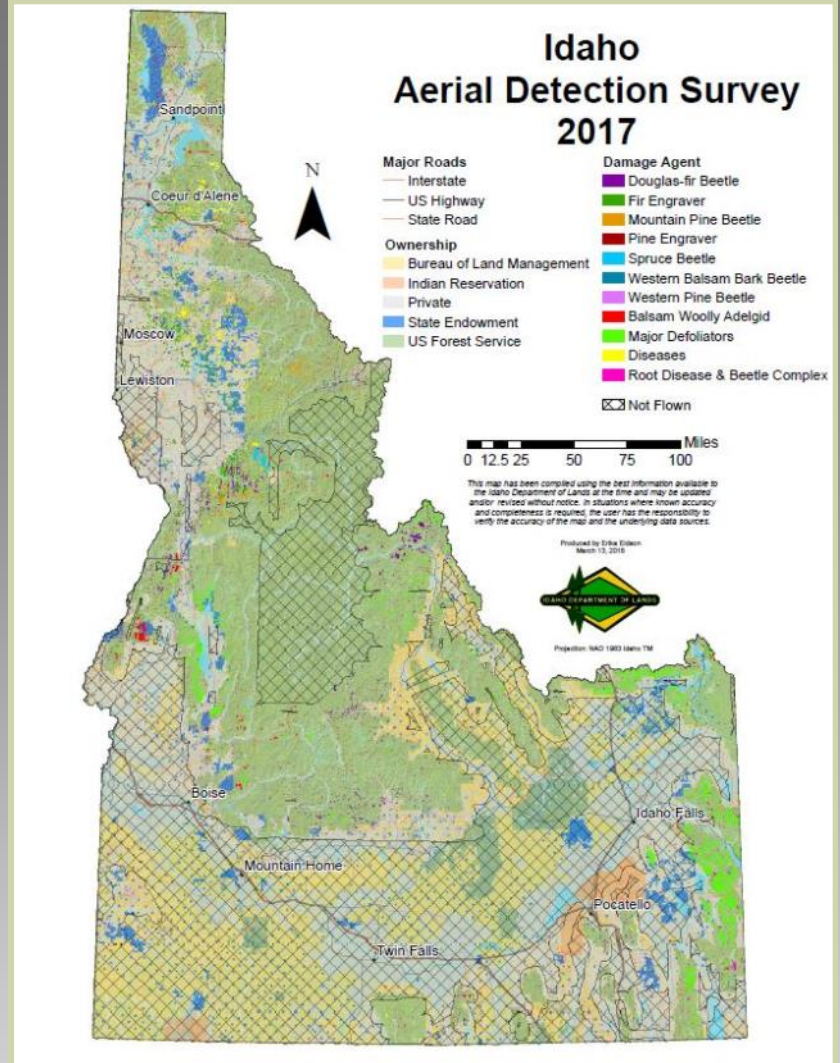
Defoliators

Western spruce budworm is a major defoliator of Douglas-fir and grand fir in Idaho, especially in the south. Approximately 260,000 acres were affected in 2017 compared to over 740,000 acres in 2016. Most of the defoliation is in southern Idaho. Douglas-fir tussock moth populations increased in southern Idaho in 2017, and caused limited defoliation occurred near Craters of the Moon National Monument and in the Sawtooth and Boise National Forests in 2017. Populations are expected to collapse in 2018. No defoliation is expected in northern Idaho in 2018.

Other Agents

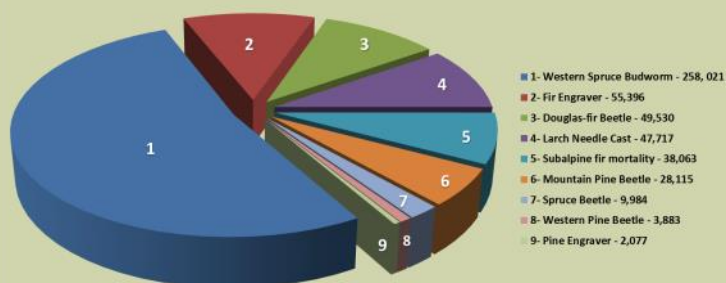
Approximately 47,000 acres were affected by larch needle cast in 2017, compared to 4,000 acres in 2016. Mortality of subalpine fir, attributed to balsam woolly adelgid, western balsam bark beetle and possible root disease more than decreased in 2017 to approximately 38,000 acres, down from 56,000 acres recorded in 2016.

Idaho Aerial Detection Survey 2017



[Link to larger map](#)

Principal Damage Agents (2017 Acres)



Principal Damaging Diseases/Declines

Damage Agent	Acres
Root Disease	Est. > 8,000,000
Dwarf Mistletoe	Est. > 2,500,000
Foliar Disease	> 47,000
Subalpine fir Mortality	> 38,000

Notes on Aerial Detection Surveys

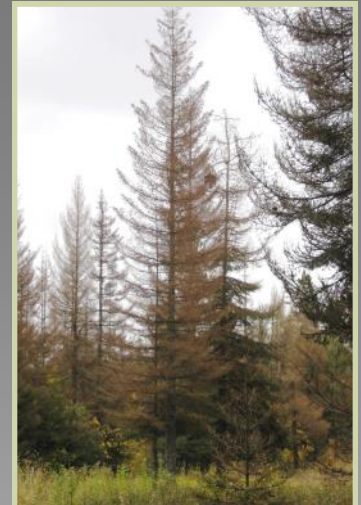
A total of 27.1 million acres were surveyed in Idaho in 2017, compared to 27.2 million acres in 2016. It is important to remember that trees attacked by bark beetles do not usually change color until the following year, so mortality observed in 2016 actually represents trees that were attacked in 2015.

Idaho's forests are also significantly impacted by diseases, but not all diseases are easily detected from the air. With the exception of foliar diseases, **most forest diseases are not well represented by aerial detection surveys.** Root diseases are very common in northern Idaho, affecting over 8 million acres, with most mortality occurring in Douglas-fir, grand fir, and subalpine fir in northern Idaho. Dwarf mistletoes infect over 2.5 million acres of forest statewide. These parasites are especially damaging on western larch, Douglas-fir, lodgepole pine and ponderosa pine. White pine blister rust is widespread throughout the range of western white, whitebark and limber pines, affecting millions of trees, though an acreage estimate would be difficult to determine.

Key Forest Insect Issues in Idaho



Bark beetles continues to kill susceptible trees in Idaho, though the totals have decreased markedly over the last several years. The decrease is most likely due to host depletion. Many stands are of a susceptible size, age and density that are favorable for bark beetle attack. In 2017, mountain pine beetle killed trees on over 28,000 acres in Idaho, compared to a peak of over 1.9 million acres in 2010. **Spruce beetle** is another bark beetle that is capable of large scale mortality in susceptible spruce stands. Approximately 10,000 affected acres were identified in the Nez Perce National Forest in north central Idaho in 2017. There were approximately 3,300 affected acres in the same area in 2016. [Link to IDL publication:](#)



The Douglas-fir tussock moth is a defoliating insect that periodically infests Douglas-fir and true firs in Idaho. Outbreaks occur approximately once per decade, and the most damaging infestations have occurred in northern Idaho. Historically, outbreaks have lasted 1-4 years, and then natural controls bring the populations down to undetectable levels. Populations are increasing in southern Idaho, and defoliation was observed in the Craters of the Moon National Monument in 2017. The Douglas-fir tussock moth will probably begin to defoliate forested areas in northern Idaho within the next three years. [Link to USFS brochure.](#)



Western spruce budworm infested acres decreased in 2017 to approximately 258,000 acres compared to 730,000 acres in 2016 and 1.1 million acres in 2015. In 2011 the total was over 1.8 million acres. The reason for the decrease is unclear. [Link to USFS publication:](#)



Gypsy moth survey. Over 3,600 pheromone traps were deployed and collected in Idaho in 2017, and no European gypsy moths were captured. Delimit surveys were conducted in Bannock and Shoshone Counties in 2017. [Link to IDL 2017 Gypsy Moth Report](#)

Key Forest Disease Issues in Idaho



Root diseases north of the Salmon River kill millions of trees every year. Douglas-fir and grand fir are particularly susceptible. Root diseases are more prevalent than aerial detection survey data indicate, and are very common in northern Idaho. Root diseases can be managed through silviculture by encouraging tolerant species. While all conifer species are susceptible to root diseases (especially at a young age), pines, western larch and western redcedar are more tolerant, especially after the trees reach 20-25 years of age. [Link to additional information:](#)

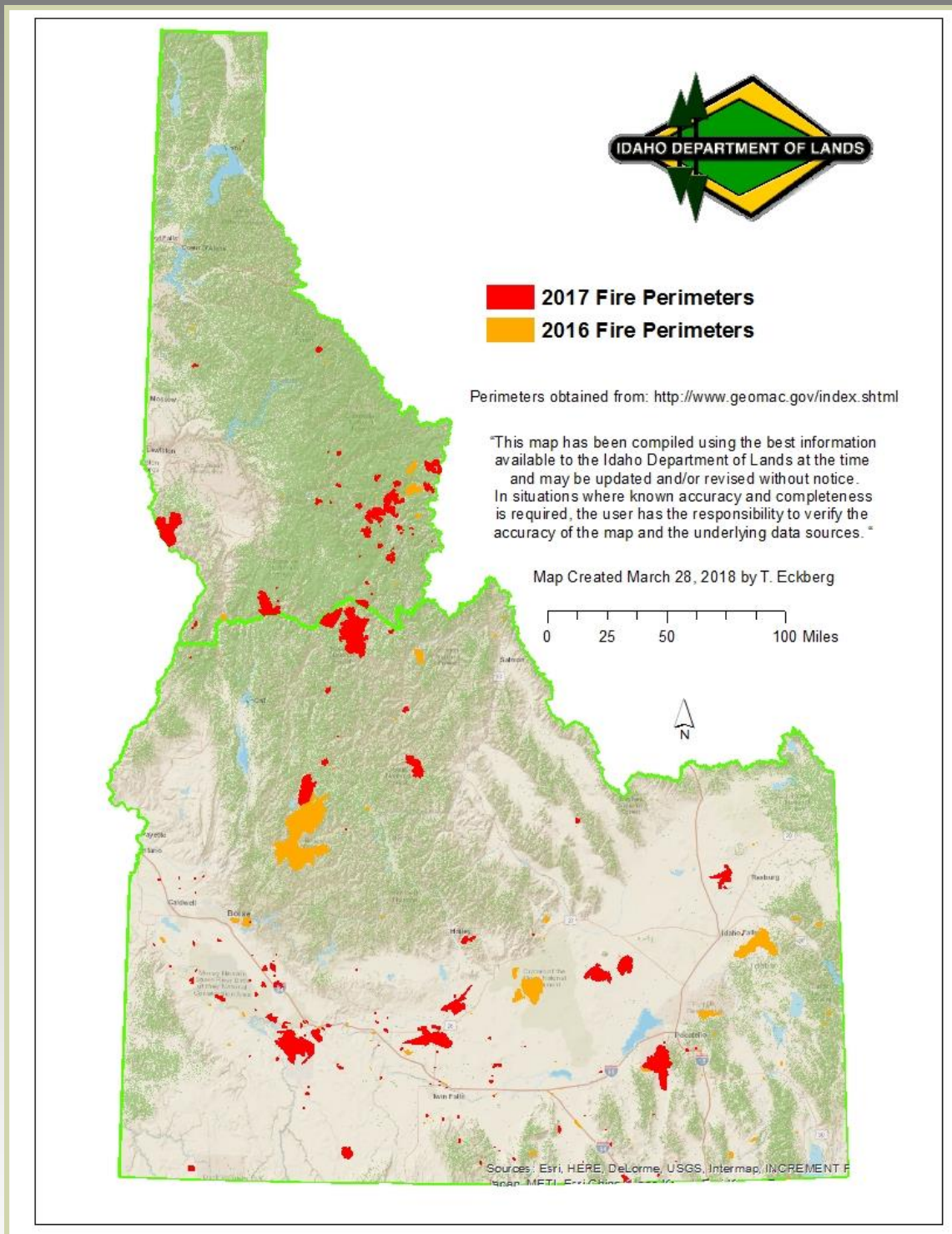
White pine blister rust is an introduced disease that kills 5-needled pines (western white, whitebark and limber) throughout western North America. Western white pine (WWP) was the dominant tree species in much of northern Idaho. Due to rust, fire suppression and past management practices, western white pine is now a minor component of many of these same forests. Idaho's forest type that was dominated by western white pine is now reduced to 5% of its historic levels. The Idaho Department of Lands aggressively plants rust resistant WWP in stands where it was historically present. Western white pine is fast growing, drought tolerant, and is not highly susceptible to root diseases. *Photo (R) by J. Schwandt* [Link to USFS publication:](#)



Dwarf mistletoes infect many species of conifers in Idaho. Most damage is on western larch, Douglas-fir, ponderosa and lodgepole pines. These parasitic plants reduce growth and over time can kill trees. Dwarf mistletoes are fairly host specific, and can be managed through silviculture by removing heavily infected trees and by converting stands to nonhosts. [Link to USFS publication:](#)

Foliar Diseases can infect many species of conifers in Idaho, but damage is most noticeable on western larch and lodgepole pine. While the appearance can be dramatic, the effect on trees is usually minor. Cool, wet spring weather during needle development is favorable for disease development. Approximately 49,000 acres of foliar diseases were mapped in 2016, compared to approximately 7,000 acres in 2015. [Link to IDL Forester Forum:](#)

2017 Fire Season



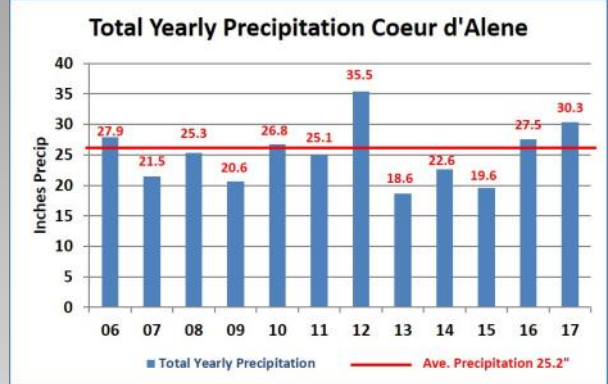
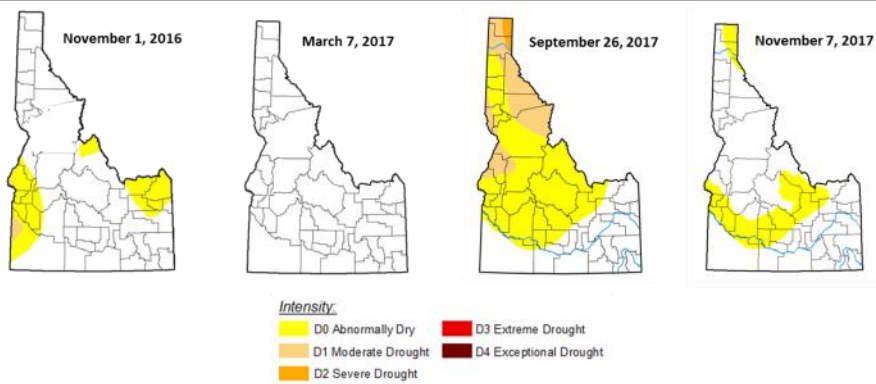
Fire Activity in Idaho, 2017

The total acreage burned in Idaho in 2017 was over 680,000 acres, compared to over 360,000 acres burned in 2016. The largest fire was in USFS Region 1, north of the Salmon River; The Powerline fire burned almost 112,000 acres on the near the Snake River. A large percentage of the acreage burned in Idaho in 2017 was range land in southern Idaho.

2015-2017 Drought

Northern Idaho had been receiving abnormally low precipitation since 2013, especially during the growing season. By 2015 many areas were experiencing severe or extreme drought. In addition to increased fire activity during drought, trees are stressed and often become more susceptible to bark beetle attack. Certain bark beetle species such as pine engraver (*Ips pini*), western pine beetle (*Dendroctonus brevicomis*) and fir engraver (*Scolytus ventralis*) tend to cause more problems for land managers during droughts. *Scolytus monticolae*, a species that does not normally cause serious problems, was killing Douglas-fir of all ages. This species usually attacks small, weakened trees or branches of trees. Mortality from *S. monticolae* was common during the fall of 2015 through spring of 2016, but became less visible as normal moisture returned in late 2016. Overall 2017 was an above average year for precipitation, but almost now moisture fell during July-September. Wet weather during the fall brought most of northern Idaho out of drought, though southern Idaho remained dry.

Drought Status in Idaho 2016-2017



Bark Beetles and Drought in 2016



Fir engraver-killed trees on hillside near Coeur d'Alene, June 2016.



Ponderosa pine killed by pine engraver and western pine beetle in Post Falls, February 2016.



Douglas-fir killed by *Scolytus monticolae* in Hayden, May 2016.

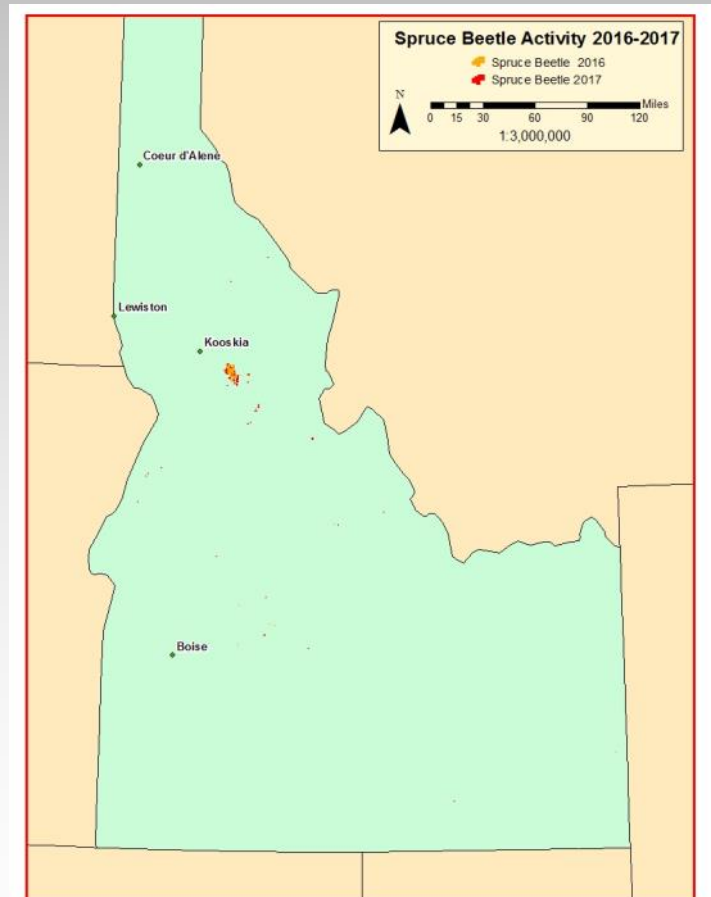
Spruce Beetle 2016-2017



Spruce beetle (*Dendroctonus rufipennis*) is a native bark beetle that can have irruptive populations capable of landscape level mortality. Severe outbreaks have occurred in Utah and Alaska in the 1990's, and a current outbreak in Colorado impacted over 200,000 acres in 2017. This species attacks Engelmann spruce in Idaho, and there have been large scale outbreaks in the past. Until recently, spruce beetle has been at low population levels in Idaho, but an outbreak was identified in the Nez Perce National Forest in 2016, and the damage increased in 2017 to almost 10,000 acres. Outbreaks often start with wind events that uproot large diameter spruce. The beetles infest these down trees, and populations build over time and then attack standing trees. Outbreaks generally subside when suitable hosts (large diameter spruce) are depleted.



Photograph of 2017 spruce beetle mortality in the Nez Perce National Forest, Idaho.



Map of 2016-2017 spruce beetle mortality in the Nez Perce National Forest, Idaho.

For More Information

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