

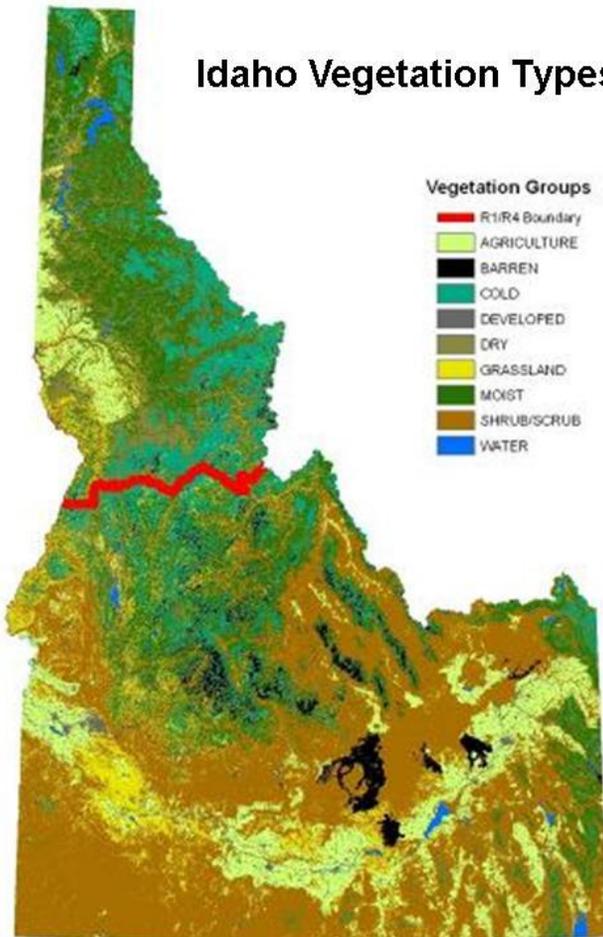
Forest Health Highlights



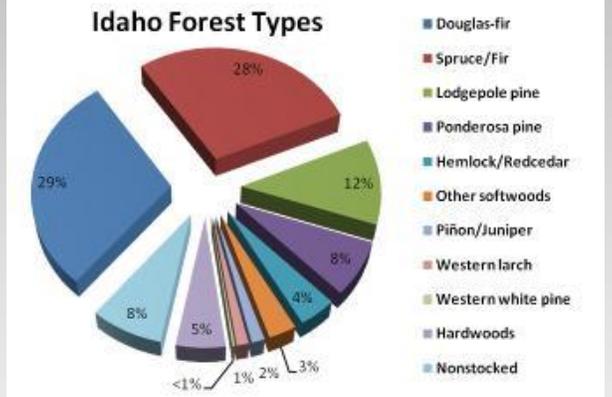
Idaho's Forest Resources

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 Sawtooth 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

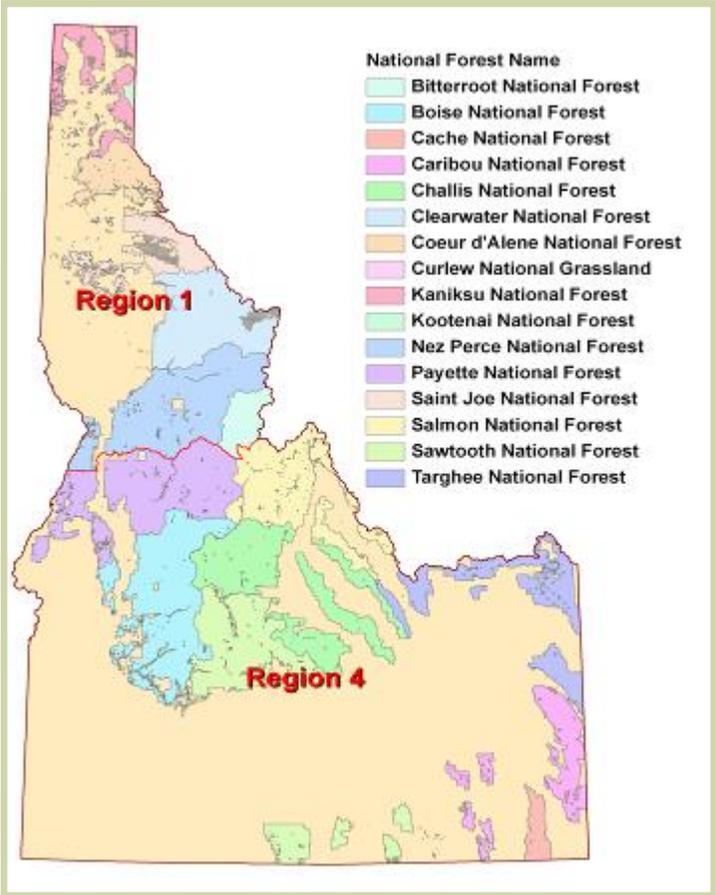
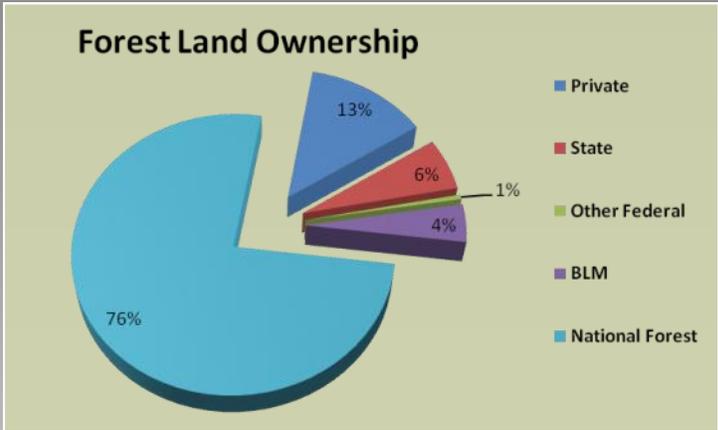
The Salmon River Valley generally divides the moister mixed conifer forests of the Panhandle region from the drier forests of southern Idaho. Much of southern Idaho is rangeland with scattered juniper-dominated woodlands typical of the Great Basin. The highest mountain peaks also occur in southern Idaho. 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.



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 2015 revenues of wood and paper products totaling over \$2.7 billion. An estimated 11,980 people were directly employed in the forest products industry in 2015, and an additional 13,700 people are employed in associated occupations. Average worker earnings were \$56,600 per job, which is nearly 40% higher than the Idaho average. 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 Idaho Forest Products Commission.](#)



Aerial Detection Survey Results

Bark Beetles

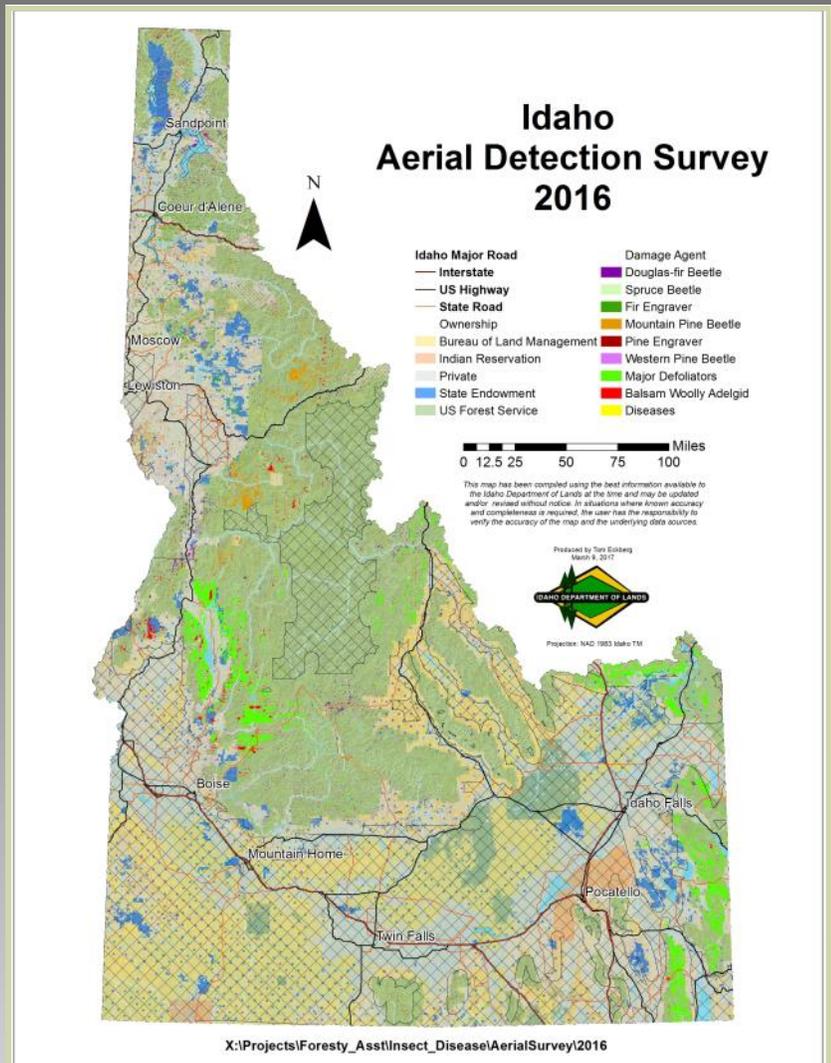
In 2016, mountain pine beetle-caused mortality decreased to 96,000 acres, continuing a downward trend from a peak of 1.9 million acres in 2010. Most of the mortality was in lodgepole pine, but approximately 900 acres of other pine species (limber, whitebark, western white) were affected in 2016. The 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 almost 30,000 acres in 2016 compared to approximately 23,000 acres in 2015. Fir engraver mortality increased to over 43,000 acres. Western pine beetle mortality increased to over 6,000 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. Approximately 740,000 acres were affected in 2016 compared to over 1.1 million acres in 2015. Most of the defoliation is in southern Idaho. Surveys indicate that Douglas-fir tussock moth populations increased in southern Idaho in 2016, but defoliation was not observed. Limited defoliation may occur in the Sawtooth and Payette National Forests in 2017. No defoliation is expected in northern Idaho in 2017.

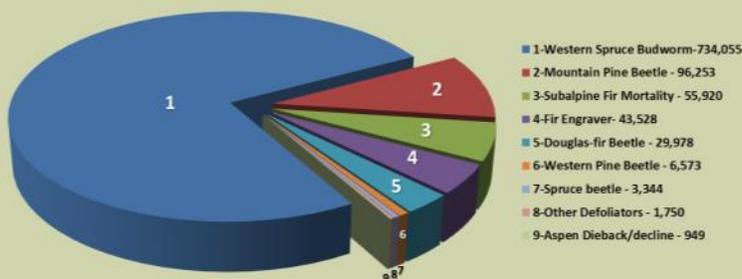
Other Agents

Approximately 4,000 acres were affected by larch needle cast in 2016, compared to 3,000 acres in 2015. Mortality of subalpine fir, attributed to balsam woolly adelgid, western balsam bark beetle and possible root disease more than doubled in 2016 to approximately 56,000 acres. Over 24,000 acres of mortality were recorded in 2015.



[Link to larger map](#)

Principal Damage Agents (2016 Acres)



Principal Damaging Diseases/Declines

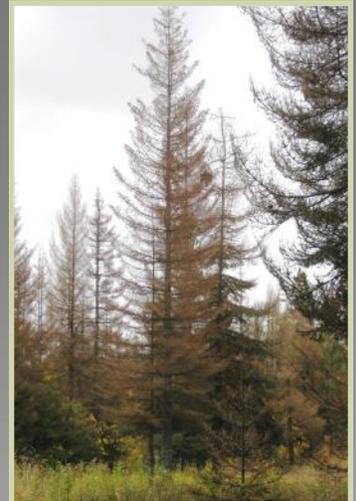
Damage Agent	Acres
Root Disease	Est. > 8,000,000
Dwarf Mistletoe	Est. > 2,500,000
Foliar Disease	> 7,000
Subalpine fir Mortality	> 55,000
Aspen Decline/ mortality	> 900

Notes on Aerial Detection Surveys

A total of 27.1 million acres were surveyed in Idaho in 2016, compared to 27.2 million acres in 2015. 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



Mountain pine beetle continues to kill susceptible pines in Idaho, though the totals have decreased markedly 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 2016, mountain pine beetle killed trees on over 96,000 acres throughout the state (all but approximately 900 acres were in lodgepole pine). Affected acres was over 158,000 and 295,000 in 2015 and 2014 respectively. [Link to USFS publication:](#)

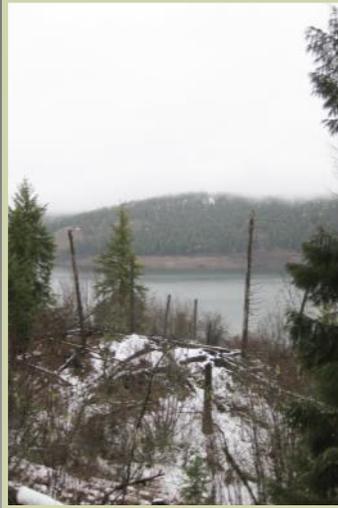
The Douglas-fir tussock moth is a defoliating insect that periodically infests Douglas-fir and true firs in Idaho. Outbreaks occur approximately once per decade, and the most damaging infestations have occurred in northern Idaho. Historically, outbreaks have lasted 1-4 years, and then natural controls bring the populations down to undetectable levels. Populations are increasing in southern Idaho, and may defoliate parts of the Boise, Payette and Sawtooth NF's in 2017. The Douglas-fir tussock moth will probably begin to defoliate forested areas in northern Idaho within the next 5-7 years. [Link to USFS brochure.](#)



Western spruce budworm infested acres decreased in 2016 to approximately 730,000 acres compared to 1.1 million acres and 529,000 acres in 2015 and 2014 respectively. 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 3,800 pheromone traps were deployed and collected in Idaho in 2016, with one European gypsy moth captured near Pocatello, in Bannock County. A delimit survey is planned in this area in 2017. [Link to IDL 2016 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:](#)



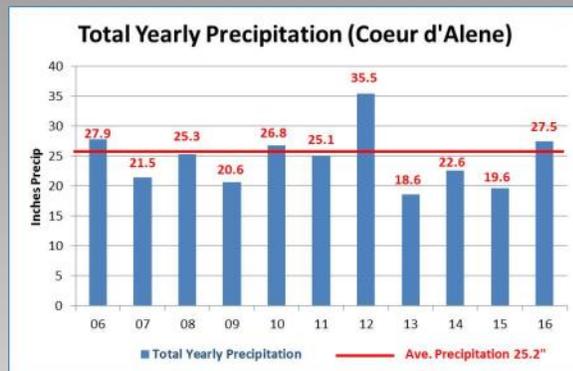
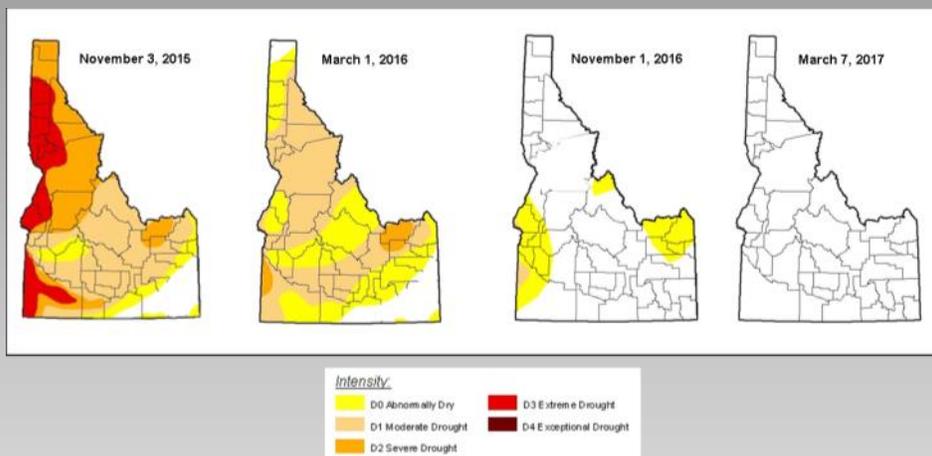
Dwarf mistletoes infect many species of conifers in Idaho. Most damage is on western larch, Douglas-fir, ponderosa and lodgepole pines. These parasitic plants reduce growth and over time can kill trees. Dwarf mistletoes are fairly host specific, and can be managed through silviculture by removing heavily 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 7,000 acres of foliar diseases were mapped in 2016, compared to approximately 600 acres in 2015. [Link to IDL Forester Forum:](#)

2015-2016 Drought

Northern Idaho had been receiving abnormally low precipitation since 2013, and 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. In addition to these common species, the Idaho Department of Lands received many requests for assistance from landowners experiencing Douglas-fir mortality due to less common, secondary bark beetles. *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* mortality was common during the fall of 2015 through spring of 2016, but became less visible as normal moisture returned in the late summer.

Drought status in Idaho, 2015-2017



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.

For More Information

Forest Health Protection

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USDA Forest Service
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Coeur d'Alene, ID 83814
(208) 765-7342

AND

Boise Field Office
USDA Forest Service
1249 S. Vinnell Way, Suite
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Boise, ID 83709
(208) 373-4227

Interior West Forest Inventory & Analysis

USDA Forest Service
507 25th St
Ogden, UT 84401
(801) 625-5388

Idaho Department of Lands

3284 W. Industrial Loop
Coeur d'Alene, ID 83815
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