

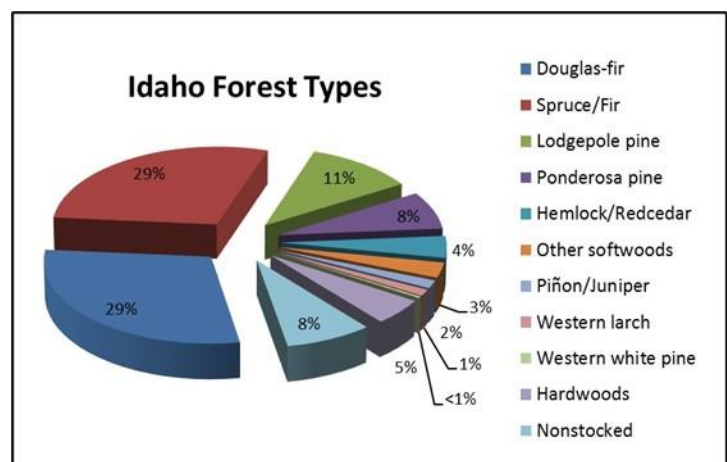
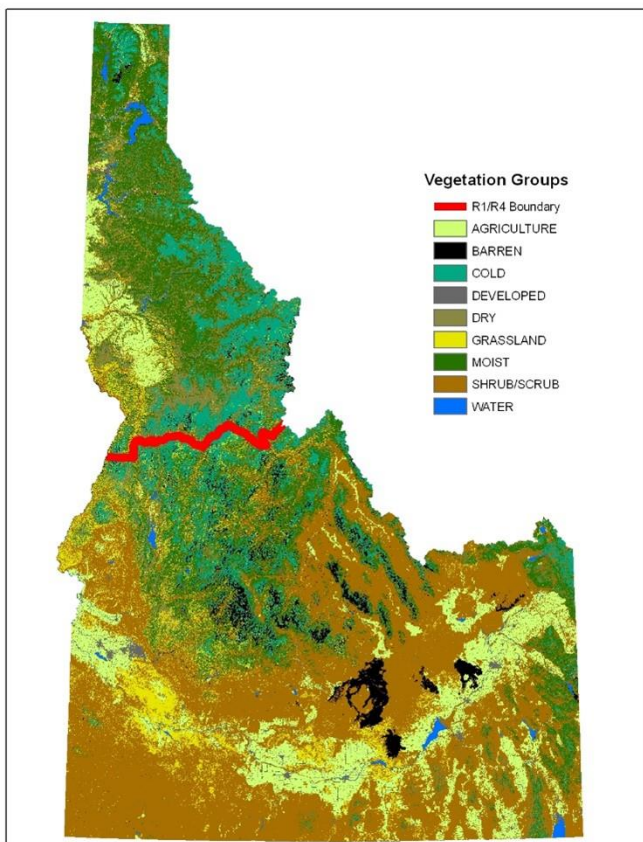
Idaho Forest Health Highlights 2022

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 southeastern 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

Douglas-fir and spruce/fir forest types make up the largest proportions of forests in Idaho, followed by lodgepole pine, ponderosa pine, hemlock/redcedar, other softwoods, pinyon/juniper, western larch, western white pine, and hardwoods.

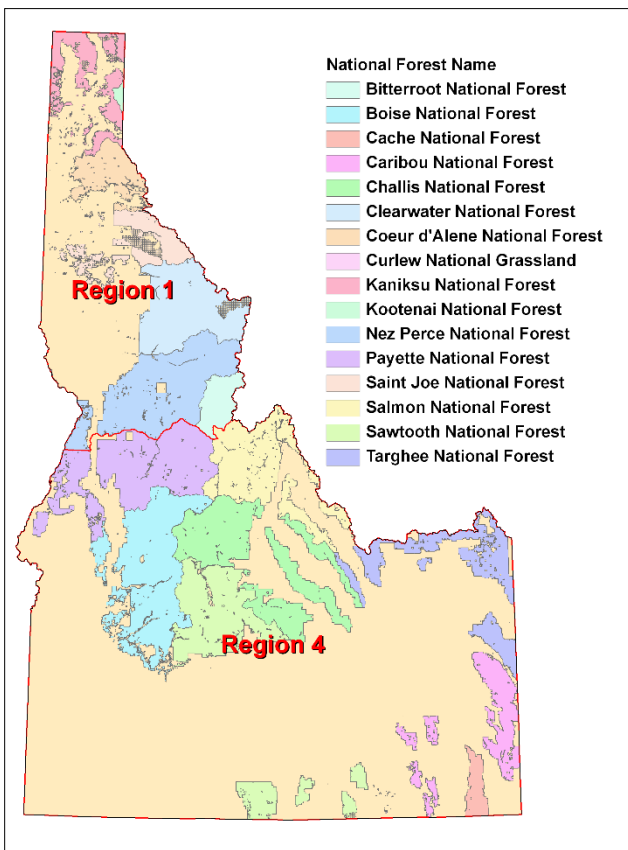


The Importance of Idaho's Forests

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.

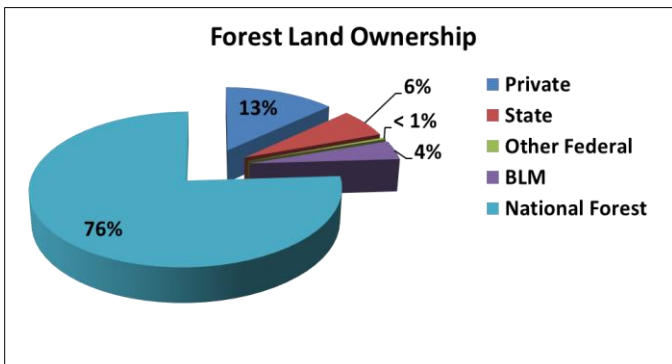
Forest Ownership in Idaho

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 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 very productive forest industry. The data for 2022 has not been updated yet, but in 2020, estimated revenues of wood and paper products totaled \$2.4 billion. An estimated 16,158 people were directly employed in the forest products industry and total harvest was estimated at 1.1 billion board feet of timber. An estimated 64% of this total came from private lands. State land provided 23% and federal lands provided 13% 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.](#)



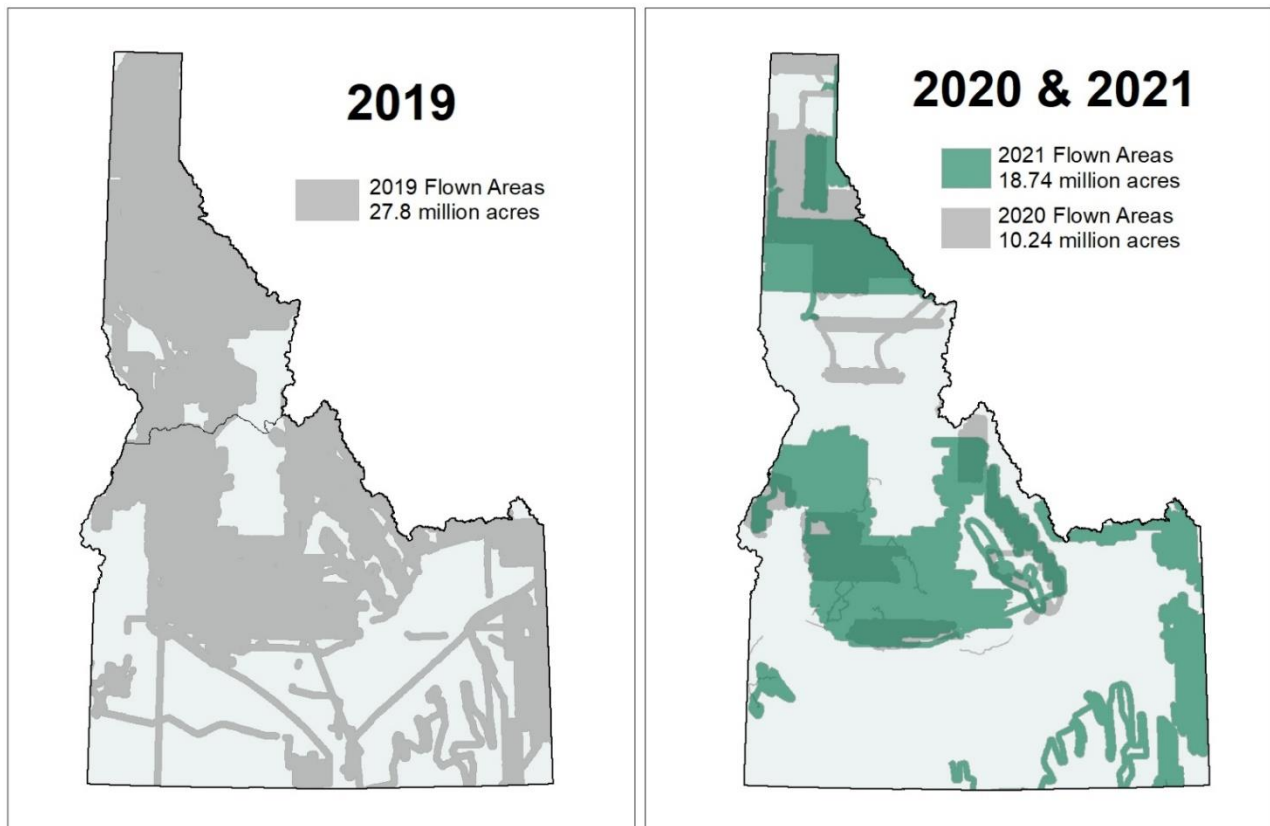
Aerial Detection Survey Results

Approximately 25.98 million acres were flown in Idaho in 2022, as compared to 18.74 million acres in 2021, 10.24 million acres flown in 2020, and 27.8 million acres flown in 2019. Total acres flown in 2020 and 2021 were lower due to Covid restrictions. For this reason, year to year comparisons of the number of acres affected by a given damage agent are flawed for 2020 and 2021.

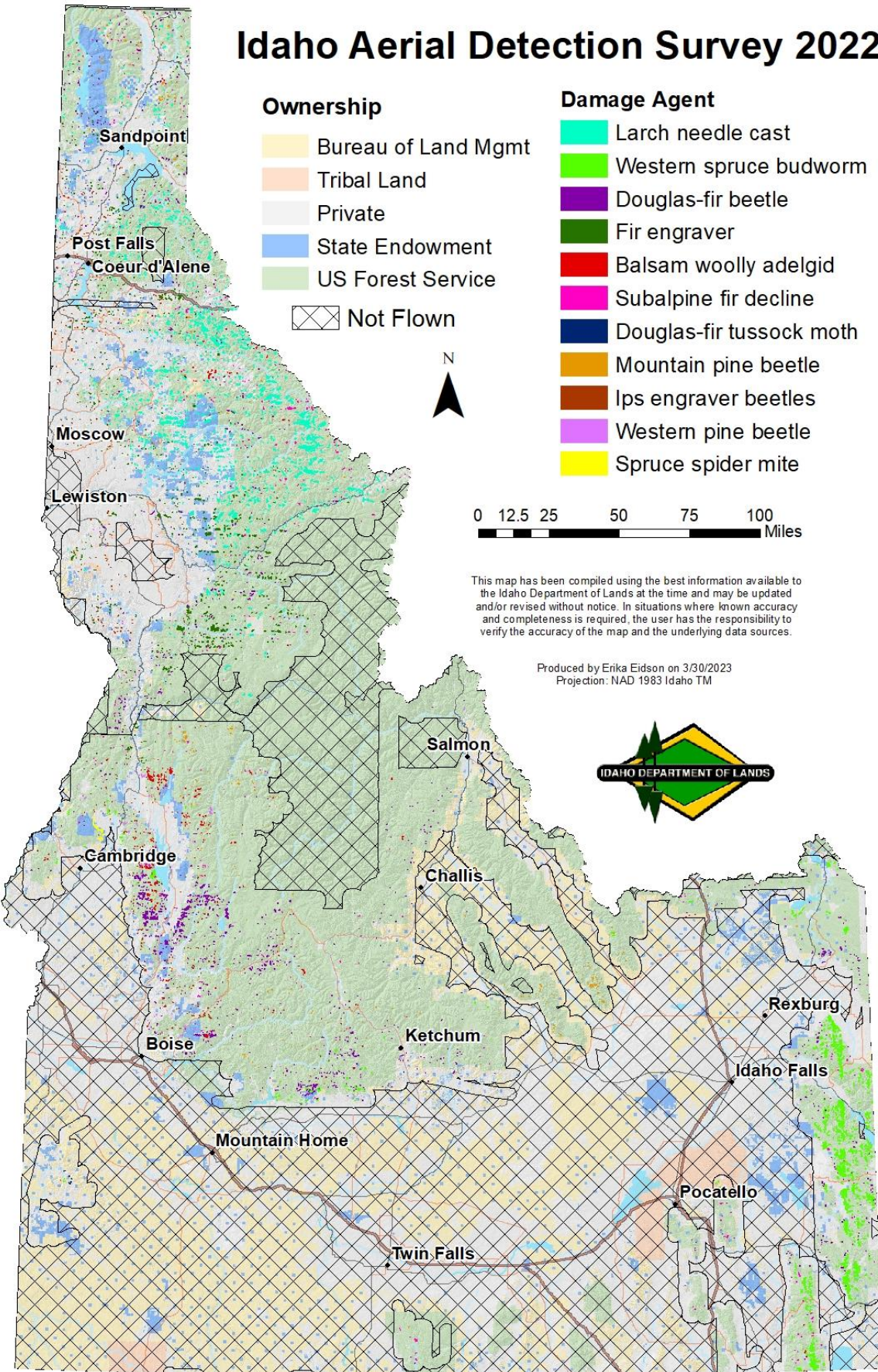
**Notes on Aerial Detection Surveys*

It is important to remember that trees attacked by bark beetles do not usually change color until the following year, so mortality observed in 2022 actually represents trees that were attacked in 2021.

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 it would be difficult to estimate affected acres. These disease are generally not recorded in aerial surveys.



Idaho Aerial Detection Survey 2022



Ownership

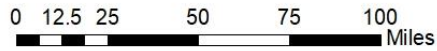
- Bureau of Land Mgmt
- Tribal Land
- Private
- State Endowment
- US Forest Service

Not Flown



Damage Agent

- Larch needle cast
- Western spruce budworm
- Douglas-fir beetle
- Fir engraver
- Balsam woolly adelgid
- Subalpine fir decline
- Douglas-fir tussock moth
- Mountain pine beetle
- Ips engraver beetles
- Western pine beetle
- Spruce spider mite

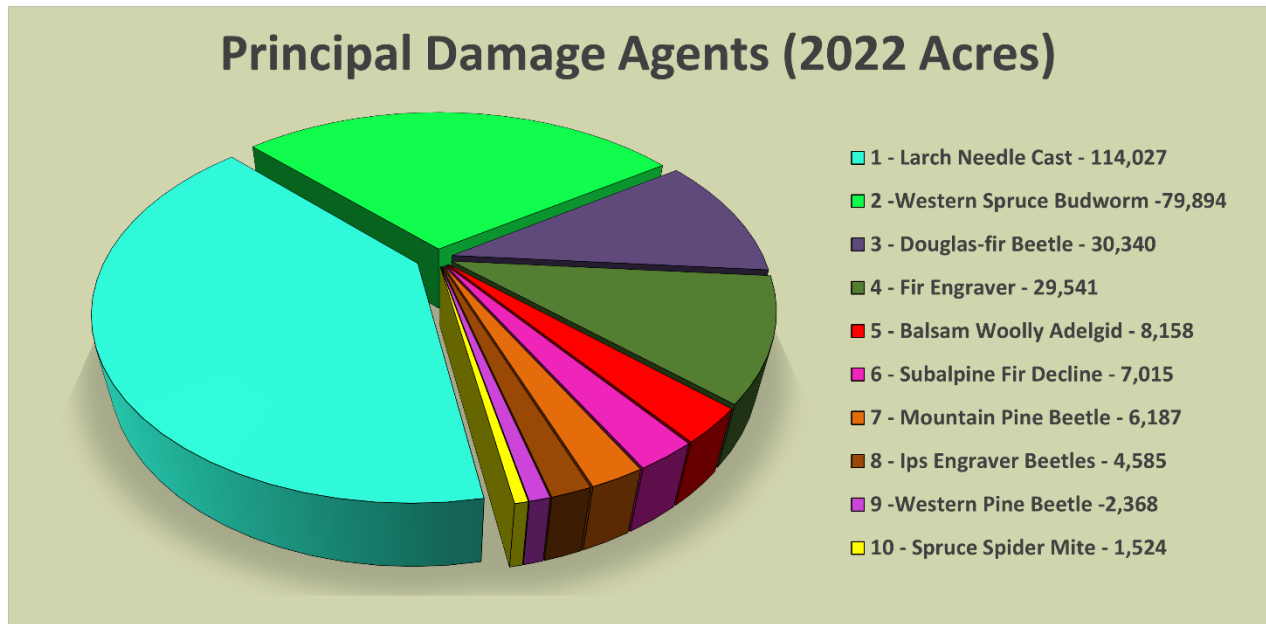


This map has been compiled using the best information available to the Idaho Department of Lands at the time and may be updated and/or revised without notice. In situations where known accuracy and completeness is required, the user has the responsibility to verify the accuracy of the map and the underlying data sources.

Produced by Erika Eidson on 3/30/2023
Projection: NAD 1983 Idaho TM



Principal Damage Agents (2022 Acres)



Bark Beetles

In 2022, Douglas-fir beetle caused mortality on over 30,000 acres. This is an increase compared to typical years, especially in southern Idaho near areas that had been defoliated by Douglas-fir tussock moth in 2018-2019 (Boise, Valley and Gem Counties). Douglas-fir beetle activity may increase in 2023 due to the January 2021 windstorms that created an excess of blowdown for Douglas-fir beetle to exploit. Fir engraver mortality was observed on almost 30,000 acres probably due in part to extreme heat and drought in summers of 2021 and 2022. Mountain pine beetle caused damage on over 6,000 acres in 2022, but most areas were small and only lightly affected. Most of the mountain pine beetle-caused mortality was in lodgepole pine (65%), but there was scattered mortality in other pine species (limber, whitebark, ponderosa, and western white). Western pine beetle-caused mortality occurred on about 2,400 acres, and pine engraver-caused mortality occurred on nearly 4,600 acres in 2022. Ground surveys in 2021 confirmed that pine engraver beetles were killing mature sized ponderosa pines that normally would have been killed by western pine beetle, likely due to drought conditions.

Defoliators

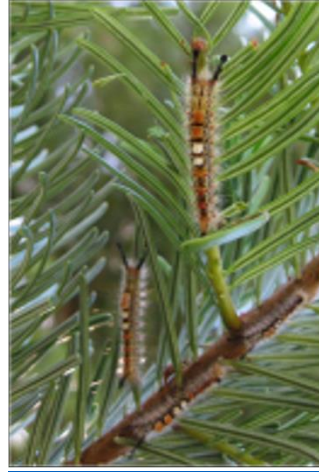
Western spruce budworm is a major defoliator of Douglas-fir and true firs in Idaho, especially in the south. Roughly 80,000 defoliated acres were recorded in 2022. Much of the activity was mapped on Caribou-Targhee National Forest in southeastern Idaho. Western spruce budworm outbreaks can be long lasting and negatively impact tree regeneration due to the insect feeding in the cones as well as on the foliage. In northern Idaho, the 2021 Douglas-fir tussock moth outbreak of just over 9,600 damage acres east of Clarkia and south of Avery collapsed in 2022. Areas of Douglas-fir tussock moth outbreak were prioritized for ADS flights in 2021 and 2022 so these recorded acreages likely captured much of the damage from Douglas-fir tussock moth. The Douglas-fir tussock moth outbreak in southern Idaho that caused defoliation on over 212,000 acres at its peak in 2019 has collapsed. There was one area of defoliation in the Owyhee Mountains that decreased from 2,900 acres in 2021 to 184 acres in 2022.

Other Agents

Approximately 114,000 acres were affected by larch needle cast in 2022, mostly in northern Idaho (Clearwater and Shoshone Counties). The increase is attributed to favorable conditions for the pathogen in the spring during shoot elongation. Damage due to larch needle cast can appear very dramatic but is rarely a serious concern. Balsam woolly adelgid, an invasive sucking insect, continues to be a major mortality agent of true fir, especially in southern Idaho. ADS surveyors are improving methods for identifying and recording balsam woolly adelgid-caused damage and recorded almost 16,000 acres in 2021 and over 8,000 acres in 2022. Balsam woolly adelgid may also be a factor in areas recorded as subalpine fir decline, but it is hard to confirm.

[Link to IDL Insect and Disease page with ADS map](#)

Key Forest Insect Issues in Idaho



Bark beetles continue to kill susceptible trees in Idaho. Increases in bark beetle activity are often associated with drought and disturbance events. In 2021, Idaho experienced several strong wind events that resulted in green trees being blown down. These green down trees are easily exploited by some aggressive species of bark beetles and can boost bark beetle populations. Additionally, the summers of 2021 and 2022 were hot and dry, leading to stressed trees that are more susceptible to bark beetles. Recent outbreaks of the Douglas-fir tussock moth defoliated many Douglas-fir and grand fir trees in southern Idaho, leaving stressed trees that are more attractive to bark beetles. Overall, we expect to see increases in bark beetle activity in Idaho in the coming years. [Link to IDL bark beetle publication](#)

The Douglas-fir tussock moth (DFTM) is a defoliating insect that periodically infests Douglas-fir and true firs in Idaho. Outbreaks occur approximately once per decade, usually lasting 1-4 years before natural controls bring the populations down to undetectable levels. Current defoliation affecting 184 acres is occurring in the Owyhee mountains in southwestern Idaho. The outbreak east of Clarkia and south of Avery in northern Idaho collapsed with only scattered groups of affected trees in this area. Little defoliation is expected statewide in 2023. [Link to IDL fact sheet](#); [Link to IDL 2022 Douglas-fir Tussock Moth Report](#)



Spongy moth survey. Spongy moth is the new common name for *Lymantria dispar*, formerly known as gypsy moth. Spongy moth is an invasive defoliator that is already established in the eastern U.S, but not in the West. Idaho monitors for new introductions this insect every year in order to prevent its establishment. Over 2,500 pheromone traps were deployed and collected in Idaho in 2022, and no spongy moths were captured. [Link to IDL 2022 spongy moth report](#)



Western spruce budworm is a major defoliator of Douglas-fir and true firs in Idaho, and outbreaks can be short-lived or chronic. Almost 80,000 acres of western spruce budworm activity occurred in the Caribou-Targhee National Forest southeastern Idaho in 2022. Overall, activity is down compared to 2019 when approximately 300,000 acres of damage were mapped. [Link to USFS publication](#). [Link to IDL fact sheet](#)

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, though they occur statewide. 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. WWP is fast growing, drought tolerant, and is not highly susceptible to root diseases. *Photo (R) by J. Schwandt* [Link to USFS publication](#)

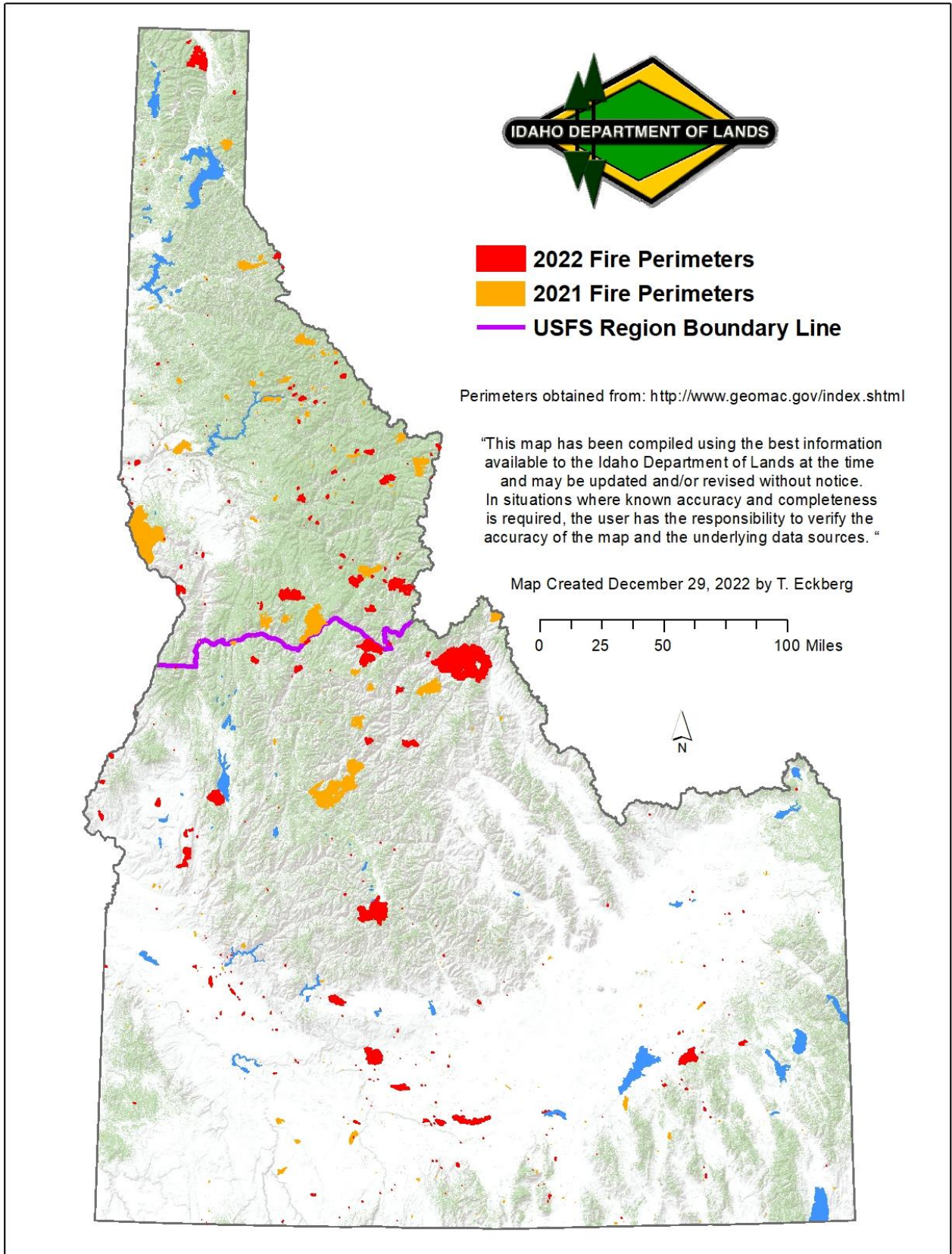


Dwarf mistletoes infect many species of conifers in Idaho. Most damage is on western larch, Douglas-fir, ponderosa and lodgepole pines. These parasitic plants reduce growth and over time can kill trees. Dwarf mistletoes are fairly host specific and can be managed through silviculture by removing heavily 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. Over 114,000 acres of needle disease in western larch was mapped in 2022, but this has no bearing on how much needle disease will affect trees in the coming years. [Link to IDL Forester Forum](#)

2022 Fire Season



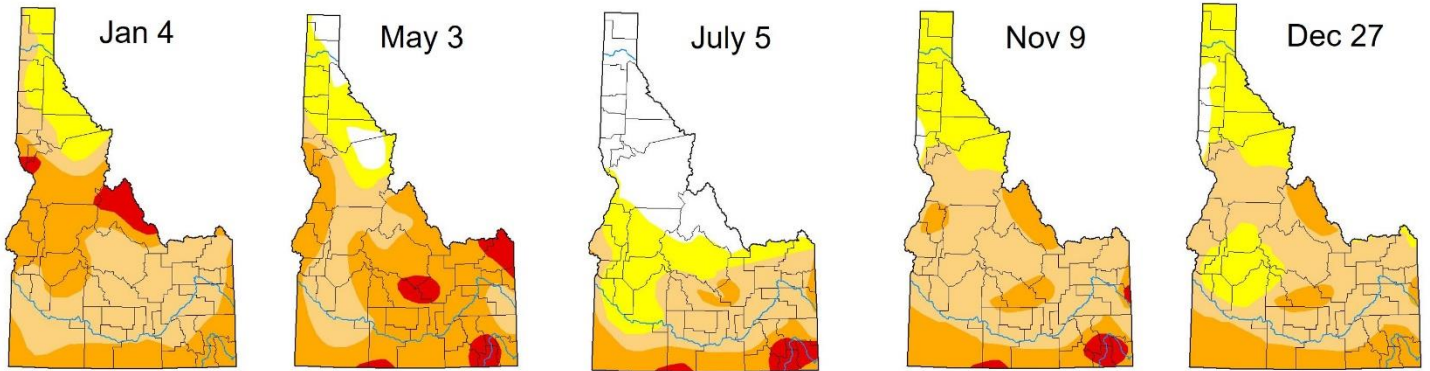
Fire Activity in Idaho, 2022

The total acreage burned in Idaho in 2022 was approximately 436,733 acres.

[Link to 2022 Fire Statistics](#)

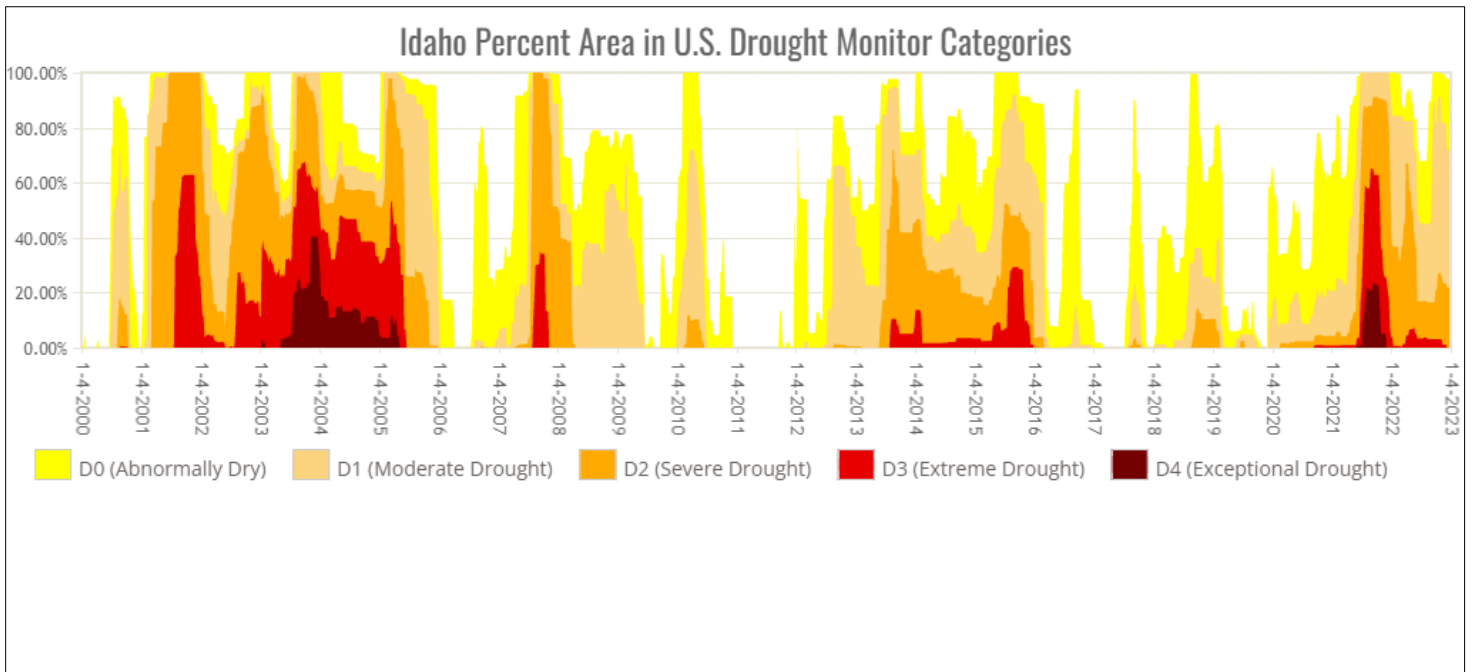
Drought in Idaho

It is normal for Idaho to have summer droughts, where little precipitation falls from July into September. Snow is usually abundant in the winter months and spring rains occur during the growing season. Due to the “heat dome” during the summer of 2021, much of Idaho experienced exceptional drought in 2021. The 2022 season started out more cool and wet than average but became hotter and drier than usual later in summer and fall. 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. Trees weakened by drought are also not capable of recovery from defoliation by defoliators such as Douglas-fir tussock moth and western spruce budworm. [Link to NOAA Drought Monitor](#)



2022 Idaho Drought

Intensity:

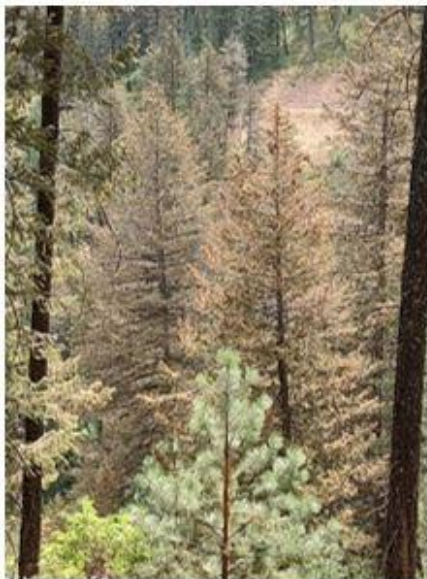


Spruce Spider Mite in Southern Idaho, 2022

Spruce spider mite (*Oligonychus ununguis*) is a conifer infesting mite that occurs throughout the northern hemisphere. Typically, spruce spider mite is thought of as a pest of landscape trees, where dwarf Alberta spruce trees are favorite hosts. Other hosts include most conifers, and damage occurs from piercing-sucking mouthparts causing a characteristic bronzing or rusty injury. Spruce spider mites are considered cool season mites, with most activity during the spring and fall months. Damage is most apparent during the summer months, but the mites are not typically active at that time. Spider mite outbreaks are often associated with insecticide applications that can disrupt the mite's natural predators. Historic records show that this occurred in the late 1950's in Idaho and Montana after applications for Douglas-fir tussock moth.

There were widespread reports of spider mite activity in Idaho in 2022, most were in landscapes. One outbreak did occur in a forest setting west of Council Idaho on state and private lands. The damage occurred in a band from approximately 3,400 to 4,900 feet, affecting Douglas-fir. No insecticide applications have occurred in this area that can explain the increase in spider mite activity. Two visits were made to the site in early August and again in late September, and during both occasions, neither live mites nor eggs were found. Foliage damage and webbing were found on Douglas-fir, but most damage was characterized as light to moderate. Damage did not progress from the first visit, and most trees should be okay.

Variable discoloration of Douglas-fir northwest of Council Idaho on August 2, 2022



Left: Defoliation from a heavy infestation.



Above: Webbing and discoloration typical of heavy infestation

For More Information

Idaho Department of Lands

3284 W. Industrial Loop
Coeur d'Alene, ID 83815
(208) 769-1525

Forest Health Protection

USDA Forest Service
Coeur d'Alene Field Offices
3232 W. Nursery Road
Coeur d'Alene, ID 83815
(208) 765-7342

and

Boise Field Office
USDA Forest Service
1249 Vinnell Way, Suite 200
Boise, ID 83709
(208) 373-4227



Interior West Forest Inventory and Analysis

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