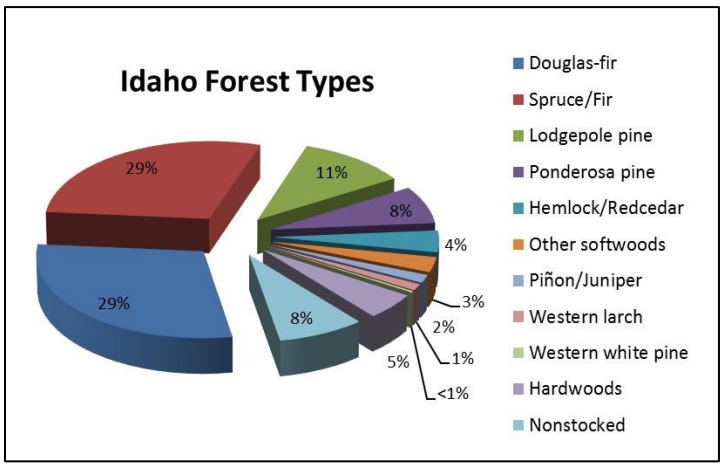
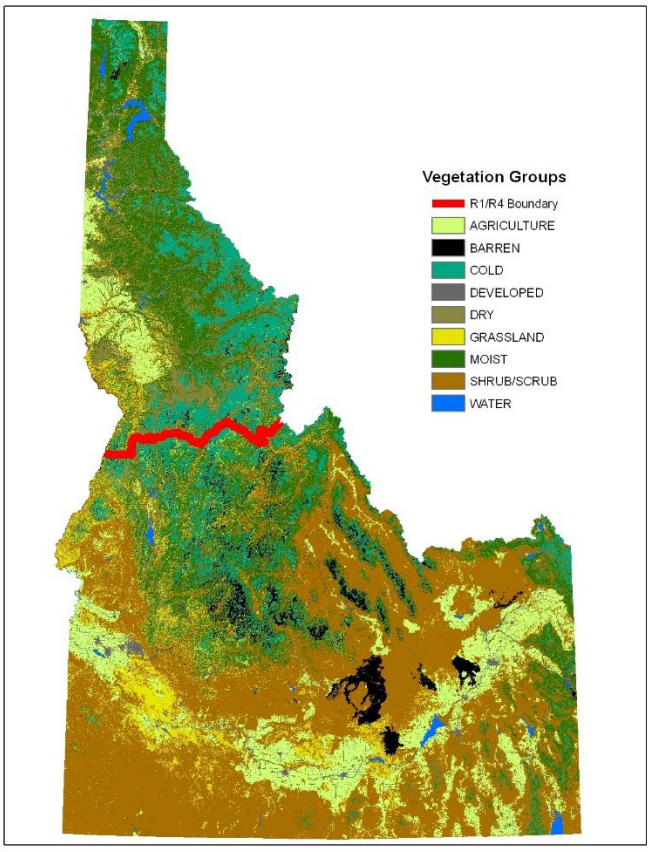
Idaho's Forest Resources

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.



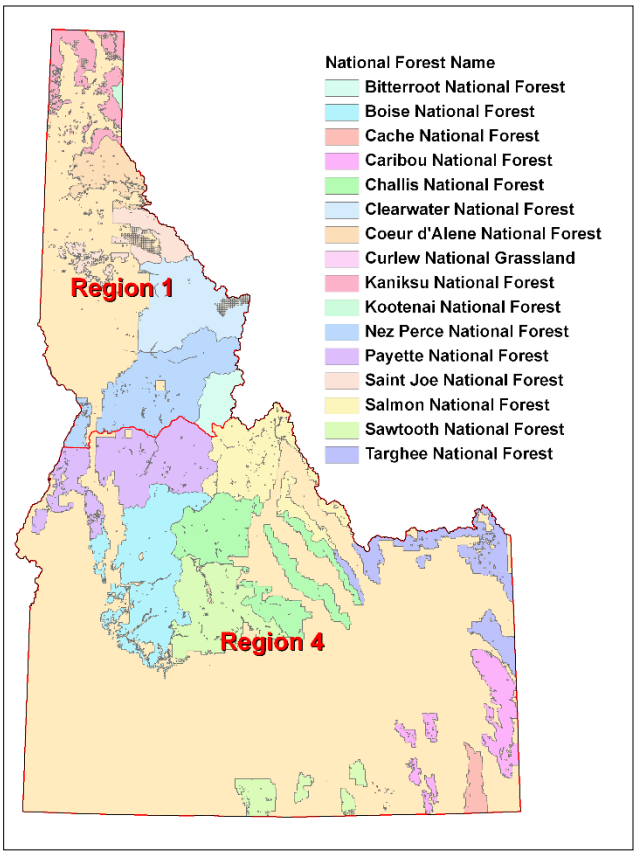


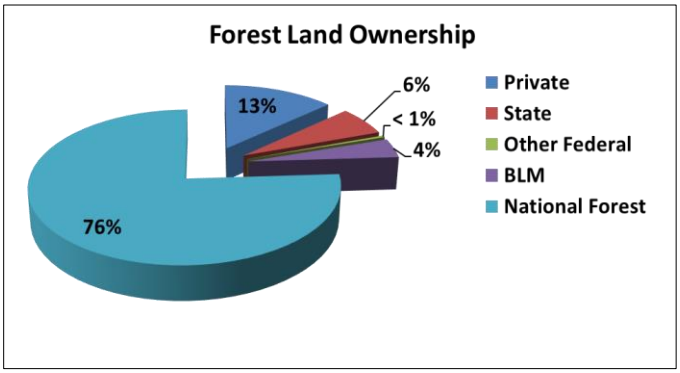
The Importance of Idaho's Forests

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 2021 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.]

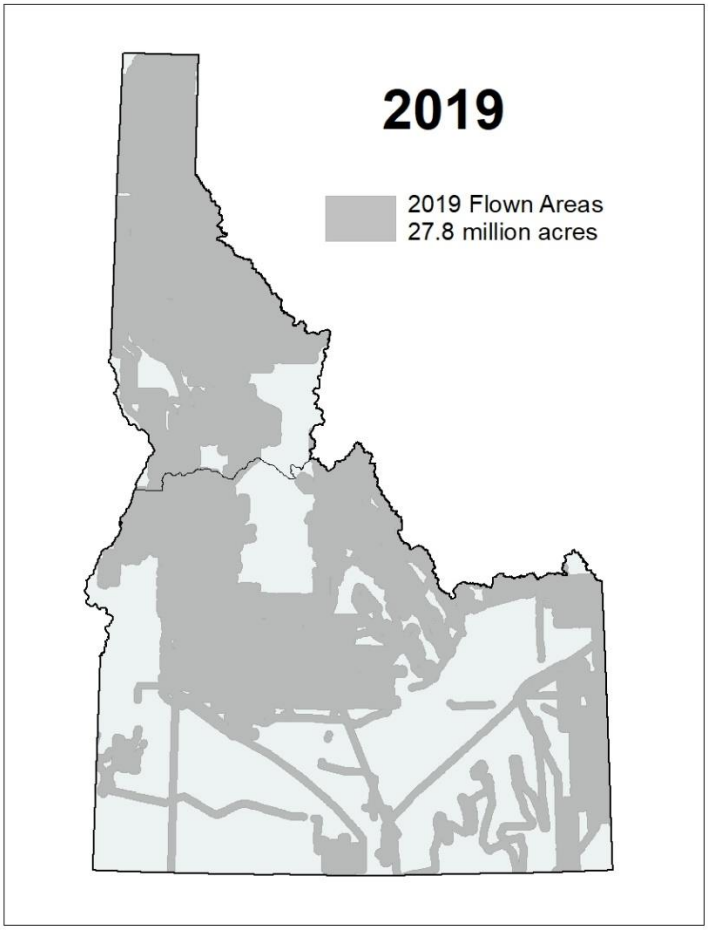
Aerial Detection Survey Results

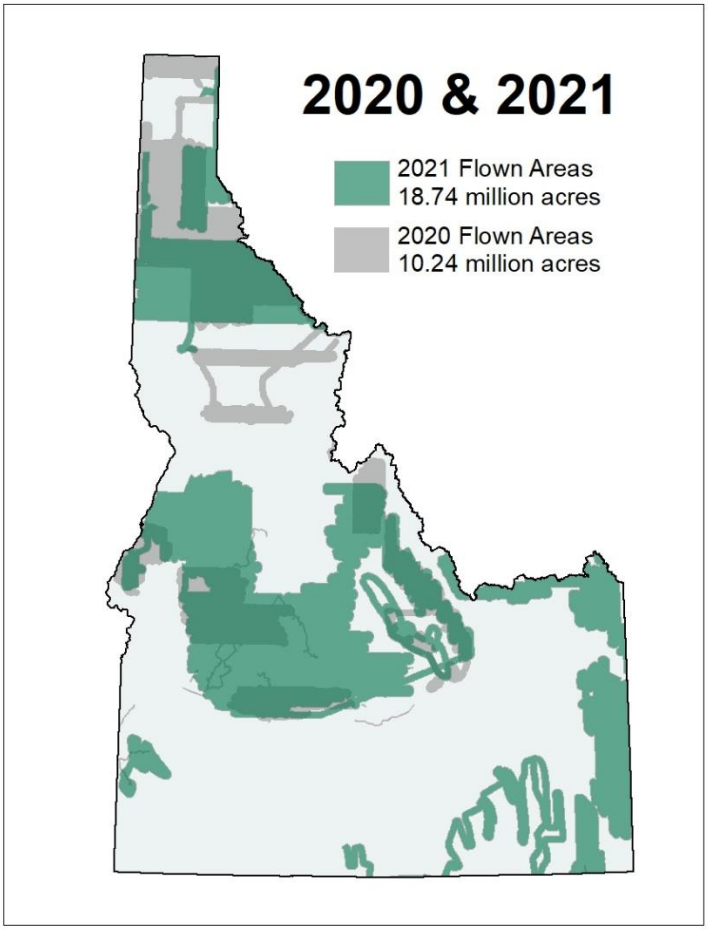
Similar to 2020, only targeted aerial surveys were completed in 2021. Approximately 18.74 million acres were flown in Idaho in 2021, as compared to 10.24 million acres flown in 2020 and 27.8 million acres flown in 2019. For this reason, year to year comparisons of the number of acres affected by a given damage agent are not valid for 2020 and 2021 and are therefore not included in this year's report.

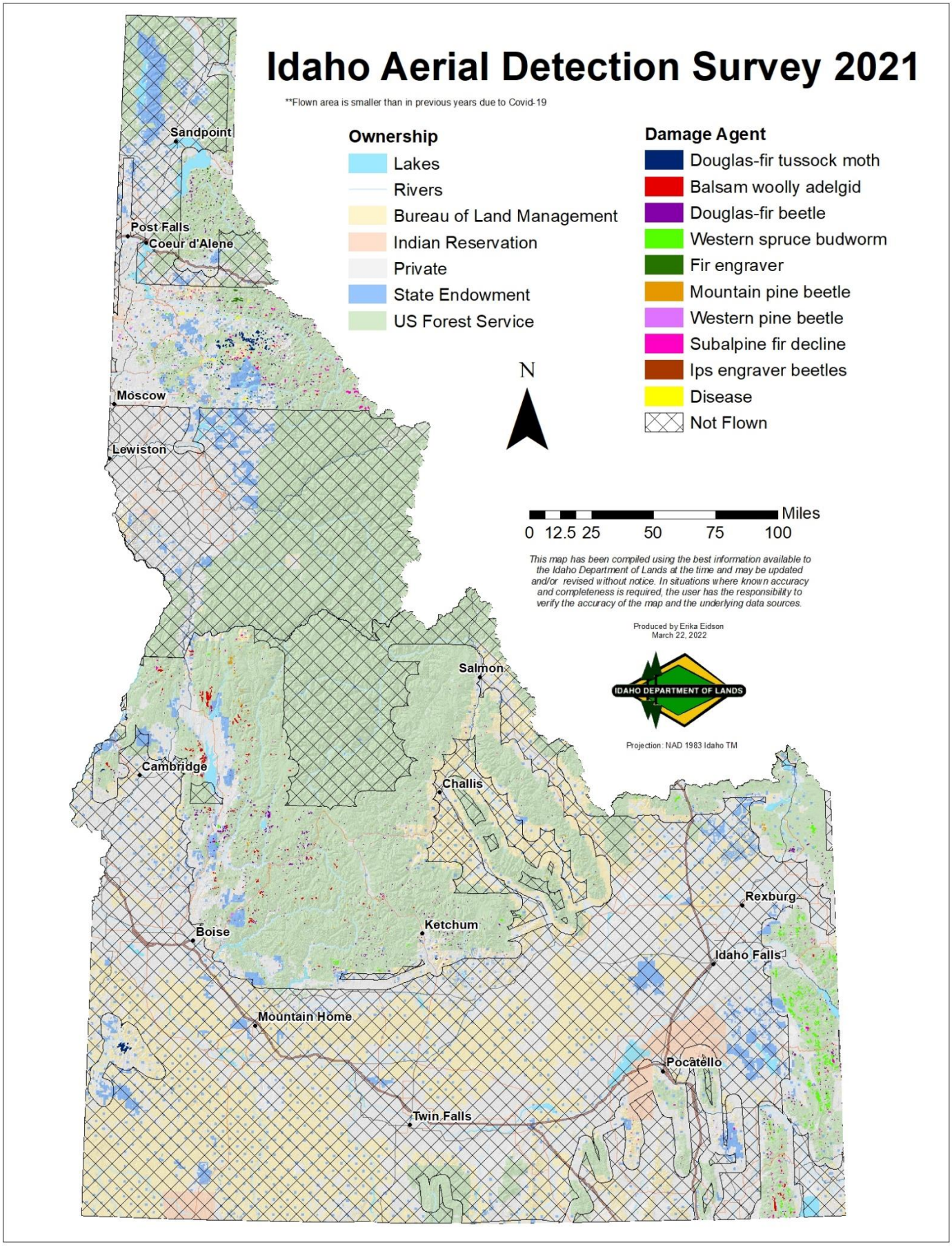
**Notes on Aerial Detection Surveys*

It is important to remember that trees attacked by bark beetles do not usually change color until the following year, so mortality observed in 2021 actually represents trees that were attacked in 2020.

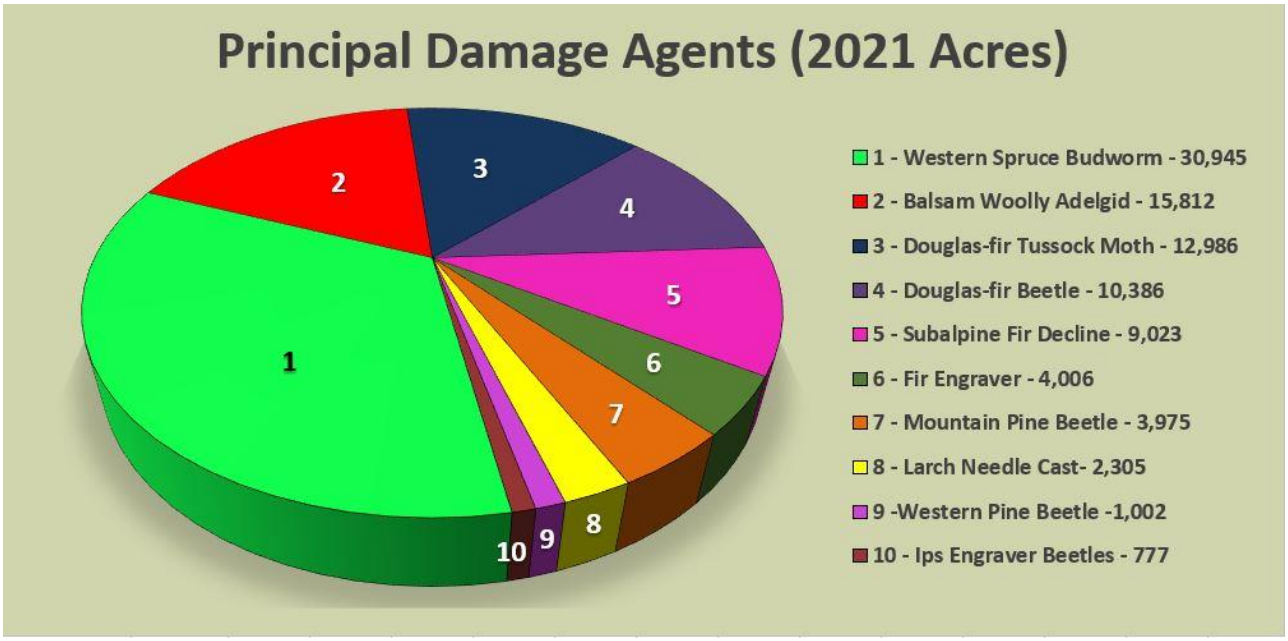
Idaho's forests are also significantly impacted by diseases, but not all diseases are easily detected from the air. With the exception of foliar diseases, **most *forest diseases are not well represented by aerial detection surveys.*** Root diseases are very common in northern Idaho, affecting over 8 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.







[Link to ADS map online]



Bark Beetles

In 2021, Douglas-fir beetle caused mortality on around 10,000 acres. This appears to be an increase compared to typical years, especially in southern Idaho near areas that had been recently defoliated by Douglas-fir tussock moth. Douglas-fir beetle activity may increase in 2022 due to 2021 windstorms that created an excess of blowdown for Douglas-fir beetle to exploit. Fir engraver mortality was observed on over 4,000 acres, which is lower than expected. The decrease in fir engraver activity may be attributed to a cooler and wetter summer in 2020. However, fir engraver activity is expected to rise in 2022 due to extreme heat and drought in summer of 2021. Almost 4,000 acres were impacted by mountain pine beetle in 2021, but most areas were small and only lightly affected. Most of the mountain pine beetle-caused mortality was in lodgepole pine, but there was scattered mortality in other pine species (limber, ponderosa, whitebark, and western white). Western pine beetle-caused mortality occurred on about 1,000 acres, and pine engraver-caused mortality occurred on nearly 800 acres in 2021. 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. Remember that the curtailed 2021 ADS survey may account for many of these acreage declines compared to previous years.

Defoliators

Western spruce budworm is a major defoliator of Douglas-fir and true firs in Idaho, especially in the south. Roughly 31,000 defoliated acres were recorded in 2021. The true defoliation extent is likely greater since survey coverage was more limited than usual; however, much less activity was mapped near Salmon, Challis, and Ketchum as compared to 2019. 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. 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 were just a few areas of defoliation west of Cambridge near the Oregon border, and one area of severe defoliation in the Owyhee Mountains. Just over 9,600 acres were damaged by Douglas-fir tussock moth in northern Idaho east of Clarkia and south of Avery. The outbreak in the Silver Valley in 2020 collapsed in 2021. Areas of Douglas-fir tussock moth outbreak were prioritized for ADS flights in 2021, so these recorded acreages likely captured much of the damage from Douglas-fir tussock moth.

Other Agents

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. Balsam woolly adelgid may also be a factor in areas recorded as subalpine fir decline, but it is hard to confirm. Approximately 2,300 acres were affected by larch needle cast in 2021. The decrease is attributed to unfavorable 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.

Link to IDL Insect and Disease page with ADS map

Key Forest Insect Issues in Idaho

Due to COVID-19, only targeted aerial surveys were completed in 2021, with only 18.74 million acres flown. Lower affected acres for damage agents are in large part due to the reduced survey.

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 summer of 2021 was extremely hot and dry, leading to stressed trees that are more susceptible to bark beetles. Outbreaks of the Douglas-fir tussock moth defoliated many Douglas-fir and grand fir trees in recent years as well, leaving stressed trees on the landscape 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

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 2021, and no spongy moths were captured. Link to IDL 2021 spongy moth report

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 outbreak areas include the Owyhee mountains in southwestern Idaho, and an area east of Clarkia and south of Avery in northern Idaho. Another year of defoliation is expected in the Owyhee mountains in 2023, but predictions for northern Idaho are uncertain for the coming season. Link to IDL fact sheet; Link to IDL 2021 Douglas-fir Tussock 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. Western spruce budworm activity is currently high in southeastern Idaho, but mapped activity is down near Salmon, Challis, and Ketchum 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

Due to COVID-19, only targeted aerial surveys were completed in 2021, with only 18.74 million acres flown. Lower affected acres for damage agents are in large part due to the reduced survey.

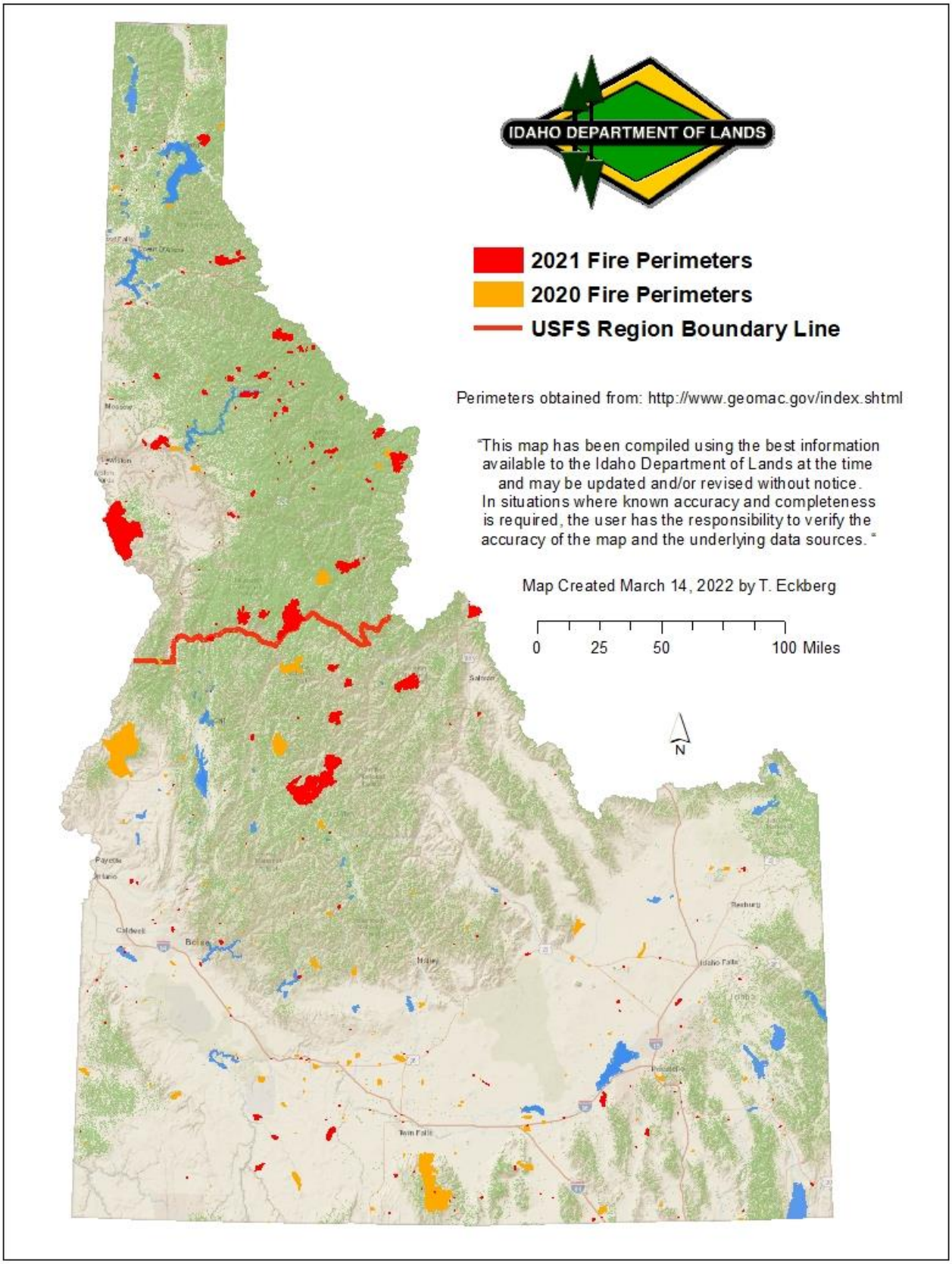
Root diseases north of the Salmon River kill millions of trees every year. Douglas-fir and grand fir are particularly susceptible. Root diseases are more prevalent than aerial detection survey data indicate, and are very common in northern Idaho, though they occur statewide. Root diseases can be managed 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 in 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 2,300 acres of needle disease was mapped in 2021, but this has no bearing on how much needle disease will affect trees in the coming years. Link to IDL Forester Forum

2021 Fire Season



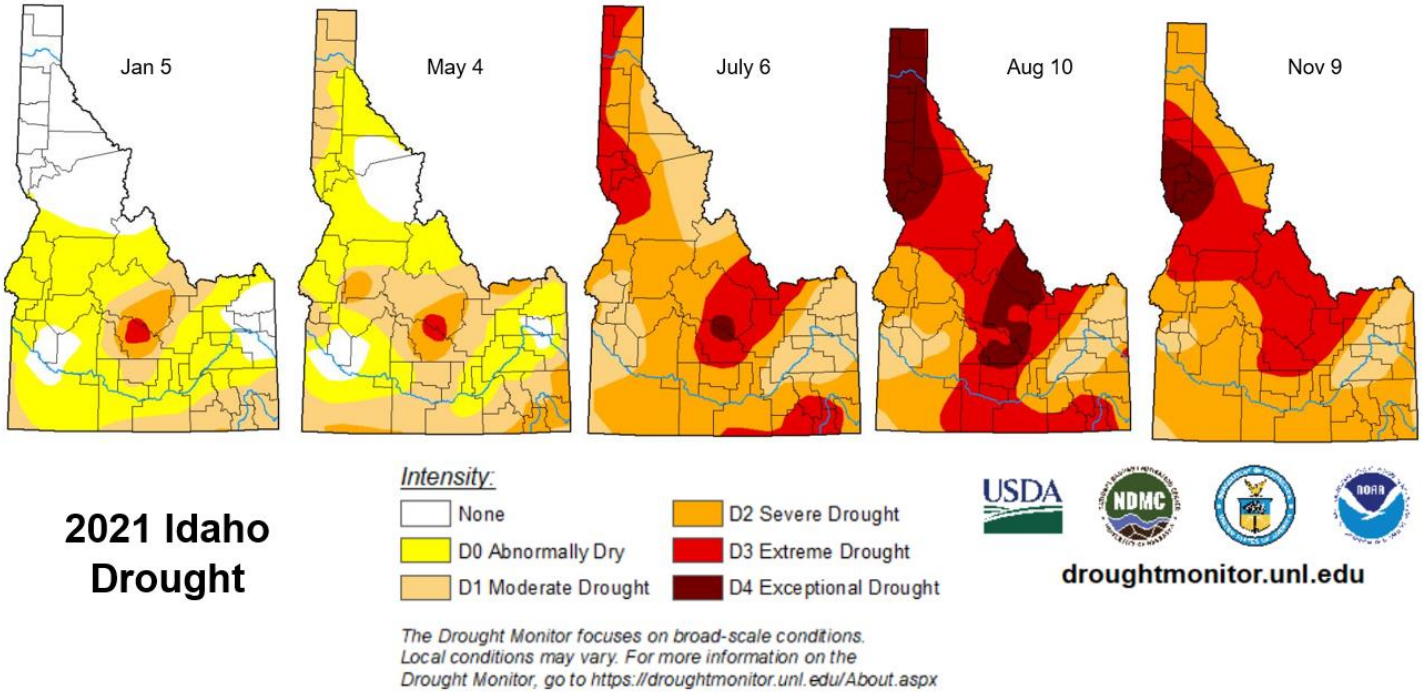
Fire Activity in Idaho, 2021

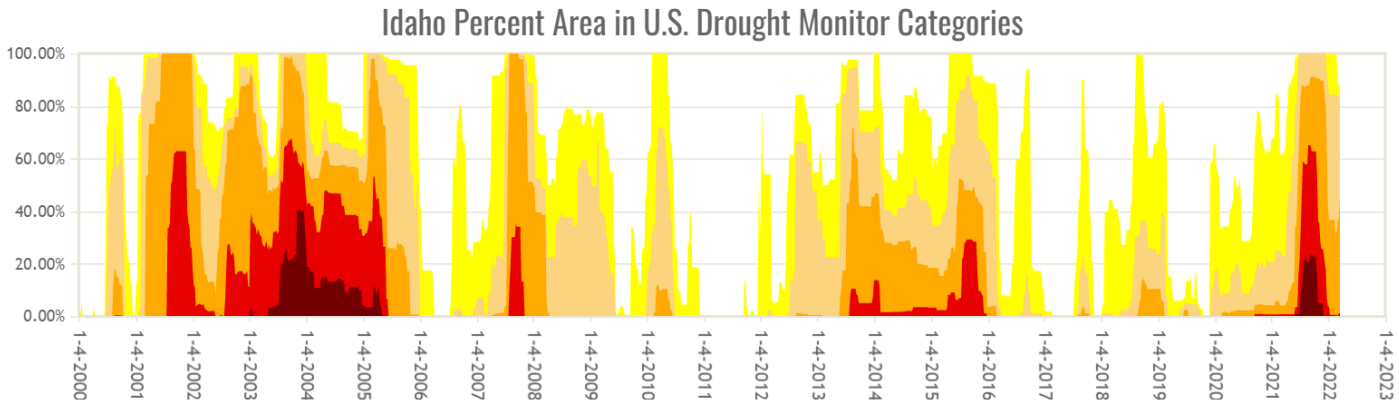
The total acreage burned in Idaho in 2021 was approximately 439,600 acres.

Link to NIFC 2021 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. 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 as capable of recovery from defoliation by defoliators such as Douglas-fir tussock moth and western spruce budworm. [Link to NOAA Drought Monitor]





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