NEVADA FOREST HEALTH HIGHLIGHTS 2022

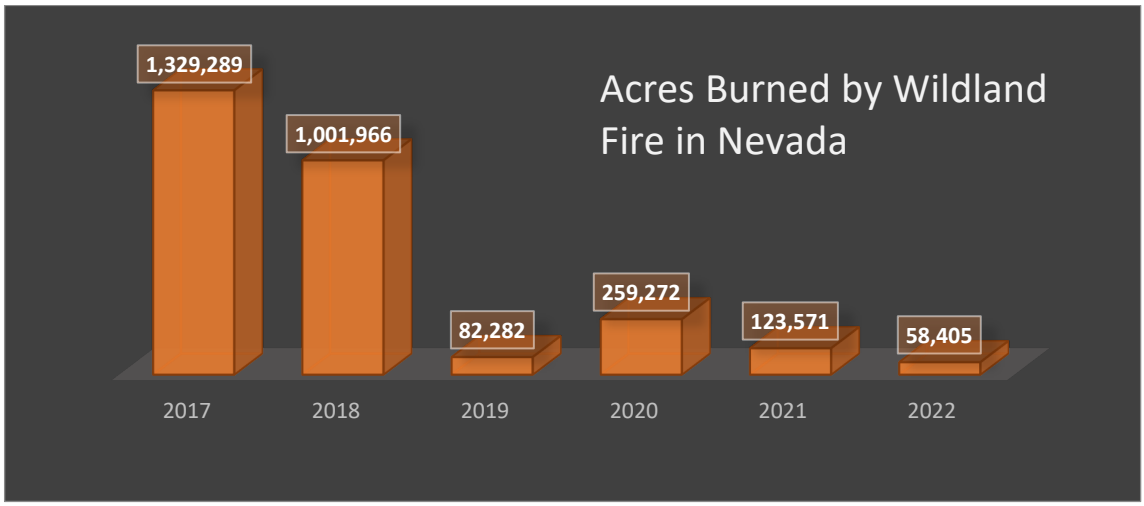
The Forest Resource

Nevada's forests are made up of 314 forested mountain "islands" separated by wide non-forested basins; these mountain islands make Nevada a unique western state regarding forested lands. Eighty-six percent of the state is non-forest and approximately 86% of the land is federally owned. Although the area of forest land is small, the value of the forest resource is invaluable in terms of commodities, recreational use, and aesthetic properties. Healthy wildland, and urban forests provide multiple benefits to Nevada's diverse population. Nevada's forests vary from pinyon and juniper woodlands, mixed conifer forests, and alpine forest cover types. Nevada's 11.1 million acres of forestland produces little commercial timber; however, they do provide other wood products, important watershed protection, wildlife habitat, and recreational opportunities. Together with the urban forests in the state's communities, Nevada's forests are a critical resource in this sparsely forested state.

Most of the forested lands are owned by the federal government, with approximately 866,900 acres of forestland in state or private ownership. From a statewide perspective the total of all forestlands (76%) are composed of pinyon and/or juniper woodlands. The other forest types are found in riparian areas, the mid, and high elevations in the state's 314 mountain ranges. Detailed information is available from the Forest Inventory and Analysis webpage developed by the USDA/USFS.

Forest Health Highlights

Nevada's forests are host to many common pests which plague western forests. Widespread stress to trees, brought on by drought conditions is a concern every year in Nevada. These conditions weaken individual trees creating favorable conditions for native and non-native pests. Wildfire is a major change component for Nevada's forest and rangelands. In 2022, Nevada experienced minimal wildfires compared to the previous five years.



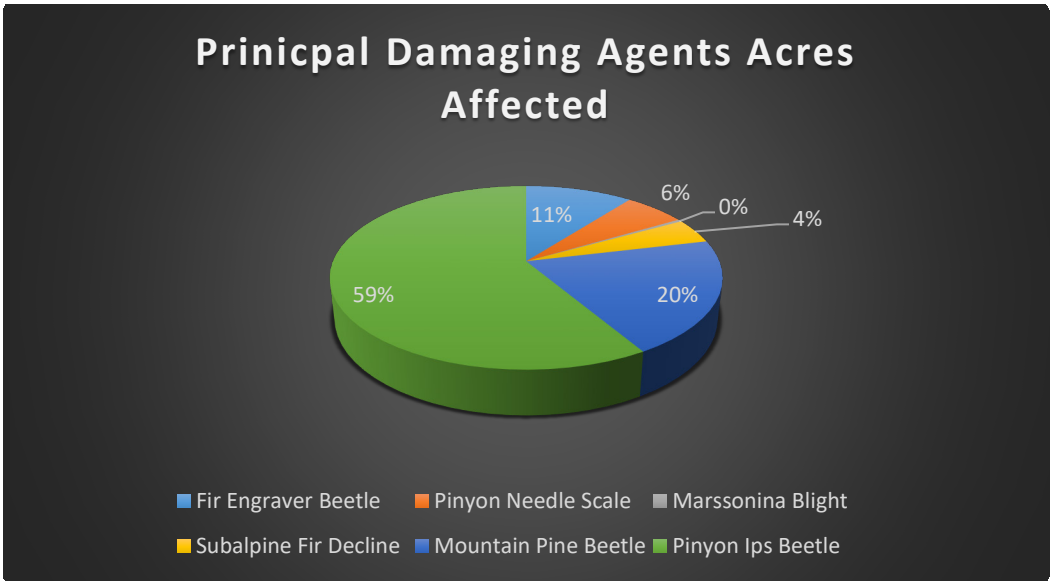
Approximately 58,405 acres were burned in 2022 as compared to 1,001,966 acres in 2018. The 2022 fire season in the great basin was preceded by a very dry winter and spring, thus a lower than average carry-over fuel load existed. IN Mid-July large spread lightening events occurred with large fires emerging in eastern Nevada. Some large fires remained active into October (pg. 4 Great Basin Fire Activity Report https://gacc.nifc.gov/gbcc/predictive/docs/2022FireActivityReport.pdf).

Forest health issues range at varying degrees, but no large-scale outbreaks were recorded in 2022. In 2022 Aerial detection surveys were conducted over a total of 7,906, 706 acres which equates to approximately 11.2% of the state's overall acres of 70,773,727 (another way to put it is that 62,867,020 aces were not flown over/surveyed for forest health disease).

Total recorded damage is approximately 84,468.4 acres. Pinyon Ips beetle caused the most damage statewide affecting approximately 46,665.9 acres. The next

most active pest was Mountain pine beetle detected on 16,103.8 acres affecting mainly lodgepole, limber, whitebark, western white, and bristlecone pine. Mountain pine beetle outbreaks have been increasing for the past several years. Marssonina Blight in Aspen drastically decreased from 2019 levels on 7,750 acres to only 313.2 acres for 2022.

Fir Engraver beetle damage has fluctuated over the past several years with 2022 observing 8,353.5 acres of damage. Conversely Pinyon Needle scale damage drastically decreased to just 4,790.1 acres of damage this year compared to 18, 344 acres in 2019.



Subalpine fir decline is a root disease complex that damages sub-alpine fir and white fir, which increased by 1,616 acres since 2019 to a total of 3,486 for 2022. This complex is mainly casued by Annosum root disease, and western balsam bark beetle, and other wood borers. The majority of this damage was confined to the Jarbridge Mountains, in northeast Nevada.

White Satin Moth, a non-native insect pest, continues to be detected throughout Nevada with the greatest impacts being in Carson and the Santa Rosa Ranges. Aerial surveys detected 2,399 acres statewide in 2019, however in 2022 only 23.7 acres showed evidence of white-satin moth all of which are in the Carson Range.

A cooperative study between the University of Nevada, Nevada division of Forestry, and Nevada State Parks is ongoing to study the effects from White Satin Moth. This study is researching the effects of tree genetics, soils and water tables have differences on how levels of damage the pest causes and if better management guidelines be developed. For additional information see the Nevada Division of Forestry web site.

Forest Health Project Highlights

Screwbean Mesquite Research/ Sooty Canker Identified

The Nevada Division of Forestry has actively been participating and supporting research on screwbean mesquite die-off in Southern Nevada. Research was funded collaboratively through several federal and local agencies. The outcome of this research is that the sooty canker fungus appears to be having a devastating effect on screwbean mesquite trees in Southern Nevada, Arizona, and California. Trees were monitored for the calendar year of 2022 every 6-weeks and observations were made about the health of each monitored tree. Trainings were conducted with agency staff and private landowners so they could learn how to monitor individual screwbean mesquite trees and assess their health over the duration of the year/research. A working group was formed for Screwbean Mesquite die-off a mid-term report and final report were presented by Ecoculture researchers. Another informational session will take place soon with a professor and his PHD student from UNLV who are also researching how the water table affects screwbean mesquite die-off.

Bark beetle Sanitation efforts ongoing in the Western Region

Drought has weakened many trees, especially those near the edge of fire scars; Pinyon Ips beetles are abundant near the Tamarack fire scar in western Nevada. 19 landowners requested assistance and bark beetle sanitation work has been conducted on their properties. More landowners are requesting assistance and their trees will be assessed for sanitation needs. Mountain pine beetles are afflicting many other stands throughout the eastern Sierra Mountain range. A 66-acre privately owned parcel has been assessed and bark beetle sanitation is underway. At Mt. Rose Ski resort 40 acres have been assessed and tree's are

marked for removal/ sanitation. White pine blister rust is also being monitored in this forested area that abuts Humboldt-Toiyabe land holdings (that the ski resort leases from the USFS for recreation use). Several forest health sanitation projects are underway in the western part of the state to assist in decreasing the spread of the beetles in the Spring of 2023.

Bristlecone stand health via thinning

This project treated 10 acres on private land located in the Deer Creek drainage of the Spring Mountains in Southern Nevada. The property consists of mixed conifer stands dominated by mature and pole size bristlecone pine trees. White fir is the next most dominant species with limber pine, ponderosa pine and mountain mahogany species decreasing in percentage, respectively. Mountain pine beetle is causing isolated damage in the bristlecone and limber pine. However, white fir encroachment that is outcompeting all tree species comprises more than 90% of the understory, which is preventing any bristlecone pine to naturally regenerate. The understory canopy cover is more than 70% shade. The project work mechanically removed the white fir understory to open the forest floor to allow for natural regeneration of the other pine species. Slash debris was removed and chipped on site adjacent to existing roads. A portion of the slash will be piled and burned on steeper slopes which will also open the forest floor to natural regeneration for bristlecone pine. Some mountain pine beetle infested trees were removed to reduce the local populations of the bark beetle. A few damaged and dying ponderosa pine and limber pine were also removed as a hazard tree mitigation measure.

Invasive species removal for riparian corridor health

Invasive species (tamarisk) removal is occurring in collaboration Southern Nevada Water Authority (SNWA) on their Warm Springs Natural Area (WSNA) in Moapa Nevada. WSNA is a 1,250-acre nature preserve. The property is regionally significant and contains more than 20 perennial springs that form the headwaters of the Muddy River, as well as numerous habitat types. The project work protects riparian and mesquite habitats at WSNA by removing Tamarisk, reducing fire potential and increasing resilience to drought, which will benefit the wildlife they support, including the endangered Moapa dace that resides in the headwaters. SNWA will monitor the site for any re-growth of the salt cedar and treat with herbicide.

Treatment area for Tamarisk removal along the riparian corridor of the Muddy river headwaters

After treatment with wood chips scattered

<u>Two Short Videos representing Forest Health Activities</u>

This year the Nevada Division of Forestry published land stewardship videos some of which interview landowners regarding Forest health activities on their properties. Below is a link to a film clip regarding Tamarisk removal in Bunkerville, Nevada https://www.youtube.com/watch?v=f0WQ1NiGMLo

Here is another link discussing the importance of thinning for forest health, fire mitigation and overall land stewardship on Mt. Charleston in Southern Nevada. https://youtu.be/LUW3osYLoJk

Statewide Trapping Program

The Nevada Division of Forestry cooperates with the Nevada Department of Agriculture on trapping activities. The Nevada Division of Forestry mainly traps native bark beetle populations to monitor trends and populations. The focus is placed mainly on mountain pine beetle, pine engraver, western pine beetle, and fir engraver beetle. In 2022 NDF did not set traps, due to the Forest Health position being vacant. The Nevada Department of Agriculture conducts trapping and monitoring of native and non-native insects. Generally, they survey Asian defoliator, exotic wood borer surveys, gypsy moth, palm commodity survey, and pine shoot beetles. Please visit their website for exact trapping details.

For More Information:

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