Utah Forest Health Highlights
2019

Forest Resources

Utah landscapes are diverse, and visitors from around the world, together with locals, enjoy Utah's forests, which extends from deserts and canyons to the alpine zone.

While Utah is only 34% forested, these forests have high scenic, recreation, wildlife and other forest use values. In Utah's dry climate, healthy forests protect and enhance water quality and quantity, for a growing population.

Utah has a total of 18.3 million acres of forests. Most of those acres are administered by federal, state, and local agencies. About 2.9 million of the total acres are privately owned.

Detailed information on Utah's forest vegetation is available from Interior West Forest Inventory and Analysis (FIA). http://www.fs.fed.us/rm/ogden/publications/utah.shtml

Tree net growth and tree mortality estimates are based on FIA inventory 2006-2016, of all live trees 5.0 inches in diameter and larger on forest land in Utah average. Tree mortality, averaged 256.7 million cubic feet. The averaged annual net growth of all live tree species on forested lands is 207.2 million cubic feet.

The difference between the gross growth and mortality results in a negative net annual growth estimate of –49.5 million cubic feet on forest land in Utah, which suggests that there has been more tree mortality, on average, than growth. The mortality that has contributed to this negative net growth is likely due to: drought, disease, past/current bark beetle outbreaks, and wildfire.

Components of Change

Several factors have contributed to the decline in forest health including historic logging, grazing patterns, and fire exclusion. Drought conditions can detrimentally affect forest health causing significant changes in vegetative conditions, particularly if combined with these other human-caused practices. Forest conditions throughout much of Utah are composed of dense stands that are relatively uniform in age. As species or age class composition changes due to large-scale insect outbreaks, large amounts of woody debris accumulate. Because of these alterations, many lower elevation forested landscapes are now susceptible to more severe wildfire. Although abundant spruce beetle induced mortality occurs in many spruce-fir high elevation sites, stand replacing wildfire intervals are much more infrequent than lower elevation sites and often driven by suitable fire weather. The main components of change in forests include wildfire, insect and disease outbreaks, and invasive insects, disease and plants.

Smoke from fire in Utah 2019.
Photo by Jason Curry FFSL

The 2019 fire year was mild compared to 2018, which had 1,253 total fires that burned 370,448 acres. In 2019, there were 1,168 total fires, which burned a total of 83,613 acres. There was only one fire over 10,000 acres, called the Neck fire which totaled 18,769 acres. There were 3 fires over 5,000 acres, 11 fires over 1,000 acres, and many small fires. All totaled these fires made up 70,108 acres of the state total number of acres burned.

Forest Health Issues

Several factors have contributed to poor forest health in Utah: thick overgrown forests, expansive areas of single tree species, containing large trees, and other characteristics which make these forests very susceptible to bark beetle outbreaks. Other factors such as continuing drought, stresses the trees, making them even more susceptible to bark beetle outbreaks

Insects and disease are not the cause of forest health issues, but are the result of poor forest health. It is the poor health of our forests that induces insect outbreak.

Hundreds of Utah communities are at risk to catastrophic bark beetle induced mortality. In 1997, approximately 2.2 million acres of Utah's forests were rated moderate to highly susceptible to bark beetle attack. Over the past 20+ years, many of the acres rated susceptible have been affected by bark beetle.

Insect induced tree mortality is described in terms of acres affected, however, not all trees on these acres are dead. Not all forested lands are aerially surveyed, and not all the same acres are surveyed every year.

Spruce beetle caused mortality decreased by 60.5% from 2018 where 92,832 acers were affected, and even though there is a decrease spruce beetle is still at outbreak levels in 2019, with 36,634 acres affected statewide. The largest number of acres affected in 2019 occurred in Duchesne, Summit, and Dagget counties. Unfortunately, much of the mature Engelmann spruce throughout the state has been killed by the spruce beetle.

Western spruce budworm defoliation increased by 35.5% from 2018, with 108,848 acres affected in 2019. Most counties had some damage. However, Sevier and Garfield had the most damage.

Douglas fir beetle induced damage decreased significantly from 2018 statewide by 85 percent. Still, Douglas fir beetle induced mortality was noted in most counties in 2019, with a total 1,810 of acres affected.

Fir engraver beetle, usually in white fir, decreased substantially from 2018 by 68 percent. In 2019, fir engraver beetle induced damage was noted in most counties, with 6,797 acers affected statewide.

Invasive Species

Invasive species are non-native insects, diseases, or plants, which may become established, spreading rapidly, causing significant economic and ecological impacts to forest and urban trees.

Balsam woolly adelgid, *Adelges piceae* (Ratzeburg) (Hemiptera: Adelgidae) (BWA), is a tiny sucking insect that was introduced to North America from Europe and is a damaging insect of true fir. In Utah, subalpine fir (*Abies lasiocarpa*) is a highly susceptible host tree; white fir (*A. concolor*) is also a host, but is more tolerant.

BWA caused gouting on Subalpine fir branch

BWA white woolly masses on Subalpine fir trunk

In September 2017 BWA was confirmed in Utah. It has now been confirmed in Box Elder, Cache, Rich, Weber, Davis, Morgan, Salt Lake and Summit counties, with Utah County added to the list in 2018. BWA was seen with aerial detection surveys showing 13,021 acres affected.

Emerald ash borer (EAB) is an invasive beetle that attacks only ash trees. It may be one of the most destructive forest insects to invade the United States.

EAB was first detected in Michigan. It is thought to have been in wood packing material, imported from its native Asia. Since then, EAB has been found in more than 20 mid-western and eastern states, killing more than 50 million ash trees.

In September of 2013, EAB was found in and around Boulder, Colorado. Since then, it has expanded outside of the city of Boulder, and perhaps throughout Boulder County.

Emerald ash borer adults and exit holes, with penny for size.
ofallen.mo.us

To date, EAB has not yet been discovered in Utah. The transport of nursery stock and firewood or other woody materials, made of ash, may introduce it in the future. Evidence suggests EAB is generally established in an area for several years before it is detected (see USDA's EAB Pest Alert for more information).

Gypsy moth is a non-native insect defoliator, which if established in Utah, would alter our hardwood forest landscapes, adversely affecting our high-value watersheds. Utah continues an aggressive monitoring program statewide, to catch potential infestations before they become established. Gypsy moth was not detected in Utah between 2008 and 2015. However, one was trapped in 2016, but there has been no addition captures since.

Noxious Weeds are a continuing problem for all Western states. They have the ability to aggressively colonize disturbed habitats, displacing native plant species, and alter ecosystems.

Weeds of Utah
slideshare.net

As of 2013, approximately 338 species of exotic aquatic and terrestrial plants infest lands in the State of Utah. Currently, Utah has declared 54 of these species as noxious weeds.

The exact acreage of lands infested by noxious weeds is unknown; however, every county in Utah is infested by at least ten noxious weed species. Many species of exotic aquatic and terrestrial plants infest the State.

Uinta Mountains, Photo by C. Keyes, FFSL

For More Information:

Department of Natural Resources **Forestry, Fire & State Lands** 1594 W North Temple Salt Lake City, UT 84114-5703 801-538-5418	**USDA Forest Service** **Forest Health Monitoring Program** 324 25th Street Ogden, UT 84401 801-625-5162	**Interior West Forest Inventory & Analysis** 507 25th St Ogden, UT 84401 801-625-5388	