**2009 Montana Forest Health Highlights**

Forest Resource
The forests of Montana's "Big Sky" country are a reflection of the states' inland geographic position and its topography. Warm and moist Pacific air masses create more diverse forests west of the Continental Divide while a colder and drier climate favors relatively sparser, more homogenous forests east of the Divide. Approximately 25.2 million acres are forested in Montana, with about 18.3 million acres publicly owned and almost 6.9 million acres privately owned. The predominant forest types are Douglas-fir (30 %), lodgepole pine (17 %), ponderosa pine (12 %) and fir/spruce/hemlock (19 %). Detailed information on Montana's forest vegetation is available from the [Interior West FIA](#).
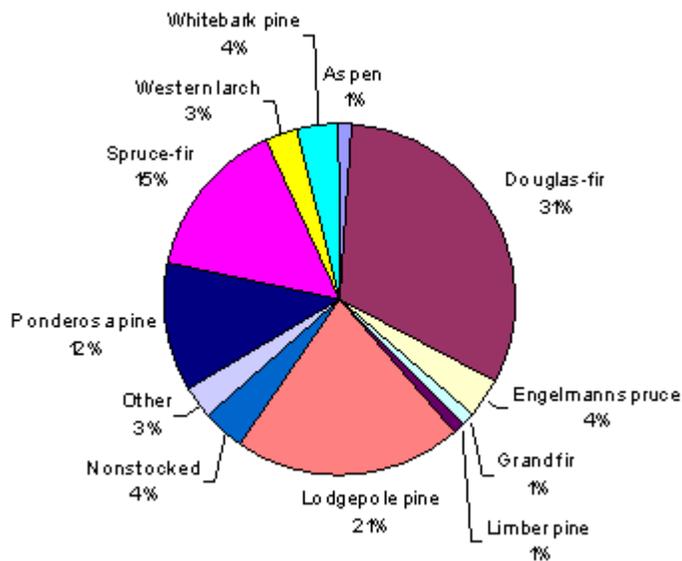

Montana forests are highly valued for their scenic, recreation, wildlife, timber, and watershed attributes. These forests are also highly subject to changes brought on by disturbances such as fire, weather, climate, insects, and diseases. Fire activity was relatively low in 2009 and precipitation was near or at normal levels. Insect and disease conditions are tracked by a cooperative effort of the Montana Department of Natural Resources and Conservation Forest Pest Management Program and the USDA Forest Service Forest Health Protection Program.

Aerial Detection Survey
The annual aerial detection survey in Montana was conducted from June 29 thru September 26, 2009. The survey covered approximately 27.8 million acres of mixed ownership, forested lands, excluding most wilderness areas.
Much of the data summarized in this report is a product of the aerial surveys, as well as ground surveys and biological evaluations. The annual aerial detection survey is an overview survey designed to cover large areas in a relatively short period of time. The intent of the survey is to cover each area once a year during which time the observer maps as many disturbances as possible.

Areas Surveyed During the Forest Health Aerial Detection Survey
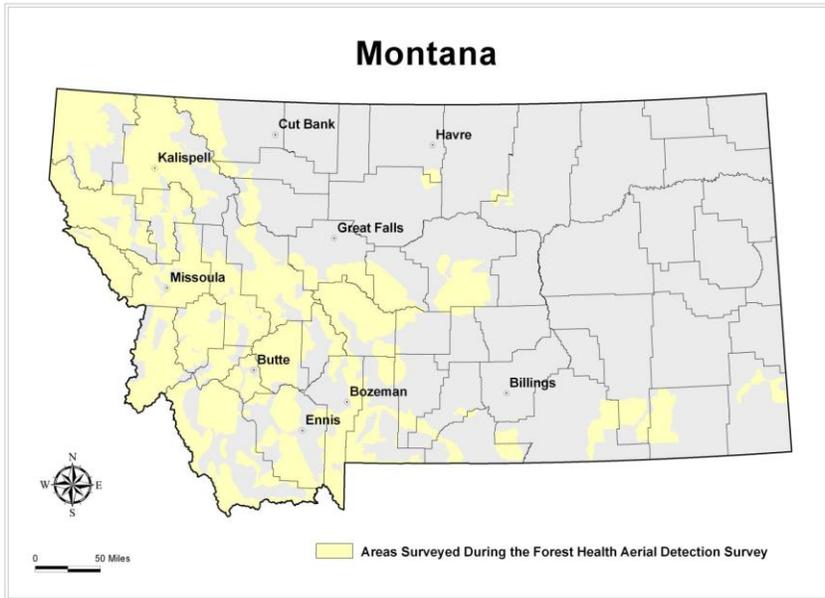
Bark Beetles

Mountain pine beetle and Douglas-fir beetle are the most common bark beetles active in Montana forests. Mountain pine beetle (MPB) populations are highest in the west-central portion of Montana and continued to increase in 2009. In some regions, populations have begun to decline because of host depletion. In summary, mountain pine beetle-infested acres in lodgepole pine stands increased dramatically in 2009—up from just over 1.5 million acres recorded in 2008, to slightly more than 2.7 million acres in 2009. Ponderosa, whitebark, and other species of pine are impacted as well.

Douglas-fir beetle (DFB) continues to be active in western Montana. At a few locations in northwestern and central Montana, populations remained at low-epidemic levels; in other areas they declined considerably. In most areas, DFB populations remain at nearly endemic levels.

Defoliators
Western Spruce Budworm
Western spruce budworm (WSBW) continues to be the most significant defoliator in the state. In 2009, 2,554,205 acres were mapped as defoliated by WSBW in Montana. Defoliation was widespread in northwestern and central Montana affecting mainly Douglas-fir. A few areas with multiple years of defoliation are beginning to see tree mortality in association with DFB.

Gypsy Moth
Cooperative detection monitoring continued for the gypsy moth, *Lymantria dispar*, in 2009 with USDA Animal and Plant Health Inspection Service (APHIS), Montana Department of Agriculture (MDA), Montana Department of Natural Resources and Conservation (DNRC), and USDA Forest Service. More than 1,000 pheromone-baited traps were placed throughout Montana's forests and urban areas most frequented by travelers.

Root Diseases
Root diseases are diseases of the site and do not change drastically from one year to the next. Root disease fungi cause damage and mortality on more than 7 million acres in western Montana, killing more than 30 million trees annually. Root disease-caused mortality is more common west of the Continental Divide. Large areas of root disease can be found east of the Divide, but it tends to occur in more discrete patches, rather than being ubiquitous throughout an area. Also, root diseases can be commonly found in riparian areas east of the Continental Divide, often in Engelmann spruce and subalpine fir.

Foliage Diseases
Over 2,000 acres of Rhabdocline needle cast of Douglas-fir were identified in Sanders and Lake Counties on the western edge of the Salish Mountains. About two-thirds of the affected acres were on Tribal lands and one-third was on private lands. Western larch needle blight was also identified on about 60 acres in western Montana.

Dwarf Mistletoes
Historical assessments of dwarf mistletoe stands in Montana show that about 16% of Douglas-fir, 33% of lodgepole pine, and 30% of western larch stands are infested with dwarf mistletoe. More recent assessments using FIA data collected on over 50,000 trees across Montana show that about 1% of Douglas-fir, 3.2% of lodgepole pine, and 3.9% of western larch trees were infected.

White Pine Blister Rust

Western white pine

Mature western white pine continues to be lost due to a combination of blister rust and MPB. Lack of suitable sites, either man-made or natural, limits natural regeneration, and white pine blister rust may kill a high proportion of natural seedlings. Resistant stock is planted operationally on suitable western white pine sites on federal, state, industrial, and private forest lands throughout northwestern Montana. In addition to planting rust-resistant stock, pruning of the lower bole is an important tool used in blister rust management. In order to encourage initiation of pruning programs a two-day workshop was held for federal and state foresters in April of 2009 in Libby, Montana, focusing on the operational aspects of how to carry out pruning in western white pine plantations.

Whitebark pine

White pine blister rust has been impacting whitebark pine ecosystems for many decades. In addition, recent outbreaks of MPB have caused widespread mortality in many whitebark pine stands already impacted by white pine blister rust. The combination of white pine blister rust, bark beetle outbreaks, and lack of natural regeneration due to fire suppression has raised concerns about the long-term viability of whitebark pine ecosystems.

A recent survey by FHP of whitebark pine stands throughout Idaho and Montana found that of the 42 sampled stands, 69% have less whitebark pine regeneration than that of other species such as subalpine fir and Engelmann spruce. White pine blister rust infection varied from 0% to 81% in these stands, and 40% had infection levels greater than 20%. Taking into account the ongoing impacts of white pine blister rust and bark beetles, the report concludes that approximately 75% of these stands will convert to other species without active restoration efforts or the occurrence of wildfire.

Limber pine

A report describing the current amount, distribution, and condition of limber pine in Montana will be available in early 2010. Authored by USFS FHP, the Montana DNRC, and the U.S. Geological Survey, it will also provide information on protection and restoration of this ecologically important species.

Limber pine seeds were collected from three Montana sites in 2009 for inclusion in a West-wide collection being carried out for gene conservation, white pine blister rust resistance screening,

and various research projects. Seed will be collected from several additional locations in Montana in 2010 if funding is available and cone yields are adequate.

Abiotic Damage
Nearly 800 acres of windthrow and 150 acres of avalanche-caused tree damage were mapped in 2009. Most windthrow occurred in a band that stretches from north-central Montana to southwestern Montana.

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