



MONTANA FOREST HEALTH HIGHLIGHTS 2011



Limber pine outside Choteau, Montana.

Montana's diverse forests are primarily composed of Douglas-fir, five species of pine, various true firs, spruce, larch and aspen. Along with these diverse tree species comes an equally diverse array of insects and diseases. Healthy, vigorous forests are generally resilient to insects and diseases but outbreaks can indicate changing forest conditions. Montana forests have experienced recent drought, overstocking, significant changes in fire ecology and noteworthy outbreaks of insects and diseases. These are landscape level agents of change and while their intensity tends to ebb and flow, the cumulative effects may linger for decades. The forests today are in many ways different from those in years past.

Much of our understanding of Montana forest conditions comes from cooperative survey between State of Montana DNRC and USFS Forest Health Protection (FHP). In 2011, USFS FHP aerially surveyed approximately 20.5 million acres of forested lands.

This year's survey included areas not historically covered: Fort Peck Reservoir and parts of Garfield, McCone, Musselshell, Petroleum, and Valley Counties.

DISTRIBUTION OF INSECT ACTIVITY ACROSS VARIOUS OWNERSHIPS IN 2010 (ACRES)

	Federal	State	Private	Total
Mountain pine beetle	864,205	39,714	146,074	1,049,993
Douglas-fir beetle	7,255	523	1,304	9,082
Spruce beetle	3,071	2	48	3,121
W. spruce budworm	818,002	72,337	310,250	1,200,589
Pine Butterfly	737	0	47	784

For a copy of the 2011 Montana Forest Health Conditions and Program Highlights, please visit:
<http://dnrc.mt.gov/forestry/assistance/pests>



MONTANA FOREST HEALTH HIGHLIGHTS – 2011



Mountain Pine Beetle

Mountain pine beetle activity continues to decline throughout much of the state especially in areas where the susceptible host has been depleted. Nonetheless, mountain pine beetle continued to kill trees on over 1 million acres in 2011. The outbreak lingers in Lewis and Clark, Granite, and Powell Counties and is emerging in Ravalli and Missoula Counties.

Long-term survival of whitebark pine is in peril due to outright mortality and lack of regeneration.

The DNRC has regeneration surveys underway in the Greater Yellowstone Ecosystem and the Stillwater State Forest along with cone collection projects.

Since the outbreak began in 2000, mountain pine beetle has killed trees on over 5 million acres, drastically altering Montana landscapes.

Mountain pine beetle continues to kill a significant component of whitebark pine in high elevation ecosystems. Effects of this mortality are compounded by the non-native, invasive white pine blister rust and fire exclusion.

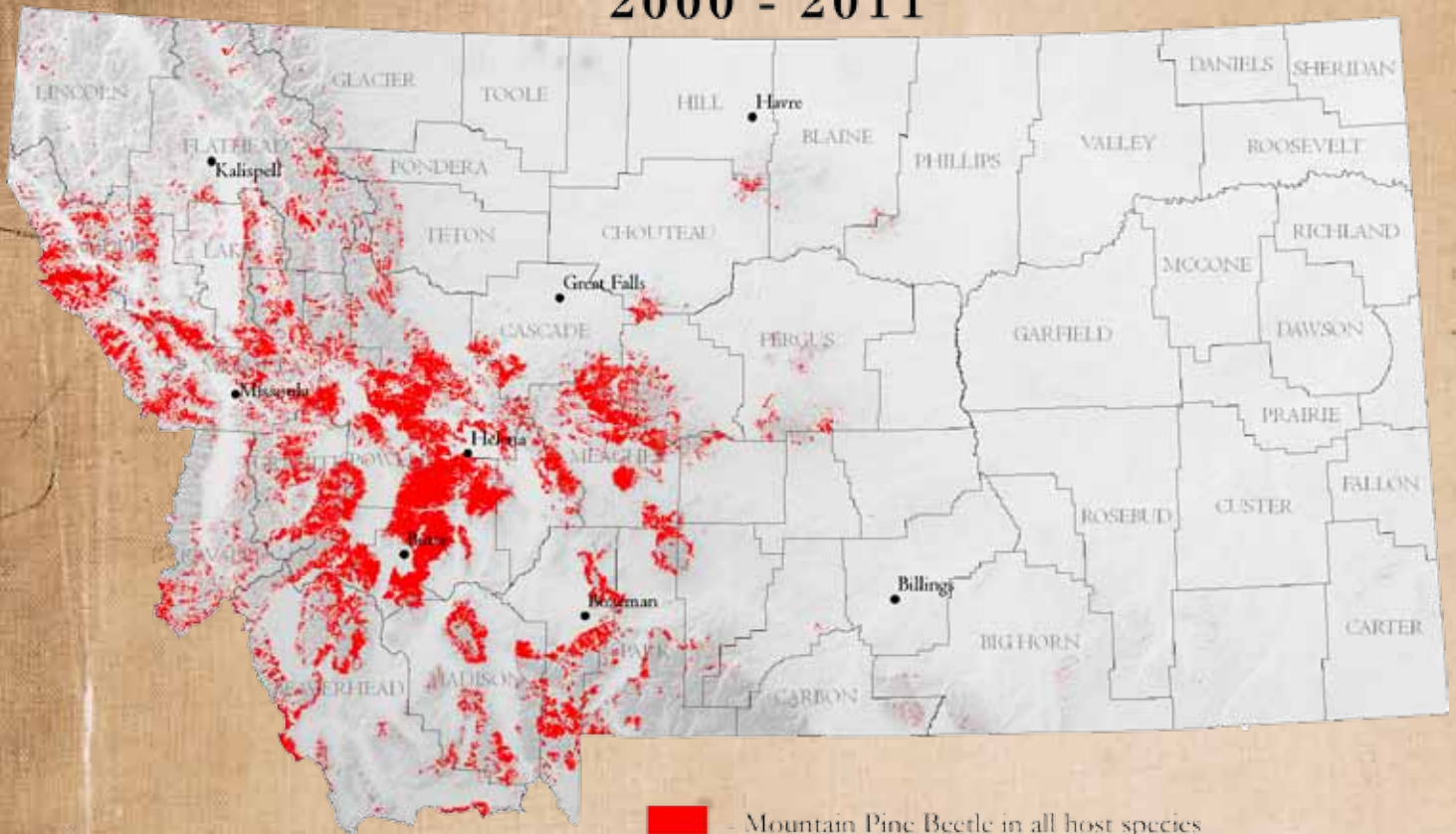


Adult mountain pine beetle



Mountain pine beetle gallery

MOUNTAIN PINE BEETLE IN MONTANA 2000 - 2011



BALSAM WOOLLY ADELGID (BWA) DETECTION IN MONTANA SURVEY RESULTS 2010 - 2011



Balsam Woolly Adelgid

Balsam woolly adelgid (BWA) has long been confirmed along the Idaho-Montana border but surveys in 2011 detected presence in interior forests as well. This non-native, invasive insect appears as white wool on the bole and branches of subalpine fir and causes gradual branch flagging and eventual tree mortality. The DNRC conducted ground surveys in 2010 and will continue surveys in 2012, particularly in the interior part of the state.

Western Spruce Budworm

Over 1.2 million acres of Douglas-fir, spruce, and true fir were defoliated by western spruce budworm (WSBW) in 2011. In some areas, subsequent years of defoliation have led to understory mortality and even some mature tree decline. WSBW is recently more active in the northwest part of the state, particularly in the Stillwater State Forest, Kootenai National Forest, Swan Valley, and Kalispell area.

Douglas-Fir Tussock Moth

Douglas-fir tussock moth (DFTM) is co-occurring with WSBW in some areas as



Douglas-fir tussock moth

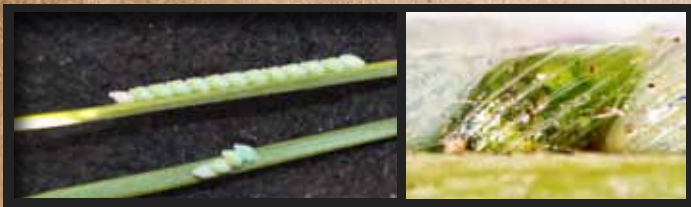


Defoliation caused by the douglas-fir-tussock moth

well. It is a much more aggressive defoliator and can kill trees more swiftly. Defoliation from DFTM was not detected from aerial surveys but ground surveys indicate increasing activity in Lake, Flathead, and Missoula Counties.

White Pine Butterfly

Pine butterfly naturally occurs in ponderosa pine yet historic outbreaks have been recorded in Montana. In 2011, large outbreaks of adults were noted and



White pine butterfly egg masses. Bitterroot, MT.

larvae created a nuisance to landowners with their copious amounts of silk and frass. Approximately 800 acres near Skalkaho Pass were severely defoliated. Thus far, no tree mortality has been attributed to pine butterfly but mature trees have been killed in past outbreaks. To help anticipate defoliation in 2012, MT DNRC conducted an egg mass survey in the fall of 2011. Plots were established on 15 sites throughout the Bitterroot Valley. Preliminary data suggests that at least four sites should expect continued defoliation in 2012. Secondary beetles such as *Ips* species and western pine beetle are of particular concern as they tend to attack stressed trees.

Root Disease

Root disease typically kills more trees than wildfire or bark beetles in a given year, yet is often overlooked as a major agent of change on our landscape. Root diseases persist on a site causing reduced growth, killing trees, and attracting bark beetles. Their presence on a site strongly dictates the species composition and structure of a stand. The most common root diseases in Montana include armillaria, laminated, annosus, and schweinitzii and impact over 8 million acres.



Root disease

Urban Forest Pests

With the financial assistance of an FHM grant, the MT DNRC Forest Pest Management and Urban and Community Forestry Programs coordinated an outreach program to educate master gardeners, extension agents, nursery and tree care professionals, and natural resource managers on the threats of invasive insects in Montana. The curriculum focused on Asian longhorned beetle, emerald ash borer, sirex wood wasp, and gypsy moth and included important ecological characteristics, potential impact, and key diagnostic features. Thirty workshops were conducted throughout the state with well over 400 people attending.



WHITE PINE BUTTERFLY EGG MASS SURVEY PLOTS - 2011

Gypsy Moth

The non-native invasive gypsy moth has a broad host range and is an imminent threat to Montana's urban and forest trees. Early detection is essential in an effective eradication program. A broad network of pheromone-baited gypsy moth traps were set by a collaborative interagency group throughout the state. One male gypsy moth (Eurasian) was caught in a campground in Billings. Delimitation surveys were conducted in 2012, and additional traps are planned. No other moths were caught in the state.

While many insects and diseases are currently active on the landscape, there are options for forest landowners and managers wishing to mitigate their impacts.

In general, vigorous forests are more resilient to insects and diseases and can be achieved through engaged stewardship and active management. For more information visit:

<http://dnrc.mt.gov/forestry/assistance/pests>