Montana Forest Health Highlights 2012

Montana's landscape is covered by diverse forest types that include an equally diverse array of insects and diseases. Although many of these organisms are an essential part of the forest ecosystem, vigorous forests are much more resilient to these disturbances. Recent drought, overstocking, and disruption in fire regime have reduced overall vigor and led to intensified 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.

Much of our understanding of Montana forest conditions comes from cooperative aerial surveys performed by the State of Montana DNRC and USFS Forest Health Protection. Despite some areas being shrouded by wildfire smoke, the survey covered approximately 24.3 million acres of forested lands in Montana in 2012. Data from this survey and observations made from the ground were used to compile the Montana Forest Insect and Disease Conditions Report. The full report can be viewed at: http://dnrc.mt.gov/forestry/assistance/pests

Mountain pine beetle

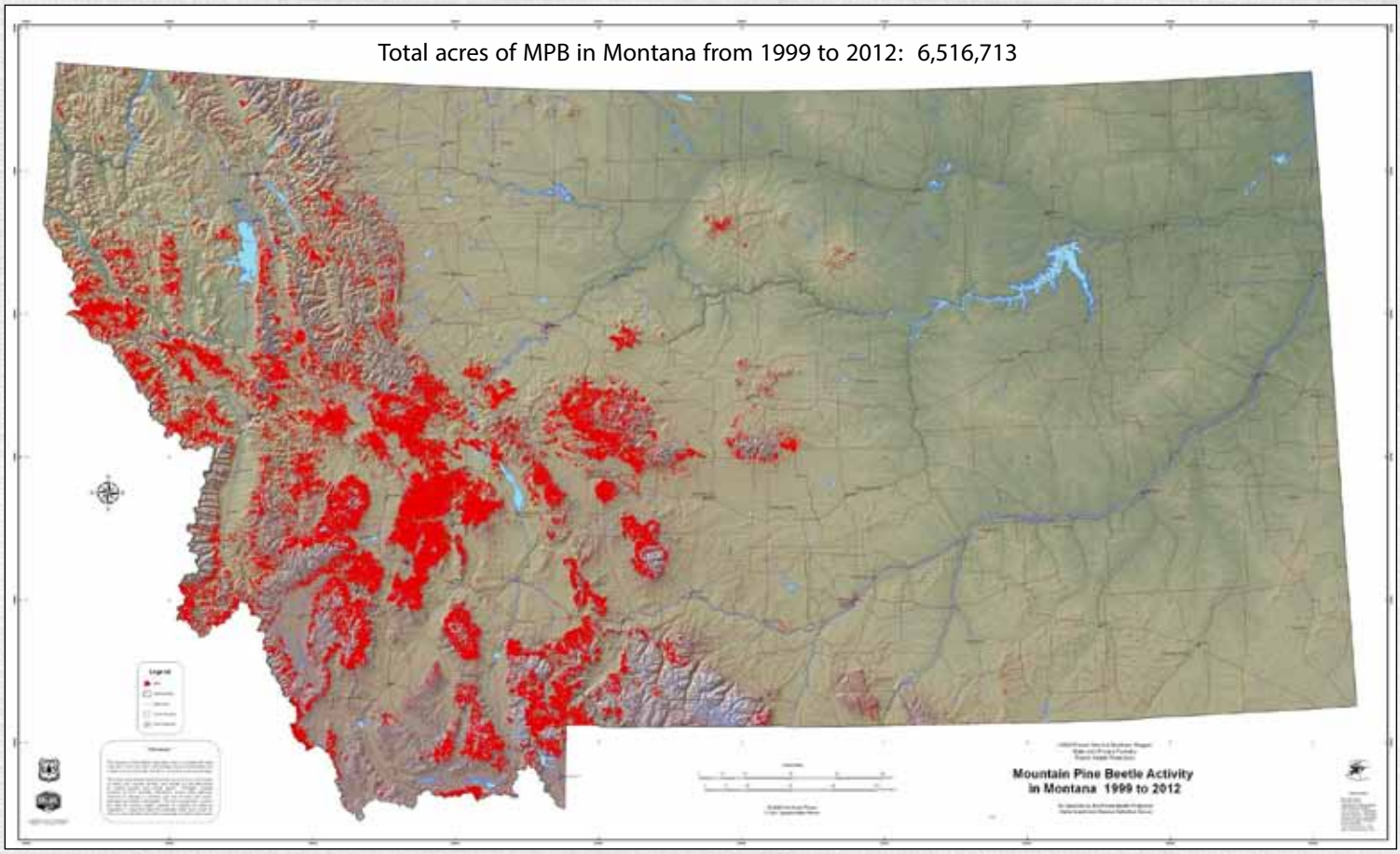
Mountain pine beetle killed trees on over 660,000 acres in 2012 alone (see table below). Although these figures are less than in previous years, the outbreak is still expanding into areas with susceptible hosts, particularly in the Bitterroot Valley and Granite County. High elevation ecosystems are suffering dramatic effects from the combined mortality of mountain pine beetle, white pine blister rust, and fire suppression. Long-term monitoring of whitebark pine is underway with specific interest on regeneration of stands killed by mountain pine beetle. Since the beginning of the outbreak (approximately 2000), over six million acres of pine have been killed. Impacts on water quality, wildlife, fire hazard, property values, and tourism are not yet fully realized.

Long-term monitoring of mountain pine beetle activity indicates peak flight occurs approximately July-August. High numbers of beetles on a monitoring site in Ravalli County led to a ground survey in the area; no recent attacks were noted.

Distribution of Mountain Pine Beetle Activity Across Various Ownerships in 2011 (acres)

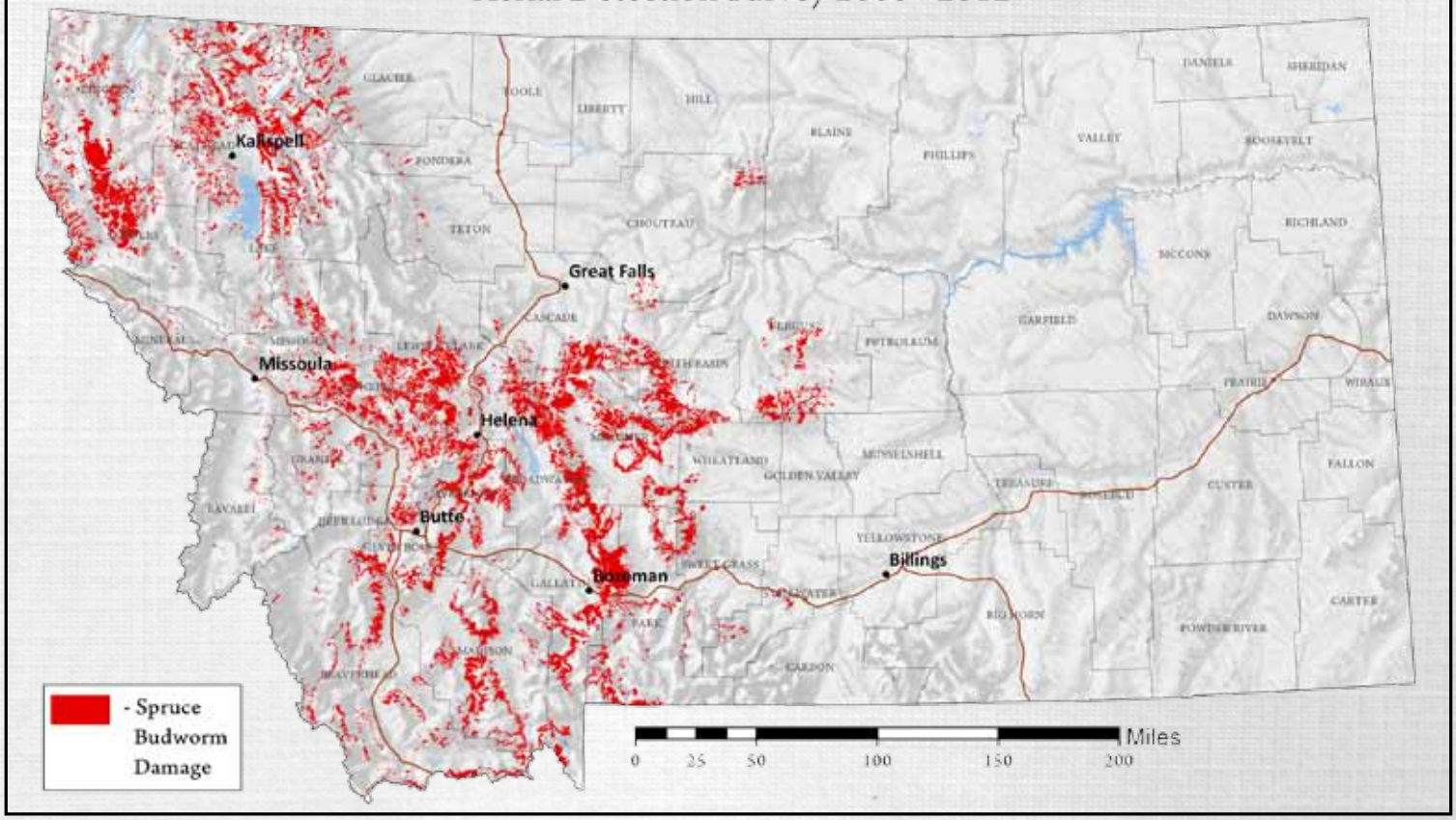
	Federal	State	Private	Total
Mountain pine beetle - lodgepole	439,705	12,513	39,000	491,218
Mountain pine beetle - ponderosa	92,037	8,365	51,082	151,484
Mountain pine beetle - high elevation	21,423	18	928	22,369
Mountain pine beetle - western white pine	1,211	2	52	1,265
Mountain pine beetle - all species	554,376	20,898	91,062	666,336

Total acres of MPB in Montana from 1999 to 2012: 6,516,713



WESTERN SPRUCE BUDWORM IN MONTANA

Aerial Detection Survey 2000 - 2012



Western spruce budworm

Western spruce budworm defoliated nearly 1.5 million acres of Douglas-fir and spruce forests. Chronic activity continued east of the Continental Divide with increased activity in the western part of the state. In areas with repeated years of heavy defoliation, Douglas-fir beetle is taking advantage of weakened trees and causing mortality.

Western spruce budworm damage near Big Sky, Montana

Douglas-fir tussock moth

Heavy Douglas-fir tussock moth damage occurred along Flathead Lake and around Columbia Falls, Kalispell, and Bigfork in 2011. An intensive survey in 2012 identified areas with high numbers of seemingly viable egg masses, suggesting another outbreak would occur in 2012. However, these areas did not experience even moderate defoliation, and thus it is likely that virus built up in the population and killed the larvae before they could cause significant damage.

Douglas-fir tussock moth larvae & frass

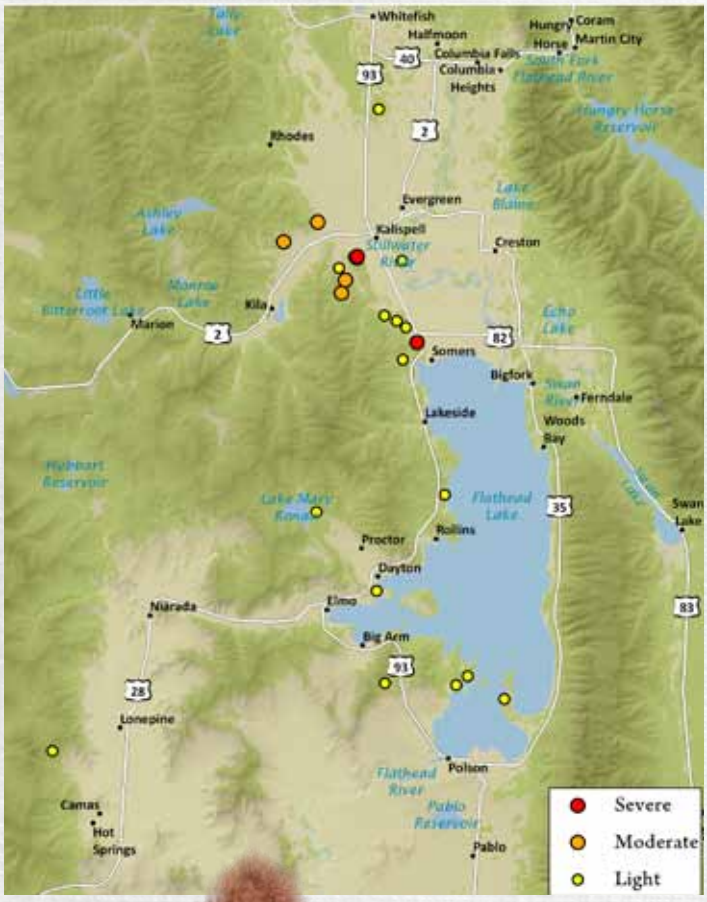
Douglas-fir tussock moth larva

Douglas-fir tussock moth egg mass

Defoliation caused by the Douglas-fir-tussock moth

Douglas-fir tussock moth detection

Survey Results 2012



Douglas-fir tussock moth damage on Colorado blue spruce near north Kalispell 2012

Pine butterfly

Pine butterfly was also abundant in 2011, specifically in the Bitterroot Valley. An intensive survey was conducted in 2011 and numerous sites had high numbers of viable egg masses. No defoliation was noted in 2012, however, and thus it is likely that parasitoids regulated the population. Egg masses reared in the lab did not produce many viable larvae but did produce numerous wasps (a common parasitoid).

Pine butterfly egg masses

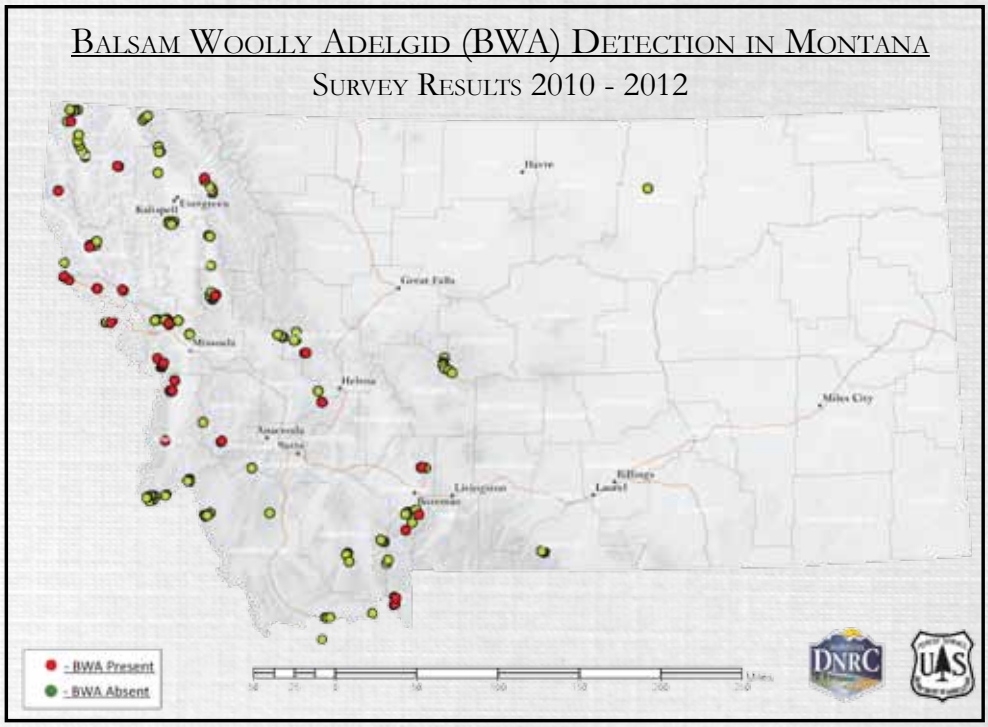
Gypsy moth

Gypsy moth is a non-native invasive defoliator that has not yet established in Montana. Over 200 detection traps were set by the Montana Department of Agriculture and DNRC with no positive catches in 2012.

Gypsy moth

Balsam woolly adelgid

The distribution of balsam woolly adelgid (BWA) is still being delineated in Montana. In 2012, the DNRC established 50 plots with BWA present in 20.



Balsam woolly adelgid gouting

Balsam woolly adelgid

A great variety of insects and diseases play a major role in shaping Montana forests and are represented in the full report. Although commonly overlooked, root disease kills trees on more than 8 million acres in western Montana, killing more than 30 million trees annually. In 2012, larch needle cast was mapped on nearly 48,000 acres in western Montana. Diplodia shoot blight, dwarf mistletoes, white pine blister rust, and a myriad other bark beetles are just a sampling of organisms encountered in Montana forests.

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