Colorado State Forest Service Insect and Disease Quarterly Report

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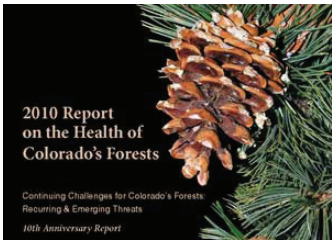
10th Annual Forest Health Report Released

The Colorado State Forest Service presented the *2010 Report on the Health of Colorado's Forests* at the annual Joint Agriculture and Natural Resources Committee Hearing at the State Capitol this February. The report provides a comprehensive overview of insect and disease problems in the state.

The 10th annual CSFS report highlights forest health concerns and documents the status of established forest pests, such as the mountain pine beetle and spruce beetle, as well as emerging threats, such as thousand cankers disease in black walnut.

Information on forest health issues and forest conditions are compiled from the annual aerial survey (conducted in cooperation with the USFS) results and from on the ground observation made by CSFS personnel throughout the year.

The forest health report and two additional sources of information – the *Colorado Statewide Forest Resource Assessment* and *Colorado Statewide Forest Resource Strategy* – will help guide forest management decisions and programs for the next several years. "The forest health report and the statewide assessment and strategy provide a basis from which to engage in public discussion about our future forests," said Joe Duda, Forest Management Division supervisor for the CSFS. "This dialogue will allow us to manage these forests while meeting the needs and interests of our stakeholders."



The entire report is available on the CSFS website (http://csfs.colostate.edu/pdfs/FINAL_2010_Forest_Health_Report_www.pdf)

Aerial Survey: A Landscape Perspective

Colorado mountain peaks as seen from aerial survey aircraft.

Every year the CSFS, in cooperation with the USFS Region 2, conducts aerial survey flights to identify and map the location of ongoing and emerging forest health issues. From July to September 2010, almost 48 million acres were flown in Colorado, Wyoming and South Dakota.

Aerial surveys help track the location and intensity of forest insects and diseases across the state and can provide a landscape-level perspective on forest health conditions. For detailed information on how aerial surveys are conducted, please see the May 2010 issue of the Insect and Disease Quarterly, available online at www.csfs.colostate.edu.

Aerial observers mapped multiple biotic and abiotic impacts on forest condition during the survey flights in 2010. Six key insect and disease agents where mapped and those numbers released in a summary of aerial detection surveys for Region 2 of the USFS.

Mountain Pine Beetle

In 2010, mountain pine beetle (MPB) impacted 878,000 acres in Colorado, bringing the cumulative acres affected since 1996 to almost 3.2 million. In 2010, an increase in MPB activity in ponderosa pine also was observed predominately across the northern Front Range.

Ponderosa pine killed by MPB outisde of Virginia Dale.

Douglas-fir Beetle

In 2010, Douglas-fir beetle impacted 37,000 acres, predominately in Douglas, Archuleta and Gunnison counties.

Douglas-fir trees killed by Douglas-fir beetle in central Colorado.

Western Balsam Bark Beetle

Western balsam bark beetle and the associated root fungi known collectively as "sub-alpine fir decline" impacted 184,000 acres across Colorado. This complex is common throughout the range of sub-alpine fir.

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Spruce beetle, *Dendroctonus rufipennis*

Another *Dendroctonus* - Spruce Beetle

The mountain pine beetle (MPB) *Dendroctonus ponderosae* is arguably the most well-known beetle in Colorado. However, a close relative, the spruce beetle, is one of Colorado's most important forest insects. Spruce beetle, *Dendroctonus rufipennis,* was Colorado's second-most damaging forest pest in 2010, impacting over 200,000 acres.

The spruce beetle is native throughout the range of spruce trees in North America, and it is the most significant mortality agent of mature spruce in North America. Colorado's high elevation forests are dominated by spruce and many of these forests are mature.

Because spruce trees dominate Colorado's higher elevation landscapes, spruce beetle impacts are not as readily noticeable as impacts from other pests and mortality in spruce forests are overshadowed by MPB and other forest insects and diseases. However, the current impacts of spruce beetle in Colorado's forests is changing the face of those high-elevation forests as much as MPB has impacted Colorado's lodgepole and ponderosa pine forests.

The spruce beetle is similar in appearance and behavior to MPB. It is approximately 1/6 to 1/4 inch in length, cylindrical and dark brown to black.

Spruce beetle impacts spruce trees the same way MPB impacts lodgepole, ponderosa and limber pines. It could be said that for every tree there is a beetle. Adult spruce beetles attack spruce trees in June and July and form galleries where eggs are layed. The larvae emerge and feed perpendicularly from the egg galleries on the phloem of the trees. This feeding can girdle the trees, cutting off the delivery of water and nutrients the tree needs to sustain itself.

Spruce trees killed by spruce beetle in southwestern Colorado.

The presence of spruce beetle in a tree is evident by several external signs including small entrance and exit holes in the bark, and frass in bark crevices and near the base of the tree. Pitch tubes, like those observed in trees impacted by MPB, are not generally seen. Bark flaking by woodpeckers is common in trees impacted by spruce beetle. Spruce trees impacted by spruce beetle fade less dramatically than lodgepole pine that turn bright red with MPB infestation and only turn a yellowish green before needles become grey and drop.

Another key difference between spruce beetle and MPB is in spruce beetles life cycle. MPB generally completes its life cycle in one year. Spruce beetle typically takes two years to complete its life cycle.

Spruce beetle can also utilize downed trees. Populations of spruce beetle typically build up in areas with large amounts of downed woody material, such as areas with recent avalanches or wind events. These areas of concentrated downed spruce trees are often the epicenter of spruce beetle outbreaks. When populations build up in an area, spruce beetle are then able to impact standing live trees.

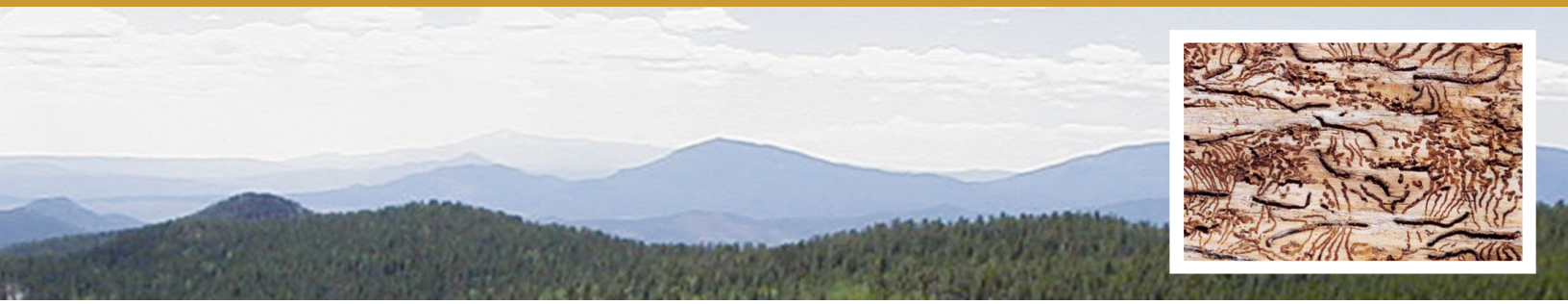
For management information, contact your local CSFS office.

Got Questions?

Do you have questions or concerns about something you've read, heard or seen on television? When in comes to forestry issues in Colorado, remember there is a wealth of forestry information, knowledge and experience available to you through the Colorado State Forest Service.

The Insect and Disease Quarterly was designed specifically as a venue to share insect and disease information with its readers. We will soon be entering the time of year when landowners will be thinking about how to provide the best care for their trees; some care might be preventative or annual maintenance in response to a recent injury or insect or disease activity.

Sometimes it can be difficult to determine the best course of action for your trees. Sorting through the plethora of information available can be a daunting challenge and may leave you wondering if you are walking away with anything but more questions. If you need more information, ask your local CSFS forester. You can also submit your insect and disease questions to the newsletter and see your questions answered in this space in a future issue.



Volunteer with the CSFS

Have you been looking for a fun and forestry-related volunteer opportunity? Look no further than the Colorado State Forest Service. Volunteering can be a rewarding experience, help you get connected with people with similar interest, and make great career contacts.

CSFS volunteers have been hard at work eliminating mountain pine beetle-infested trees, assisting with seedling transport at the CSFS Nursery and training future volunteers. We are ramping up for a spring full of fun forestry projects.

Volunteers, including CSU students, kicked off the year at Lory State Park, where they spent their Saturday cutting ponderosa pine trees hit by the mountain pine beetle and helping to haul slash. Participants enjoyed a beautiful day with spectacular views, got the inside scoop on natural resource management in the park and enjoyed lunch in a yurt.

On Feb. 23, CSU forestry student Jef Hanson and Front Range Community College student Nancy Dadisman assisted with a mini-orientation for Warner College of Natural Resources students and members of Live Green. Students got an overview of the CSFS and its volunteer program and then learned outreach techniques that volunteers use to educate the public about safety, tree planting and the mountain pine beetle. We hope to see those students at a volunteer event soon!

On Feb. 25, volunteers worked in the freshly fallen snow and practiced felling trees at the CSU Foothills Campus. The volunteers worked on clearing mountain pine beetle-hit trees in a windbreak near the Fort Collins District office. All volunteers were busy, whether they were cutting trees, piling slash or hauling firewood.

Upcoming events include fire rehabilitation field demonstration workshops in Boulder and a forestry field day for Boy Scouts at the Ben Delatour Scout Ranch. We also will be busy planting trees in April and May! Contact Jamie Dahl (jamie.dahl@colostate.edu), CSFS/WCNR experiential learning coordinator, to get involved!

A group of CSFS Volunteers enjoying a snowy day.

Aerial Survey

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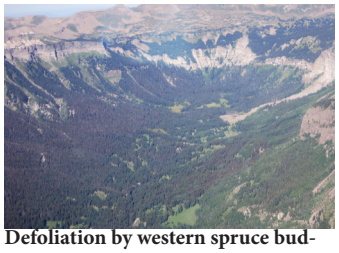
Spruce trees killed by spruce beetle.

Spruce Beetle

In 2010, spruce beetle impacted almost twice as many acres as in 2009 with over 200,000 acres in Colorado impacted. Most of the impacted acreage was in high-elevation forests in Hinsdale, Mineral and Larimer counties. For more on spruce beetle, see page 2.

Western Spruce Budworm

In 2010, western spruce budworm impacted 215,000 acres in Colorado. There has been a decrease in area impacted over the last several years. Defoliation continues to be severe in Mineral, Huerfano, Costilla and Saguache counties.



Defoliation by western spruce budworm in central CO.

Aspen Dieback and Mortality

Aspen decline has continued to impact aspen stands throughout Colorado. In 2010 aspen decline was mapped on 190,000 acres. Routt and Mesa counties had the largest areas of decline.

To read more about aerial survey results for 2010, consult the recently released *Report on the Health of Colorado's Forests* (see page 1) or visit the USFS website and search for "2010 aerial survey results" for a complete set of aerial survey results by county, view maps of impacted areas in 2010 and to track changes in insect and disease activity levels from 1996 through 2010.

Declining aspen stand.

Things to watch for:

CSFS Volunteer Opportunities

CSFS Seasonal Employment Opportunities

CSFS Quickguides

- Thousand Cankers Disease
- Sudden Aspen Decline
- Gypsy Moth
- Emerald Ash Borer

Upcoming events and announcements:

February 2010

8-10 - ProGreen, Denver, Colo.

15 - Northern Front Range Mountain Pine Beetle Working Group meeting, Boulder, Colo.

16 - Joint Ag Hearing, State Capital, Denver, Colo.

18 - Greeley Tree Care Workshop, Greeley, Colo.

March 2010

10 - Front Range Urban Forestry Council, Brighton, Colo.

12 - Eastern Colorado Community Forestry Conference, Windsor, Colo.

Miss an event! Look for updates on activities or contact a participant for an overview.

April 2010

TBA Front Range Urban Forestry Council Meeting

12 - Central Rockies White Pine Health Working Group meeting, Fort Collins, Colo.

May 2010

9-13 North American Forest Insects Working Conference, Portland, Ore.

Submissions for I&D Quarterly Report:
Do you have a FAQ?
Is there something you want to know more about?
Submit your event or announcement, ask a question or suggest an insect, disease or product to feature:
sky.stephens@colostate.edu.

Deadline for submissions is May 15, 2011.

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