

# Colorado State Forest Service Insect and Disease Quarterly Report August 2010 Volume 2, Issue 3



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## The Bark Beetle Trifecta

Mountain pine beetle (MPB) has been featured in the media numerous times over the last several years as the epidemic in Colorado continues. Yet, recently, MPB has been sharing headlines with other beetles. But who are all these other beetles?

### Bark and Twig Beetles

Bark and twig beetles have several characteristics in common.

- In the same taxonomic family
- Phloem feeders
- Relatively small and cylindrical

There are over 100 species of bark beetles native to Colorado, but only about 10 of them are key players in the forests. Even fewer make the front page news.

Let's look at a few of the bark and twig beetles getting press for their activities on Colorado's forested landscape.

### # 1 Mountain Pine Beetle

MPB, *Dendroctonus ponderosae*, is the most infamous bark beetle in Colorado's forests today. MPB is a dark brown to black beetle that is 3.5-7 mm in length. This

little beetle has made large impacts on the pine forests of western North America for more than a decade.



The face of mountain pine beetle, *Dendroctonus ponderosae*.

MPB is a native to Western forests and is part of Colorado's forest community. MPB usually kills a small number of pine trees every year in small clumps on the landscape. The beetle attacks the main bole or trunk of the tree. First killing trees suffering from another ailment like drought, dwarf mistletoe, a lightning strike or a fire damage.

During the current epidemic MPB has become more active on the landscape in response to a number of forest conditions including even-age stands of lodgepole pine

and drought. In this epidemic, MPB has impacted almost 3 million acres of Colorado's forests since 1996.

### # 2 Ips Beetle

Ips beetles are bark beetles that have been gaining momentum in the wake of MPB. "Ips beetle" is a term used to identify *Ips pini* the pine engraver. Ips is a dark reddish brown to black beetle that is 2-6 mm in length. Ips beetles also have characteristic spines on their elytra.



Spines on elytra of ips beetle, *Ips pini*.

Ips beetle is also native to the western United States and part of Colorado's pine forests. Ips beetle usually top-kills a small number of pine trees on the landscape. The Ips beetle attacks the smaller diameter

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## Thousand Cankers Disease Update

Thousand cankers disease (TCD) continues to be a concern across the United States. Kansas, Missouri, Michigan and Nebraska have recently authorized quarantines on all unprocessed walnut material from the western United States.

TCD in Colorado is a predominantly urban forestry issue. The rapid decline and mortality of walnuts in many of Colorado's

Front Range communities is changing the face of yards, neighborhoods and parks. The threat of TCD to the black walnut in its native range in the eastern United States has serious ecological and economic impacts.

The state of Missouri estimates a loss of \$850 million in wood and nut production if TCD reaches the native walnut forests of the Eastern United States.

Products from black walnuts include high-quality wood veneer products, fine woodworking material and numerous food and non-food items processed from the nuts, bark and leaves of black walnut.

The CSFS is part of several programs addressing TCD including education and outreach, urban community response, TCD surveys and ongoing research efforts at Colorado State University.







## Firewood and the Spread of Pests

Insects and pathogens don't recognize national, state or county boundaries. In today's global economy, products including raw wood material can rapidly circumnavigate the globe. This means that insects and diseases can be moved vast distances before they are evident; these insects and pathogens often find suitable conditions in their new locations.

Firewood is a good example of a raw wood material that can travel great distances. Firewood is part of many peoples' daily lives. Whether enjoying a summer campfire or

heating a home in the winter, many Coloradoans enjoy a cheerful blaze. One can find firewood for sale almost everywhere including campgrounds, grocery stores, gas stations and the Internet.

Firewood is also one of the most common sources for the introduction of exotic insect pests and pathogens. Several of the largest insect and disease threats that Colorado faces are commonly transported by firewood and other unfinished wood products, including emerald ash borer (EAB) and gypsy moth (GM).

Thirty states currently have regu-

lations in place regarding the movement of firewood. These regulations target nine forest insects and pathogens. Colorado does not currently have any firewood regulations.

In response to a recent proposal by the National Firewood Task Force, several Colorado agencies including the CSFS have begun working on firewood proposals for the possible regulation of firewood movement and increasing outreach and education efforts.

Colorado's forests are very diverse and will likely face threats

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Political cartoon from Joe Heller. Published here with permission.

## European Elm Flea Weevil

The European elm flea weevil, a common weevil throughout Europe was first identified in the northeastern United States in the early 1980s. It is now commonly found throughout most of the United States including Colorado. Its damage signature, similar to other common insects, and small size left it unobserved in many areas for years.



Adult European elm flea weevil.

The European elm flea weevil is a tiny brown weevil about 2 mm in length with darker brown or black splotches with a prominent proboscis, or snout,

and a large hind femur.

Adult weevils appear in the spring and feed on the underside of newly emerging leaves. They feed in a sporadic shotgun pattern giving damaged leaves a lacy look similar to the damage caused by the more conspicuous adult elm leaf beetle.

While the damage to leaves is very similar to the feeding pattern of the elm leaf beetle the European elm flea weevil is a less conspicuous beetle. The adults have a habit of jumping off of leaves.

Adult European elm flea weevil lay eggs along the leaf veins. The larvae mine the inside of the leaf for several weeks creating a serpentine pattern prior to pupating and emerging throughout the summer.

The European elm flea weevil infests American, Siberian, Chinese and hybrid elms. Defo-

liation damage is usually heaviest in late spring and early summer. Trees typically recover even from heavier defoliation events. Repeat defoliation by European elm flea weevil may predispose trees to other biotic and abiotic stressors.



Leaf mining by a European elm leaf flea weevil.

There are no currently prescribed management control strategies for European elm flea weevil. Several products targeted at other leaf miners and defoliators are suggested.



Feeding damage caused by the adult European elm flea weevil.



## Ask Questions About Firewood (continued from page 2)

from insects and pathogens of diverse origin. At present, the largest insect and disease risks to Colorado's forests are EAB and GM.

Despite the fact that EAB and GM are poor flyers, both insects have rapidly spread from their original introduction sites and continue to cause severe economic and ecological damage in impacted areas. EAB has recently been detected in Kansas City, Mo. Massive education and outreach campaigns throughout states currently impacted with EAB and GM have raised awareness of

these insects and have helped slow their movement into new areas. However, states that are currently not impacted but at risk need to raise awareness of these threats.

Two key education messages - "Don't Move Firewood" and "Buy It Where You Burn It" - are meant to make people ask questions about the firewood they purchase, its origins and destinations. Be proactive and help prevent the spread of insects and pathogens into Colorado's forests by asking some questions before you purchase or transport firewood:

- Where is this wood from?
- Can I buy local?
- Can I buy firewood (especially for camping) at my destination?
- Has the wood been treated (kiln dried, debarked)?
- Is it a high risk species (ex. ash)?

For more information visit:

<http://www.colorado.gov/cs/Satellite/Agriculture-Main/CDAG/1167928360848>



Two firewood education and outreach slogans.

## The Bark Beetle Trifecta (continued from page 1)

portions of a tree trunk, causing the top of the tree to discolor and die. Like trees attacked by MPB, trees attacked by Ips beetles are usually suffering from additional biotic and abiotic stressors. Ips beetles are often found in conjunction with other bark beetles.

During the current MPB epidemic, Ips beetle populations have risen as MPB have increased the number of dead and dying pines on the landscape.

### # 3 *Pityophthorus* and *Pityogenes*

Twig beetles belong to several genera including *Pityophthorus* and *Pityogenes*. Twig beetles are minute dark brown to black beetles that are 0.8-3.0 mm in length. Many twig beetle species have conspicuous down-turned spines. One twig beetle, *Pityogenes knechteli* (also known as *Pityogenes plagiatus knechteli*), received recent press because of its association with MPB.

Numerous twig beetle species are native to the western United States and are part of Colorado's forests. Twig beetles are usually found in the small diameter twigs and branches of trees. Their feeding patterns girdle these twigs and

branches, just like MPB girdles larger diameter stems, causing die-back. Twig beetles are secondary insects and are almost always found in association with other bark beetles like MPB and Ips, whose activity in trees allows twig beetle to be more successful.



A twig beetle, *Pityogenes knechteli*.

The name twig beetle can be misleading. Twig beetles are not only found in the small diameter twigs and branches. They can use dead and dying material of a larger diameter and are sometimes found in the large branches and even in the trunk of the tree.

During the current MPB epidemic, twig beetle has received some of the spotlight. Twig beetle, because of its very small size and small impact on the forest landscape, usually goes unnoticed. With

a large number of dead and declining pines on the landscape however, twig beetles have been found in trees also containing MPB and Ips beetles.

### The Trifecta

It can be very difficult for an untrained person to recognize the small characteristics that separate these bark and twig beetles, especially without equipment to magnify the beetles. Several species go completely unnoticed because of their size alone.

Even with multiple bark and twig beetle species active in the lodgepole and ponderosa pine forests of Colorado, the MPB remains the primary agent of tree mortality. Ips beetle and the various twig beetles continue to be secondary agents and their activity levels in Colorado's forests are in response to the increased number of dead and dying trees attacked by MPB and other primary agents of mortality.

### The Entomologist Mail Bag

A 4-inch by 6-inch section of lodgepole pine recently obtained from the Steamboat Springs area contained four species of bark and twig beetles!

<b>Kingdom:</b>	Animalia
<b>Phylum:</b>	Arthropoda
<b>Class:</b>	Insecta
<b>Order:</b>	Coleoptera
<b>Family:</b>	Curculionidae
<b>Genera:</b>	<i>Dendroctonus</i> <i>Ips</i> <i>Pityogenes</i> <i>Pityophthorus</i> Others
<b>Species:</b>	Numerous

Scientific classification of bark and twig beetles (Curculionidae).





## Things to watch for:

- CSFS Quick Guides
  - ◇ Spruce beetle
  - ◇ Thousand cankers disease
  - ◇ Sudden aspen decline
- Gypsy moth and emerald ash borer trap vandalism  
Report missing or damaged traps at 970-491-6303.
- Aerial detection survey flights continue through September.

## Upcoming events & announcements

### August 2010

- 18 - Northern Colorado Pest Group Meeting, Fort Collins
- 25 - Denver Metro Pest Group, Denver

### September 2010

- 16 - Front Range Urban Community Forestry Council, TBD
- 17 - Western Colorado Community Forestry Conference, New Castle
- 22 - Northern Colorado Pest Group Meeting, Fort Collins
- 29 - Denver Metro Pest Group, Denver
- 30 - ISA-RMC Annual Conference, Denver

### October 2010

- 1 - ISA-RMC Annual Conference (cont), Denver
- 4-8 - Bark Beetle Technical Working Group Meeting, Rapid City, South Dakota

### **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](mailto:sky.stephens@colostate.edu).

Deadline for submissions is October 15, 2010.

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