

Colorado State Forest Service Insect and Disease Quarterly Report February 2010 Volume 2, Issue 1



Colorado Forests after Mountain Pine Beetle

What will Colorado's forests look like after the mountain pine beetle (MPB) epidemic? Colorado State University students Matt Diskin and Kellen Nelson have spent the last few years determining the characteristics of those future forests. Diskin and Nelson originally had thought about studying in the piñon-juniper forests or working with invasive species; however, neither could resist looking at an exciting current issue – MPB in lodgepole pine forests. Diskin evaluated species composition of lodgepole pine stands experiencing MPB infestation, while Nelson focused on size-class diversity and patterns of lodgepole pine survival. The two projects provide a great view of what future forests might look like in Colorado after MPB.



Lodgepole pine

Some people believe that after MPB has subsided, there won't be any more lodgepole pine forests. Not so, say both Diskin and Nelson. Having spent the last 3 years studying forest stands in Rocky Mountain National Park, both have a good sense of what future forests will look like. Diskin says, "The first thing to remember is that lodgepole pine isn't the only tree species in the forests." Nelson also

reminds us also that, "lodgepole pine is a disturbance-adapted species and has evolved with disturbances such as fire, insects and disease."



Mixed conifer

Lodgepole pine occurs at a range of elevations, and while some forest stands are predominantly lodgepole pine other stands are mixed with high-elevation conifer species, ponderosa pine and aspen. Many of the stands Diskin observed have high densities of surviving mature-canopy trees. Most of these large survivors are spruce and fir, but lodgepole pine remains a dominant species across Rocky Mountain National Park. Nelson has observed high densities of surviving lodgepole pine individuals up to 8 inches in diameter. He also has seen larger trees survive the outbreak, but expects that "most of the largest surviving lodgepole pine trees will succumb to persistent low-level mortality as the epidemic comes to a conclusion."

Both Diskin and Nelson agree that MPB outbreaks aren't unusual in lodgepole pine forests and this current epidemic doesn't constitute an ecological emergency. "It's a

natural process," says Nelson. "Unfortunately, it's not compatible with the short time frame in which humans view natural systems, and has created undesirable conditions in and around forest communities and infrastructure." Neither researcher believes that past management of Colorado's forests was the only contributing factor to the outbreak, citing early mortality in heavily managed forests around Granby, Colo. and similar outbreaks in other regions with active management programs, such as British Columbia. Warmer temperatures and prolonged, severe drought appear to be the most influential factors inciting the widespread outbreak. Both Diskin and Nelson recognize the need to deal with the aftermath of the MPB ensuring the safety of infrastructure and people.



Aspen

So while we can expect to see changes in our forested landscapes in Colorado after MPB, we won't be left with a moonscape or lack of forests. The message that Diskin and Nelson want people to take home is that MPB in Colorado doesn't equal the end of lodgepole pine forests.

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Gypsy moth delta trap.



Ben with his special presenters award poster.

Detection report form.

Cooperative Agricultural Pest Survey

Each year, the CSFS cooperates with the U.S. Department of Agriculture, Colorado Department of Agriculture and the Animal and Plant Health Inspection Service (APHIS) to conducting the annual Cooperative Agricultural Pest Survey (CAPS). The CAPS program involves early detection and monitoring of exotic pests that threaten Colorado's agriculture, forests and urban environments. Activities include annual surveys for targeted pests, outreach and education.

In 2009 CSFS conducted extensive detection and monitoring trapping programs for gypsy moth, emerald ash borer and six exotic pine commodity pests as part of the state-wide CAPS assessment. From mid-May to late October, the three programs placed, monitored and collected more than 1,700 traps.

Pine Commodity Pests

Nonnative forest pests pose potentially significant threats to

Colorado's conifer forests and the products and services they provide. The 2009 pine commodity survey focused on six pine commodity pests: pine shoot beetle, Japanese pine sawyer beetle, Siberian silk moth, pine tree lappet, rosy gypsy moth and sirex wood wasp.

Current Colorado Status: No pine commodity pests detected.

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Young Scientists Ask Big Questions

In late October, I got a call from two boys from the Denver metro area. They wanted to 'solve the mountain pine beetle problem' for their science fair project. This request provided an excellent way for me to help meet our agency's mission and foster youth interest in forestry and current issues.

After our first phone call, I mailed a letter and a packet of agency-developed information on mountain pine beetle (MPB) to the two boys. By luck, a week later I also encountered a number of live MPB in eastern Colorado on a district visit the day before I had a

meeting in Denver. So with vials of MPB in my purse, I arranged to meet Ben and Jack.

Ben and Jack were very enthused about our meeting and came prepared with a number of questions about MPB biology, physiology, predators and management. I gave the boys instructions for keeping their bark beetles alive and couldn't help but smile at their excitement.

Following our meeting I received a couple of updates and more questions from the boys about things they were seeing in their experiments. In mid November I got an email that announced that Ben and

Jack had won a special presenters award, a photo (left) and a synopsis of their project. The boys discovered several things about MPB and cold temperatures, and about the kind of oils and other products that kill, or don't kill, MPB.

With just a little of my time, I was able to be a small part of this science project that might foster continued enthusiasm from Ben and Jack, and keep them engaged with forestry and science. In 2010 I hope everyone in our agency finds their own way to be involved with Colorado's youth.

Revised Detection Report Available

The Colorado State Forest Service forest insect and disease detection report form has been revised and updated. The form is used to facilitate the diagnosis, identification, treatment and management recommendations for insect and disease damage throughout Colorado.

The revised form is similar to the previous form. The form is used to identify the geographic location of the insect and disease damage event, provide information on the host species, allow users to quickly assess the condition of the affected host and characteristics of its environment.

This form is most effective when filled out completely and accurately with all known information. Forms are available on the CSFS intranet and can be submitted to Sky Stephens by fax, email or mail. All materials will be examined and recommendations will be returned as soon as possible.



Cooperative Agricultural Pest Survey

(continued from page 2)

Emerald Ash Borer

Emerald ash borer (EAB) is an exotic beetle that was discovered in southeastern Michigan near Detroit in the summer of 2002. The adult beetles nibble on ash foliage, but cause little damage. The larvae feed on the inner bark of ash trees, disrupting a tree's ability to transport water and nutrients, much like the mountain pine beetle affects conifers. EAB probably arrived in the United States on solid wood packing material carried in cargo ships or

airplanes originating in its native Asia.

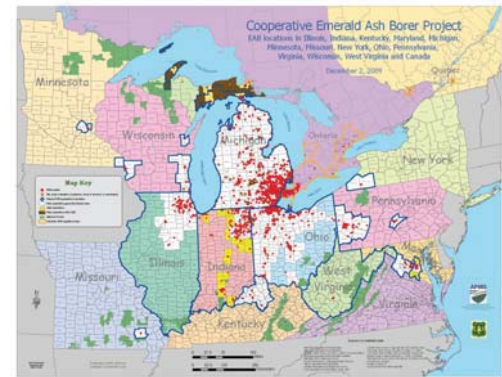
Since its discovery EAB has spread throughout 19 northeastern and north-central states and provinces (see map). EAB has caused the death of tens of millions of ash trees throughout the impacted area. It has been estimated that the cost of treatment, removal and replacement of impacted ash trees in communities alone will exceed \$10.7 billion.

Preventing the introduction of EAB in Colorado is highly reliant on

restricting the movement of ash products including firewood, logs and nursery stock.

In 2009, EAB trapping focused on high-risk areas. High-risk areas have a high concentration of host trees, nursery stock and firewood, and typically are in urban and recreation areas.

Current Colorado Status: No EAB observed.



Range of emerald ash borer; Dec. 2009. Red indicates EAB presence, white and yellow areas are under quarantine.



Female (top) and Male (bottom) gypsy moths.

Gypsy Moth

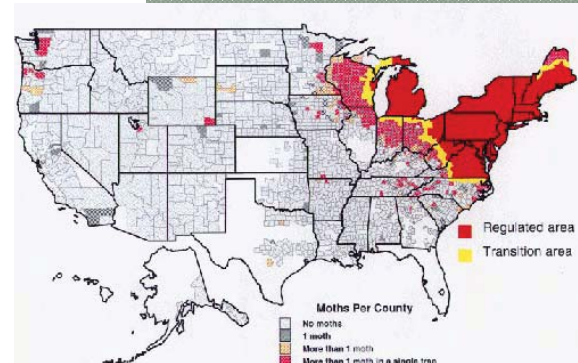
The gypsy moth (GM) is one of North America's most devastating forest pests. Originally from Europe and Asia, it was accidentally introduced in the late 1860s to New England. Since the 1890s, state and

federal governments have attempted to eradicate the GM. All attempts to date have failed to stop the spread of this pest (see map).

The European GM feeds on the foliage of hundreds of species of deciduous plants and trees in North America. Its preferred hosts are oak and aspen, which predominate forests throughout much of the eastern United States. European GM has the potential to cause widespread loss and decline of ecologically and economically important oak species. The Asian GM is a larger threat to Western forests, including those in Colorado, feeding on conifers and hardwoods. DNA analysis is the only way to distinguish between European and Asian GM.

Twenty states currently have GM quarantines on the movement of materials that might harbor GM, including outdoor recreation equipment and woody material. Most widespread GM control efforts have had negative impacts on native moth species. However, successful "spot" control of GM appearances has kept the moth from establishing in many areas.

Current Colorado Status: Occasional observations, including three individual male moths in 2009 (Westminster, Commerce City, Pueblo).



Emerald ash borer.

Want More Information on Exotics?

Check out these webpages for additional information on CAPS insect pests of interest.

www.emeraldashborer.info

www.fs.fed.us/ne/morgantown/4557/gmoth/

www.invasivespeciesinfo.gov/animals/eurogypsymoth.shtml

Range of gypsy moth. Red and yellow indicate GM regulation areas; grey depicts isolated observations of GM.



Things to watch for:

- New Forest Insect and Disease Leaflets (FIDLs)
 - ◊ Mountain Pine Beetle
 - ◊ Western Tent Caterpillar
 - ◊ Decay and Discoloration of Aspen
 - ◊ Large Aspen Tortrix
- Results from 2009 Aerial Survey Flights—Released January 22, 2010!
- Assessment of Forest Health Report

Upcoming events & announcements

February 2010

- 4 - Utilization in the Wake of EAB*
- 11 - Management of Woodlots to Prepare for EAB*
- 15-19 - Commercial Pesticide Applicators Meeting, Grand Junction
- 18 - Forest Health Discussion Group, CSU
- 19 - Winter Tree Care Workshop, Greeley
- 25 - Eastern Colorado Community Forestry Conference, Springfield

March 2010

- 1-5 - Wood to Energy Wood Biomass Short Course, Fort Collins
- 4 - Utilization of Ash in the Wake of EAB*
- 8-11 - Interagency Aviation Training, Lakewood
- 11 - Forest Health Discussion Group, CSU
- 18 - Helping Communities Prepare for and Live with EAB*

April 2010

- 1 - What Happens After Ash is Gone? Planning Diversity*
- 8 - EAB Awareness Week*
- 12-16 - Western Forest Insect Work Conference, Flagstaff, Ariz.
- 20-23 - FHP AS2M (aerial survey) Training, Albuquerque, N.M.

* Free web-based programs offered by Emerald Ash Borer University www.emeraldashborer.info

Submissions for 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 for a feature to sky.stephens@colostate.edu

Deadline for submission is April 15, 2010.

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