



Central States Forest Health Watch



Current forest health information for land managers in Illinois, Indiana, Iowa and Missouri

August 5, 2005

About This Newsletter...

This collaborative effort of the USDA Forest Service Northeastern Area, Missouri Department of Conservation, and Indiana, Iowa and Illinois Departments of Natural Resources will provide updates three times per year (Spring, Summer, Autumn) on forest health issues of regional interest.

Important Regional Forest Health Issues

Below you will find updates some of our “most popular” exotic forest pests: sudden oak death and emerald ash borer. We also have information on a new one: Sirex woodwasp. We are currently in trapping season for gypsy moth, and 2005 treatments have been completed. We will have a summary of 2005 treatments and trapping results in the autumn edition.

Sudden Oak Death

As you may recall, nursery material (primarily rhododendrons, camellias, and other ornamental plants) potentially infected with *Phytophthora ramorum*, (the pathogen that causes Sudden Oak Death) has been distributed all across the USA, originating from infested nurseries in California and Oregon. This unfortunate series of events has spawned widespread surveys of nurseries and forests to detect whether the pathogen has been introduced or become established in the Eastern USA. The good news is that, so far, no established populations of *P. ramorum* have been found in the Central States.

Emerald Ash Borer

Dead ash trees are present across many areas in southeast Michigan, and the devastation wrought by the emerald ash borer is highly evident. This small Asian beetle is a tremendous tree killer with the potential to eliminate ash (*Fraxinus* spp.) from much of our forested landscapes. In July, beetle flight, mating and egg-laying is ongoing. Most of the larval development follows in August and September. Any suspect ash trees should be quickly reported, especially outside of Lower Michigan, and northwest Ohio. Also be aware that that much of the long distance spread of this insect is being attributed to movement of firewood.

It is well known that tree borers are attracted to stressed trees. In an effort to determine whether emerald ash borers might be present in certain Illinois state and county sites where firewood is often present, selected ash trees were girdled (about 8 inches of the bark removed) in early May. In October and November the trees will be dissected and examined for the presence of any emerald ash borer larvae. In this way we can initiate immediate control measures if an infestation is found before the infestation gets out of control. Other surveys will be conducted in Illinois during August and September in which ash trees will be examined for the presence of borer emergence holes.

An EAB survey is also ongoing statewide in Indiana. The primary emphasis is campgrounds, sawmills, and nurseries. For campgrounds, surveyors walk the entire campground, recording information on ash and other species components and distributing information on EAB. They then survey a 2 mile corridor on the cardinal directions outside of the campground. Around sawmills and nurseries, the 2 mile corridor is surveyed. Nurseries are inspected each year by the Division of Entomology, thus EAB surveyors do not survey inside the nursery. In addition to the visual survey, over 1,000 trap trees have been set across the northern tier of counties. The survey area is 50 miles south of the Michigan line on the eastern side of the state and 25 miles south on the western side. Trap tree removal will begin in late September.

EAB was previously detected in 3 distinct locations in Indiana. The 2005 survey has located one new site in Indiana in Lima Township, LaGrange County. The site, called Grand View Bend, is a campground that has permanent pads owned by Michigan and Ohio residents). Public meetings are in progress and marking for tree removal will begin in mid August. The first three EAB sites had over 118,500 ash trees removed and burned or killed with Garlon.

A visual detection survey for EAB is being conducted in Missouri in 2005 by the Missouri Dept. of Conservation and Missouri Dept. of Agriculture at some high-risk sites (selected state parks, commercial campgrounds, and the St. Louis Arch grounds). Surveys are also being conducted in Iowa.

For more information on EAB, visit: <http://www.na.fs.fed.us/spfo/eab/index.html>

Sirex Woodwasp

Sirex woodwasp, *Sirex noctilio* has been recognized as a serious potential threat to our pine resource for many years. This woodwasp from Europe and Asia was inadvertently introduced into New Zealand (1900), Australia (1952), Brazil (1985), South Africa (1994) and several other southern Hemisphere countries where it attacked exotic pine plantations. In these plantations, up to 80 % tree mortality has been observed. Most of these “exotic” pine plantations were North American pines, e.g. Monterey and loblolly pine. In the U.S., sirex woodwasps have been detected in wood-packing material at several ports and warehouse locations, including a site in Bloomington, Indiana, but no established U.S. populations were known. That changed with the detection of infested trees near Oswego, New York (Oswego County) in June 2005. The extent of the infestation is not known at this time; a delimiting survey is underway this summer. This insect raises great concern because of its history of large scale damage and the wide number of pine species that it has attacked in other locations.

Woodwasps are large (1 to 1.5 inches long) wasp-like insects (see picture) that have a well developed ovipositor (egg laying tube) on the females. We have more than a dozen native species in North America. None of our native species are considered significant pests. Larvae are creamy white, legless and have a distinct dark spine at the rear of the abdomen.

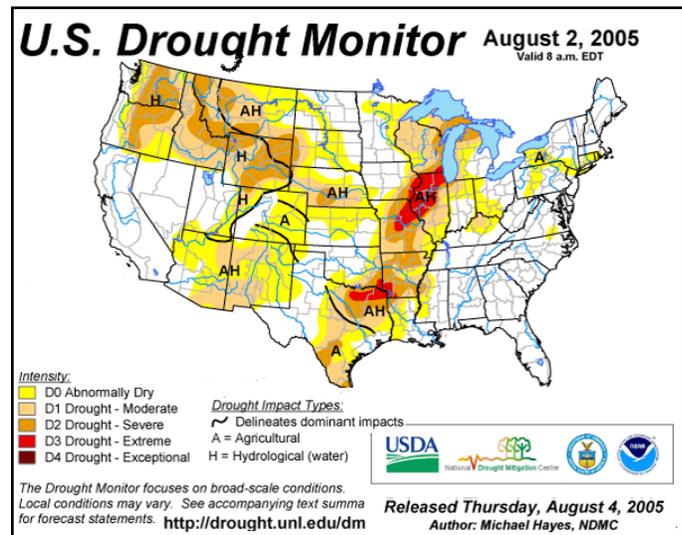


Sirex wood wasp (photo courtesy of D.A. Haugen)

For more information visit: http://www.aphis.usda.gov/ppq/ep/emerging_pests/sirexnoctilio.html

Weather Overview

Drought headlines the weather impacts across the Central States this summer. The current US Drought Monitor shows a band of extreme drought stretching from central Missouri up through western and northwestern Illinois. Additional moderate to severe drought conditions have stretched from southern Missouri, through southern Illinois, and into the northern ¼ of Indiana during May, June and July. Although parts of southeastern Missouri and southern Illinois received some relief when remnants of hurricane Dennis dumped rainfall during mid-July, drought conditions persist. The situation has been further exacerbated by several days of over 100 degree temperatures during the 3rd week of July.



Many trees are now stressed in the region especially trees transplanted within the last 5 years. Such trees are very vulnerable to attack by tree borers so watering these trees is essential. Some diseases impacts have been made more severe in Missouri. Cedar-Quince rust caused by *Gymnosporangium clavipes* is just such an example, as many hawthorns are exhibiting scorch like symptoms following the onset of the rust. Wilt diseases (oak wilt, Dutch elm disease, and Verticillium wilt) continue to dominate the number of samples being sent into the Missouri diagnostic lab for analysis. Catalpa, normally a resilient tree on Missouri landscapes, has recently been sent in for possible Verticillium wilt determination.



Aecia of Cedar-Quince Rust emerging from hawthorn fruit. (Photo by Simeon Wright, MU Diagnostic Lab)

Although the drought impacts in Iowa have been primarily in the eastern portion of the state, another major weather event impacted much of Iowa earlier this growing season. Low temperatures across Iowa on May 2-4 were colder than what the low temperatures reached for most of April throughout the state. Air and ground temperatures warmed very rapidly from the end of March and throughout April, setting the stage for a late season frost injury to many tree species throughout Iowa. Trees that were reported to be most affected by the frost were ash, black walnut, hackberry, mulberry, and oaks. Species that were further along in their leaf development, particularly silver maple, elm, willow, alder and cottonwood, sustained the least amount of damage. More trees were affected by the chilly weather in Northern Iowa as compared to Southern Iowa, and in Central and Southern Iowa the damage was more likely to occur in low lying areas. The result of the widespread frost damage is that instead of getting an early start from the above normal temperatures in April, trees opened their leaves later this year. Trees will produce less seed this fall because so many of their flowers were killed by the frost. The good news is that most lateral buds had not opened at the time of the frost, and trees were able to fill out with the normal green leaves.

What else is being reported across the Region

White pines in landscape settings and in plantations scattered across Illinois have been **declining and dying** for many years. For several years before tree death there is an abundance of resin flow from the bark. After death numerous insect borers invade the trees. The cause of death remains unknown.

Various **scarab beetle species** such as Japanese beetles and the green June beetle are being reported in high numbers this summer in Missouri. The milder, wetter summer of 2004 may have increased survival of soil-dwelling grubs.

The **looper epidemic** has collapsed in southern Indiana. Aerial surveys did not detect any defoliation this year. However, oak mortality is starting to appear on Clark and Jackson-Washington State Forests.

Forest tent caterpillar continued to defoliate the forests above the Ohio River in Ohio and Switzerland Counties (southeast Indiana). The population is starting to collapse but has still caused heavy defoliation in some areas. A quick sample of pupae and eggmasses found 75% parasitism in pupae and small poorly formed eggmasses. These are indicators of a population collapse. The damage from FTC will be more severe than compared to loopers. Quick estimates in some forest areas found 20-30% timber mortality. This is the third consecutive year of defoliation and Indiana is the northern limit of the epidemic. Most of the epidemic is in Kentucky occurring over a 3 county long area.

The **granulate ambrosia beetle** (*Xylosandrus crassiusculus*) and **black stem borer** (*X. germanus*) are exotic ambrosia beetles established in the eastern U.S. that attack a variety of deciduous host trees. The presence of

“frass toothpicks” protruding from bark is an indicator of attacks by these insects. Damage to hosts can be severe and sometimes fatal. The granulate ambrosia beetle was reported damaging and sometimes killing young ornamental and fruit trees across central Arkansas this spring.

In Indiana, exotic ambrosia beetles are a problem in nurseries on black cherry and have recently appeared in yellow poplar trees in a disturbed site in Jackson County. In Missouri, the granulate ambrosia beetle was identified as infesting black walnut trees in a southwest Missouri plantation in May. This may be one of the first reports of this insect attacking walnut. Additionally, frass toothpicks have been observed and reported so far this year in Missouri on a goldenrain tree, American elm, and recently-cut oak stumps. Identities of the specific ambrosia beetles involved were not determined.

A report was recently received of *Xylosandrus* sp. ambrosia beetles being detected in oak railroad ties cut in Missouri, Arkansas, Louisiana and Texas and shipped to the Pacific Northwest. Attacks presumably were initiated prior to or immediately after the wood was cut in the originating state.



Xylosandrus crassiasculus damage on black walnut, sap oozing from infested roots on black walnut, and adult in gallery in wood, respectively. Photos courtesy of Rob Lawrence, MDC.

Reducing stress on recently-planted or nursery trees is important in reducing attacks by the granulate ambrosia beetle. This insect has multiple generations per year. Heavily attacked branches or whole trees should be removed and destroyed to prevent infestations of nearby stressed trees. Web sites with further information:

http://www.uaex.edu/Other_Areas/publications/PDF/FSA-7064.pdf

http://creatures.ifas.ufl.edu/trees/asian_ambrosia_beetle.htm

A Look into the Crystal Ball...

As we move into August, typically one of the driest months of the year, areas that have been experiencing excessive dry conditions since spring are likely to see more drought-related damage. Drought scorch and early leaf drop on hardwoods, increased spider mite damage on conifers, and increased susceptibility to bark beetle and wood borer attacks are possible.

Feature Topic: Galls

General description and overview of galls

Galls are abnormal growths or swelling of plant tissues induced by some type of parasitic organism. The stimulus for the plant tissue development appears to be growth-regulating chemicals produced by the parasite; these chemicals cause cells to enlarge or proliferate in large numbers. The parasites can be pathogens such as bacteria, fungi or viruses; insects such as aphids or many tiny fly or wasp species; nematodes, or one of many mite species. The mites involved tend to be from a group called the eriophyid

mites, which are very, very tiny creatures. About 95 percent of the known galls of the world are caused by insects, nematodes or mites, the remaining 5 percent by pathogens.

The structures or galls that are formed are very characteristic in shape and color; they can be used to identify the specific organism that is causing the gall to form. Good reference books are invaluable. Unfortunately, good references are hard to find. Ephraim Felt published a book titled “Plant galls and gall makers” in 1940 (reprinted in 1965) that is the most complete book on insect galls. This book is hard to find. A good general reference book that includes the more common insect galls is “Insects that feed on trees and shrubs” by W. Johnson and H. Lyon.

Landscapers, homeowners, and foresters often observe galls and submit samples for identification. Though common and often very abundant, galls are rarely injurious to trees. The exception to this would be twig or stem galls, especially on smaller trees. Small trees can be overwhelmed by galls and killed or deformed. On occasion, twig galls can be very numerous on larger trees causing twig and branch mortality that may lead to tree decline. Because they rarely cause injury, control is rarely justified. Further, because the causal organisms are often protected within plant tissue, control can be difficult. For insects and mites, it is important to time an insecticide application when egg laying is occurring. This obviously is well before the point where the galls themselves become visible. Sanitation, or removal of the galls may be helpful in some situations.

Details on oak rough bullet gall on bur and swamp white oak

(Info for this section is courtesy of Mark Shour, Iowa State Univ Extension Entomologist)

In the past few years, conspicuous growths have been observed on the twigs and branches of some Bur oak, *Quercus macrocarpa*, and swamp white oak, *Quercus bicolor*. The growths are the oak rough bullet gall or oak bullet gall, made by a tiny cynipid wasp, *Disholcaspis quercusmamma* (Walsh). The wasp is 2-3 mm long, winged, and is brown or black in color.

In the fall, the wasps chew out of the galls, fly to the terminal buds on their oak host tree, and then lay 1 or 2 eggs in each dormant bud. Following several weeks of cold weather, larval development begins in the spring as the buds are expanding. When the white, legless larvae feed, the oak tree is stimulated to grow around the gallmaker, completely enclosing it. A single larva develops in and derives nourishment from the gall tissue. Fortunately only one generation develops per year in Iowa.

Oak rough bullet galls first appear as small green eruptions/bumps on the twig. The color is changed to a red and then dark brown as the galls grow in size. Completely formed galls are rounded with a point at the apex and are 8 – 15 mm long. Clusters of galls can be found along a host twig or branch (see photo). Reports have been made of the entire new growth of a host covered with galls.



UGA1326010. Fully formed oak rough bullet galls on bur oak twig. Photo courtesy of Whitney Cranshaw, Colorado State University, www.insectimages.org.

Because the oak rough bullet galls persist on a host tree for as many as five years after the gallmaker has left the gall, many homeowners are concerned about the damage done to their tree. It is thought that although the galls do not kill a twig or branch, they can cause reduction in the growth rate of a host.

There appears to be some variability in the susceptibility of a given tree to the gallmaker. In a Colorado study, only 7% of surveyed bur oaks were heavily galled (75 or more galls/four terminals), while the rest of these street trees either were free of galls or had minor levels of galling (25 or less galls/four terminals). In this study, the tiny wasp *Sycophila dubia* parasitized unprotected *D. quercusmamma* gallmakers. The parasitized galls were not as well developed, thus their length was 9mm and shorter; unparasitized galls were

fully developed with a length of 10 – 15mm. From this study, a control strategy develops for young host trees: remove and destroy the larger galls (10mm and larger) in September, but leave the smaller galls (9mm or less) on the host twigs. The smaller galls will have natural enemies in them and these insects will then emerge the following spring to parasitize any new galls formed on this or nearby hosts. No chemical control tools are recommended for management of this pest.

A few other galls you might see on oaks in the Central States.

Oaks seem to be affected by a disproportionately large number of gallmaking agents. Most are insignificant, but some are worth noting. Jumping oak gall is a small leaf gall on oaks that can cause significant levels of defoliation across fairly large areas of the landscape. Another leaf gall which may become an issue is the marginal fold gall on pin oaks (and possibly other leaf galls) because of its connection with the new exotic itch mite, *Pyemotes herfsi*, which preys on gall midge larvae.

Other galls you may see on oaks are pictured below:



Section through a gouty oak gall, showing the larval chambers. *Photo courtesy of G. Lenhard, www.forestryimages.org.*



Horned Oak galls form hard woody swellings on twigs, with small horns protruding from the surface of the gall. *Photo courtesy of J. Weidhass, www.forestryimages.org*



Oak apple gall on oak leaves is caused by a tiny wasp. *Photo contributed by J. O'Brien*

Upcoming Opportunities

The 2005 North Central Forest Pest Workshop will be held September 19-22 in LaCrosse, Wisconsin. A draft agenda and registration information are posted on the www at <http://www.na.fs.fed.us/spfo/ncfpw/ncfpw05/ncfpw05.htm>

This newsletter is also available on the WWW at:

www.na.fs.fed.us/spfo/pubs/newsletters/csfhw

					<p>For More Information:</p>
					<p>Forest Health Protection USDA Forest Service 1992 Folwell Avenue St. Paul, MN 55108 (651) 649-5029 lhaugen@fs.fed.us</p>