Central States
Forest Health Watch

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

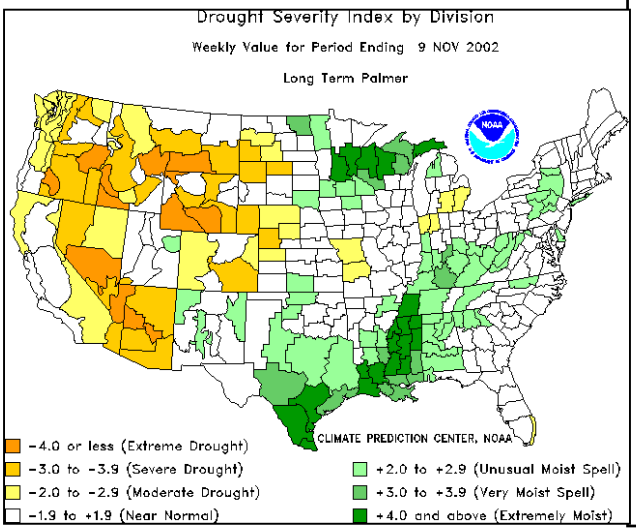
November 18, 2002

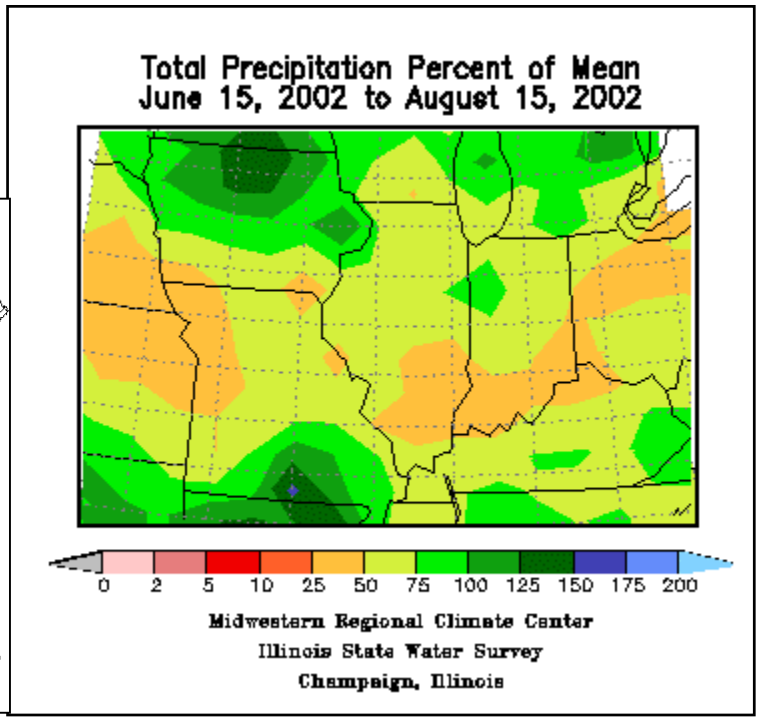
About This Newsletter…

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.

Weather Overview

The wet spring experienced by much of the Midwest gave way to a dry summer. The central and southern Midwest received well below normal amounts of rain from mid-June to mid-August. The midsummer drought affected plant health, but considerable recovery of soil moisture levels has occurred during late August through the present time. For current regional weather information, see the Midwest Regional Climate Center webpage: http://mrcc.sws.uiuc.edu/Watch/watch.htm





Regional Overview of Current Pest Conditions

White ash decline is prevalent in woodlots, fence rows and ornamental plantings throughout **Illinois**. Affected trees die following several years of stunted growth with sparse foliage. In Illinois, the **Ash yellows** phytoplasma contributes to ash decline but additional causes may also be involved.

Moderate to heavy defoliation by **locust leafminer** was observed on black locust trees in **southern Illinois** and the **southern half of Indiana**.

Bagworm defoliation, which usually occurs in the southern half of Indiana, was observed in the northern half of Indiana. Because of the mild winters, bagworm populations are surviving in northern Indiana and developing into noticeable heavy defoliation to individual trees. Bagworm was reported in the northern quarter of the state for first time in many years. Heavy infestations of bagworms also severely damaged spruce, white pine and junipers throughout the southern half of **Illinois** during the months of July and August.

In south central **Indiana**, **"flagging" of ash branches** throughout the tree crown occurred in August and September. The flagging symptom is similar to cicada injury but without the oviposition wound and branch breakage. Drought conditions are believed to be the cause.

Drought conditions were evident in the forests of southern **Indiana**. Yellow poplar in the forest or the yard had dropped most of its foliage in response to the drought. By August, the yellowing inner foliage of yellow poplar made it easy to outline distribution of this species in the forest. Sycamore also showed early fall color (yellowing) in August and September because of the drought. This year is an up-and-down year for moisture available to the trees. The spring was extremely wet with constant rains occurring through June. Then the moisture was turned off and the heat turned on from July through September. So the fine feeding roots of the trees have had a difficult time of going from complete soil saturation and flooding to no moisture down to the subsoil level. The decline of trees in the forest is expected to develop over the coming years.

White oaks in parts of Eastern **Iowa** are exhibiting serious decline. In 2002 **oak tatters** also caused significant damage to white oaks in this area, but we do not yet know whether the incidence of oak tatters and decline are related.

A large number of cases of **hard maple decline** have been reported in **Northeastern Iowa**. The cause is not yet known.

There is a general increase in the number of reported **wood borer** problems in **Missouri**. Much of the increase is assumed to be due to increased susceptibility of trees stressed by the severe drought conditions of 1999 and 2000. See the article below for more details on different borers.

Revenge of the Boring Insects

After suffering decades of being referred to as boring, the cerambycids, buprestids, cossids, and sesiids of the world are making a united attack on the trees we love. Here is the latest:

The emerald ash borer (*Agrilus planipennis)*, a buprestid beetle native to Asia, was found during late June in the Detroit, Michigan, metropolitan area. Thousands of trees are already dead or dying in a six county area of Michigan plus one adjacent county in Ontario. All species of ash can be attacked and killed by this beetle. The website http://www.na.fs.fed.us/spfo/eab/ provides the latest information on this new pest.

Oak decline sites in southern Missouri exhibit numerous **wood borer** species including: red oak borers (*Enaphalodes rufulus*), carpenterworms (*Prionoxystus* spp.), oak timberworms (*Arrhenodes minutus*), twolined chestnut borers (*Agrilus bilineatus*), and various other flatheaded borers (*Chrysobothris* spp.) Field reports indicate that the survival rate of the current red oak borer generation is consistent with past reports in the literature. Healthy larvae (20-25 mm long) were observed during October. Adult emergence is expected next June and July. Twolined chestnut borers have not been seen in large numbers as in past years.

Attacks by **unidentified wood borers** have been observed in Missouri on the lowest one meter of red oak stems, and often just above soil level around the root flare. These have been reported in pin oaks in St. Louis and a northern red oak and pin oak in north central Missouri (Chillicothe). (Photos available at: *mo_borerphotos.pdf*). Attacks are very similar to those made by three species of **clearwing moths** (*Paranthrene simulans*, *P. pellucida*, and *P. asilipennis*). A 0.5-1.0 cm diam. tunnel extends directly from the entrance hole in the bark for about 2-4 cm into the sapwood, and then turns upward for another 4-8 cm. A dark frass plug was often found covering the entrance hole during September. See this web site for more information about *P. simulans*: http://fhpr8.srs.fs.fed.us/pubs/oakpests/p17.html

Exotic ambrosia beetles (*Xylosandrus* spp.) were observed at three locations in Missouri this year. The granulate ambrosia beetle (*X. crassiusculus*) and the black stem borer (*X. germanus*) produce characteristic white, toothpick-like frass sticks that extend a few centimeters out from each attack site. Both are exotic species that have spread across several southern (*X. crassiusculus*) and eastern (*X. germanus*) states. See this web site for more details: http://creatures.ifas.ufl.edu/trees/asian_ambrosia_beetle.htm . Attacks were observed this year on yellow poplar in south central Missouri, Japanese maple in a St. Louis nursery, and a freshly-carved white pine totem pole recently transported to Missouri from northern Minnesota.

Gypsy Moth Activities

An overview of the status of gypsy moth in the Central States was presented in the July 2002 edition of this newsletter (http://www.na.fs.fed.us/spfo/pubs/newsletters/csfhw/jul02/07_02.htm). The table below summarizes the summer 2002 activities in the Central States.

States without established populations:			
	# traps set	Total moths captured	Comments
Iowa	NA	35	Trapping concentrated on cities, nurseries, campgrounds/recreation areas, sawmills, and previous catch sites. There were 31 single catches, 2 double catches. Geographic area of greatest concern is the northeastern corner of the state, where 9 of the 13 moths captured in 2002 are in sections where moths have previously been captured. Other areas of concern include the east central portion of the state (15 moths) and Polk county (4 moths, from sites with previous treatments or catches).
Missouri	11,409	4	The number of moths caught in 2002 is lower than usual. All captured moths were taken in St. Louis. This year is the first time since 1991 that no gypsy moths were captured in the two counties in southwestern Missouri surrounding the popular recreation areas of Branson and Table Rock Lake.

States with established populations:					
	Quarantine Area	Slow-The-Spread (STS) Actions	Counties with STS treatments	STS trapping results	Trapping trends outside quarantine and STS area
Illinois	One county (Lake) is considered generally infested and is under APHIS quarantine.	21,275 acres with mating disruption, 6,978 acres with Btk.	Cook, DuPage, Winnebago, McHenry and Kane	4831 moths were captured in 5,712 traps set as part of STS action projects.	4609 traps were set by APHIS in 58 Central IL counties. Ten of these traps captured a total of 18 moths.
Indiana	Allen, DeKalb, Noble, Elkhart, La Grange, Porter and Steuben counties are under APHIS quarantine.	15,650 acres with mating disruption, 906 acres with Btk.	LaPorte, Kosciusko, Whitley, Allen and Elkhart	15,500 moths were captured in 8,803 traps set in STS action & monitoring areas.	7,289 traps were set by Aphis & IDNR in the remainder of the state below the STS zone. 18 traps captured 27 moths.

Elsewhere in the Midwest, the trend in gypsy moth populations was varied. In Minnesota, three sites were treated to eradicate limited populations and the statewide detection was the lowest it has been in several years. Wisconsin continued an aggressive Slow-the-Spread strategy, treating over 300,000 acres in 2002. Despite this, populations in eastern Wisconsin are reaching very high levels (particularly in Marinette and Shawano counties) and continue to move westward. In Michigan, three counties participated in the 2002 cooperative suppression program treating 2,271 acres (down from 5,947 acres in 2001) with Btk. Preliminary results of egg mass surveys indicate that Michigan gypsy moth populations are increasing, and as many as 10 counties may participate in the 2003 suppression program.

Feature Article: White Pine Maladies

The native range for eastern white pine extends into northern Iowa, Illinois and Indiana. Outside this range, white pine is planted extensively and valued for timber, wildlife, landscape plantings, and Christmas trees. FIA data indicates that there are over 70,000 acres of Eastern white pine forest type in the Central States, out of 672,000 acres in conifer types.

Because white pine is frequently planted outside of it's natural range and on a variety of sites, planted white pine is often under stress. Thus there are many stress-related and abiotic causes of white pine problems in the Midwest.

- In Missouri, xylem cavitation may explain why the needles on 20-30 year old plantings suddenly turn chlorotic and flaccid resulting in a wilt like appearance. During periods of high heat indices it is hypothesized that transpiration rates may exceed water availability resulting in patches of sunken pinkish bark. Isolations for potential canker causing agents are on-going, but to date no clear pathogen has been identified.

Sunken pinkish bark on white pine in Missouri.

- Some white pine trees throughout Illinois show symptoms of white resin flow from cracks on the tree trunks. It is most prevalent on trees older than 15 years. After several years, trees that show multiple symptoms on the trunk often die. When the bark is lifted from affected areas there is an accumulation of resin and the xylem tissues show dark brown staining. The cause is unknown.

• The death and decline of white pine has been common in Indiana for the past 10 years. The cause of the mortality is attributed to white pine root decline based on the symptoms observed and reported. Much of the mortality occurs to windbreak, Christmas and ornamental trees. In some situations, poor soil drainage is believed to have a role in the mortality. The patches of sunken pinkish bark reported in Missouri have been observed on some white pine but have not been associated with the death of trees or white pine root decline.

Major or common pests observed on Eastern White Pine in the Central States include:

Pest name	How common or important	Recognizing the damage
White pine root decline, *Leptographium procerum*	Very common in Indiana, considered the leading cause of white pine death. Sometimes associated with poor drainage.	The pathogen infects the roots and lower bole of white pines, causing a gradual decline and death. Also causes resinous cankers on the base of trees, with a reddish brown discoloration in the wood beneath the canker.
⇒ More Info: http://www.agcom.purdue.edu/AgCom/Pubs/BP/BP-34.html http://www.forestpests.org/southern/Diseases/wprd.htm		
White pine blister rust (WPBR)	White pine blister rust is fairly uncommon outside the natural range of white pine, but does occur in northern Illinois, northern Indiana and eastern Iowa. The location and pattern of the damage can help distinguish this disease from basal cankers caused by white pine root decline.	WPBR pathogen infects white pine needles then grows into the bark to cause cankers. The most common symptom is a red-needled branch "flag" caused by a canker girdling and killing a branch. Cankers that occur on the main stem will either originate from a branch canker that grew into the main stem, or from an infection that occurred when needles were still attached to that portion of the stem. “Old” cankers are often sunken/constricted and exude resin.
⇒ More info: http://www.plantmanagementnetwork.org/pub/php/management/whitepine/ http://www.na.fs.fed.us/spfo/pubs/howtos/ht_white/white.htm		
Bagworm	Bagworm defoliation is particularly common on white pine and juniper in urban landscapes. Complete defoliation results in tree death.	Early instar bagworms feed on the bark of terminal and lateral twigs, girdling and causing a dieback of the new shoots. Bagworms feed on foliage throughout summer, increasing the size of their bag as they grow, and eventually pupate within their bag. The bags, which can be up to 2” long, are constructed of leaf and twig material bound with silken threads.
⇒ More info: http://muextension.missouri.edu/explore/agguides/pests/g07250.htm www.entm.purdue.edu/Entomology/ext/targets/e-series/EseriesPDF/E-27.pdf		
White pine weevil	White pine weevil damage is generally more common in the native range of white pine and where large concentrations of white pine are planted, such as landscape nurseries and plantations.	White pine weevil oviposit in the cambium of the previous years growth, just below the terminal bud, in the spring. Larvae then feed under the bark, girdling the stem and causing the new terminal growth to wilt and die.
⇒ More Info: www.na.fs.fed.us/spfo/pubs/fidls/wp_weevil/weevil.htm http://ppdl.org/dd/id/white_pine_weevil-pine.html http://ohioline.osu.edu/hyg-fact/2000/2556.html		
Zimmerman pine moth	Although Zimmerman pine moth is most common on 2-3 needled pines, it also causes significant injury to white pines. Damage is particularly heavy on wounded or previously infested trees.	This pest attacks pines at the point where tree branches join the main stem. Feeding in this area results in resin masses covered with frass near the whorls. The first symptom often observed in smaller diameter trees is often top death
⇒ More info: www.ag.uiuc.edu/cespubs/hyg/html/199817e.html www.entm.purdue.edu/Entomology/ext/targets/e-series/EseriesPDF/E-40.pdf		

Other pests that may occur on white pine in the central states include Introduced Pine Sawfly, Armillaria root disease, *Heterobasidion (Fomes) annosum* root rot, pine root collar weevil and Deodar weevil, bark beetles, and pine wood nematode.

In the New England states, the fungus *Caliciopsis pinea* causes cankers on white pine, particularly on stressed or declining trees. These cankers have profuse pitching, and commonly occur high on the stem of the tree. This pathogen has not been reported in the Central States, but cankers that matched this description were recently observed on declining mature white pine in Illinois.

Other Resources and Sources of Information

Forest Health Highlights webpage (with yearly forest health report for each state):
www.na.fs.fed.us/spfo/fhm/fhh/fhmusamap.htm

State of the Nation's Ecosystems Report
The Heinz Center (http://www.heinzctr.org/) recently released the *State of the Nation's Ecosystems* Report. The report is designed to provide policymakers and the general public with a succinct and comprehensive—yet scientifically sound and nonpartisan— view of "how we are doing." The report identifies the major characteristics of ecosystems that should be tracked through time and provides information on both current conditions and historic trends. The chapter on forest ecosystems includes an indicator for "forest disturbance: fire, insect and disease". Check it out at: http://www.heinzctr.org/ecosystems

This newsletter is also available on the WWW at:

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

Northeastern Area

Indiana

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