



Lake States Forest Health Watch



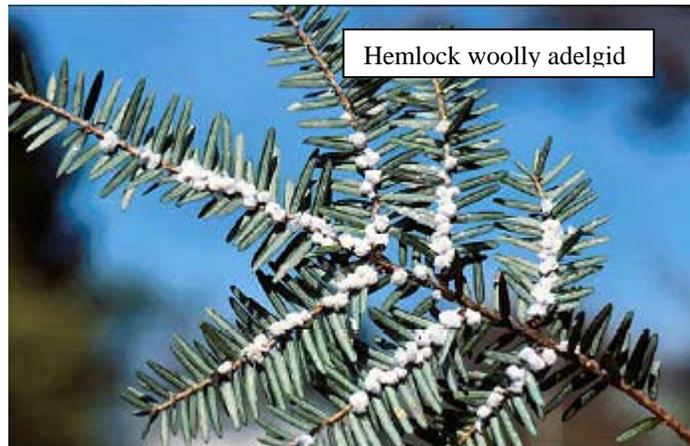
October 6, 2006

About this newsletter...

The Forest Health Protection unit of the Forest Service located in St. Paul, Minnesota produces this newsletter. Our intent is to keep Federal land managers in the Upper Great Lakes region abreast of forest health related issues such as insect and pathogen outbreaks.

What's happening this fall...

Let's start with some **bad news!** Michigan has reported that another major exotic insect pest has been found in the state. **Hemlock woolly adelgid** was imported into the Harbor Springs area (Emmett county). Harbor Springs is in the northwestern tip of Lower Michigan. Michigan has had a hemlock woolly adelgid quarantine in place since 2000. Despite that, infested nursery material was shipped into the state. At this time, the Michigan Department of Agriculture is attempting to determine the extent of the infestation and beginning clean up operations.



Hemlock woolly adelgids are small sap sucking insects that are similar to aphids. They produce a white cottony material on the twigs of hemlock. This insect is of Asian descent, but it has been in the eastern U.S. since 1951 when it was found in Virginia. It is considered a major threat to our hemlock resource in the Great Lakes region.

One hopeful note is that climate, specifically extreme winter temperatures may limit the northern extent of hemlock woolly adelgid. So, let's all hope that northern Michigan has a very cold winter this year! Any unusual hemlock dieback or mortality should be reported, as should the presence of any white cottony material on the twigs of hemlock trees. For more information see the USDA Pest Alert at: http://na.fs.fed.us/spfo/pubs/pest_al/hemlock/hwa05.htm

Some signs of **sugar maple and yellow birch decline** are being observed across the western end of the U.P. and adjacent areas of northern Wisconsin. It appears that a spring 2006 frost event and perhaps some localized defoliation initiated branch dieback and decline in sugar maple and yellow birch crowns. Regional declines for both sugar maple (1956-57 in Florence County, 1979 on the Eagle River and Florence Districts of the Nicolet,) and yellow birch (1953-1964 in the U.P., and 1984-1990 in northern Wisconsin), have been reported historically. Frost, drought, and insect defoliation have all been blamed in past decline episodes. Branch dieback in the upper crown is considered the initial stages of decline. This can be followed by foliage chlorosis and wilt, then by epicormic sprouting on the main stem, and finally by tree mortality. Declines can persist and get worse over a period of years or they can end with tree recovery. At this point, it is unclear if this is the start of a widespread decline episode or just a one year event.

American beech mortality is becoming more and more prevalent in the eastern end of the Hiawatha National Forest. Beech trees are dying from **beech bark disease**. Our aerial survey crew reports that dead and dying trees are easily visible from the air in that area. This disease was first reported in Michigan only a few years ago, but has spread rapidly. It is also found on the Manistee side of the Huron-Manistee National Forest.

Jack pine budworm – For the third year in a row, extensive jack pine budworm defoliation was reported across many areas in the Lake States. Jack pine budworm outbreaks normally terminate after 1-3 years, limiting damage during any one outbreak. So, in areas that have seen 2-3 years of consecutive defoliation we do expect the populations to drop next year.

All of the Lake States National Forests had some jack pine budworm defoliation in 2006, the hardest hit areas were on the Chequamegon-Nicolet west of Ashland, the west side of the Hiawatha, and the Huron side of the Huron-Manistee. You can access the aerial survey data on our web site at: <http://na.fs.fed.us/fhp/ta/av/index.shtm>

For further jack pine budworm information see the publication titled, “How to Manage Jack Pine to Reduce Damage from Jack Pine Budworm” at http://www.na.fs.fed.us/spfo/pubs/howtos/ht_jack/ht_jack.htm



Classic browning on a budworm infested jack pine

Jack pine budworm in red pine – Both the Minnesota and Wisconsin DNR’s have reported extensive areas of jack pine budworm feeding damage in red pine in 2006. This is not unprecedented but, it does appear to be more extensive in red pine stands than it has in the past. Damaged red pine trees appear to have very thin tops and in some cases, top-killed trees have been reported. Most of the damage appears to be in westcentral Minnesota, but we have also received reports from western and central Wisconsin and from the Anoka Sand Plains north of the Twin Cities. We have no reports from National Forest lands. This outbreak will be interesting to watch, it should fade away as the current budworm outbreak in jack pine dies out. But, it could persist, we do not have much past history to predict what will occur long-term in these red pine stands. If anyone has observed early season red pine defoliation that could be from jack pine budworm, we would like to hear from them.

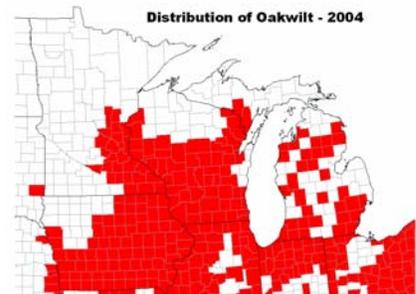


Jack pine budworm feeding damage on red pine (photo courtesy of Todd Lanigan, WI DNR)

Spruce budworm – Northeastern Minnesota, especially the areas between the cities of Virginia and Ely, had the most active spruce budworm populations in 2006. This area includes Superior National Forest land. Most of the Minnesota defoliation was in balsam fir dominated stands. Additional smaller pockets of spruce budworm activity were observed on the Hiawatha, Ottawa and Chequamegon Forests. Much of this activity was in white spruce plantations.

Expanding oak wilt – Oak wilt pockets are very common in many parts of the Lake States. But, oak wilt is not found on most of our National Forest lands in the area (see map). Unfortunately, the range of oak wilt appears to be expanding northward with increased activity on the Lakewood District of the Nicolet and an increasing number of pockets on and around the Manistee Forest in Lower Michigan. Central Lower Michigan appears to be seeing a broad overall increase in oak wilt. Root grafting makes this disease difficult to manage, one dead tree generally leads to groups of dead trees. Why the range expansion? Well, one possible explanation is the movement of the fungus via firewood. For more on oak wilt see:

http://www.na.fs.fed.us/spfo/pubs/howtos/ht_oakwilt/toc.htm



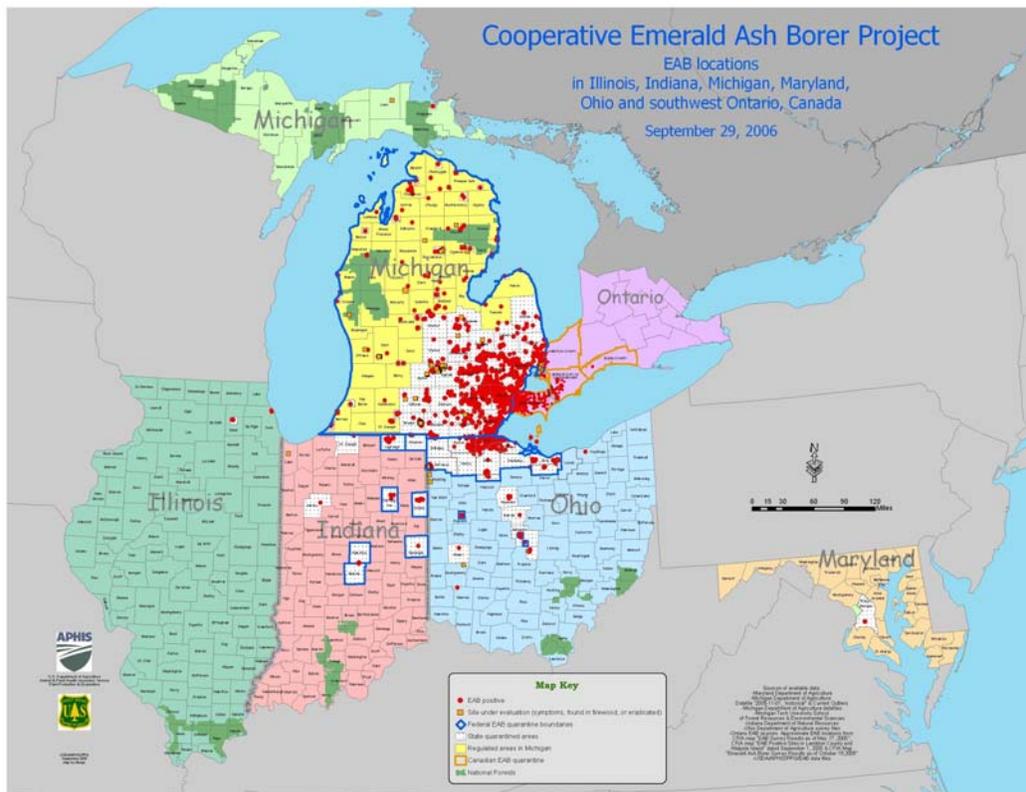
Updates on exotic pests...

We currently have several major exotic concerns in the upper Great Lakes forests. This issue updates only two of those major threats, emerald ash borer and gypsy moth.

In 2006, **emerald ash borer (EAB)** infestations were found near Indianapolis and South Bend, Indiana; in the Chicago area; and near Dayton, Ohio (see map below). Additional infestations were found in northern Ohio, northern Indiana and southern Michigan. A couple of infested trees were found in Maryland, near a nursery that had received infested nursery stock back in 2003. Most of these infestations are not considered “new” introductions, rather we are finding infestations that were probably introduced 4-6 years ago. In many cases, local tree decline and tree death are drawing the attention of homeowners, park managers, and city forestry officials. Girdled trap trees are also being used to find low-level emerald ash borer populations. Firewood movement is a likely culprit in a number of the sites found to date. Land managers looking for emerald ash borer should focus efforts on areas where firewood use is likely. Anything that can be done to eliminate the long distance movement of firewood may help keep insects such as emerald ash borer out of uninfested areas.

For emerald ash borer status and information visit:

<http://www.emeraldashborer.info/>



Gypsy moth defoliation across the Lake States has not been widely reported over the past several years. Central Michigan did have areas of defoliation in 2005 and again in 2006. But, overall large gypsy moth populations have not been observed recently. Of note in 2006 was gypsy moth caused defoliation reported on several of the Apostle Islands at the northern tip of Wisconsin. That general area has had increasing gypsy moth populations for several years with the Slow-the-spread (STS) program heavily focused on trying to “clean-up” gypsy moth populations in Bayfield County, Wisconsin. This area includes the Red Cliff Indian Reservation, the Chequamegon National Forest and the Apostle Islands National Lakeshore. Oaks, the favorite food source of gypsy moth caterpillars, are common on several of the islands. Gypsy moth populations are moving west toward Minnesota and trap catch data is being posted for 2006. This data can be monitored at the STS web site listed below:

<http://da.ento.vt.edu/>

Fall Insects and Diseases...

The following are some tree-related insects and diseases that you might encounter this fall.

Fall webworm, *Hyphantria cunea* is a native caterpillar species that feeds on a variety of hardwood trees though wild cherries (*Prunus* spp.) and walnut trees are often preferred. The extensive webbing that encloses branches and sometime entire trees is diagnostic for the species. The caterpillars become relatively large (25 mm), and are covered with long silky hairs. In the northern Lake States, this species is common in late August and September but rarely considered a significant pest. Do not confuse this tent or web-making species with the eastern tent caterpillar, an early spring caterpillar species that makes a tight, neat silk tent on cherry and apple.



Maple tar spots, caused by the fungus *Rhytisma americanum* can be commonly found on red and silver maple leaves in late summer. There are actually a couple of different species of *Rhytisma* that cause tar spots on maples (box-elder included), some of these can appear as smaller spots or clusters of black dots. Moist conditions encourage tar spots. Rarely are tar spots considered a significant problem on any of our native maples.

Asian lady beetles, *Harmonia axyridis*, have, for better or worse, become one of our most common fall insects. Soon after the first hard frost, adult Asian lady beetles will begin to congregate around houses, sheds, and garages, looking for winter shelter. These beetles spend the summer in tree crowns and out in agricultural fields hunting aphids and other soft-bodied insects. Fall population levels are likely driven by summer aphid populations. When we have a good aphid year we are likely to have lots of Asian lady beetles. It appears that this fall, in many areas, the populations are much lower than they have been in recent years.



Boxelder bugs are similar to Asian lady beetles in that they congregate on the south- and west-facing walls of homes and garages in October. Boxelder bugs become pests when they collect in very large numbers. This most often occurs in close vicinity to their host, box-elder trees. Nymphs and adults feed on box-elder seeds. Removing local boxelder trees will often eliminate problems. Maple seed will sometimes be fed on as well, but in most cases it is the presence of a box-elder tree with a heavy seed load that results in a wall covered with boxelder bugs.

Conifer seed bugs, *Leptoglossus* spp. are another insect that can be found congregating on south- and west-facing walls in the late fall. This insect is relatively large (15-18 mm long) and therefore quite conspicuous when they are present. The nymphs and adults feed on pine seed, inserting their long straw-like mouthparts into developing seeds, injecting saliva and then sucking-up the seed contents. This results in empty or partially filled seed. Seedbugs can be major seed pests in seed orchards. Interestingly, *Leptoglossus* seedbugs were not known to occur historically in the Lake States, but today both the western conifer seedbug, *L. occidentalis*, and the southern pine seedbug, *L. corculus*, can be found here. These would be a good example of an exotic species that did not originate in another continent just another region of North America.



Introduced pine sawfly, *Diprion similis*, is a non-native sawfly that can be found feeding on any of our native pines late into September and early October. White pine is the most likely to be defoliated. These colorful sawflies tend to feed as dispersed individuals, which is much different than many other sawflies that feed in groups of larvae. Individual trees can be defoliated and in rare cases top-kill or even outright tree mortality may occur.

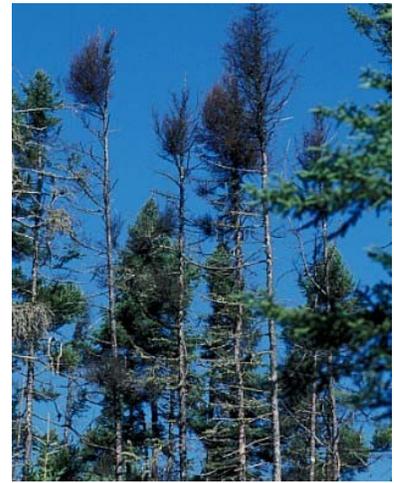
Forest Invasive Plants, Weeds to Watch For...

Japanese Stilt Grass (JSG) – *Microstegium vimineum*, is a non-native invasive grass that is on the doorstep of our Lakes States forests. The NRCS Plants Database website shows JSG as occurring throughout most of the eastern and southeastern US as far north as Missouri, Illinois, Indiana and Ohio. However, at least one small population was recently discovered in Wisconsin, so now is an excellent time to become acquainted with this plant. JSG is a rapid spreading annual grass that thrives in moist woods, wetlands, riparian areas, roadsides, rights-of-way, old fields, and other disturbed sites. This plant is highly tolerant of low-light conditions where it can form dense thickets crowding out native vegetation and limiting natural reproduction. Somewhat “bamboo-like” in appearance, JSG is distinguished by a pale silvery stripe along the mid-rib of its narrow leaves, its very late flowering (mid-September), terminal spike-like flowers and often a pale purplish fall coloration. JSG is also referred to as Napalese browntop. For more information see <http://www.nps.gov/plants/alien/fact/mivi1.htm>



Any idea what's going on here???

The photo to the right was taken in a Minnesota black spruce stand. Notice the dense clumps of twigs and branches. In the photo the trees are dead, but in many cases the black spruce trees with these tight clumps of branches would still be alive. These clumps would be referred to as witches' brooms. Broomed trees often occur in groups or pockets.



The witches' brooms in this case are caused by a parasitic plant called **eastern dwarf mistletoe**, *Arceuthobium pusillum*. Dwarf mistletoes are perennial, parasitic plants. They infect trees, absorbing nutrients from them. This causes a general decline in health and eventually can kill trees. Eastern dwarf mistletoe is considered the most serious disease of black spruce in the Great Lakes region. Eastern dwarf mistletoe can be confused with spruce broom rust, a fungal disease that also causes brooms on spruce. Dwarf mistletoe can be confirmed by the presence of female mistletoe shoots (see photo below) found on live branches of infected trees. Dwarf mistletoe seeds are dispersed short distances by explosive ejection. The seeds are sticky and they adhere to needles of nearby trees. This short distance seed dispersal causes the formation of pockets of infected trees. Long distance dispersal can occur when birds inadvertently carry seeds to uninfected trees.



Female mistletoe shoots

For more information on eastern dwarf mistletoe see:

http://www.na.fs.fed.us/spfo/pubs/fidls/dwarf_mistletoe/fidl-dm.htm

Quiz...

Test your knowledge. The photographs below were taken of an ash (*Fraxinus*) tree. The photo on the left was taken in November, after leaf drop. The photo on the right was taken in the spring time.



Quiz answers...

These photos are of the same thing, **ash flower gall**. The only difference is the time of year. Ash flower galls are caused by a proliferation of flower buds on male ash trees in the early spring (photo on the right). This proliferation is caused by an infestation of eriophyid mites. These mites are very small and cannot be seen without some aid (hand lens or microscope). The clumps of male flowers dry and harden and persist on trees. Certain ash trees in wooded areas or along city streets appear to be very prone to repeated ash flower gall infestations. These are most easily observed in the late fall or winter when the brown, hardened galls can be easily seen at the ends of twigs or branches (photo on the left).

Get to know your fungi... Information and photos provided by Dr. Joseph O'Brien.

Common name: Northern tooth fungus

Scientific name: *Climacodon septentrionale*

Description: Overlapping shelves growing on the bark surface, with "teeth" growing from the bottom of each shelf.

Habitat/host: mainly sugar maple, but occurs infrequently on other hardwoods.

Relevance: This fungus causes a white spongy heartrot, and weakens the tree considerably by the time the sporocarp is produced.



Common name: Bird's nest fungus

Scientific name: *Crucibulum laeve*

Description: Small (½ the size of a dime) cups that appear to contain tiny "eggs." Cups are at first covered by an orange material that disappears to reveal the "eggs," the reproductive structures of the fungus.

Habitat/host: Decayed wood; found everywhere, if you look carefully.

Relevance: None, other than aesthetic.



Common name: Giant puffball

Scientific name: *Calvatia gigantea*

Description: Basketball-sized round sporocarps, initially pure white inside, turning yellow and finally brown as it ages.

Habitat/host: On the ground in open woods or grass.

Relevance: A specimen this size (about 10" across) can produce up to 7 trillion spores! Edible when flesh is pure white.



Aerial survey maps...

The Forest Service Forest Health Protection unit along with cooperators in the state forest health groups, conduct annual surveys for forest insect and disease outbreaks. Each Lake State National Forest along with most other Federal properties are flown annually and damage is recorded onto maps. This information has been gathered for many years, in some cases since the 1950's in Michigan, Minnesota and Wisconsin. You can access the annual survey data on our web site at:

<http://na.fs.fed.us/fhp/ta/av/index.shtm>

We encourage you to visit that site and take a look at the information available. If you have questions or suggestions for improvement of the site or about the surveys please contact Quinn Chavez at qchavez@fs.fed.us

State forest health reports...

Our state cooperators in Michigan, Minnesota and Wisconsin annually put together a report called forest health highlights. These reports are an excellent record of the major insect and disease activity within each state. Much of the information is directly relevant to Federal lands in the Lake States. They are developed in cooperation with the Forest Service, Forest Health Monitoring (FHM) program, and can be accessed at the FHM web site:

<http://fhm.fs.fed.us/>

Upcoming forest health workshops...

2006 Annual Gypsy Moth Review, Nov. 6-9, 2006, in St. Louis – Don't let the name fool you, this is actually a review that covers a wide array of exotic forest pests including updates on sudden oak death, emerald ash borer, sirex wood wasp, and Asian longhorned beetle. You also get plenty of gypsy moth information. For information visit <http://www.uky.edu/Ag/NurseryInspection/agmr2006.htm>

Emerald ash borer (*Agrilus planipennis*)/Asian longhorned beetle (*Anoplophora glabripennis*) research and technology meeting, Oct. 31 – Nov. 2, 2006, in Cincinnati – Catch up on all of the newest research findings on EAB and ALB. For more information on this meeting contact one of our staff entomologists.

Publications and resources...

Almost all of our publications are available via our home page found on the World Wide Web. Publications can be viewed at accessed at:

<http://na.fs.fed.us/pubs/index.shtm>

Copies can be obtained by contacting our office at the address or phone number listed to the right.

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