



# Lake States Forest Health Watch



July 15, 2005

## 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. We need your assistance, please contact us with your observations.

## The firewood dilemma...

Exotic insects and pathogens are obviously one of our most significant forest health concerns. Fortunately, many of these pest agents such as gypsy moth or emerald ash borer do not have the ability to rapidly spread, they simply cannot fly or disperse long distances on their own. Left to their own devices most would spread slowly.

Unfortunately, humans often provide a ready means of dispersal by moving exotics in a variety of ways from infested firewood to egg masses on recreation vehicles. This long distance movement is creating big problems. No longer is Lake Michigan a natural barrier between Lower Michigan and Wisconsin, a few sticks of firewood carried by a southern Michigan camper visiting the Nicolet can readily introduce emerald ash borer.

In the past year we have found a number of emerald ash borer populations established in northern Lower Michigan and northern Indiana. Many of these can be directly traced to the introduction of infested firewood. Beech bark disease was found around two developed recreation areas in Michigan, one a state park and another a state forest campground. It appears very likely that this exotic insect/pathogen combination was introduced into these areas from the eastern U.S., most likely via firewood. Gypsy moth egg masses have been found in wood piles in the Minneapolis/St. Paul area, the firewood traceable to infested eastern states. In addition to the exotics, we also have several instances of oak wilt disease occurring in areas outside its known range, generally in campgrounds or around lakeshore cabins where firewood is widely used and stored.

Regulations for the movement of nursery stock and logs have been implemented for several pests but firewood is much more difficult, especially small non-commercial loads. Unfortunately, in many cases it may only take a small amount of wood to initiate a new introduction. Forty or fifty emerald ash borer adults could emerge from a single piece of firewood. One piece of oak wilt infested firewood could produce a spore mat that starts an oak wilt pocket in a campground.

The issue of stopping the movement of infested firewood is not simple. Campers, hunters and others visiting our forests have brought firewood from home for years. We need to spend time educating them about the risks involved with firewood movement. We need to come up with ways that promote the use of local firewood. If we ignore the concern, we run a high risk for more introductions.

## What happened this spring and early summer...

**Jack pine budworm** – Jack pine budworm populations are at very high levels in many parts of the northern Lake States. Some very intense defoliation is obvious along Highway 2 just east of Rapid River, Michigan. In July, infested trees can be easily observed, look for jack pine that appear to be brown or red in color. Close examination should reveal extensive webbing, holding many clipped needles. It is not unusual to have about 5-10 percent tree mortality and 10 percent top-kill following an outbreak. Outbreaks tend to last 2-3 years before declining. If outbreaks persist, more extensive mortality can occur. We also have reports of widespread budworm activity in red pine in northwest Minnesota this year. This behavior is not real unusual, it was reported last summer in central Wisconsin and east central Minnesota. Watch for top-kill in these stands. For further information see:

[http://www.na.fs.fed.us/spfo/pubs/howtos/ht\\_jack/ht\\_jack.htm](http://www.na.fs.fed.us/spfo/pubs/howtos/ht_jack/ht_jack.htm)



Jack pine budworm infested trees.

**Spruce budworm** – Spruce budworm has been reported feeding on white spruce in northern Wisconsin, the west end of the U.P. and northern Minnesota. Spruce budworm generally prefers to eat balsam fir but at this time it seems to be more commonly encountered in white spruce plantations, at least in northern Wisconsin and the U.P. Defoliation levels are at moderate levels. In July watch for spruce or balsam fir with a brown or burnt appearance. Close inspection should reveal new foliage that is webbed or tied with clipped needles caught in the webbing. You may find pupal cases tied in the webbing as well.

**Aspen tortrix** – This is one of several leafroller caterpillars that on occasion undergo outbreaks in aspen stands in the region. This year we are observing many areas with “thin” aspen crowns. Some of these stands have evidence of aspen tortrix. The aspen resource in most parts of the Lake States appears to be in relatively good health considering that only a few years ago forest tent caterpillar had eaten up most of our aspen leaves.

Aspen tortrix egg mass on an aspen leaf.



**Gypsy moth** – A second damp wet spring looks like it has taken its toll on gypsy moth populations in Wisconsin. Wet spring weather favors *Entomophaga*, a fungal pathogen of gypsy moth caterpillars. Only a few scattered pockets of visible defoliation are being reported statewide. Lower Michigan does have at least one larger area of intense defoliation in the West Branch, Grayling, Roscommon area. In Minnesota, the Superior NF had its first gypsy moth eradication treatment this spring (see the special report at the end of this newsletter).

**Arborvitae leafminer** – The Michigan DNR reports that arborvitae leafminers are active in the northern Lower Peninsula. White cedar leaf miners cause browning of the foliage. Most of the time this damage is not a big concern, but the Canadians have reported twig and branch dieback in southern Ontario and Quebec. There are at least four closely related species of small moths that could be responsible, in some areas all four may be present at one time. The species are *Argyresthia thuiella*, *A. aureoargentella*, *A. Canadensis*, and *Coleotechnites thujaella*.

### Updates on widespread tree declines...

Over the past two years we have reported several ongoing tree decline and mortality episodes in the region. We had widespread **decline and mortality in black ash stands** across the region, abundant **oak mortality** in northwest Wisconsin and north central Minnesota, and **white spruce plantation decline** in north central Wisconsin. Drought conditions back in 2002-2003 probably triggered much of this. As of spring 2005, many oak and black ash trees that have been dead for the past 2-3 years are evident but very little recent mortality has occurred. Nothing has occurred this spring that should initiate further decline. Therefore, we expect to see some continued improvement in these two species. In contrast, white spruce plantation decline has progressed in north central Wisconsin. Many of the declining spruce stands on the Chequamegon National Forest now have many dead trees. Spruce budworm feeding is removing the few needles that are being developed on many of the very stressed and weakened trees.



Black ash decline

### Mid-summer insects and diseases...

The following are some of our more commonly reported tree problems in mid to late summer.

**Redheaded pine sawfly** – This is the most destructive pine sawfly in the Great Lakes region. It attacks several pines but prefers red and jack pine that are 10-15 feet tall. They are more destructive than other sawfly species because they eat both old and new needles and can completely defoliate young trees. Tree mortality can occur in pine once all the needles are removed. Recently, we have had reports of localized redheaded pine sawfly outbreaks in northeastern Wisconsin and in the U.P. Watch for larvae throughout July and again in mid-August through September.



Redheaded pine sawfly

**Introduced pine sawfly** – This non-native sawfly is most commonly encountered in late summer through September feeding on eastern white pine. It can be found on all of our native pines but does prefer white pine. We have had reports of heavy defoliation on scattered individual trees. Watch for white pine trees that appear very thin in the crown. The larvae are attractive with a shiny black head and easily identifiable pattern of spots (see photo).



**White pine weevil** – In mid- to late summer white pine weevil killed terminals on white pine become visible (see photo). The larval stage of this insect feeds inside last-year's terminal during the early spring and summer. By this time of year the feeding damage is extensive and results in girdling of the terminal. Pupation occurs about this time with adult weevils emerging in the next few weeks. Watch for the dead terminals that form a classic "shepherd's crook" (see photo). White pine growing in full sunlight are most prone to attack. Jack and Scotch pine, white, Norway and blue spruce are also attacked.



## Updates on exotic pests...

Just what we do not need is another major exotic threat. Unfortunately, that is what we have. **Sirex woodwasp**, *Sirex noctilio* has been recognized as a serious potential threat to our pine resource for many years. This European/Asian woodwasp 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 including Jack pine. In the U.S., sirex woodwasps have been detected in wood-packing material at several ports and warehouse locations 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. We have no reason to believe that sirex woodwasp is present in our area.



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

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.

We will continue to update you on the New York situation. For more information visit:

[http://www.aphis.usda.gov/ppq/ep/emerging\\_pests/sirexnoctilio.html](http://www.aphis.usda.gov/ppq/ep/emerging_pests/sirexnoctilio.html)

**Emerald ash borer** -- Dead ash trees are present across many areas in southeast Michigan, a drive from Lansing to Ann Arbor will quickly bring home the devastation caused by emerald ash borer. This small Asian beetle is a tremendous tree killer with the potential to eliminate ash (*Fraxinus* spp.) from much 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.

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



EAB infested street tree

### Quiz...

Test your knowledge. The photograph on the left is a balsam fir in early spring. The new growth is distorted and somewhat twisted. In the early spring, closer examination reveals small soft-bodied insects covered with a white coating “wrapped” inside the needles. Later in the summer, the twisted needles are still evident but no insects may be present. The center photo is a mass of bubbles that looks like spit on the twig of a white pine. The photo on the right hand side is a young aspen stem with its bark removed. The wood under the bark has a number of darkly stained patches. Most of the damage is concentrated on one side of the tree. Aspen trees in the area had extensive decline. Other tree species in the same area also had similar symptoms.



### Quiz answers...

In the first photograph (left), the twisted new foliage on balsam fir was caused by the balsam twig aphid, *Mindarus abietinus*. This native aphid feeds on balsam and Fraser fir and occasionally on white spruce. The damage occurs very early in the spring, the aphids are feeding on the new twigs and foliage just after bud break. The damage is cosmetic, Christmas tree growers can be concerned because the twisted needles do persist. The center photo shows a spittle mass that is covering the immature stage of a small insect called the pine spittlebug, *Aphrophora parallela*. The pine spittlebug feeds on many different conifers though it seems to prefer jack, white, and Scotch pines. Both the adult and immature stages (called nymphs) feed on pines but it is only the nymphs that form spittle masses. High populations of pine spittlebug can damage young trees. The last photograph (right) illustrates hail damage on young hardwood trees. The pattern of wounding on one side and the fact that multiple tree species are affected is characteristic of hail injury. In addition to bruising under the bark watch for shredded leaves and tears through the bark. Hail injury can cause significant decline though in most cases the damage is relatively isolated.

### Upcoming forest health workshops...

The 2005 North Central Forest Pest Workshop, September 19-22, LaCrosse, WI. This is an annual meeting of the forest health community in the Great Lakes region. It includes a number of presentations, posters and panel discussions on forest insect and disease issues in the region. For more information visit:

<http://www.na.fs.fed.us/spfo/ncfpw/index.htm>

## Publications and resources...

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

<http://www.na.fs.fed.us/spfo/>

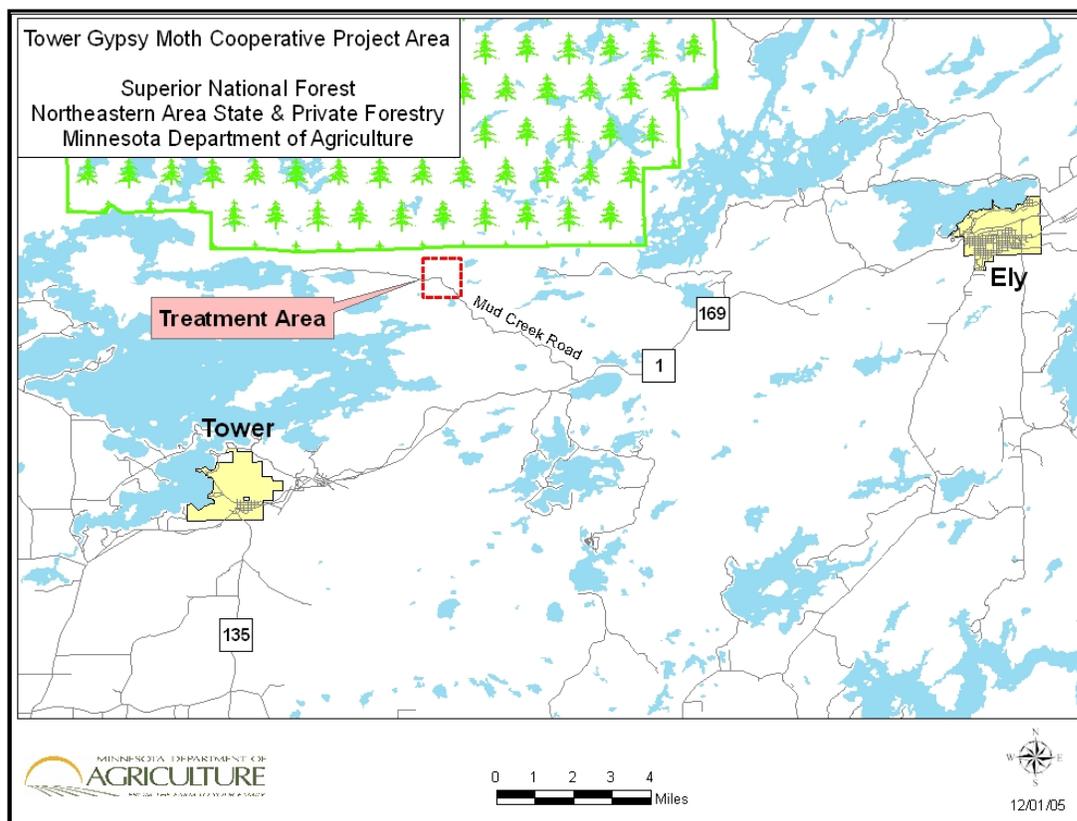
Copies can be obtained by contacting our office at the address or phone number listed to the right.

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## Special Update...The First Gypsy Moth Treatment on the Superior National Forest

(Information provided by John Kyhl, Entomologist, FHP in St. Paul)

Last summer, (2004) an isolated population of gypsy moth was found northeast of Tower MN in an area partly on National Forest land (Superior National Forest). This population was more than 150 miles ahead of the 'generally infested' area in Wisconsin. It was detected with gypsy moth traps placed by the Minnesota Department of Agriculture. A single trap caught 28 male moths, notably higher than the normal low-level background catches. Based on the trap catch, an egg mass search was conducted, and a single egg mass was found.



When reproducing populations of gypsy moth are found this far ahead of the generally infested area, actions to eradicate the insect are required to avoid state and federal quarantines. The Minnesota Department of Agriculture contracted for two applications of the microbial insecticide Btk. The first application was June 6, the second on June 14. Additional trapping will occur at this site in 2005 to determine the success of the eradication efforts.



Application of Btk to the gypsy moth eradication site.

This find did afford an opportunity to learn more about gypsy moth biology in colder northern areas. The Tower area of Minnesota is consistently among the coldest in the state (the low temperature this winter was approximately -50 F). Since few gypsy moth populations are known from this far north, records of hatch date in this area were not available. There are computer models to predict these biological events, but most models have proven inaccurate in northern Wisconsin and in the upper peninsula of Michigan. To monitor egg hatch (and to satisfy quarantine requirements), the egg mass was placed into an emergence cage and monitored. A few caterpillars did survive the cold temperatures, hatching in early June. Continued concerns about gypsy moth in northeastern Minnesota have prompted MDA to significantly increase trap placement in 2005, placing approximately 26,000 traps statewide.