



Lake States Forest Health Watch



May 20, 2007

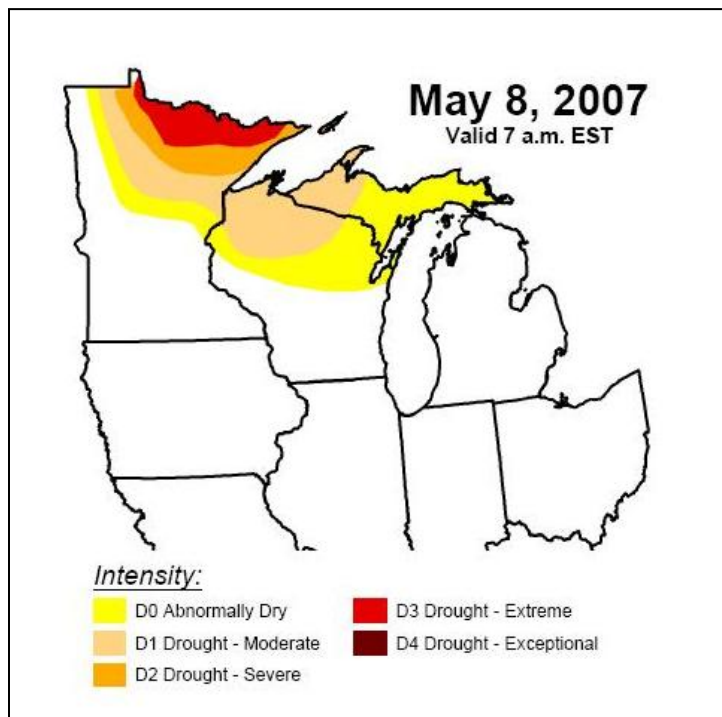
About this newsletter...

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 to expect in 2007...

So, what does our crystal ball see for this coming summer?

Drought impacts - much of northern Minnesota, northern Wisconsin, and the U.P. have lingering drought concerns. Drought is a major contributor to a variety of forest health issues. Drought can initiate declines in many tree species including black ash, sugar maple, paper birch, white spruce and yellow birch. Wood borers and bark beetles thrive in drought stressed trees. Be aware of insects such as the pine engraver, *Ips pini*, attacking red and jack pine; hemlock borer, *Melanophila fulvogutatta*, attacking hemlock; two-lined chestnut borer killing oaks; and bronze birch borer infesting birch trees. Armillaria root disease is likely to be more prevalent during dry periods. Armillaria fungi are present in many forest soils, just waiting for weakened trees to provide a food source that they can invade. Also, many caterpillar outbreaks coincide with drought periods. Watch for increasing gypsy moth activity, especially in Wisconsin. Another big concern will be Diplodia shot blight and canker on red pine. Watch for seedling red pine mortality caused by Diplodia.



Palmer Drought Index

U.S. Drought Monitor

http://www.drought.unl.edu/dm/DM_midwest.htm

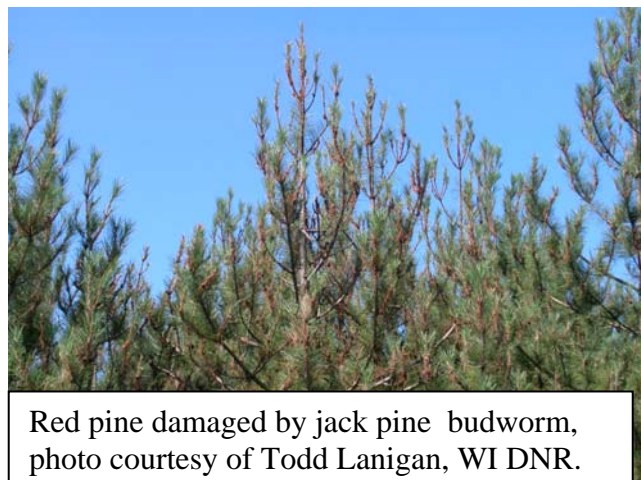
Sugar maple decline – Last spring we received many reports of sugar maple defoliation in far northern Wisconsin and adjacent areas in the U.P. Most of the damage was high in the upper crowns of trees. It appeared that frost may have played a key role along with some insect defoliators. Whatever the cause, the impact may still be observed this spring. Crown decline (dead twigs and branches, small leaves, thin crowns) is often observed for a year or two after a stress event. Trees generally recover if growing conditions are favorable. But, if other stress events follow, such as a drought, then further decline may occur. Please send us any reports of crown decline in sugar maple or in yellow birch.

Spruce budworm – This early season defoliator of white spruce and balsam fir remains locally active in the region. White spruce plantations and older balsam fir are the most likely places to observe spruce budworm. In late May look for caterpillars tunneling in expanding buds and new foliage on spruce and fir. Budworm caterpillars use silk to tie needles so infested shoots are often webbed together. Carefully pull these apart to locate the caterpillar wrapped up inside.



Jack pine budworm – The past three years have seen some extensive areas of jack pine budworm defoliation in Minnesota, Wisconsin and in Michigan. Normally, budworm outbreaks are regional in extent and last 2-3 years. After a couple of years most outbreaks terminate. This current outbreak has been more a series of localized outbreaks with intense defoliation being concentrated in the central and eastern U.P., and northwest Minnesota. Last year, defoliation expanded into eastern Minnesota and northern Lower Michigan. What this year holds is still unclear, we would normally predict a population collapse but there are jack pine areas where the budworm populations appear to be rising rather than dropping, such as the western U.P.

We have had reports of jack pine budworm feeding extensively in red pine in west central Wisconsin and in portions of central and northwest Minnesota. This is not a common occurrence. Red pine with budworm feeding damage will have a very thin upper crown and top-kill can occur. Close inspection should reveal pupal cases and clipped needles tied loosely with silk webbing. Please report any defoliation in red pine that looks like the adjacent photograph.



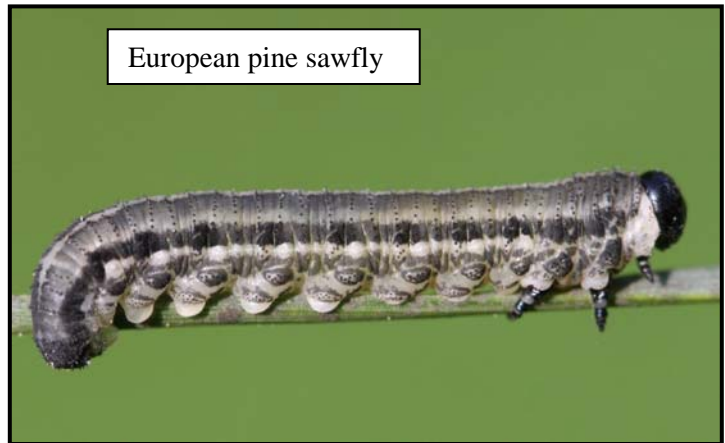
Red pine damaged by jack pine budworm, photo courtesy of Todd Lanigan, WI DNR.

Early Spring Insects and Diseases...

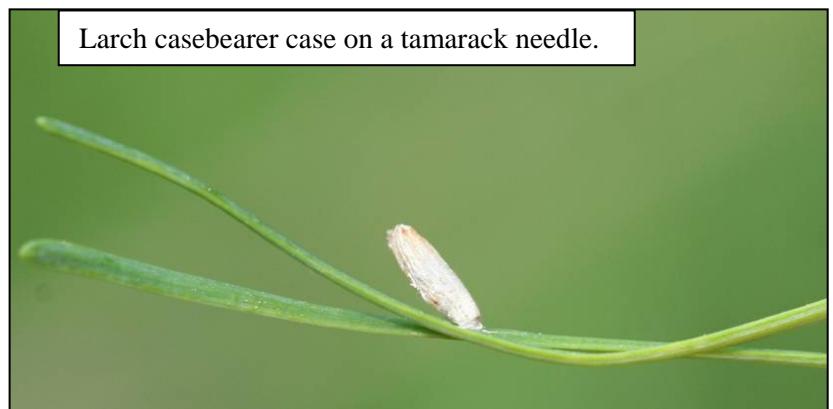
The following are some of our more commonly reported tree problems in early spring.

Anthracnose diseases of hardwood leaves are widespread in eastern North America. The most common symptom of this disease is dead areas or blotches on infected leaves. However, classic symptoms are not always seen, especially on ash trees. Anthracnose on ash often causes leaf drop to occur with few or no spots on the fallen leaves. In most cases, anthracnose is simply an aesthetic concern and not a serious health problem for trees. In general, we have more anthracnose observed during wet springs. For more information see: http://www.na.fs.fed.us/spfo/pubs/fidls/anthracnose_east/fidl-ae.htm

European pine sawfly, *Neodiprion sertifer*, is a very common early season defoliator on Austrian, Scots, red and jack pines. Landscape mugho pines are often infested. This is an exotic species to North America. It is much more common in the southern portions of the Great Lakes region than further north. There is a native sawfly, the **red pine sawfly**, *Neodiprion nanulus nanulus*, that looks very similar and is often found feeding on red and jack pine at the same time of year. Telling the two species apart by larval appearance is difficult. The red pine sawfly has a habit of eating only the outer two-thirds of needles, leaving a distinctive pattern with the basal one-third remaining.



Larch casebearer -- Larch casebearer is a very small caterpillar that feeds on larch needles. Half-eaten needles make infested trees appear burnt from a distance. Close inspection reveals tiny cases made of hollowed needles. The caterpillars live inside these cases. Casebearer activity has been reported for the last several years, especially in the central portions of the U.P. and in parts of northern Minnesota.



Eastern tent caterpillar – This is one of our earliest and most common leaf feeders in the upper Midwest. Eastern tent caterpillar forms a characteristic silk tent on cherry, apple and plum. Other tent-making caterpillars, such as the fall webworm, uglynest caterpillar or cherry scallop shell moth, appear later in the summer and their tents enclose foliage. The eastern tent caterpillar tent is very neat in comparison and does not enclose leaves.

Tents formed on cherry by eastern tent caterpillar



Balsam twig aphid – Feeding damage causes the new needles to curl and distort (see photo). Pulling the needles apart should reveal small aphids coated with a white dusting. The damage is cosmetic and not a tree health concern. Christmas tree growers become concerned since the curled needles persist. Several predators including lady beetles attack the aphids and generally keep the aphid populations well in check.

Venturia shoot blight – caused by the fungus *Venturia macularis*, is common in many young aspen stands. This shoot blight (fungi) can have a profound effect on height growth and crown position of individual stems. Young aspen trees that lose their dominant or co-dominant crown status in dense young aspen sucker stands, tend to be eliminated. This is part of the natural thinning process that occurs frequently in these developing stands.



Introduced basswood thrips

– Thrips are tiny insects that scrape and damage newly developing leaves when they are still in the bud stage. Thrips feeding causes very early season defoliation on basswood. Under close inspection you should see aborted buds and shredded leaves. Trees appear to have a “ragged” appearance (see photo). The timing



Basswood thrips defoliation

between thrips emergence from overwintering in the soil and bud development seems to be the key for determining the amount of damage in any given spring. Damage is intensified if the thrips get to the buds before the leaves expand. For more information see:

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

Birch leafminer – Birch leafminer is a sawfly. The adults are small, black, fly-like insects. In May, adult sawflies can be seen landing on birch leaves where they lay eggs. The larval sawflies tunnel and feed inside of the birch leaf tissue forming a blister or leaf mine. The leaf in the photograph shows several leaf mines on a birch leaf. These mines expand and the leaves begin to brown in June and early July. There are several birch leafminer species in the Great Lakes region, all of them are exotic. White barked birches are more often attacked than are yellow or river birch. High populations can make landscape trees very unsightly. Birch leafminer populations have been relatively low the last year or two. For more information see:



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

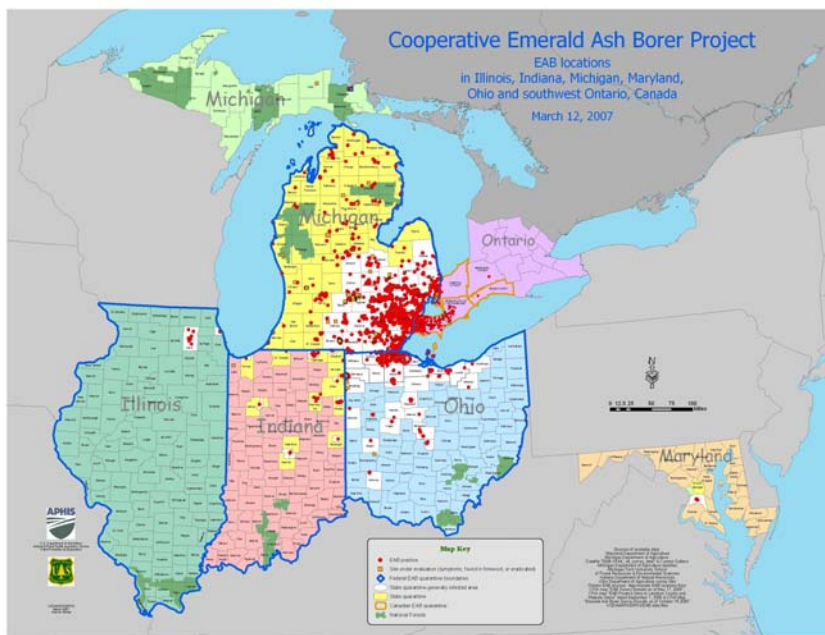
Updates on exotic pests...

Exotic invasives are a significant concern for our Great Lakes forests. We have several invasives that literally threaten to alter forest ecosystems by killing or deforming key forest tree species. Michigan is taking the brunt of the initial impact. Beech bark disease is reaching epidemic levels, the loss of much of our American beech resource will have major impacts on parts of the Hiawatha and Manistee National Forests as well as Pictured Rocks National Lakeshore. Emerald ash borer is building populations across Lower Michigan threatening native green, black and white ash trees. Sirex wood wasp appears to have a firm foothold east of Michigan and could enter the western Great Lakes region soon. This would threaten our pine resource. We also have a confirmed infestation of hemlock woolly adelgid in Michigan. Those are just four major threats, we still have gypsy moth moving into northwest Wisconsin and northeast Minnesota and several exotics plants invading our forests. Updates follow **on emerald ash borer** and **beech bark disease**.

Emerald ash borer (EAB)...

The map below shows location data where EAB has been found to date. A few outlier populations have received eradication treatments including Brimley State Park in the eastern Upper Peninsula of Michigan. Hopefully that site no longer has an established EAB population. Unfortunately, outlier populations in the Chicago area and in Maryland have proven to be more extensive than initially thought and local eradication appears unlikely. Major survey efforts continue in many states. Research activities on emerald ash borer are underway with a major emphasis on refining survey tools, insecticide efficacy, and biological controls. The 2006 research review for emerald ash borer can be viewed at the following web site:

http://www.fs.fed.us/foresthealth/technology/pub_titles.shtml#E

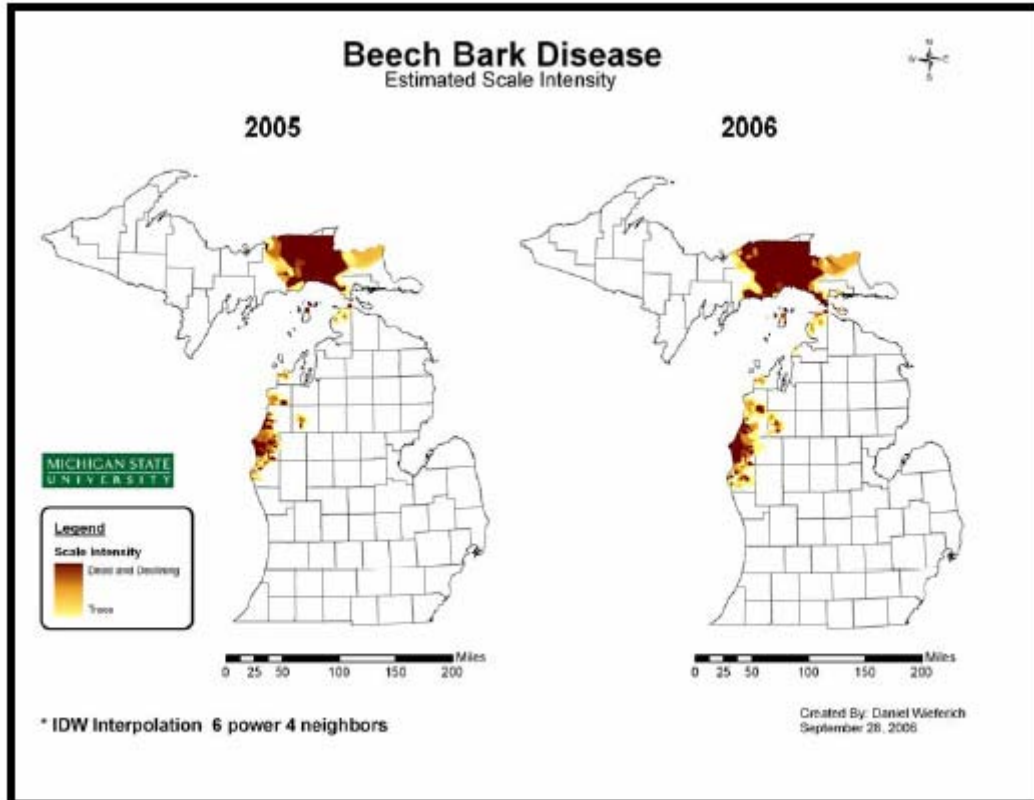


Beech bark disease (BBD)...

This update was taken from the 2006 Michigan Forest Health Highlights, it was prepared by the Michigan DNR, Forest, Mineral & Fire Management Division.

Beech scale populations in the Upper Peninsula moved westward to Munising in 2006. Scale populations are building rapidly as the advancing and killing fronts expand in the Upper Peninsula. In killing front areas, forest resource professionals are facing the challenges of salvaging stands before trees die or snap. Hardwood stands with high numbers of beech which historically regenerated naturally after selection harvests now often require tree planting programs to ensure a future, fully stocked, sustainable forest resource. A minor beech component is left in many stands to provide wildlife food and habitat as stands transition to other tree species mixes. Hazard tree management due to the threat of beech snap and tree mortality is now a fact of life in parks, campgrounds and cities in the eastern Upper Peninsula.

Since the discovery of **beech bark disease (BBD)** in Ludington State Park in 2000, the BBD killing front has expanded very slowly in the west-central Lower Peninsula. Based on data from the Michigan Beech Bark Disease Monitoring and Impact Analysis System (BBDMIAS), a cooperative network of statewide BBD monitoring plots, only Mason, Oceana and Muskegon counties have suffered beech mortality as a result of infection from *Neonectria* fungi, the pathogens responsible for the wood decay and 'beech snap' that occurs in BBD-infected trees.



Any idea what's going on here???

The photo to the left is of a young jack pine. The photo was taken in early August. The terminal is dead and curled into a “Shepherds crook”. Any idea of the cause?

The terminal was killed by white pine weevil, *Pissodes strobi*. The larval stages of this weevil feed inside the previous years terminal, eventually causing enough damage to girdle the shoot and kill the newly expanding terminal growth at the very top of the tree.

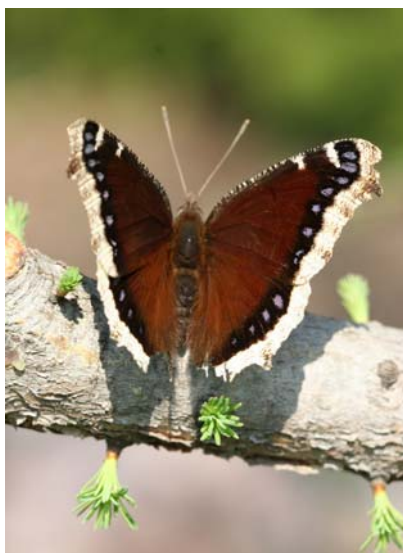
Though the common name is “white pine weevil”, the insect infests the terminals of many conifers including white, blue and Norway spruce, jack and Scots pine, and on occasion red pine.

White pine weevils are not tree killers, rather they cause trees to become deformed, crooked, and multi-stemmed. This becomes an issue if trees are grown for high quality wood products.



Quiz...

Test your knowledge. The photographs below are of a common woodland butterfly often observed in early spring and a small green weevil that can be very abundant on the leaves of many of our hardwood trees and shrubs. The answers are on the next page.



Quiz answers...

The butterfly is a **mourning cloak**, one of only a few species that can be found flying in the very early springtime. The adults over-winter in protected places such as under bark flaps, inside hollow trees or in sheds or garages. As soon as the weather warms in the spring the adults can be observed. The caterpillar stage of this butterfly is called the spiny elm caterpillar, it has abundant large spines and is black in color with red dots on its back. The caterpillars can be found feeding on elms and willows in late May and June. The small weevil is a ***Polydrusus weevil***. It is an exotic (non-native) species to North America. Adults can be very numerous feeding on hardwood leaves. The larval stage (grub) feeds on the roots of hardwood trees and shrubs. This weevil has been a pest in some nursery situations. Because it is green and rather fluorescent in appearance it may be mistaken by some for emerald ash borer. But, it has a classic weevil body shape with an extended snout. Emerald ash borer adults would be more flattened and bullet shaped.

What About Exotic Weeds...

Early spring can be a great time to locate infestations of **garlic mustard**. This invasive plant is green and growing very early in the spring. In fact, the plants stay green during the winter. The white flowers are present in May. In areas where this weed is still not common, pulling or herbiciding small patches of garlic mustard can prevent local spread of the weed. Control work should be done before seed set and dispersal in early to mid-summer. Garlic mustard is often found along woods edges and trails. It prefers sites with nutrient rich soils and a good moisture supply.



Garlic mustard

Mammal damage...

Insects and pathogens are obviously not the only causes of damage to trees. In the Great Lakes region mammal caused damage can be common. One could argue that in some areas **deer browse** is the most significant damaging agent on the landscape, especially for certain tree species. White cedar, hemlock, and white pine are three conifers that are often browsed heavily by deer. Regenerating these species can be difficult in many areas because of repeated browse damage. **Snowshoe hares** and **rabbits** can also cause extensive injury on seedlings and small trees. **Mice and voles** can girdle stems, especially when young trees are growing in heavy grass. **Beavers** obviously are a damaging agent in some situations, not only by chewing stems but also by building dams that alter water flow patterns or flood areas. **Porcupines** can be destructive. They often chew off large patches of bark on a variety of trees, this can cause branch death or top-kill. **Squirrels** clip twigs and chew bark and can cause branch or twig death when they remove cones in the late summer and fall.



Porcupine injury (J. O'Brien)

We have another mammal that causes a great deal of damage, especially in urban landscapes. **Human** caused injury can be a major problem for many trees. Lawn mower injury, weed whackers, ropes and wires, construction activity and other human caused abuse kills and damages many trees. We also have to consider poor planting practices and improper pruning techniques as human caused. Campsites are a great place to view some of the abuses people heap on trees, everything from hatchet injuries to burns caused by lanterns. Injured trees or poorly planted trees are much more prone to insect attack or invasion by pathogens.



"Lantern injury"
Photo J. O'Brien



Rope and lawnmower injury



Beaver activity



Rabbit damage

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

Common name: Red tree brain

Scientific name: *Peniophora rufa*

Description: Orange, highly wrinkled, small sporocarps occur on poplars and willows, usually on decaying trees and branches on the ground.

Habitat/host: *Populus*, *Salix*

Relevance: Decays only wood that is already dead. Common and widespread.



Common name: Violet-toothed polypore

Scientific name: *Trichaptum biforme*

Description: Brackets with boring whitish upper surface, and a beautiful lilac, pored undersurface.

Habitat/host: Occurs across the country in every state on hardwoods.

Relevance: Causes a yellowish sapwood rot in standing trees, and is a major decomposer of hardwood slash.



Common name: Rusty-gilled polypore

Scientific name: *Gloeophyllum sepiarium*

Description: Brown, concentrically zoned brackets with a whitish margin, maze-like pores underneath.

Habitat/host: Conifers

Relevance: This fungus causes a brown rot in conifers, usually seen on downed branches and stems.



State forest health highlights...

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/fhh/ncregion.shtm>

Upcoming forest health workshops...

The 56th North Central Forest Pest Workshop will be held September 24-27 in Shoreview Minnesota. That is a north metro suburb of Minneapolis/St. Paul. The workshop is an annual gathering of persons interested in forest health in the north central portion of North America. It is usually attended by plant pathologists, entomologists, foresters, and other scientists and students. For more information visit:

<http://www.na.fs.fed.us/fhp/regional/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://na.fs.fed.us/fhp/index.shtm>

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

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