Lake States
Forest Health Watch

May 1, 2003

About this newsletter…

The Forest Health Protection unit of the Forest Service located in St. Paul produces this newsletter. Its 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. In order to do that, we need your assistance, please contact us with your observations.

Forest health's most wanted list…

Emerald ash borer – This small beetle has become the # 1 exotic insect threat to forests in the Great Lakes Region. It has caused tremendous tree mortality in SE Michigan where an estimated 5 million ash trees have been infested or are already dead. That is a very impressive number for an insect that was identified in the country for the first time last summer. A major concern with this insect is the threat of long distance movement via infested firewood, logs or nursery stock. Campgrounds and other recreation areas could be prime locations for new infestations.

Emerald ash borer adults have a metallic green hue and are about 3/8 inch in length. Watch for them on the bark of ash trees in June, July and early August. Photo by Dave Cappeart, MSU

Symptoms include off-color foliage and dead branches in the upper crown. This is followed by the death of larger branches and eventually tree death. It can take 2-3 years of repeated infestations to kill trees. Characteristic D-shaped exit holes show where adults have cut through the bark to emerge. Removing the bark reveals characteristic serpentine (winding) larval galleries.

Dead or dying ash tree should be inspected for the signs and symptoms described above. We would appreciate reports of declining or dying ash trees. It appears that all of our native ash are susceptible. For more information on this insect please visit our emerald ash borer web site at: http://www.na.fs.fed.us/spfo/eab/index.html

Hemlock woolly adelgid – This exotic insect is viewed as a major threat to hemlock in North America. At the present time populations are found across parts of the northeastern U.S. Hopefully, the introduction of biological control agents and cold winter temperatures in the region will limit its impact. Nevertheless, this is one insect we should be very concerned with. Introduction could occur into our area through infested nursery stock. Watch for white cotton-like masses at the base of hemlock needles (see photo). For more information on hemlock woolly adelgid: http://www.fs.fed.us/na/morgantown/fhp/palerts/hemlock/hemlock.htm

Adelgids on hemlock

Sudden Oak Death – The disease referred to as Sudden Oak Death (SOD) is known to occur only in California and southwestern Oregon; however, transporting infected hosts may spread the disease. The pathogen, *Phytophthora ramorum,* has the potential to infect oaks and other trees and shrubs elsewhere in the United States. Tests show that northern red oak and pin oak are highly susceptible. SOD trees often have cankers that bleed a black or reddish ooze. The eastern version of the SOD Pest Alert helps differentiate SOD from oak wilt, oak decline, and red oak borer, some of our more common oak killers. That pest alert can be found at: http://www.na.fs.fed.us/spfo/pubs/pest_al/sodeast/sodeast.htm

Bleeding canker on oak

Early spring insects, diseases and other stuff…

One of our earliest and most noticeable caterpillars is the **eastern tent caterpillar,** *Malacosoma americanum.* This species is a close relative to the forest tent caterpillar that has been at outbreak levels for the past few years. Eastern tent caterpillar can be differentiated from forest tent by the presence of the neat silk tents formed in the crotches of branches (see photo). Forest tent caterpillars do not form a tent. Also, eastern tent feeds almost exclusively on cherry and apple trees. Forest tent caterpillar feeds on a variety of hardwoods but prefers aspen, oaks, basswood, and ash. Eastern tent caterpillars do not feed in their tent and therefore there is no foliage in the tent. This helps distinguish them from other common web or tent making species such as the fall webworm, uglynest caterpillar or cherry scallop shell moth, all of which have silk tents that enclose foliage.

Other very early season insects include **introduced basswood thrips, European pine sawfly, and red pine sawfly.** Thrips damage on basswood occurs as the buds begin to swell and leaves emerge. If trees appear very ragged in appearance the problem is likely due to this exotic thrip. The two sawflies are very similar in appearance and both feed on red, Scots, Austrian, Mugho and jack pine. Watch for clumps of small green worms with black shiny heads. These clumps of sawfly larvae can quickly eat at all of the needles off of a branch, but the buds remain undamaged. New needles usually emerge after the sawflies are done feeding.

Woodpecker activity that has occurred during the winter is often a very good sign of bark beetle or wood and phloem boring insect infestations. The woodpeckers will strip off the outer bark hunting for larvae or pupae of a number of beetle species. This is a good way to locate hemlocks infested with **hemlock borer** and tamarack infested with **eastern larch beetle**. Woodpeckers are also active on ash trees infested with emerald ash borer.

Woodpecker activity on a hemlock infested with hemlock borer

Anthracnose is a leaf and twig disease that can be very prevalent in early spring, especially if we have wet weather. The most common symptom is dead areas or blotches on the leaves. Anthracnose fungi attack numerous hardwood species. In the northern Lake states we often have reports of anthracnose on white oak and on ash. On white oaks, the lower leaves often get large blotches. On ash, blotches are less visible but leaf drop is very common. For more on anthracnose see: http://www.na.fs.fed.us/spfo/pubs/fidls/anthracnose_east/fidl-ae.htm

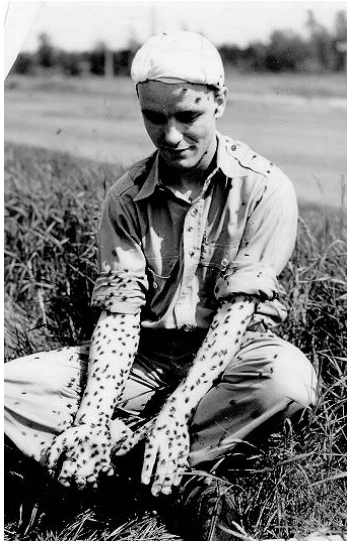
Frost injury is always something to watch for in early spring. Newly expanding shoots curl or flop over soon after a frost event. After a few days the affected plant parts turn black. Frost damage often leaves a pattern, such as all of the young red pine growing in a depression. Trees growing above that depression may be undamaged.

Spring is the time when we see damage that occurred during the fall or winter express itself. **Salt damage, winter burning,** and **winter drying** are all observed at this time of year. These problems often show a pattern such as damage occurring along a road, around intersections, or on one side of all the trees in a stand. Insect damage and in most cases pathogens rarely show such distinct patterns. There is a How To publication on what are often referred to as non-infectious diseases of trees: http://www.na.fs.fed.us/spfo/pubs/howtos/ht_non/non_all.htm

Don't prune oaks in April, May and June…

Historically, **oak wilt** has not been viewed as a major concern on the Great Lakes National Forests with the disease being more prevalent in areas south of the Forest boundaries in Michigan, Minnesota and Wisconsin. However, oak wilt appears to be expanding northward. Both the Huron-Manistee and the Nicolet Forests have reported active oak wilt. This fungus can be moved into new areas via firewood and readily transmitted by several different insects that visit fresh wounds in the spring. Any activities that may lead to wounding of oak trees in April, May and June should be stopped. Once the disease gains a foothold it can be very difficult to manage. For more information see: http://www.na.fs.fed.us/spfo/pubs/howtos/ht_oakwilt/toc.htm

Forest tent caterpillar and the friendly flies…



We are reaching the end of a regional forest tent caterpillar (FTC) outbreak that has been ongoing for the past 3-4 years. This spring we expect some localized defoliation by FTC but most areas should see greatly reduced populations. One of the reasons FTC populations crash is an explosion in the population of an FTC pupal parasite, *Sarcophaga aldrichi.* This natural enemy of FTC is a large gray fly locally referred to as the "friendly fly" or the "government fly". It is a native parasite that has evolved with FTC. It lays tiny maggots on the cocoons of FTC. The maggots eat the developing pupa found inside a cocoon. *S. aldrichi* becomes very numerous near the end of outbreaks, killing many of the FTC pupae. In many cases the flies become more of a nuisance than the caterpillars. This fly does not bite but often lands on people as shown in the photo thus the name of friendly fly. They also like to land on laundry, light colored cars and siding. The name government fly refers to a common misconception that these flies are released by government agencies to control FTC. This is not the case, this fly is a native parasite of FTC and its great numbers at the end of outbreaks are just part of the population dynamics of FTC.

Biting flies…

In contrast to the non-biting fly described above, we have an abundance and diversity of non-friendly, biting flies in the Great Lakes region. These include mosquitoes, black flies, biting midges such as no-see-ums, horse flies, deer flies, and stable flies. All of these will bite people and in some cases will transmit diseases. Issues related to disease transmission are becoming more important as diseases such as West Nile virus invade the region.

If you would like to learn more you can visit an excellent web site on biting flies maintained by Agriculture Canada: **http://res2.agr.gc.ca/ecorc/diptera/index_e.htm**

This web site is basically an electronic version of a publication titled "Biting flies attacking man and livestock in Canada", by D.M. Wood. It includes an excellent discussion on the mechanism of blood feeding and disease transmission (always good reading)! It also includes some abatement strategies and a discussion on personal protection.

A few fun facts taken from the website above:

Black flies are strongly influenced by color—they find dark hues more attractive than pale ones, and blue, purple, brown, and black more attractive than white or yellow.

For black flies, blue jeans might be better than pale trousers: if they are carefully tucked in at the ankles and are without holes, jeans may help to attract the flies away from the head region.

The sub arctic, in the vicinity of treeline, owes its formidable reputation as the worst place in the world for mosquitoes largely to *Aedes hexodontus.* Breeding in enormous numbers, estimated at 12.5 million to the hectare at Churchill, Manitoba, *hexodontus* attacks day and night, under conditions of wind and cold that would subdue most other species.

One cow can lose about one-quarter of a liter of blood per day under heavy attack from horse flies, with more blood lost from the bite wounds.

Stable flies are one of the more painful biters. The entire proboscis (mouthparts), which is slender and pointed, is forced into the skin like a hypodermic needle, with a resulting painful effect on the victim. Small recurved spines at the tip of the proboscis dig into the skin and then are moved sideways away from each other to rasp a hole and pull the proboscis.

Every time a biting fly takes a blood meal it injects a small amount of salivary fluid to help prevent coagulation within and around its mouthparts. This fluid contains proteins which act as allergens, resulting in swollen, itchy welts.

Quiz…

Test your knowledge. The caterpillar on the left feeds on several hardwood trees including apple, ash, birches and willows. Caterpillars can be found from May through September. The beetle in the center photo is a weevil that can be found as an adult in early spring congregating on the terminals of white pine. The sugar maple leaf in the right-side photo is hanging from its petiole. These leaves tend to drop and litter the ground in early summer. The petiole contains the culprit. Answers are found below.

Quiz answers…

The caterpillar is an **eastern tiger swallowtail**, *Papilio glaucus*. The adult is a large yellow swallowtail butterfly. The center photo is an adult white pine weevil, *Pissodes strobi*. In the early spring female white pine weevils lay eggs in small holes that they chew just below the terminal buds on white pine. These eggs hatch and several larvae tunnel downward in the terminal eventually causing enough damage to kill the terminal. The sugar maple petiole on the right was infested with a small sawfly called the maple petiole borer, *Caulocampus acericaulis.* The larva of this sawfly tunnels in the petiole causing leaves to drop. The ground can be littered with leaves but in most cases damage is minimal.

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.

For More Information

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