

Illinois Forest Health Highlights

2005

Photographer: J. Appleby



Forest Pest Report

Compiled and written by
James E. Appleby



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Contributing Agencies:
USDA Forest Service
Illinois Department of Natural Resources
Illinois Department of Agriculture
Illinois Natural History Survey
Dept. of Natural Resources and Environmental Sciences
University of Illinois
Urbana-Champaign, IL



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April 2006

2005 Illinois Forest Pest Workshops

Forest Pest Workshops have been a part of the Illinois forestry program for many years and this year was no exception. In 2005 two Forest Pest Workshops were held for Illinois Department of Natural Resources District Foresters. On June 14, 2005 a workshop was held at the U.S. Army Corp of Engineers' Lock near Starve Rock State Park. At Benton, IL another workshop was held on June 15, 2005. The workshops were presented by Dr. Manfred Mielke, Plant Pathologist, from the USDA Forest Service in St. Paul, MN, and Dr. James Appleby, Entomologist, at the University of Illinois.

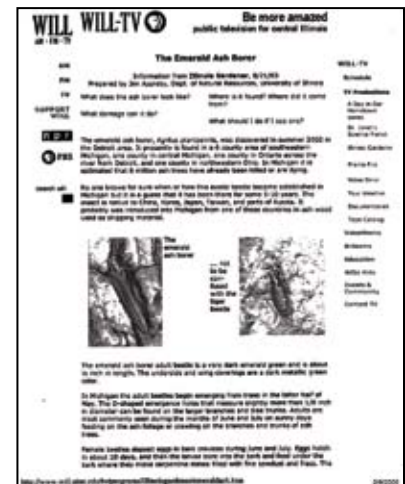
At each workshop updated information was presented about any new diseases or insects or any that may enter the state that could affect Illinois forests. Updated cultural, biological, and chemical control measures affecting economically important tree diseases and insect were discussed in addition to explanations of the life histories of tree diseases and insects. PowerPoint presentations were shown on given topics.

At each location attendees brought in diseased and insect infested plant material. Dissecting microscopes were used to examine field collected insects and disease organisms. Current literature on tree diseases and insects was distributed. Explanations on how disease and insect surveys are to be conducted for the current and future years were discussed. The disease and insect survey report from the previous year's survey was distributed. A questions and answer session was part of each workshop.

2005 Educational Exhibits

A poster display entitled "The Emerald Ash Borer - A Threat to Illinois Ash Trees" was shown at the Illinois State Fair August 12-21. The 4' X 5' poster display consisted of colored photographs of the adult beetle, its larva, larval galleries, ash crown thinning symptomatic of an infested ash tree, basal sprouting another symptom, D-shaped emergence holes, firewood showing larval galleries, and the cuckoo wasp and a tiger beetle that may be confused with the emerald ash borer adult. A USDA Forest Service leaflet on the emerald ash borer was a handout for everyone desiring more information about the insect. Approximately twenty-two thousand persons viewed the display in Springfield, IL. The poster was a cooperative project and credits were given to the USDA Forest Service, Illinois Department of Natural Resources, USDA APHIS PPQ, Illinois Department of Agriculture, Illinois Natural History Survey, University of Illinois, and The Morton Arboretum.

A 3' X 4' poster display with similar information as that exhibited at the Illinois State Fair was shown at Forestry Expo on September 9-10 in Davenport, Iowa, also at the University of Illinois Turf Day on September 14, and at a Tree Farm Meeting near Charleston, IL on



October 15. At all these events the USDA emerald ash borer leaflet was available.

Firewood Warning Poster

A total of 50 UV resistant heavy plastic colored posters with information warning not to bring Michigan firewood into Illinois because of the danger that the firewood might be infested with the emerald ash borer were distributed to state parks in the northeastern area of the state. The posters were designed for outdoor display in areas frequented by the general public. It is estimated that some 15 million ash trees have died in Michigan due to infestations of the emerald ash borer. Even though there are strict quarantines in Michigan which restricts the movement of ash logs or trees out of the state, there may be instances that people are unaware of the regulations and move ash firewood into Illinois that may be infested. The poster information warns about the danger and gives information as to whom to call in case a person has Michigan firewood.

Firewood Warning
Don't Bring Michigan Firewood Into Illinois
The Wood May Be Infested With the Emerald Ash Borer

This information made possible through grants from the USDA Forest Service, USDA APHIS PPQ, and the IL Dept. of Natural Resources.

If you have Michigan firewood call IL, USDA APHIS PPQ (847-299-6939), IL Dept. of Agriculture (800-641-3934), your camp main office, local Extension Office, or an IL Dept. of Natural Resources forester.

The adult beetle is about 1/2 inch long. It has killed nearly 15 million ash trees in Michigan. Adults emerge from tree bark from mid May until late July. Search for beetles on ash trunks and foliage during sunny days.

The tiger beetle is about 1/2 inch long. It should not be confused with the emerald ash borer.

A close-up of a D-shaped emergence hole. The hole is about 1/8 inch across.

When the adult beetles emerge they leave D-shaped emergence holes in the bark.

The bark from this piece of firewood was removed to expose the beetle larva. The larva makes serpentine tunnels beneath the bark.

A piece of firewood can contain many borer larvae. If firewood is not burned, beetles will emerge from it during the spring and summer months and infest ash trees.

In Michigan this entire row of ash trees was killed by the borer.

For additional information visit the web site: www.nra.fs.fed.us/epfo/

James E. Appleby, PhD, Forest, Dept. of Illinois, Charles Heilm, IL Natural History Survey, Stephen Knight, APHIS PPQ, Mark Crossman, IL Dept. of Agriculture, and Edith Malar, The Morton Arboretum.

Photos by James E. Appleby, Univ. of Illinois Copyright

Firewood Warning Leaflet

A single-sided 8.5" X 11" colored leaflet with horizontal format was published in 2005 which warns about bringing into Illinois any firewood from Michigan as it might be infested with the emerald ash borer. The leaflets were distributed to all Department of Natural Resources Foresters and they were given out as handouts at various forestry meetings including the Illinois State Fair.

Asian Longhorned Beetle Leaflet

Through a grant from the Department of Natural Resources and Environmental Sciences at the University of Illinois a colored leaflet on the Asian longhorned beetle was published in July 1998. The leaflet describes the life history of the beetle, shows colored photographs of the adult beetle, egg laying sites, an egg, emergence holes, and tree damage. The free leaflet can be obtained by writing to the Dept. of NRES, 1102 S. Goodwin Ave, Urbana, IL 61801 and requesting leaflet no. 100In.

Availability of the Oak Wilt Video

This video was part of the 1994 project and was released in March of 1995. The video illustrates the range of the oak wilt disease in the United States, symptoms in oak species within the north-central states, methods of transmission, prevention, and control. The script was written by Jane Cummings Carlson, a plant pathologist with the Wisconsin Department of Natural Resources, and James E. Appleby, an entomologist with the University of Illinois, Department of Natural Resources and Environmental Sciences.

The production was made possible through grants from the USDA Forest Service, Northeastern Area

State and Private Forestry, Forest Health Protection; The Joyce Foundation; Minnesota Department of Natural Resources; Wisconsin Department of Natural Resources; Illinois Department of Natural Resources; and the University of Illinois. The video was produced by James E. Appleby, and is available through the University of Illinois Office of Agricultural Communications, and is copyrighted by the University of Illinois Board of Trustees.

Included with the video is a 6-page leaflet published by the Wisconsin Cooperative Extension Service, which summarizes the information, presented in the video. Permission to reproduce copies of the leaflet is granted.

To borrow a copy of the video call or write an email note to James E. Appleby.

2005 Insect Surveys

Each year at the Forest Pest Workshops, Illinois Department of Natural Resources District Foresters are given reporting forms for the surveys that they conduct over the 4.3 million acres of Illinois forests. Information is requested for the name of the insect or disease, date collected, host plant, county, severity of the infestation, number of forest acres infested, whether plantation or natural, and number of trees infested whether planted or natural. This information is compiled into an annual report giving information on the status of the economically important tree insects and diseases in Illinois with accompanying maps showing locations in the state.

Maps of Forest and Urban Forest Insects

In this section maps are presented which feature the distribution of forest and urban forest insects that have been reported for 2005. Each year Illinois district foresters and their associates are given reporting forms, which they complete, at monthly intervals during the growing season. The information is compiled into this report. The cross-hatch lines on the map indicate counties having an infestation. In the narrative about the insect or disease there is information about the severity of the problem.

Shipment of Insect and Plant Specimens

Insect specimens - Persons wishing to send insect specimens that might be added to the insect collection should include with the specimens the following information: date of collection, county, and nearest city, host plant, and collector's name. Live insects should be placed in a plastic bag with enough host plant foliage to sustain the insects for at least 3-4 days of travel time. Water should not be added to the bag. The bag should be placed in a cardboard box for shipment. To send a dead insect simply place the specimen between pieces of paper towel or tissue than place in a small box. Do not send dead specimen in a bottle or plastic bag, as the specimen will quickly become covered with fungus. If possible it is best to make shipments on Monday or Tuesday, as late in the week the specimens may remain at the post office for extended periods of time. Send insect specimens to: James E. Appleby, Dept. of NRES, 1102 S. Goodwin Ave., Urbana, IL 61801. Phone 217-244-3431, Fax 217-244-3219, e-mail: jappleby@uiuc.edu

Tree disease specimens—Branches and/or foliage may be sent to the same address as above, if additional help may be needed the specimens when then be taken to the Plant Clinic. Plant specimens are best shipped in between pieces of paper towel or paper tissue. If part of a branch appears normal and the other part diseased, then be sure to send a sample containing that junction between the normal and dis-

eased part. As much information about the tree symptoms, soil conditions, and the symptoms of nearby trees of the same species is always very helpful in trying to determine the disease causing agent.

Tree Insects in Illinois —Deciduous Tree Pests

Walnut Caterpillar (*Datana integerrima*)

No widespread infestations have been reported for many years. In 2005 there were no reports. Trees that are growing on poor sites suffer the greatest after defoliation. Such trees that are in a weakened state are more likely to suffer from tree borers, which in some instances could result in tree mortality. Although the drought of 1988 occurred seventeen years ago, some trees are still in a state of recovery. Walnut growers should examine trees at weekly intervals during July and August for infestations.



Insects such as the walnut caterpillar that defoliate trees in mid to late summer are less injurious to trees in comparison to spring defoliators such as the gypsy moth. Foliar sprays of *Bacillus thuringiensis* will give good control of the walnut caterpillar when larvae are noted. In the northern half of Illinois a hard frost occurred during the first week of May when walnut leaflets were unfolding. All of the exposed leaflets were killed. About a week later new normal growth appeared. Although the death of the leaflets did not appear to harm the trees it was a stress factor. The severe drought of 2005 in many parts of the state was another stress. Walnut growers should pay attention to the vigor of their trees during 2006 considering the stress factors that occurred in 2005. If drought occurs again in 2006 growers should consider if possible to provide water to the trees and control any walnut caterpillar infestations.

Bronze Birch Borer (*Agrilus anxius*)

During 1989-1990 large numbers of birch trees died throughout the state because of the bronze birch borer. The 1988 drought weakened the trees and they become infested with the borer. The borer infestations eventually resulted in large numbers of trees dying. Birch trees that are now growing are mostly young trees that have recently been planted or are trees that have received proper care. Birch trees must be mulched, and watered during drought periods to keep the trees in a vigorously growing condition. At least one inch of water per week should be applied to the soil around birch trees. To accomplish the watering, use a water sprinkler to apply the water and then place a pan under the spray. When there is an inch of water in the pan then move the sprinkler until all the area under the tree drip line has been watered. Extend the watered area at least 15' beyond the tree drip line.

Bayer Advanced Garden Tree and Shrub Insect Control is a new systemic insecticide containing imidacloprid that is applied to the soil to control tree borers. This material looks promising. The treatment can be applied in late fall or sometime in April. Remove the mulch under a tree, treat the tree and then replace the mulch. It is very important that after treatment that plenty of water is applied to the treated area to get the insecticide to the root system. Some treatments have been ineffective because not enough water was added after treatment.



Mimosa Webworm (*Homadaula anisocentra*)

Populations of the mimosa webworm vary greatly from year to year. In the late 1980s and early 1990s the populations were extremely low, but then started to gradually build from 1992 through 1997. High populations were reported in some areas in 1998. From 1999, through 2004 only light infestations were reported. The same situation persisted in 2005. Light infestations were noted on honeylocust trees in Henry and Champaign counties. When the webs are still small, foliar sprays of *Bacillus thuringiensis*, malathion, and/or carbaryl (Sevin) will give good control of the larvae. In central Illinois small webs are usually noted in mid June.

Contributors: J. Appleby and S. Felt.



Photographer: J. Appleby

Eastern Tent Caterpillar (*Malacosoma americanum*)

During 2001 and 2002 infestations were heavy in some areas of eastern and southeaster Illinois. In 2003 the population crashed. After several years of widespread defoliation it is not unusual to find sudden drop in severity. This is due to the build up of parasitic insects and also in the spring of 2003 the spring was especially wet which is not favorable to larval development. In 2005 moderate infestations occurred in the southern third of Illinois. During some years when black cherry is completely defoliated the tree seems to be able to tolerate such defoliation without much lasting damage. In most instances no control is needed; in some instances removing the large web nest with the caterpillars inside might be appropriate. If the homeowner

insists on a spray application, then *Bacillus thuringiensis* should be used on the foliage surrounding the nest.

Contributor: J. Appleby.

Elm Leaf Beetle (*Pyrrhalta luteola*)

In 1992 complete defoliation of elms occurred in many parts of the state, but since then populations have remained low. In 2000 and 2002 there were no reports and in 2003 there was a light infestation reported in Johnson County. Since 2003 including 2005 there have been no reports. Foliar sprays of carbaryl (Sevin) or *Bacillus thuringiensis* strain *san diego* will give control. Such treatments should be applied when the larvae are small and foliar injury not yet severe which is usually in early to mid May.



Photographer: J. Appleby

Elm Leafminer (*Kaliofensa ulmi*)

The elm leafminer is a sawfly that mines the leaves slippery elm. The insect is found in the northern half of the state. Mining occurs during May. Although the leaves may be mined it appears the tree is able to tolerate the infestation without much damage although mined leaves are unsightly. Mining is most noticeable on elm trees growing as understory trees. There were no reports in 2005. A malathion or acephate (Orthene) foliar spray when the tiny mines are first noted will give good control.

Locust Leafminer (*Odontota dorsalis*)



Nearly every year black locust trees in extreme southern Illinois are infested with the locust leafminer. The larval stages of the beetle mine the leaves. The adult beetle will also feed on the black locust foliage. Trees are often defoliated by August. Since the most severe injury takes place in the latter half of the summer the injury to the trees does not appear to affect the vigor of the tree. There were moderate infestations in 2005 in southern Illinois.

Contributor: J. Appleby.



Periodical Cicada (*Magicicada septendecim*)

The great southern brood of the periodical cicada emerged in many Illinois counties in 1998. Their egg laying in trees such as apple, crabapple, peach, cherry, serviceberry, and oaks caused moderate to heavy twig damage. Work conducted at The Morton Arboretum showed that no insecticide was effective in preventing the egg laying damage. Placing netting over small trees before egg laying begins is about the only solution to prevent twig damage. In 1999 many dead twigs were noted on trees that had egg-laying injuries caused by the female cicadas. During 2001 some weakened twigs were still breaking during windstorms. In 2002 another brood of the periodical cicada emerged in scattered areas of southern Illinois. There were no reports in 2003. The next large emergence should take place in 2007 in the Chicago region and northeastern Illinois when the northern brood of the 17-year cicada emerges.

Fall Webworm (*Hyphantria cunea*)

Populations of this insect vary from year to year. In 1999 populations were moderate to heavy in the northern third of the state but light in central Illinois and low in the southern areas. In 2000 only moderate infestations occurred in a few areas of northern Illinois. In 2001 moderate infestations were found in west central and extreme northeastern counties. In 2002 heavy infestations occurred especially in west central Illinois. Then in 2003 very heavy infestations occurred in south-central Illinois. Some trees like persimmon were completely webbed. In 2004 heavy infestations occurred in west central Illinois with light infestations in northern and central Illinois. When infestations are present, black cherry, persimmon, crabapple, hickory, walnut, and oak are often reported as hosts. In 2005 only light infestations were reported. Control is usually not necessary, but the web containing the larvae can be pulled from the branch and destroyed, or the foliage nearest the web be sprayed with *Bacillus thuringiensis*.

Contributors: J Appleby and R. Timmons.

Yellownecked Caterpillar (*Datana ministra*)

Mostly light infestations of this caterpillar occurred in 2002 and 2003. A light infestation was observed in Pope County in 2004. There were no reports in 2005. Oaks, basswood, and hawthorn are the more common tree hosts. Trees should be observed during July and August for feeding larvae. When populations are high complete defoliation of trees can occur. Since the larvae are very gregarious, pruning out the infested branchlet is one means of control. Sprays of malathion or carbaryl (Sevin) will control the larval stages.

Forest Tent Caterpillar (*Malacosoma disstria*)

An area in southwestern Illinois that periodically has outbreaks of this insect occurs in an area southwest of Jonesboro, IL called the Oakwood Bottoms. Outbreaks of this insect occurred in the Oakwood Bottoms in the spring of 1986 and in 1997. The population remained low in 1998 through 2001. In 2002 populations were again high in the Oakwood Bottoms. About 2000 acres of forest were defoliated. It could be that the flooding may interfere with natural predators and parasites of the caterpillar and could be a factor in population explosions. During the spring months the Oakwood Bottoms are often flooded for periods of 3 weeks. Only a mile from the flooded areas the caterpillars are rare. The major trees defoliated are pin oaks, elms, and hawthorns. Many of the larvae were dying of a virus infection in 2002. Because of the high incidence of the viral infection in the 2002 populations, the populations in 2003 through 2005 were very low.



Contributor: J. Appleby.

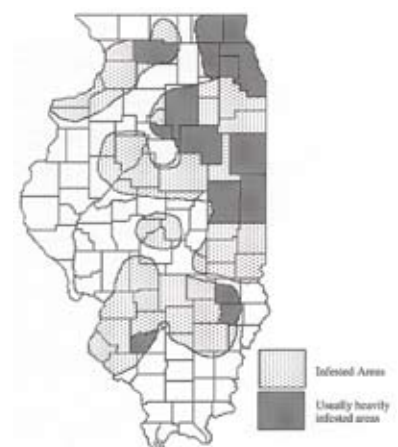
Tuliptree Scale (*Toumeyella liriodendri*)

This is the largest scale insect in Illinois. In southern Illinois infestations often are abundant on tuliptree (yellow poplar). The scale when abundant often kills entire limbs. This scale also produces an abundance of honeydew during the months of June, July, and August. Leaves, branches, and anything beneath the infested tree will be covered with the sticky honeydew. When there is a lack of rain, a black sooty fungus will grow on the honeydew covering everything with a black film. Young scales are produced in abundance during August and September. For control it is best to kill all of the young scales which are best accomplished by using a superior oil spray, sometimes called horticultural or summer oil applied to the tree limbs in late September to mid October. A moderate infestation occurred in Pope County in 2004 but by 2005 parasites and ladybird beetles had controlled the infestation.

Contributor: J. Appleby.

Japanese Beetle (*Popillia japonica*)

Populations of this beetle are on the increase. High populations are now occurring in most parts of the state. When the adults are common, moderate to severe skeletonization can be expected on the foliage of trees such as apple, crabapple, basswood, hawthorn, oak, black alder, sassafras, and baldcypress. Pheromone traps are probably only effective when the populations are very low. For adult control, cyfluthrin and/or carbaryl (Sevin) sprays are effective. Cyfluthrin appears to be a little more effective. The larval stages of this beetle will feed on the roots of grasses and often can cause considerable damage to lawns. Contact local Extension Office for control of the grub stage. To stop adult foliar damage on individual trees homeowners can purchase Bayer Advanced Garden Tree and Shrub Insect Control. It contains the systemic insecticide imidacloprid. For adult control the treatment should be made in April or early May and then thoroughly water in. If the tree has bark mulch remove the mulch apply the treatment, then replace the mulch and water in thoroughly. Infestations in 2005 in general were not as heavy as they were in 2004. Contributor: J. Appleby.



The European Hornet, (*Vespa crabro*)

In 1994 several populations of this hornet species were reported in southern Illinois. Since then the populations have remained low as was the case in 1998 thru 2005. This hornet was introduced into the U. S. in the late 1800s. It is about the size of the common baldfaced hornet (this species makes the very large gray egg-shaped paper-like nests on tree branches), but the baldfaced is mostly black and white, whereas the European hornet is mostly a reddish-brown with yellow markings. The species is readily attracted to lights at night and will build nests in hollowed tree limbs and trunks, and sometimes in barn and shed interiors. The wasp will quickly sting if the nest is disturbed. Therefore caution must be exercised when felling trees that might be infested with nests. One southern Illinois forester was severely stung when he felled a tree that contained a hollow limb where the nest was located.

Gypsy Moth (*Lymantria dispar*)

The first gypsy moths caught in Illinois occurred in 1973 when 5 moths were captured in northern Illinois. The trap numbers remained low until 1981 when 2,753 were trapped. At that time *Bacillus thuringiensis* was used successfully and the numbers remained in the hundreds until the early 1990s. Since 1994 the numbers have been in excess of 2000 moths. The large increases started in 1997 when 34,816 were captured. The following is the number of moth catches and the year: 51,536 (1998), 3,753 (1999), 2000 (8795), 18,275 (2001), 10,773 (2002), 38,720 (2003), 137,323 (2004) and 13,676 caught in 2005. To date there has never been any widespread defoliation in Illinois. The catch numbers vary from year to year as a result of control measures. The moth catch numbers are those reported by the Illinois Dept. of Agriculture, APHIS PPQ, and the USDA Forest Service.



Gypsy moth larvae are best controlled with a spray of *Bacillus thuringiensis*, applied after all of the overwintering eggs have hatched. When white oak leaves are about 1/4th expanded or usually about late April or early May is the time a treatment should be applied.

In 2000-01 because of the wide spread infestation in Lake County that county remains under quarantine and more counties nearby will probably be quarantined in the near future. In cooperation with the USDA Forest Service and APHIS PPQ a program of slow the spread is now underway in the northeastern Illinois counties.

The Illinois Department of Agriculture deserves a great deal of praise for their excellent control program in keeping the gypsy moth from establishment in Illinois since 1973, but now the gypsy moth has finally gotten a foothold.

Presently we should be planting a variety of tree species including trees that are the least susceptible to gypsy moth attack. Even trees in the moderately susceptible category may at times be defoliated, but when infestations are moderate such trees usually retain some foliage.

The following information is adapted from articles written by D. R. Houston, H. T. Valentine, and J. S. Elkinton.

Susceptibility of Tree Species to Gypsy Moth Feeding

Susceptible		
Alder	Birch, Paper	Oak, Pin
American Mountain Ash	Boxelder	Oak, Post
Apple (also crab)	Hawthorn	Oak, Scarlet
Aspen, Bigtooth	Larch (Tamarack)	Oak, White
Aspen, Quaking	Oak, Black	Poplar, Lombardy
Basswood	Oak, Blackjack	Sweetgum
Birch, Gray	Oak, Chestnut	Willow

Most Susceptible		
Alder	Birch, Paper	Oak, Pin
American Mountain Ash	Boxelder	Oak, Post
Apple (also crab)	Hawthorn	Oak, Scarlet
Aspen, Bigtooth	Larch (Tamarack)	Oak, White
Aspen, Quaking	Oak, Black	Poplar, Lombardy
Basswood	Oak, Blackjack	Sweetgum
Birch, Gray	Oak, Chestnut	Willow

Moderately Susceptible		
American Hornbeam	Maple, Silver	Poplar, Silver
Beech	Maple, Sugar	Spruce, Black
Buckeye, Ohio	Pear	Spruce, Blue
Chestnut	Persimmon	Spruce, Red
Hemlock	Pine, Pitch	Spruce, White
Hop Hornbeam	Pine, Red	Tupelo
Magnolia, Cucumber	Pine, Scotch	Witch-hazel
Maple, Norway	Pine White	

Least Susceptible		
Ash, Black	Dogwood	Locust, Black
Ash, Green	Elm, American	Maple, Mountain
Ash, White	Elm, Slippery	Maple, Stripped
Birch, Black	Fir, Balsam	Redcedar
Birch, Yellow	Hackberry	Sourgum
Butternut	Hickory, Bitternut	Sumac
Catalpa, Northern	Hickory, Pignut	Sycamore
Cherry, Black	Hickory, Shagbark	Tulip Tree, Yellow Poplar
Cherry, Sweet	Honeylocust	Walnut, Black
Cottonwood, Eastern	Juniper	White-cedar, Northern

Asian Longhorned Beetle

On July 22, 1998 a call was received from Stan Smith, IL. Dept. of Agriculture, Plant and Pesticide Specialist Supervisor, with information that an infestation of the Asian longhorned beetle, *Anoplophora glabripennis* (Cerambycidae), was been found in the Ravenswood area of Chicago.

On July 23 a visit to the infestation site revealed Norway maple trees approximately 40 feet in height heavily infested. Already the upper branches were dying and the lower branches had numerous egg laying marks. There was one young tree about 10 feet tall that was dead and had numerous beetle emergence holes. It was common to see mating beetles on the live tree branches and female beetles chewing egg cavities in the branch limbs. The destructiveness of this beetle was indeed shocking.

The information below is a summary of a paper written by Dr. Robert Haack, USDA forest entomologist, and others who wrote about an infestation in New York and reviewed the current literature.

The first Asian longhorned beetle infestation in trees within the United States occurred in 1996 in Brooklyn and Amityville, New York. In 1998 the beetle was found infesting trees in the Ravenswood area of Chicago, in Summit, IL, and near Addison, IL.

The beetle is native to China, Korea, and Japan where it is considered a pest of maple, poplar, willow, mulberry, plum, pear, black locust, and elm. In New York the beetle has attacked species of maple, poplar, willow and horsechestnut. In Chicago infestations were found in Norway and silver maples, boxelder, elm, green ash, and horsechestnut.

It is thought that the beetle probably entered the United States in wooden braces or crating material from Asia, probably in the larval or pupal stage within wood material.

The body of the adult beetle (excluding the antennae) is about 1 to 1 1/4 inches in length, and shiny black with small white markings on its wing coverings. The long antennae are banded in black and white.

The adult beetles are heavy bodied insects. Although they are capable of flight, they probably will not fly great distances to feed on tree twigs, especially if suitable tree hosts are present. Adults can probably be expected to be present from late May through October.

After mating, the adult female beetle with its powerful jaws will chew small funnel shaped depressions in tree bark. It then reverses its position and inserts an egg under the bark at the bottom of the recess. The bark of recently cut logs, dying trees, stressed and even healthy trees can serve as sites for egg laying. Recently transplanted trees are particularly vulnerable due to their transplant shock. In New York, newly planted street trees were heavily infested, but some well-established street trees with a diameter of 24 inches were also infested.

After hatching from the egg, the beetle larva will initially feed under the bark. As it matures it will enter the heartwood, thereby destroying the quality of the wood. Branches and tree trunks weakened by larval feeding often break during windstorms.

The overwintering larvae change into the pupa stage in the spring and summer and then change into the adult stage. The adult beetle will chew its way out of the wood leaving an exit hole that is almost 1/2 of an inch in diameter. The adult beetles will feed on the twig bark of healthy trees. The adult feeding wounds are possible sites for the introduction of branch pathogens that can eventually kill branches.

There are many native longhorned beetle species that attack trees. The native species have similar habits with the adults also leaving exit holes in the bark. Therefore, the presence of exit holes cannot be used as the only evidence of an infestation of the Asian longhorned beetle. Individuals finding beetles that they suspect might be the Asian beetles should call the hot line number 800 641-3934 (current number as of March 2006).

Stressed trees are always the most vulnerable to attack by the female beetles. Therefore, it is vital to try to minimize plant stress by following good cultural practices such as: proper site selection, proper planting and pruning procedures, watering trees during drought periods, the use of mulch, and eliminating all possible injuries to the roots and tree trunks, insect and disease control, and plant a diversity of tree species.

The USDA APHIS PPQ in cooperation with the Illinois Department of Agriculture has established a plant quarantine in the infested areas. The quarantine restricts any movement of beetle-infested material out of the quarantine areas. These agencies in cooperation with the Chicago Bureau of Forestry, Chicago Park District, Illinois Department of Natural Resources, USDA Forest Service, and Natural History Survey will cooperate in taking initiatives to control this insect.

A colored leaflet No. 100In is available by writing to Dept. of NRES, 1102 S. Goodwin Ave., Urbana, IL 61801, and internet information is available at: (http://www.aces.uiuc.edu/longhorned_beetle/) and (<http://willow.ncfes.umn.edu/asianbeetle/beetle.htm>).

During a visit to the Ravenswood area on January 26, 1999 the infested trees were being felled. Immature as well as mature Asian longhorned beetle larvae were observed inside the wood of the branches and tree trunks. One branch contained a beetle pupa. Finding a beetle in the pupal stage means that a few beetles could emerge as adults in May. This reconfirms what was found in New York City where a few adult beetles were found emerging in mid to late May. Finding larvae of all stages would also mean that adult beetle emergence would have occurred over a several months period probably from June through August with the peak of emergence probably in June and July. Since adult life is a couple of months, adult beetles could have been present from May through September with a few even surviving through October.

It was quite evident that the area residents loved their trees but accepted the fact that tree removal was in the best interest of everyone. There were a few trees that were still standing. These trees consisted of catalpa, honeylocust, ash, mulberry, tree of heaven, and cottonwood. The bark of these trees was carefully examined and no egg laying sites or emergence holes were found, so these trees were let standing. Recently ash trees have been found infested.

The City of Chicago is now replanting the area with a variety of trees including various oaks, Kentucky coffeetree, Turkish filbert, linden, ginkgo, catalpa, tuliptree or yellow poplar, and honeylocust.

In 2001 only 2 adult beetles were found in the Chicago area so it appears that the control program of the IL. Dept. of Agriculture in cooperation with the USDA Forest Service, APHIS PPQ, and many of the Chicago agencies is paying off in getting rid of this pest in Illinois. As of February 2004 only 3 infested trees were found in Chicago during the 2003 year. No infestations were found in 2005.

Everyone must still be vigilant and if finding an adult beetle, kill it, keep the specimen for the authorities, report the find immediately to the Illinois Department of Agriculture by calling 800 641-3934 or your local Extension Office.

Emerald Ash Borer (*Agrilus planipennis*)

Ash trees comprise about 9% of the forest trees in Illinois representing about 177,652,000 ash trees. This figure does not include the millions of ash trees that comprise Illinois urban plantings and nursery trade. So Illinois indeed would be a fertile area for the emerald ash borer.

The emerald ash borer, *Agrilus planipennis*, was discovered in the summer of 2002 in the Detroit area of Michigan. It presently has been found in 52 Michigan counties, one county in Ontario across the river from Detroit, 13 counties in Ohio, and 6 counties in Indiana. In Michigan it is estimated that 15 million ash trees have already been killed or are dying. No one knows for sure when or how this exotic beetle became established in Michigan but it is a guess that it has been there for some 10-12 years before it was discovered. The insect is native to China, Korea, Japan, Taiwan, and parts of Russia. It probably was introduced into Michigan from one of those countries in ash wood used as shipping material.



The adult beetle is a dark emerald green and is about ½ inch in length. The underside and wing coverings are a dark metallic green color. In Michigan the adult beetles begin emerging from trees in the latter half of May. The D-shaped emergence holes that measure slightly more than 1/8 inch in diameter can be found on the larger branches and tree trunks. Adults are most commonly seen during the months of June and July on sunny days feeding on the ash foliage or crawling on the branches and trunks of ash trees. Female beetles deposit eggs in bark crevices during June and July. Eggs hatch in about 10 days, and then the larvae bore into the bark and feed under the bark where they make serpentine mines filled with fine sawdust and frass. The full-grown larvae overwinter in shallow galleries they make in the sapwood. The mature cream-colored larva measures about ¾ inch in length. Behind the tiny brown head is a cream-colored segment that is larger in width. At the larval end are two tiny brown pincher-like structures.

Borer infested trees may go undetected until symptoms such as upper tree canopy dieback occurs and the D-shaped emergence holes are seen on the trunk and branches. Depending on tree size the symptoms may not show for a year or a couple of years. In some infested trees a vertical bark split may occur on the trunk. If the bark is removed at such sites, the serpentine larval galleries can be exposed. Trees that are near death often have an abundance of trunk sprouts below the dead trunk tissue.

Throughout the entire Midwest many ash trees are in a state of decline due to such factors as drought, poor growing sites, lilac and native ash borer infestations, and ash yellows, a disease. Tree symptoms caused by these factors can be confused with symptoms caused by the emerald ash borer. Search for adult beetles, the serpentine larval galleries, and the D-shape emergence holes. A native tiger beetle that is a brilliant green and often seen on the ground in open areas should not be confused with the emerald ash borer adult.

Successful containment and eventual control of this beetle will require the utmost vigilance of everyone. All infested areas are under quarantine, which prevents the movement of any ash trees, branches, logs, and firewood. The transportation of infested firewood and trees are probably the mostly likely ways a new infestation might get started.

Intensive studies are underway at Michigan State University and the USDA Forest Service in cooperation with the Michigan Dept. of Natural Resources, Michigan Dept. of Agriculture, and the USDA APHIS PPQ.

With the recent increase in fuel prices the trend to take shorter vacation trips and save on overnight expenses by camping will probably continue. Campers nearly always enjoy having a campfire as part of their experience. Our special concern is the camper that may be coming to Illinois from an area that is infested with the EAB. Even with quarantine regulations in effect in the infested areas, sometimes people are unaware of the regulations or simply choose to disobey such restrictions and might bring infested ash wood into Illinois. Beetles could emerge from the wood during the months of May through July and infest Illinois ash trees. Another concern is the possibility that infested ash trees could have been shipped to Illinois before quarantine regulations became established.

During 2005 visual surveys and the establishment of trap trees were conducted in Illinois in areas that are used extensively for camping, near tree nurseries, and in urban areas where there are a large number of ash trees. Trap trees were girdled in early May, felled in the autumn months and the bark removed and inspected. Visual surveys were conducted mainly during July and August. In Illinois during 2005 no evidence of EAB infestations were noted in any of the survey sites or in any of the trap trees.

During 2005 and 2006 a firewood warning leaflet was distributed at many educational meetings in Illinois. The leaflet describes the dangers of moving infested wood into Illinois. An EAB poster display was shown at many educational meetings as well as at the Illinois State Fair. It is estimated that about 20,000 persons viewed the display at the fair.

In 2006 continued EAB visual and trap tree surveys will be conducted throughout the state.

This is an extremely dangerous ash pest with the entire ash resource of Illinois at risk. For more information visit the following web site, which has additional links: <http://www.na.fs.fed.us>

Banded Elm Bark Beetle (*Scolytus schevyrewi*)

The first detection of this insect in Illinois was discovered in 2003 by Charles Helm of the IL Natural History Survey in Madison and St. Clair counties in wood borer traps. Presently seven Illinois counties have been found to be infested. The insect is native to China, Korea, Russia, and Mongolia. It probably was imported into the U.S. in shipping materials from one of those countries. In Illinois, traps that were near Siberian elms had the largest number of beetles. Known hosts include American elm, Siberian elm, and rock elm. In other countries hosts include Siberian elm, European white elm, Russian olive, Japanese elm, weeping willow, caragana, and various *Prunus* species such as apricot and peach.

The insect has been found in 14 states from Oregon and California east to central Illinois. From information about its life history in China it appears to have habits very similar to that of the European elm bark beetle. Whether it is a vector of Dutch elm disease fungus is yet to be determined.

Contributor: C. Helm.

Twig Girdler (*Oncideres cingulatus*)

In late summer the adult beetle will deposit eggs in tree branches which it then will girdle. The girdled branches then fall to the ground especially during windy conditions. By collecting and burning all fallen branches the populations of this beetle can be reduced. The larvae overwinter inside the fallen branches.



The following growing season the larvae continue to feed inside the fallen branch and then transform into the adult stage in late summer. Moderate to heavy infestations of the twig girdler occurred in some areas of southern Illinois during 2005.

Contributors: J. Appleby, M. Brown, D. Johnson, and C. Patterson.

Evergreen Pests



European Pine Sawfly (*Neodiprion sertifer*)

In 2002 moderate to heavy infestations occurred in some counties in southwestern Illinois. Ever since 2002 populations have remained low. In 2005 light infestations were found in Champaign and Jefferson counties. *Bacillus thuringiensis* will not control sawflies, but carbaryl (Sevin), or malathion will give good control. Plantations should be inspected at weekly intervals during April and May for infestations. Larvae develop rapidly and in only three to four weeks if populations are high complete defoliation of the old needles can occur. The larvae will not feed on the new spring growth. Common hosts are Scotch, mugo, and red pines.

Contributor: J. Appleby.



Bagworm (*Thyridopteryx ephemeraeformis*)

Bagworm populations were high in 2002 and this continued through 2004. In 2005 east central and west central Illinois had moderate infestations. When bagworms are abundant complete defoliation of spruce, juniper, fir, and arborvitae trees can occur. Foliar sprays of *Bacillus thuringiensis*, carbaryl (Sevin), and/or malathion will give control of the larvae. Bagworms are easily controlled with foliar sprays, but it is very important that they be controlled with they are still very young and after all the overwintering eggs have hatched. In central Illinois, a single spray in mid June will give good control. When the bagworms are more mature in late July and early August *Bt* seems to be the only material that is very effective. It generally takes about 3 days after treatment before the larvae stop feeding when treated with *Bt*.

Contributors: J. Appleby and B. McVey.



Pales Weevil (*Hylobius pales*)

Problems with this insect usually begin after trees are harvested over a period of years. Fresh pine stumps and slash serve as sites for the development of the larvae. High mortality of seedling trees and severe branch damage of larger trees can occur with a moderate infestation. Spray applications of Lorsban in early to mid March to pine stumps are advisable. It is always better to apply the insecticide early rather than later as it is desirable to kill the adults before they have a chance to deposit eggs on the stumps. Lorsban residue will be effective for at least 4 weeks. In some plantations it might be necessary to spray seedling trees in late July as well as the trees that may be harvested that same year. White pine is the preferred host, but damage may also occur on Scotch, Austrian, Douglas fir, and spruce species. In 1998 a moderate infestation was reported in Jersey Co. Since then there have been no reports. Through

treatment of stumps and the elimination of slash growers have kept this species under control. Dursban is no longer available to homeowners but Lorsban is available for restricted use with a commercial permit.

Redheaded Pine Sawfly (*Neodiprion lecontei*)

Populations of this insect vary considerably from year to year. There were no reports in 2005. This species is also very unpredictable on when larvae will be present. The dates in 1991 when larval stages were found are as follows: April 23, June 22, and Sept. 30. Foliar sprays of malathion or carbaryl (Sevin) will give control when larvae are noted. *Bacillus thuringiensis* will not control sawflies.

Zimmerman Pine Moth (*Dioryctria zimmermani*)

Moderate to heavy infestations of this moth occurred in 1999 in plantations and home landscapes where control measures have not been used. Frequently the terminal branch and side branches along the tree trunk will die. This insect is most often a pest in the northern half of Illinois. Scotch, red, Austrian, and white pines are attacked. The most ideal time to accomplish control is with a foliar and trunk spray in late July or early August. Some control has resulted with sprays applied in early March. Treatments at other times are ineffective as the borer larvae are established in the wood and thereby protected. In 2003 a single report was a moderate infestation in LaSalle County. There were no reports of this insect in 2005. Dursban has been removed from the market place. Permethrin or esfenvalerate sprays might be effective but no data is available to support this claim. More studies are needed.

Pine Needle Scale (*Chionaspis pinifoliae*)



Scotch and mugo pines are favorite hosts but red, and white pines are also hosts as are spruces. A complete spray in early May with a superior grade oil spray applied with a hydraulic sprayer with good coverage will give control. Another application may be needed in early July. During the period of 2000 to 2004 populations of this scale seem to decline. It was during this period that populations of the Asian ladybird beetle were very abundant and they may be responsible for the decline in numbers of this scale. However in 2004 the beetles in many areas were not as abundant and in 2005 moderate scale infestations were found in isolated areas of Champaign County.



Contributor: J. Appleby.

Pine Shoot Beetle, (*Tomicus piniperda*)

By 2003, surveys conducted in Illinois by APHIS, Illinois Department of Agriculture, and the USDA Forest Service, have confirmed the beetle in the following 39 counties and these counties are now under quarantine regulations (Feb. 2004): Stephenson, Winnebago, Boone, McHenry, Lake, Carroll, Ogle, DeKalb, Kane, Cook, DuPage, Kendall, Grundy, Will, Kankakee, Livingston, Iroquois, Piatt, Champaign, Vermilion, McLean, Lee, Whiteside, Henry, Putnam, Bureau, LaSalle, Clark, Coles, Ford, Mason, Tazewell, DeWitt, Macon, Moultrie, Shelby, Woodford, Marshall, and Peoria. In the U.S. in most instances the beetle was found infesting Scotch pine, but in some instances it has been found in Austrian, white, and red pines.



From what is known of the life history of the pine shoot beetle, (PSB) in Europe and from some information from U.S. observations, the following is about what the life history of this beetle might be in the Midwest: The adult beetles will overwinter in the thickened bark at the base of older pine trees most likely Scotch, Austrian, and red. High mortality of the overwintering adults may occur. During warm periods in March the adult beetles will fly to pine stumps from trees cut the previous November or December, to pine trees stressed because of drought or other environmental conditions, to pine trees dying of pine wilt disease, to pine logs cut during the winter months, slash trees and slash piles. At such sites the female beetle will borer into the pine



wood. For example, if the site is a stressed pine tree or stump, the female beetle will enter the wood and borer out a vertical tunnel, which may be several inches in length. Short side tunnels at a 90-degree angle to the main tunnel will be made along the sides of the main tunnel. In each such tunnel will be deposited an egg. Some beetles that are closely related to this beetle species will construct resin tubes on the outside of the bark. Apparently PSB when feeding on standing trees that are weakened will also cause an outflow of resin that hardens into tubes. Evidence of this beetle working under the bark of stumps and cut logs, will be the small amounts of very fine sawdust pushed out of tiny openings. After egg laying is completed, the beetles will emerge from the wood, some will probably die at this time, and the survivors will fly to healthy pine twigs where each beetle will enter a twig by chewing a small entrance hole. The beetle will excavate about an inch long tunnel within the twig. The tunnel will be clean of any frass material because that is pushed out the entrance hole. Around the entrance hole there may be a small amount of hardened resin. The beetle may spend several weeks within a twig then exit and fly to another twig. The injured twig will usually droop and then die. Most twigs that I observed in Indiana were from 3 to 8 inches in length.

Eggs deposited in the stumps, logs, etc. will hatch within the short tunnels under the bark. Beetle larvae will develop by feeding under the bark. The time interval from egg deposition until the beetles are in the adult stage will probably be about 3 months. So probably in late May or early June within the Midwest, adult beetles will emerge. The beetles will fly to the pine twigs especially that of current year's growth and enter into the twig. Several twigs may be damaged during the summer by each adult beetle. They will feed within the twigs during the summer and early fall. When cooler temperatures prevail they will exit the twigs and seek hibernating quarters at the base of trees in the thickened bark of probably large trees.

Since the adult beetles will probably be most abundant in June and July, shoot damage will be most noticeable in the months of July through October. But since some adults may survive the winter, a few shoots will most likely be damaged in the months of March through June. There is some evidence to suggest that temperatures below 0 degrees Fahrenheit may kill the overwintering adults. In areas that have persistent snow cover, the snow will provide some insulation to the low temperatures so beetle survival might be better in such areas. A pine twig that is killed by PSB may be 3 to 8 inches in length. At the junction of the live and dead twig tissues will be a small hole. Surrounding the entrance hole there may be a small amount of hardened pine resin. If the twig is cut in half, there will be a tunnel in which the adult beetle has been feeding. There may be a small black or very dark brown beetle, which is slightly less than 3/16 of an inch in length inside. If a caterpillar is found inside the twig, it is not the PSB.

What can pine producers do at the present to lessen the impact this beetle may have on the industry? Follow the following practices: Remove all dead and dying pines and either burn the wood or convert it into chips that are then spread. This practice is important in not only preventing increased populations of PSB, but will prevent the emergence of pine sawyers which are the primary vectors of the pinewood nematode which causes pine wilt disease. In January or February cut trap logs (2' long) from live pine trees or use whole trap pine trees as breeding sites for the beetles (no. of acres X 10 logs per acre, divided by no. of blocks plus 1 = no. of trap logs or trees to use per block). By May 1 (no later) burn or convert to chips all trap logs and cut trees. Apply Lorsban spray (commercial license required) onto trees in late May. Keep written records of all practices. Send for the following publication: Pine Shoot Beetle Extension Bulletin E-2615, MSU Bulletin Office, 10-B Agri. Hall, Michigan State Univ., East Lansing, MI 49924-1039 with check for \$2.50 payable to Michigan State University.

From what I observed in an Indiana infestation during Sept. 1992, I would consider the damage as minor on Christmas trees. Approximately 60% of the trees were infested, however the two or three dead twigs on each tree I would consider of minor importance. This particular nursery had many pine stumps that were as much as 12" tall. There was also a very large slash pile. The stumps and slash pile I am sure contributed to the problem. However, I was distressed to read one article that stated "Should this insect be able to successfully attack and breed in white and southern pines, the timber industry could be severely affected as reductions of 39% in volume growth have been reported from Poland."

To prevent the spread of this beetle, APHIS has imposed a plant quarantine on all infested Illinois counties. Consumers who purchase Christmas trees should not be concerned that this beetle will cause any harm to household items, plants, humans, or pets. The chance of even purchasing an infested tree is remote, and the possibility of ever finding a 3/16-inch long beetle is indeed slim. If tiny beetles are found near windows, they are probably carpet and/or granary beetles. If you find such beetles, and need a confirmation I will be glad to examine them. If they are alive place them in a freezer overnight to kill them. Simply enclose the specimens in some tissue and then place in a small container and mail them to J. Appleby. Do not seal the container as the specimens tend to mold rapidly, even placing them between paper towels and shipping in an envelope is better than in a sealed container.

As research studies progress in the United States, we will have a much better understanding of the life history and control of this insect. Presently the best advice I can give is to have plantations that are clean of pine logs, slash, dead trees, and stumps that are no higher than 3" and treated early in the spring with Lorsban (restricted insecticide).

Questions concerning Illinois plantation inspection and quarantine should be addressed to: Ill. Dept. of Agriculture, 9511 Harrison St., Rm 169A, Des Plaines, IL 60016. Phone (847)-294-4343.

Contributors: Personnel of the Illinois Department of Agriculture, APHIS PPQ, and the USDA Forest Service.

Pinewood Nematode (*Bursaphelenchus xylophilus*) and Pine Wilt

Scotch, red, Austrian, and occasionally white pines die of pine wilt. A tree may be growing vigorously for 15 years and then usually in late summer the needles turn a light green and then a few weeks later all the needles turn brown and the tree dies. The pinewood nematode causes pine wilt. The most common insect vector of the nematode in Illinois is the Carolina pine sawyer. The beetle becomes infested with the nematode during the beetle's development in a tree that dies of pine wilt. The nematodes reside in the beetle's breathing pores. When the nematode infested beetle feeds on a healthy pine twig the

nematodes leave the beetle's body and enter the twig through the twig feeding wound. The nematodes multiply rapidly within the tree and the tree dies. To reduce the incidence of pine wilt, pine trees should be cut as soon as they die and the wood converted to chips or the wood burned.

Leaf Tatters, Tree Diseases, Drought, and Exotic Plants

Leaf Tatters



Photographer: J. Appleby

Leaf tatters is a condition often seen affecting different species of white oaks. The symptoms are only seen on the first flush of spring leaves. As the spring leaflets begin to unfold, large areas of the leaf tissues between the major veins become necrotic and die. The affected tissues dry quickly and drop leaving mostly major leaf veins. In past years, cold temperatures, frost, insects, and herbicide drift have been mentioned as possible causes.

During the 2002 spring the southern half of Illinois was very wet and field planting was delayed for nearly a month. White oaks had already foliated before herbicides were applied to fields. No leaf tatters were observed in the southern half of Illinois in 2002, but in the northern half of the state, planting dates were more normal and leaf tatters were evident. The planting season of 2001 was near normal throughout the state and leaf tatters were observed in both northern and southern Illinois. From past evidence it appeared that herbicide drift was the cause of leaf tatters. In 2003 there were not as many reports as in previous years. In 2004-2005 studies were undertaken at the University of Illinois to study if herbicides might be the cause of leaf tatters.

Potted white oak trees were exposed briefly to various herbicides inside a spray chamber which is used to simulate the kind of exposure that might occur under field conditions. After exposure the potted trees were returned to field plots. The trees were treated in the tight bud stage, when leaflets were unfolding, and when the leaves were fully expanded.

Leaf tatters developed in the group of trees that were exposed to the chloroacetanilide herbicides acetochlor + atrazine (Harness Xtra), acetochlor (Harness), dimethenamid (Outlook), and metoachlor (Dual Magnum) when they were in the unfolding leaf stage. Leaf tatters did not develop on the oaks that were treated in the tight bud stage or when the leaves were fully expanded. The leaf symptoms that were produced in the experiments were similar to the leaf symptoms seen in woodlots near agricultural fields. These experiments showed that indeed leaf tatters could be produced through the use of different herbicides. Oaks have a second leaf flush in late spring and those leaves always appear normal.



Photographer: J. Appleby

Oak Wilt (*Ceratocystis fagacearum*)

Oaks in the red oak group such as red, black, and pin oaks are the most susceptible to the oak wilt fungus. White oaks are more resistant and if they become infected the disease progresses more slowly



and sometimes the tree survives for many years. Initially oak wilt gets started in a woodland because fungus contaminated sap beetles transfer the fungus to fresh oak wounds. Once inside the tree the fungus multiplies and eventually spreads to the root system. The fungus is then spread to nearby trees through the root system. It is common for oaks in the red oak group to have root grafts. This is why oaks die in groups because they all have grafted roots. Grafting of red and white oak roots is rare.



Photographer: J. Appleby

Sap beetles become infested with the oak wilt fungus usually in the spring when they feed on the fungus that is produced on oaks that have died of oak wilt. It is therefore important that oaks not be pruned from March 1 until at least July 15 as it is during that time when infested sap beetles are most common and when transmission is more likely to occur. Oaks become infected when the beetles that carry the fungus feed on fresh oak wounds.

Oak wilt is becoming increasingly common because of new housing developments in susceptible oak stands. During home construction the oaks are wounded. The infested sap beetles feed in the oak wounds and thereby transmit the fungus to the healthy oak. Once the tree is infected then transmission can occur to nearby oaks through grafted roots.

Cutting oak roots with a 5' long digging blade around infested oaks will stop the root graft spread however this is very difficult to accomplish in wooded areas. It is more commonly used in the home landscape. In using this method it is best to make the digging line far enough away that all infected tree roots are cut. Usually within the cutting line it is a good idea to include what appear to be healthy trees as they might already be infected.

Chemical injections in the root flare with propiconazole may prevent oak wilt spread. The results of this treatment are still variable.

Logs from trees that died of oak wilt can be used for firewood but be sure to split the logs immediately after the trees are felled and store the wood in bright sunny areas with good air circulation so the wood dries quickly to prevent any chance of oak wilt fungus development on the logs that might be attractive to the sap beetles.

Contributors: S. Felt, B. McVey, and R. Timmons.

Sudden Oak Death (*Phytophthora ramorum*)

The disease was first discovered in 1995 in central coastal California where it killed tanoaks, coast live oaks, and California black oaks. Cankers occur on the branches and probably the trunk. A black or reddish ooze bleeds from the oak cankers. Alternate hosts include a wide range of plants such as rhododendron, huckleberry, and bay laurel. On these hosts the fungus causes leaf spots and twig dieback.

It is only on the West Coast where the fungus has caused oak deaths. Studies have shown that red and pin oaks are susceptible so there is concern the fungus could cause the death of oaks in other areas of the country. Infected alternate host plants have been shipped to many areas of the country before the

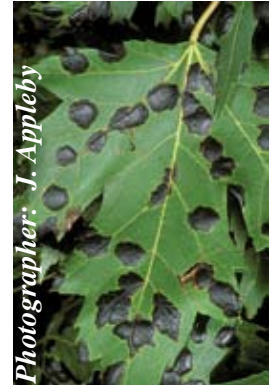
disease was found. So far no oaks have been infected in other parts of the country. To obtain the latest information search the internet.

In surveys conducted in Illinois during 2005 by the USDA Forest Service and other agencies, oaks or alternate hosts were not found to be infected.

Large Tar Spot (*Rhytisma acerinum*)

Leaves of silver and sugar maple that are infected with the fungus show large black shiny spots on the upper leaf surface. Heavily infected leaves often fall in late summer. In past years this leaf disease has only been found in northern Illinois.

Other than being unsightly the disease does not appear to cause much damage to infected trees. Burning all fallen leaves will help to reduce the inoculum; as such leaves will produce spores the following spring that will infect new leaves.



Verticillium Wilt (*Verticillium albo-atrum*)

The disease is commonly found in maples, elm, catalpa, and ash. The disease is usually not considered a forest disease but more an urban disease. The fungus enters wounds and most commonly by injuries to roots. Wilting of leaves on one or more branches usually in the upper canopy is a common symptom. The life of a tree can sometimes be prolonged if the infected branch is pruned off at the trunk. Fertilizing and watering the tree is helpful. The fungus can persist in the soil for several years so it is best not to plant a susceptible tree species in the same area where another tree died. Sugar, Norway, and red maples are most susceptible. Other trees that commonly get the disease are elm, catalpa, and ash. To confirm the presence of the disease a branch sample must be taken from a branch with recently wilted leaves and send to a lab for culturing. A sugar maple specimen from McDonough County was reported positive in 2005.

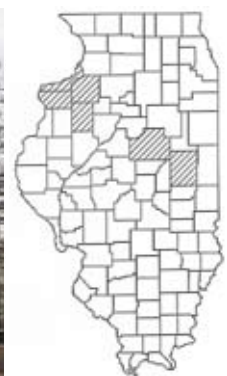
Contributor: B. McVey.

Anthracnose (*Apiognomonia spp. And Discula spp.*)



The fungi can cause leaf and twig death depending on the fungus species and the host tree. Cool and prolonged wet weather contributes to the increase incidences of anthracnose. The fungus spores are wind and rain disseminated. In forested areas no control is

practical. In ornamental plantings, trees should be spaced widely to increase air circulation and planted in sunny areas. Some chemical sprays are effective if applied at bud break. Sycamore trees in northern Illinois in 2005 were severely to moderately affected. Even within a given tree species there is variation in susceptibility in trees that are planted near to one another.



Contributor: S. Felt.

Dutch Elm Disease (*Ophiostoma ulmi*)

The first discovery of the disease occurred in Ohio in 1930. It probably was introduced in elm logs from the Netherlands. The disease is now widespread throughout the U.S. The European elm bark beetle is responsible for spreading the fungal spores from diseased trees to healthy elm trees when the beetles feed on the twigs of healthy trees. The fungus also moves from infected elm trees to healthy elms through grafted roots.

By destroying all dead and dying elms the beetles responsible for spreading the spores can be eliminated. The diseased trees should be burned or converted to small chips. The logs should not be stored for firewood because beetles will emerge from the wood. If the bark is removed soon after the tree dies the logs could be used for firewood. The disease is reported in many areas in Illinois in 2005.

Contributors: S. Felt, B. McVey, and R. Timmons.



2005 Drought in Illinois

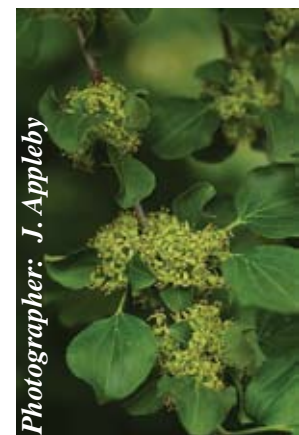
The drought during 2005 was severe in northwestern, northeastern, and central Illinois with moderate drought in southern Illinois. During drought conditions trees compete for moisture. In forests where trees are crowded and in forests where there is a dense understory especially with exotic plants the trees will be greatly stressed and more susceptible to insect borers. Therefore it is important to plan for future droughts and so some forest stands should be thinned and all exotic plants that compete for moisture should be eliminated.

Exotic Plants in Illinois Forests

Many Illinois forests are changing dramatically because of an invasion of exotic plants. Presently the most common exotic plants found are amur honeysuckle, buckthorn, garlic mustard and along forest edges, autumn olive. These plants compete with trees for moisture and so during drought the trees are then greatly stressed. In addition, the exotics shade so extensively the forest floor that the production of seedling native trees is not possible. Recent studies at the University of Illinois have shown that garlic mustard produces toxic substances that interfere with the growth of oak seedlings. In many Illinois forests, because of the competition with exotic plants, few woodland native flowering plants exist and the ones remaining will probably be gone soon. And so the entire flora and fauna of Illinois forests are changing quickly.



Photographer: J. Appleby
Flowering Honeysuckle Bush



Photographer: J. Appleby
Buckthorn Flowers



Photographer: J. Appleby

Amur honeysuckle berries



Photographer: J. Appleby

Amur honeysuckle bush in the winter



Photographer: J. Appleby

Olives in the Autumn



Photographer: J. Appleby

buckthorn foliage



Photographer: J. Appleby

Garlic Mustard Flower



Photographer: J. Appleby

Buckthorn Bush



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