2012 Illinois
Forest Health Highlights

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Table of Contents

I. Illinois' Forest Resources

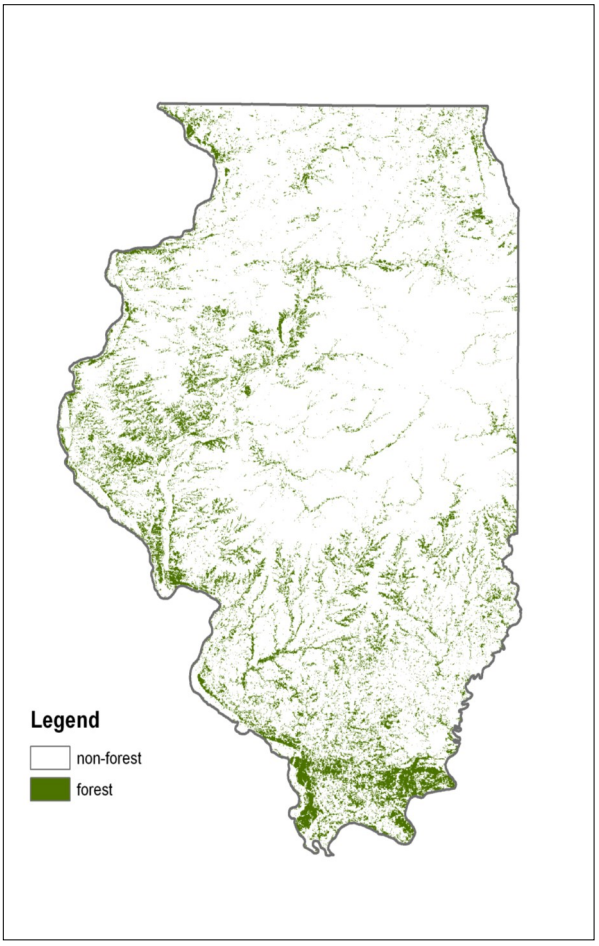

Figure 1. Illinois Forest Areas

Illinois forests have many recreation and wildlife benefits. In addition, over 32,000 people are employed in primary and secondary wood processing and manufacturing. The net volume of growing stock has increased by 40 percent since 1962, a reversal of the trend from 1948 to 1962. The volume of elms has continued to decrease due to Dutch elm disease, but red and white oaks, along with black walnut, have increased by 38 to 54 percent since 1962.

The area of forest land in Illinois is approximately 5.3 million acres and represents 15% of the total land area of the state (Figure 1). Illinois' forests are predominately hardwoods, with 90% of the total timberland area classified as hardwood forest types (Figure 2). The primary hardwood forest types in the state are oak-hickory, at 65% of all timberland, elm-ash-cottonwood at 23%, and maple-beech which covers 2% of Illinois' timberland.

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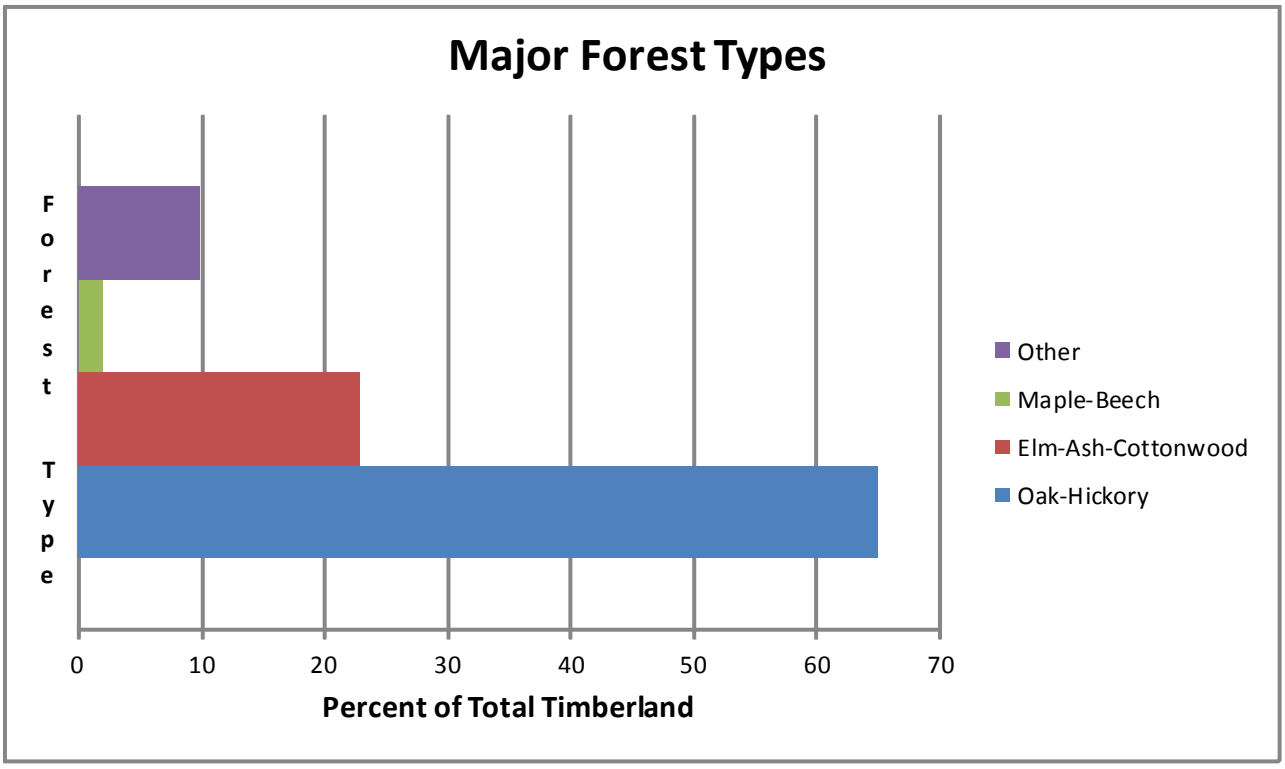


Figure 2. Major forest types by percent of total timberland. Source: Illinois' Forest 2005, NRS-29.

II. Forest Health Issues: An Overview

2012 ILLINOIS FOREST HEALTH HIGHLIGHTS

Arthropod Pests: Overall, the 2012 growing season was relatively quiet with no serious arthropod pest outbreaks with the exception of outbreaks of Gouty Oak Gall (GOG) on pin and shingle oaks (*Quercus palustris* and *Q. imbricaria*) in central, western, and southern Illinois.

Gouty Oak Gall (GOG)

Gouty oak gall (GOG) is a woody gall that forms on small twigs and branches of scarlet, red, pin, and black oaks (*Quercus* spp). The tiny native wasps, *Callirhytis cornigera* and *C. quercuspunctata* are responsible for forming the galls (Figures 3 and 4) (10).

Like most gall-forming wasps, their lifecycles can be rather complex and complicated and GOG is no exception. Adults emerge in May and June, and lay eggs in major veins of oak leaves. GOG larvae form blister-like galls with adults emerging in July. After mating, the adult female lays eggs in young oak twigs. Young GOG's appear as small, brown marbles which grow to two inch diameter brown galls. Later, adults emerge from the gall completing the two-year lifecycle. (Figures 3 and 4).

Galls can be physically removed on small trees in the northern part of the insect's range (northern Illinois), but in southern Illinois, galling can be quite heavy and pruning may not be practical especially on large trees. Heavy galling can cause death of twigs and branches, but generally does not kill a mature, healthy tree (10).

Heavy galling was observed in 2012 along the I-57 corridor south of I-70 (Effingham, Illinois) as far south as the Dixon Springs area; between the I-57 and I-55 corridors from the Shawnee National Forest (SNF) north to I-70; and west from Springfield along I-74 to the Mississippi River. Heavy GOG populations and tree death were observed in south-central Illinois (Eldon-Hazlett and S. A. Forbes State Parks) as well as in the Springfield, Illinois area. GOG-affected trees were in all stages of decline from newly infested trees to dead trees.

Stress agents, such as drought, soil compaction, and poor drainage are probably the predisposing agents for extensive dieback and death of pin oaks in south central Illinois, but death of individual branches by GOG was evident. Further study is needed to determine the contributing factor(s) for extensive death of oaks in the affected areas.

Figure 3. Heavy infestation of GOG

Figure 4. Close up of GOG

Plant Diseases:

Foliar, root rot, vascular, decline, and canker diseases. Overall, disease incidence was atypical for 2012. The early spring warm temperatures and below normal precipitation mitigated most foliar diseases. Stress related diseases like *Cytospora, Botryosphaera, Thyronectria, and Fusarium* cankers, oak wilt, and white pine decline were more prevalent particularly later in the season as severe to extreme drought persisted. *Phytophthora* root rots were present probably due to overwatering, poor drainage, and wrong plant siting. *Phomopsis* tip blight of juniper and arborvitae was observed statewide (1, 11)

Ash Decline and Dieback. Considerable ash (*Fraxinus* spp.) decline (both green and white ash) continued to be observed along the I-57 corridor south of I-70 to extreme southern Illinois (Dixon Springs area). Declining ash were also observed earlier in the season (early June) along the I-64 corridor from south central Illinois (Mt. Vernon area) west to the East St. Louis, IL. Most trees showed thinning canopies and dieback. Death was also a common symptom. Trees were examined periodically throughout the summer, but there was no evidence of EAB. This trend has been going on since 2008 and may be caused by ash decline and/or ash yellows. Luley, et al. (1994) documented an outbreak of ash yellows in this geographic area.

More specifically, ash decline was specifically noted in east central Illinois (Kickapoo S.P.) in early June. On-site interviews with IDNR personnel indicated ash trees had been declining for several years. Extensive dieback (50% or greater) was observed in mid-July. Ash decline was also observed in other areas of east central and southern Illinois (Fox Ridge, S.A. Forbes, and Wayne-Fitzgerrell S.P.'s).

Pine Decline. IDNR district foresters reported cases of white pine (*Pinus strobus*) decline statewide particularly in western Illinois. In addition, dying and dead Scots (*P. sylvestris*) and Austrian (*P. nigra*) pines were common, in both urban and forested areas. Individual trees were not specifically examined, but most contain evidence of bark beetles and Carolina pine sawyer beetles, and probably died of pine wilt disease. The droughts and hot weather of 2010 and 2011 followed by the severe and extreme 2012 drought continue to predisposed these trees to the above pests and diseases.

Oak Decline. In addition to oak trees infested with GOG, chlorotic oaks were observed along the Mississippi River valley between Trail of Tears S.F. and Lake Murphsyboro S.P. in southeastern Illinois and in northwestern Illinois along the bluffs of the Mississippi River valley from the Fulton-Savannah, Illinois corridor north to the Elizabeth, Illinois area including Mississippi Pallisades S.P.

Weather and Abiotic Factors:

The 2012 winter was strange to say the least with extremely mild temperatures and below normal precipitation (1) The 2012 winter was marked by much less snowfall (Figure 5). Monthly average precipitation was below the 74 year normal for February and March, 2012. (Figure 6).

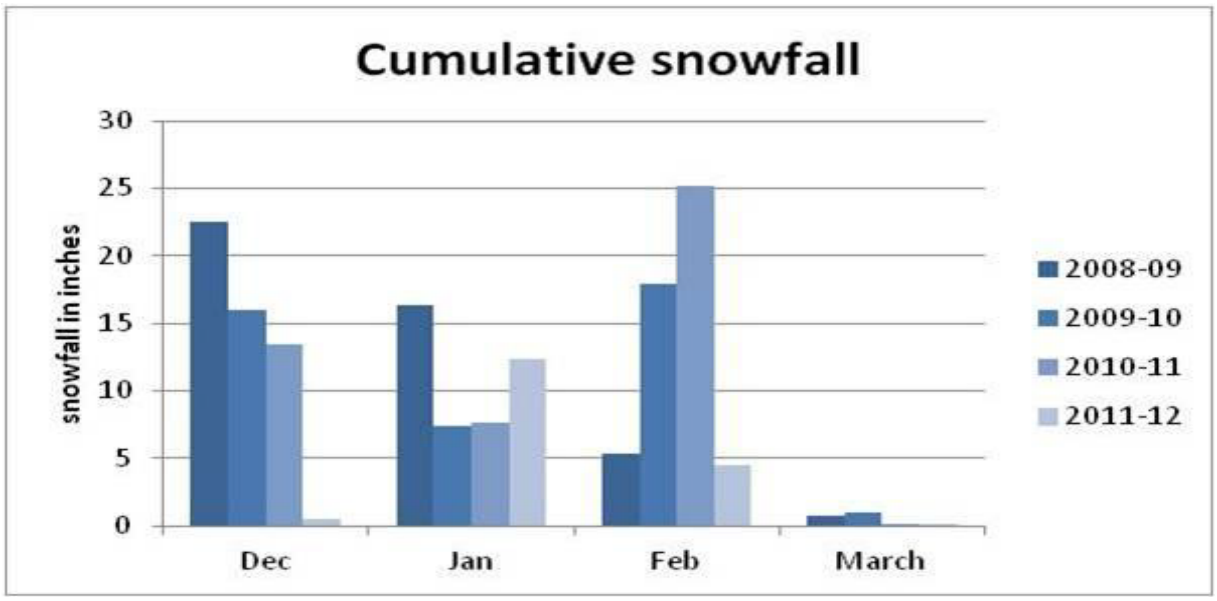


Figure 5.: Cumulative snow fall for December—March, 2012 (1)

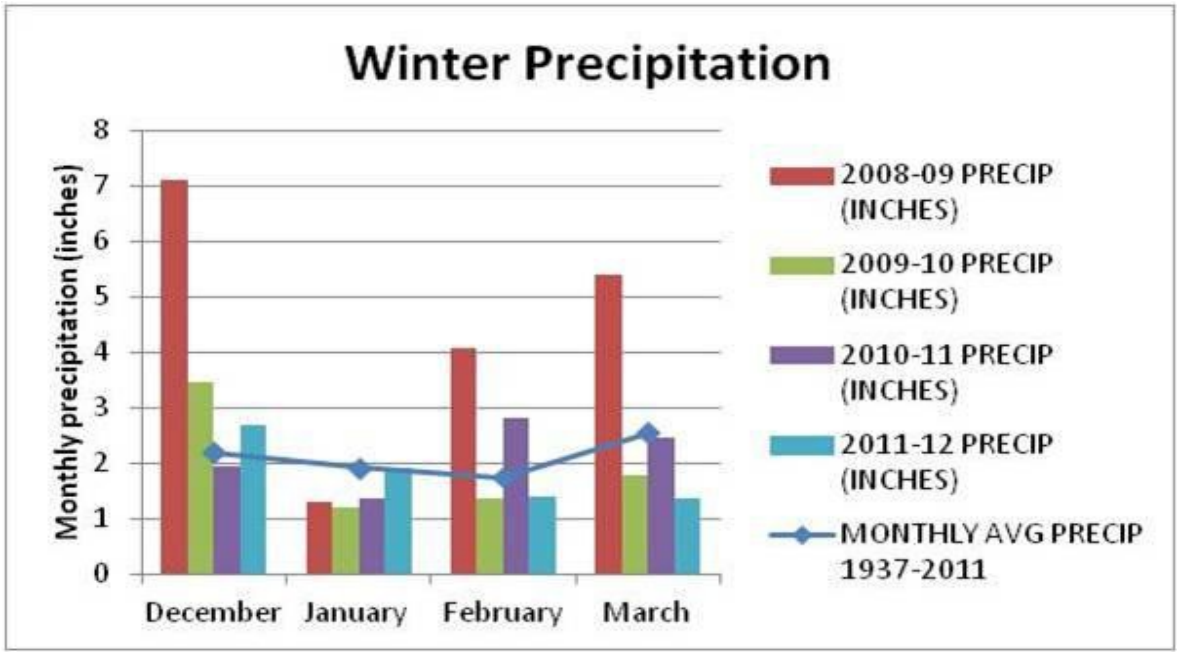
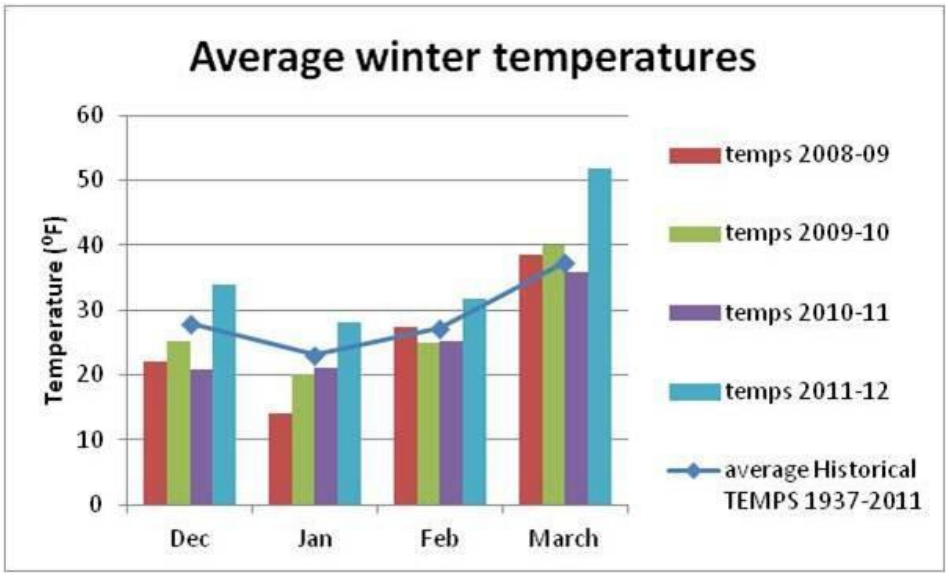


Figure 6: Winter precipitation for December – March, 2012 (1)

The 2012 winter was also warmer than normal for the months of December through March (Figure 7). Record -breaking heat was experienced in March and greatly accelerated bloom times for many of plants. For example, lilac and viburnum that normally bloom in late April and into May started blooming in late March. Bud break, flowering, and leaf emergence not only came early, but over a shorter period of time than usual.. Along with accelerated plant phenology, insect development increased with insects emerging about four weeks earlier than normal. All of this warm March weather was followed by a series of late spring frosts and freezes in April and May. Fruit trees and other flowering plants were damaged and fruit production (especially apples) were hard hit in the northern regions of Illinois. Forest species that were in the midst of leafing out were also damaged.

Figure 7: Average winter temperatures for December – March, 2012 (1)



Dry weather continued throughout summer, 2012 resulting in one of the worst droughts since 1988. Areas of southern Illinois experienced extreme drought while the rest of the state was under moderate to severe drought. The effects of the drought included severe leaf scorch of maples, early leaf drop for honeylocust and elms, and early fall color for most shadetree and forest species. It is expected that many trees species will continue to be under stress going into the 2013 field season due to damage to find feeder roots and root hairs, and reduced stored food. Stress related diseases (i.e. cankers and vascular diseases) and insects (i.e. wood borers and bark beetles) will probably be more prevalent in 2013 and beyond on pre-disposed trees. Proper plant management will be critical in assuring plants have a reasonable chance to recover and rebound from the 2012 drought.

Exotic Pests

The emerald ash borer (EAB) continues to spread throughout Illinois particularly to the west. New positive finds for 2012 include Knox, Henry, and Lee counties in western Illinois near the Quad City area. To date, 40 Illinois counties are under quarantine and 29 counties have known EAB infestations (refer to Figure 8). Beginning in 2012, purple and green Lindgren funnel traps (LFT's) were deployed in 60 Illinois state parks forests, natural areas, seven county forest preserves districts, and on private property of forest landowners. This is a change from using the purple panel traps in previous years.

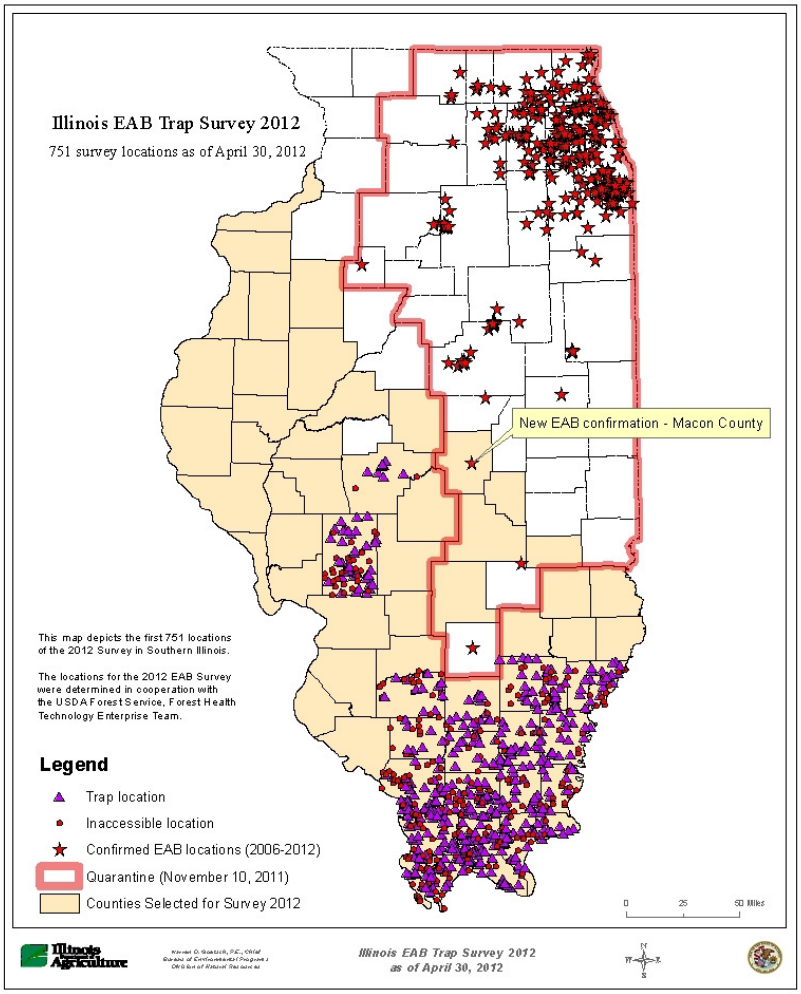


Figure 8. EAB Quarantine Map and New Finds

The emerald ash borer (EAB) is a phloem feeding wood boring insect that kills its host by destroying the vascular system of the tree. Unlike many other borers, EAB has the capability to attack both healthy and stressed ash trees.

Asian Long-horned Beetle (ALB). To date, no new sightings of ALB have been discovered. The original ALB infested areas are no longer under quarantine and the Illinois quarantine is now lifted since ALB has not been found since 2007. Along with visual surveys, newly developed ALB traps were deployed in 2012 in selected areas of seven county forest preserves in northeast Illinois. Visual monitoring efforts are always on-going.

Brown Marmorated Stink Bug (BMSB). This newest exotic insect pest has been found in Illinois in Cook and Kane counties as early as 2010. This insect has a broad range host including tree fruits, vegetable, and woody landscape plants (3). A BMSB pheromone trap was deployed in 2012 in Will county at the Joliet Junior College (JJC) Horticulture Land Lab (HLL) as part of a statewide monitoring program. **To date, there have been no new BMSB finds.**

Viburnum Leaf Beetle (VLB). As reported in the 2009 Forest Health Highlights (FHH), the viburnum leaf beetle (VLB) was found in 2009 in an urban Cook county landscape. The viburnum leaf beetle feeds on a variety of commonly planted viburnums and has the potential to become a major pest of these ubiquitous woody landscape plants. The VLB was added to our watch list. **To date no new finding of the VLB has been reported.**

Chinese Long-horned Beetle (CLHB). Another invasive long-horned beetle, *Hesperophanes campestris*; synonym *Trichoferus campestris* and similar to ALB appeared for the first time in 2009 near O'Hare airport and in Crawford county in east central Illinois (Figure 9). Its arrival at O'Hare is not surprising since it is a major point of entry, but the east central Illinois find is unsettling. The CLHB was captured near a pallet-making plant which is consistent with the movement of infested green wood and wood products. CLHB has also been found near Minneapolis, MN and in Quebec, Canada. The insect is originally from Asia and parts of Eastern Europe and spreads through movement of infested wood. It has a similar life cycle as the Asian long-horned beetle (ALB) and causes similar damage to trees. Preferred hosts of the CLHB are presented in Table 1 (9). In cooperation with APHIS, an intensive trapping, effort using 12 Unit LFT's, was conducted in 2012 in 60 state parks, forests, natural areas, and the northeast Illinois seven (county forest preserve system. **To date, no new CLHB finds have been confirmed.**

Table 1. Preferred hosts of the Chinese long-horned beetle (12)

Apple	Mulberry	Maple	Birch
Beech	Ash	Locust	Walnut
Larch,	Fir	Cedar	Oak
Willow	Elm	Cut wood of spruce and pine.	

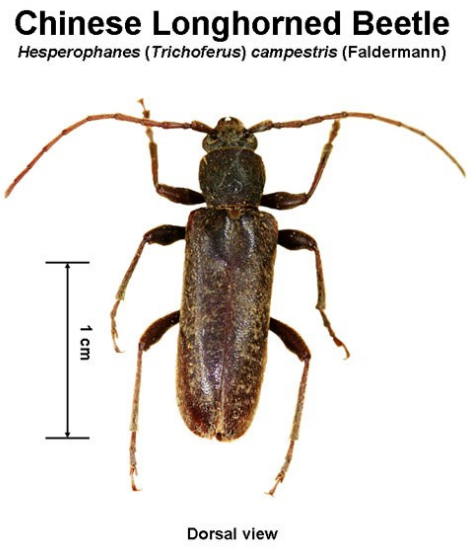


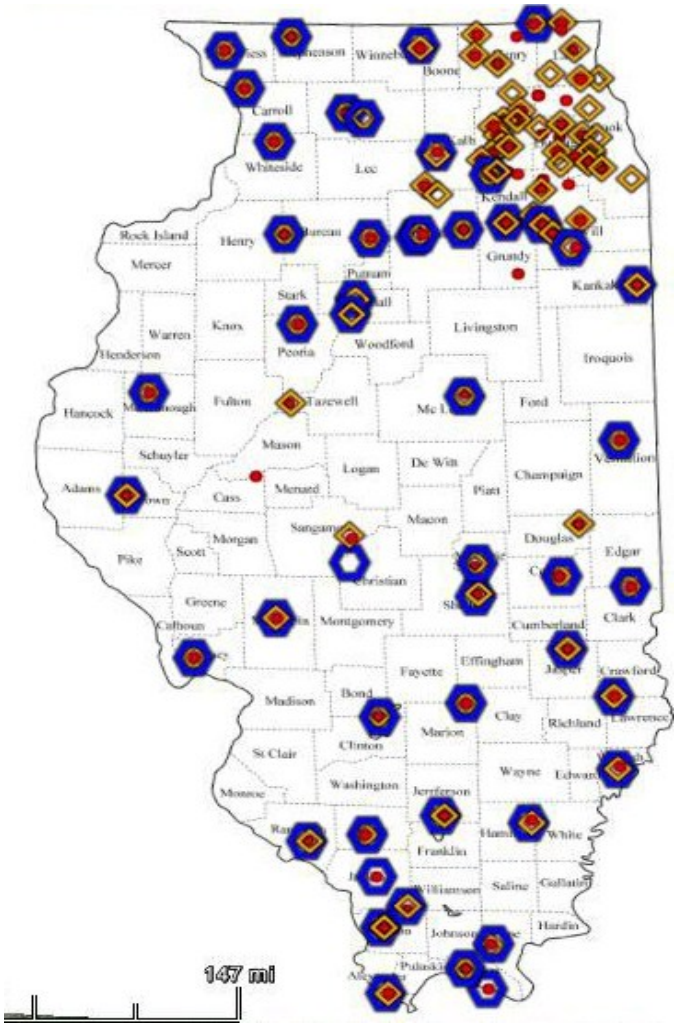
Figure 9. Adult Chinese Long-horned Beetle

Thousand Cankers Disease of Walnut (TCD)

To date, TCD has not been found in Illinois. Beginning in early summer, 2012, four unit LFT's were deployed along with a newly developed pheromone for detection of the walnut twig beetle (WTB). Traps were placed in 60 state parks, forests, natural areas, the seven county forest preserve system, private woodlots, and wooded areas near mills (Figure 10). In addition to trapping, visual assessments of declining walnut trees, and documentation of walnut plantings and walnut natural stands are being conducted and developed.

Figure 10. Distribution of LFT's for 2012

Key: **Blue** symbols = EAB 12 Unit Green LFT's; **Red dot** symbols = WTB 4 Unit Black LFT's; **Orange diamond** symbols = Hardwood Borers 12 Unit Black LFT's



Sudden Oak Death (SOD). SOD is a deadly disease that attacks primarily oaks, but also rhododendron, and other woody ornamental trees and shrubs. The fungus causes cankers on stems contributing to plant decline and eventual death. Beginning in spring, 2012, a stream baiting sampling program was conducted as per the USDA -SOD protocol.. Another sampling period (October – November, 2012) has commenced. To date, no SOD inoculum has been found at the Illinois sampling site.

Dutch Elm Disease (DED). This vascular wilt disease has been with us for decades and continues to kill American and red elms throughout Illinois. Based on reports provided by the University of Illinois Plant Clinic (UIPC) and Morton Arboretum Plant Clinic (MAPC), DED cases continue to be a problem and levels were comparable to 2011 levels (1, 11).

Oak Wilt (OW). The dreaded oak wilt is found in every Illinois county and has become a major urban and forest tree disease. Reports for 2012 by the UIPC indicate that 2012 OW disease incidence was higher compared to previous years (11). It is very likely, that the 2012 drought contributed or even accelerated the development of OW in pre-disposed trees.

Verticilium Wilt (VW). This very ubiquitous and opportunistic vascular wilt fungus was common in 2012 and at levels seen in previous years. Flooding and drought over the last seven years including the severe 2012 drought has and will continue to pre-dispose woody plants to VW. Sugar maple, red maple, ash, smoketree, Japanese maple, saucer magnolia, and three-flowered maple are just a few examples of VW susceptible hosts (3).

Bacterial Leaf Scorch (BLS). Bacterial leaf scorch resembles abiotic scorch, but is caused by a bacterium, *Xylella fastidiosa* (Figure 11). It is thought to be spread by leafhoppers and spittlebugs (Figure 12). Tree hosts include elm, hackberry, maple, mulberry, oak, sweetgum, sycamore, and planetree (Table 2) (5) Since 1999, the UIPC records show that BLS has tested positive in 10 Illinois counties stretching from Jefferson, Madison, and St. Clair counties in southern Illinois through parts of central Illinois (i.e. Sangamon, Champaign, Douglas -Moultrie, Iroquois), north to Cook and DuPage counties, and to Jo Daviess county in extreme northwest Illinois (11). With the exception of Champaign county with 40 positive samples, the remaining 9 counties have had 1-3 positive cases confirmed. In terms of hosts, BLS has been found in bur, northern red, pin, white, swamp white, and shingle oaks from 1999-2008. In 2008, BLS was found in seven oak positives including northern red, swamp white, pin and several unidentified oak species. Eleven BLS samples submitted in 2010 to the MAPC. Of those 11 samples, two were positive, one inclusive and eight were negative (1). The positives were found on oaks growing in DuPage and Cook counties.

In 2011, a total of 22 trees were tested for *Xylella fastidiosa.* One sample, taken from an American elm (*U. americana*), tested positive (Cook county), and six were elevated and inconclusive. Eleven (11) samples were taken from trees growing at The Morton Arboretum. Additional samples were received from western and northwestern suburbs of Chicago, and western Illinois, but were negative (1). Reports received from the UIPC indicate BLS symptoms were more pronounced in 2012 probably due to drought stress.

Figure 11. Bacterial leaf scorch symptoms

Figure 12. Spittle bug

Table 2. Tree species known to be susceptible and not susceptible to BLS (5)

Susceptible Species	**Non-Susceptible Species** (*Based on Observations*)
American elm	European black alder
Gingko	Northern catalpa
Hackberry	Kentucky coffeetree
Red maple	Amur cork tree
Silver maple	Chinese elm
Sugar maple	Sugar hackberry
Black oak	Shagbark hickory
Bur oak	Shellbark hickory
English oak	Pignut hickory
Northern red oak	Katsuratree
Pin oak	Littleleaf linden
Swamp white oak	Cucumbertree
White oak	Black maple
American sweetgum	Chinkapin oak
American sycamore	Sawtooth oak
	Common sassafras
	Tulip tree
	Japanese zelkova

IV. Plant Diseases

Bur Oak Blight (BOB). Bur oak leaf blight is a fungal disease that attacks bur oak (*Quercus macrocarpa*) with severe symptoms occurring on *Q. macrocarpa* var. *oliviformis* (Figure 13). It has been found in Kansas, Nebraska, Minnesota, Iowa, Wisconsin, Illinois and Missouri. In 2011, BOB was found isolated from a tree in Winnetka, Illinois (north shore area of Chicago) and in 2012 from a single tree in Lake County, Illinois.

BOB is caused by the *Tubakia* sp fungus resulting in blighting of the tree over a period of years. It starts in the lower portions of the tree and moves upward. Leaf symptoms usually do not show up until late summer (Figure 14). Severely affected trees may die after protracted years of defoliation. Bur oaks growing in established savannahs and upland areas appear to be more vulnerable. Oaks growing in bottomlands and/or dense forests appear to be less affected (4,12).

Figure 13. BOB tree symptoms

Figure 14. BOB foliar symptoms

Needle cast disease. Two very common diseases affecting conifers, *Rhizosphaera* needle cast and *Diplodia* (i.e. *Sphaeropsis*) were present in 2012. Both of these fungal leaf diseases attack the needles of cone-bearing tree species causing premature needle cast or a browning and/or death of the growing tip, respectively. While not outright fatal, they stress the trees and reduce overall ornamental qualities and growth rates. Coupled with chronic drought, a deadly combination may result (1,11).

Stress-related canker diseases. *Cytospora* canker of spruce is definitely a stress related disease particularly of Colorado blue spruce. Spruces are a common urban forest and landscape species. The cankers are initially found on the undersides of the branches and result from some type of stress. Spruce trees growing in urban environments are very prone to this canker. While not fatal, the cankers cause branches to die distal to the canker resulting in a loss of ornamental quality and landscape function (1). In addition, there has been an increase of *Thyronectria* canker on honeylocust and the honey locust borer in areas of northeast Illinois. It is anticipated that other cankers will make their appearance in 2013 and beyond due to the 2013 drought (1).

Hickory Decline. In recent years, reports of dieback and mortality of hickory have been reported in areas of the upper Midwest (Figure 15). Bitternut hickory (*Carya cordiformis*) and shagbark hickory (*C. ovata*) appear to be most affected. Symptoms include thinning canopies, dead branches, and eventually tree death (13).

Historically, death of hickory trees was attributed to the hickory bark beetle (*Scolytus quadrispinosus*) following droughts. Recent research seems to indicate that hickory decline may include a complex of biotic and abiotic factors such as bark beetles (*Xylobiopsis basilaris and* borers (*Agrilus otiosus*), and the fungus *Ceratocysis smalleyi*. In some cases, Armillaria root rot fungus has been found associated with recently dead trees (13).

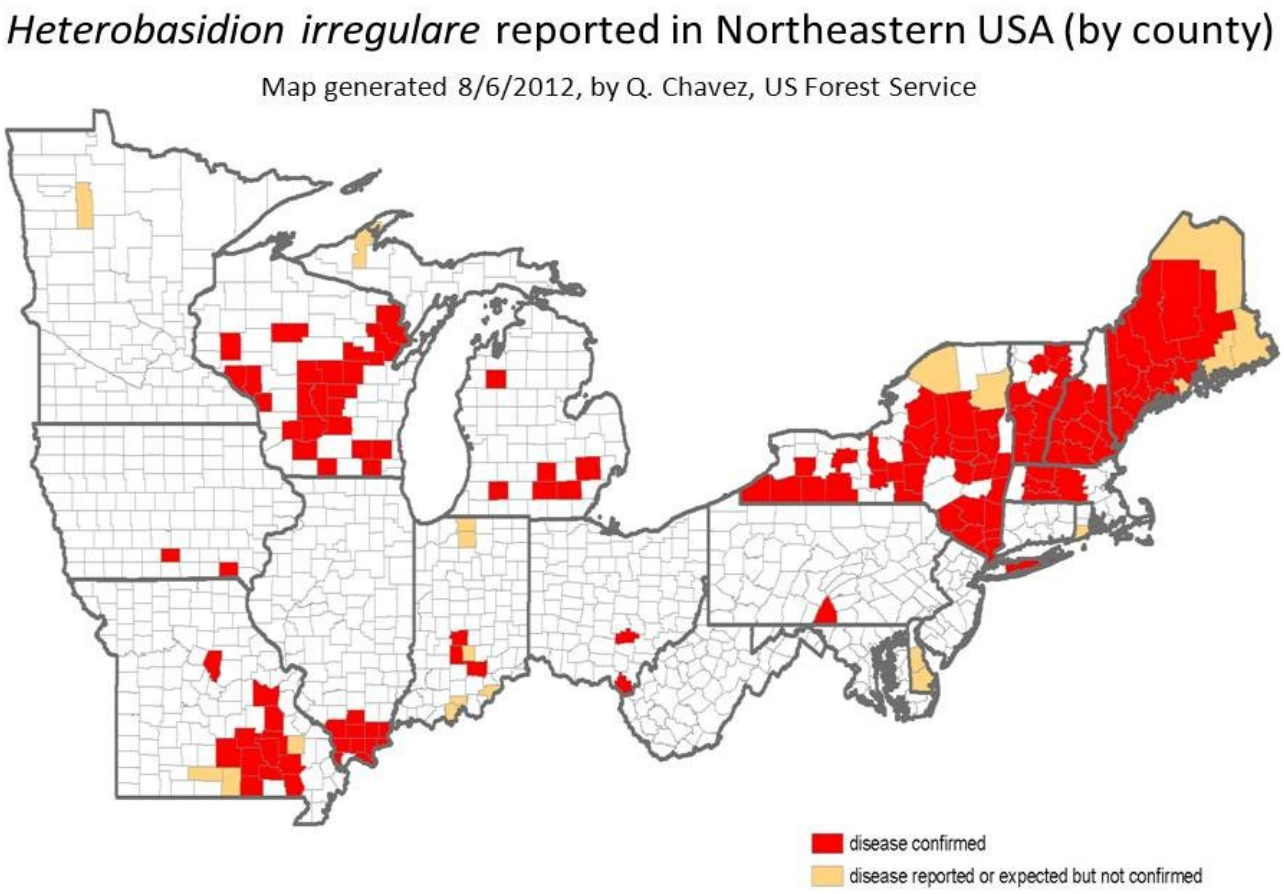
Hickory decline and dieback is most common in overstocked stands. Current management practices include sanitation by removing dead and dying trees to reduce bark beetle breeding habitat and insecticide applications to the trunk of individual trees. Widespread use of insecticides for forest stands is not be economical nor practical (13).

Figure 15. Hickory decline

***Heterobasidion* spp of red pine.** The fungus is a root and basal stem rotting fungus that colonizes cut stumps and then moves through root systems to adjoining trees. The fungus eventually colonizes the lower stem leading to wind throw and death of affected trees. In the Midwest, white, red, and jack pines are most susceptible (Figure 16). Thinned and/or harvested pine stands are prone to this disease. Prevention is the best approach. Treating freshly cut stumps with a fungicide along with and good sanitation and stump removal are important management tactics.

Aerial and ground surveys from 1962 to 1971 by Hanson and Lautz confimed *Heterobasidion annosum* being present in southern Illinois. Since 1971, there is no record of further *H. annosum* surveys. Statewide surveys will resume in 2013.

Figure 16. Distribution of Heterobasidion annosum or *irregulare* in the Northeastern, USA



V. Insect Pests

Bark Beetles (BB) and Wood-borers (WB). Bark beetles attack primarily stressed trees including both hardwoods and conifers. Prolonged drought or a variety of abiotic and biotic stresses may pre-dispose trees to bark beetle attacks.

Based on field observations and in conversations with green industry members and foresters, 2012 appeared to a "normal year" for bark beetle activity. No major bark beetle outbreaks were observed or reported. However, that may change very quickly starting with the 2013 field season. Due to extremely dry conditions, trees are still stressed and may be attacked by bark beetles and/or borers. Weaken trees may lack the ability to fight off these attacks and succumb.

In addition, engraver beetles and the Zimmerman pine moth continue to be chronic problems for many of our urban forest conifer species particularly Scots, Austrian pine, and mugho pines. As above, both of these insect pests tend to attack stressed conifers growing on poor sites (poor drainage) along with drought stress, soil compaction, construction damage, etc.

Expanding on 2011 trapping efforts, 12 unit LFT's were placed in 60 state parks, forests, and natural areas, on private land, and near wood mills during the 2012 field season. The results of these trapping efforts are presented in Table 3. Bark beetles, (conifer, engraver, and hardwood insect species) make up the majority of insects trapped. Long-horned beetles and flat-headed borers accounted for only 5% of trap catches.

Table 3: Summary of Lindgren Funnel Trap (LFT) catches for the 12 Unit EAB trap, 12 Unit Exotic Bark Beetle trap, and 4 Unit WTB trap (May – September, 2012)

TRAP TYPE	N	TRAP SPECIMENS				
		EAB	Bark Beetles[1]	Weevils	Longhorn Beetles	Flat-Headed Borers
EAB LFT	60	3				
Percent of Total		(<1%)				
4, 12 Unit LFT	60		4,203	93	184	45
Percent of Total			(73%)	(2%)	(4%)	(1%)

[1]Bark beetles include members of the *Scolytus* and *Ips* genera

Fall Webworm (FWW) and Eastern Tent Caterpillar (ETC). Small scattered pockets of fall webworm (FWW) and eastern tent caterpillar (ETC) nests were seen at state parks and forests in southeastern (Lincoln Trail S.P.) and southern Illinois (Lake Murphysboro and Pyramid S.P's). Populations were comparable to previous years.

Japanese Beetle (JB). Japanese beetle was evident throughout the state , but defoliation was sporadic and not nearly as extensive as in previous years. Heavy Japanese beetle damage (50-75% defoliation) was common on lindens and crabapples throughout central, western, and southern Illinois (south of I-80 between the I-57, I-39, and I-55 corridors, and north and south between the I-70 and I-80 corridors).

Elm Flea Weevil (EFW). The European flea weevil (EFW) (*Orchestes alni*) has been a pest in the upper Midwest since 2003, but has been in the U.S. since 1982. The EFW is a very tiny insect ($1/16^{th}$ inches long) with the characteristic long snout. (Figure 17). Adults are reddish-brown with black heads. Adult EFW's emerge in May and early June and begin feeding on young leaves chewing small holes in the leaf (Figure 18). Adult females lay eggs and the young larvae begin mining the leaf-tip eventually becoming a blotch-like mine. Larvae pupate within the leaf and emerge as a adults in mid to late summer. Adults over winter in under loose bark and in litter under infested trees (2). EFW feeding damage should not be confused with the elm leaf miner (*Kaliofenusa ulmi*) which is a blotch-mining sawfly. While the adult elm leafminer (ELM) emerges about the same time as the EFW there are subtle differences in larval feeding and biology. ELM larvae typically form blotch-like mines throughout the leaf in contrast to the leaf tip mines associated with EFW larvae. Also, by mid-June, mature ELM larvae drop from the leaf and enter the soil to pupate. Adult emergence does not occur until the following spring with one generation per year.

Figure 17. Adult flea weevil

Figure 18. Adult flea weevil feeding damage

Larval and adult feeding is usually considered an aesthetic issue, but coupled with heavy Japanese beetle feeding damage, preferred hosts can be completely defoliated by mid to late summer.

Research conducted at The Morton Arboretum (7, 8) and by Condra et al. (2010) indicate that *U. pumila* (Siberian elm) and 'Homestead' elm are the most susceptible to EFW feeding damage. In addition, long term field feeding preference studies conducted at The Morton Arboretum have indicated that elm hybrids with Siberian elm and *U. carpinifolia* parentage are strongly preferred by EFW (8). Refer to Table 4 for a listing of highly preferred hosts and host preference by geographic origin.

Table 4. Summary of elm flea weevil (EFW) medium to heavy feeding damage on elms (*Ulmus* spp) and very low to low feeding damage, and by geographic origin (The Morton Arboretum (2004-2009).

Elm Biotype (*Medium to Heavy*)	**Elm Biotype (*Very Low to Low*)**
U. laevis	*U. propinqua var. suberosa*
U. Morton Glossy 'Triumph'	*U. glabra*
U. davidiana var. *manshurica*	*U. alata*
U. americana f. pendula	*U. macrocarpa*
U. lamellose	*U. thomasii*
U. castaneifolia	*U. crassifolia*
U. foliaceae	*U. parvifolia* var. *coreana*
U. procera	*U. americana* 'Moline'
U. berganniana	*U. 'Morton Plainsman* x *U. parvifoia*
U. pumila	*U. japonica* x *U. wilsoniana*
U. davidiana x *U. pumila*	*U. pumila* x *U. americana*
U. pumila x *U. rubra*	'Sapporo Autumn Gold' (*U. pumila*)
U. carpinifolia x *U. pumila*	*U. carpinifolia* hybrids

Origin	**Field Feeding Damage Rating (FFDR)[1]**
• Asia	2.2
• Complex Asian hybrids	2.0
• Europe	3.9
• North America	0.4
• Zelkova spp.	0.7
• Simple and complex hybrids of *U. pumila* and *U. carpinifolia*	4.5

[1]FFDR is based on a scale of: 0=no feeding damage; 1=very low; 2=low; 3=moderate; 4=heavy; and 5=severe feeding damage

VI. Weather/Abiotic Related Damage

Based on the Palmer Drought Index, severe to extreme drought affected about 34 percent of the contiguous United States as of the end of October 2012, a decrease of about 4 percent from September. Areas of southern Illinois were under exceptional drought for most of the summer, and central and northern Illinois experienced severe to extreme drought.

Drought related symptoms of scorch, early leaf drop, dieback, and early fall color began by mid summer and were common on willow, cottonwood, maple, honeylocust, elm, ash, and conifers. Aerial flyovers in August and early September revealed that early fall color was much more pronounced in 2012 compared to the same time in 2011.

What little precipitation that was received usually came down in heavy downpours associated with thunderstorms. Small pockets of storm damage were observed in southern Illinois consisting of broken limbs, and a few down trees. Similar damage was observed in the Chicago area in June and early July due to very localized severe storms of short duration.

Fall precipitation has been more consistent and is helping replenish soil moisture levels. It will be important not to forget the 2012 drought as we enter the 2013 growing season. Many woody plant species suffered significant damage to fine roots and root hairs. This "infrastructure" will have to be replaced and repaired which will require good winter and spring precipitation. It could take several growing seasons for plants to return to normal even under optimum growing conditions. Stressed plants will be pre-disposed to secondary agents such as wood-boring insects and disease-causing cankers, and other stress-related pathogens. Good plant health care practices will be important in helping these plants survive and recover.

VII. Invasive Plant Species

No formal statewide surveys or studies were conducted in 2012 related to invasive plant species.

VIII. Professional Training Clinics and Public Outreach

Three diagnostic training workshops were conducted in late summer and early fall, 2012; one at The Morton Arboretum outside Chicago a second in Murphysboro, Illinois, and a third in Springfield, Illinois. Attendees included commercial and municipal arborists, IDNR district foresters, consultants, master gardeners, and natural resource managers. Workshop participants received classroom instruction and hands on field training on proper pest and disease identification, diagnosis, and sampling techniques. Training topics included TCD, BLS, BOB, common Arthropod pests, and abiotic diseases.

Public outreach events for 2012 included town hall meetings, an EAB symposium, and seminars, addressing management options for EAB and how individual homeowners and communities can prepare for tree mortality and subsequent effects of EAB on urban forests and shade trees.

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PLEASE NOTE: *The data presented in this summary are not to be considered to be comprehensive nor all inclusive studies. The narrative reported here is based on visual and observational surveys by Dr. Fredric Miller, IDNR Forest Health Specialist, IDNR Forest Health field technicians, IDNR district foresters, Stephanie Adams of The Morton Arboretum Plant Diagnostic Clinic, informal conversations with consultants and members of the green, natural resources, and forest industries.*