

BE ON THE LOOKOUT FOR ASIAN LONGHORNED BEETLES

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materials. More alarming, it is believed that ALB was present in New York for at least ten years before its discovery and in Illinois for at least five years. Given these facts, it is possible that there have been infestations of ALB in other parts of the United States.

In December 1998, the United States Plant Health Inspector General, on behalf of the United States Department of Agriculture, enacted regulations requiring all wood products imported from China be treated with methyl bromide fumigation, or chemical fumigation, prior to export. Similar regulations were enacted in Canada in 1999. At the same time, these regulations were also intended to reduce the risk of new pest introductions directly from China. In addition, the risk of new pest introductions from other countries, such as Eurasian longhorned beetle (*Anoploplatypus fuscum*), is believed to have been reduced into Halifax, Nova Scotia, more than ten years ago, but was not discovered in 1999 only after infestation of spruce trees (*Picea canadensis*).

Longhorned beetles: Arborist News 10(2): 55-57

As a direct consequence of the increasing global economy is an increase in the trade of pests worldwide. The Asian longhorned beetle (*Anoploplatypus fuscum*), a pest native to China, was first discovered in the United States in 1996. It has since spread throughout the country in a pattern associated with international trade increases. In the United States, the pest was first intercepted in 1995, the number of interceptions in wood products imported from China increased to 10 percent of the total intercepted insect species in 1996, the total number of interceptions increased to 21 percent, and the number of interceptions increased to more than 100 in 1997-2000). In the United States, the pest is currently found in the vicinity of New York City and Chicago, live interceptions in many other parts of the United States, Canada and the United Kingdom, primarily in wood packing

DAMAGE, BIOLOGY, AND DETECTION

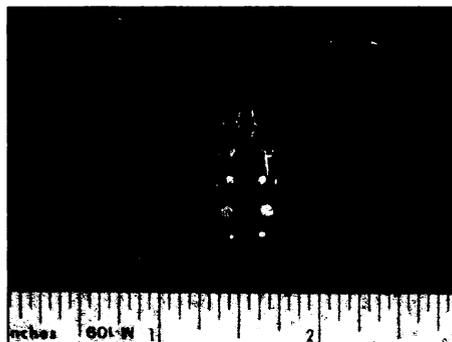
In New York City and Chicago, ALB is most often found in maples (*Acer* spp.), reflecting both a preference for maples as well as the fact that maples are the most common urban trees in both cities. In the United States and China, the ALB also attacks a wide range of other deciduous trees including birches (*Betula* spp.), elms (*Ulmus* spp.), poplars (*Populus* spp.), and willows (*Salix* spp.). Recent observations show that several other trees in the United States also serve as hosts to the ALB, including species of *Aesculus*, *Fraxinus*, *Hibiscus*, *Prunus*, and *Sorbus*. Laboratory rearing studies by U.S. researchers suggest that the host range may be even broader.

Asian longhorned beetles infest both stressed and apparently healthy living trees. They attack first the upper branches and in subsequent years progress down to the lower bole. Successive generations tunnel into the cambium and wood, eventually killing the tree.

Asian longhorned beetles have one generation per year. Adults are active from early summer until late fall, feed on the bark of

twigs, and mate on the trunks and branches. The females chew pits in the bark and insert eggs singly into the cambium; the eggs hatch in one to two weeks. At first, the larvae feed in the cambial region and then tunnel into the wood. Most individuals pass the winter in the larval stage. The larvae transform first into pupae and then into adults inside the tree. The new adults emerge through circular holes that they chew through the bark.

Adult beetles are glossy black with up to 20 irregular white spots on their wing covers. They are 0.8 to 1.4 inches (2 to 3.5 centimeters) long. Antennae are longer than the body,



Adult Asian longhorned beetle: large black beetles with white spots on their wing covers; long antennae have a white band at the base of each segment.

with black and white bands on each antennal segment. Because some native longhorned beetles look similar, trained entomologists should identify suspicious-looking insects.

Infested trees can be difficult to identify during the initial stages of infestation. Signs of attack may include circular holes 0.2 to 0.5 inches (0.6 to 1.2 centimeters) in diameter made by the emerging adult beetles, circular pits in the bark made by adult females when chewing egg-laying sites, sap leakage from egg-laying sites, or sawdust (frass) produced by larval feeding and expelled through the egg-laying site. Attacks can be clustered on branches or trunks because adult females may lay several eggs in a row.

CURRENT STATUS

New York

The first ALB infestation was discovered on Long Island, in Brooklyn, New York, during 1996 (Haack et al. 1996, 1997). A homeowner found what looked to be shotgun holes in several trees growing in front of his house; he reported the "vandalism" to the authorities.

Since the discovery of the Brooklyn infestation in 1996, more than 2,400 trees have been identified and destroyed in the imme-



Exit holes made by adult Asian longhorned beetles emerging from a tree; holes are 0.2 to 0.5 inches in diameter.

diat Brooklyn area (Table 1). Currently, there are five known ALB infestations in the New York area (Table 1). Shortly after the Brooklyn infestation was detected, more ALB damage was found in Amityville (on Long Island), about 30 miles (48 kilometers) east of the Brooklyn infestation. A third infestation was detected in the Queens-Bayside area during 1998. In 1999, infestations were found on Manhattan Island (near Central Park) and in Islip (on Long Island, 11 miles [17 kilometers] east of the Amityville infestation). Several additional small pockets of infestation were found in Manhattan and Queens in the summer of 2000.

All five infestations likely originated from one introduction into Brooklyn. Wood and debris cut from infested trees in Brooklyn was likely moved to the other four locations (before ALB was detected). More than 5,100 infested trees had been removed and destroyed in New York as of December 2000.

Chicago

Chicago's bout with the ALB began in 1998, when a local park employee observed an unfamiliar beetle emerging from cut firewood in the Ravenswood area. He tentatively identified the beetle and reported it to the authorities for confirmation after visiting an ALB Web site (Poland et al. 1998).

As in New York, ALB is believed to have arrived in Chicago in wood packing materials imported with goods from China. More than 1,300 trees have been discovered in the Ravenswood area since 1998 (Table 1).

Chicago benefited greatly from the ALB experience in New York, and authorities quickly implemented an eradication and public information program. As a result of intensive media coverage, two other small infestations were reported by private citizens in



Ravenswood neighborhood (Chicago, Illinois) before trees infested with Asian longhorned beetle were cut and destroyed.

1998: one in Addison (18 miles [29 kilometers] west of Ravenswood) and the other in Summit (13.5 miles [22 kilometers] southwest of Ravenswood). Owing to the long distance between these three infestations and the presence of warehouses that store imported Chinese goods in all three areas, these infestations were believed to be independent of each other and not a result of spread from Ravenswood.

Two more recent infestations, one at Park Ridge in 1999 and another near O'Hare Airport in 2000, likely arose from the movement of infested tree debris from the Ravenswood infestation before 1998. Five infestations totaling more than 1,400 trees had been detected in the Chicago area as of December 2000 (Table 1).

CONTROL EFFORTS

If ALB were to become permanently established in North America, experts feel that the ecological and economic effects would be devastating (Nowak et al. 2001). Therefore, control programs in New York and Illinois focus on the costly and difficult task of eradication of ALB, not simply on suppression.

In both Illinois and New York, quarantine zones are established around known infestations to prevent movement of infested materials. Adjacent neighborhoods continue to be surveyed and quarantine zones expanded as infested trees are found. All infested trees are cut and destroyed.

Table 1. Number of ALB-infested trees detected in New York and Illinois by location and year

Location	Year					Total
	96/97	97/98	98/99	99/00	00/01	
New York						
Brooklyn	766	440	210	787	225	2,428
Amityville	454	344	586	242	120	1,746
Queens			158	569	139	866
Manhattan				31	51	82
Islip				11	0	11
Total						5,133
Chicago						
Ravenswood	-	-	837	472	39	1,348
Addison	-	-	41	15	1	57
Summit	-	-	8	17	0	25
Park Ridge	-	-	-	4	3	7
O'Hare Airport	-	-	-	-	23	23
Total						1,460

Year totals are from May 1 to April 30 for New York, and from July 1 to June 30 for Chicago. Partial data for the year 2000-2001 are current through December 9, 2000 (www.na.fs.fed.us/spfo/alb/).

In New York, detection of infested trees has relied on ground surveys with binoculars. In Chicago, bucket trucks and tree climbers have been used in addition to ground surveys since early 1999; this procedure greatly improved the survey and detection program. In spring 2000, an operational trial was initiated in Chicago to evaluate the efficacy of systemic trunk injections of imidacloprid (Imicide, J.J. Mauget Co.) for protecting uninfested trees from attack. More than 11,000 uninfested trees of susceptible host species around the known infestations were treated with imidacloprid. Ongoing surveys of treated and nearby untreated trees will help determine if the injections are effective in preventing spread of ALB.

Replanting and beautification programs have been implemented in areas impacted by ALB. Eradication and replanting are largely funded by federal, state, and municipal government agencies and through private donations.

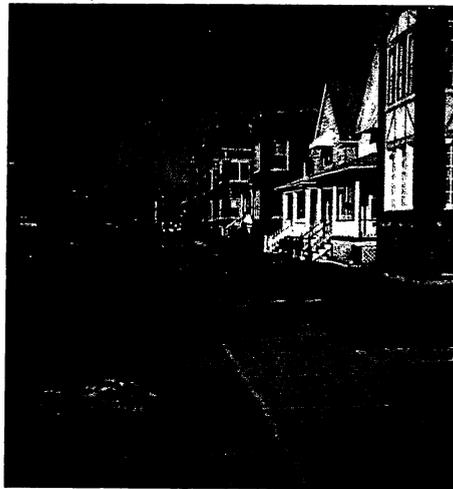
RESEARCH EFFORTS

Many gaps remain in our understanding of ALB biology and its potential impact in North America. University and government agencies are involved in ALB research, which is being broadly coordinated by USDA. Current research is focusing on such issues as basic biology, flight capacity, host preferences, cold hardiness, systemic insecticides, pheromones, trapping, and biological control agents. Efforts are also underway to find better means of detecting and treating infested wood packing materials and infested trees.

WHAT CAN YOU DO?

Arborists can play a key role in the war against exotic pests. By assisting in the early detection of exotics, tree care professionals can help avert another disaster like Dutch elm disease or gypsy moth infestation.

Be on the lookout for unusual pest symptoms in your area. If you see suspicious activity, try to collect insects or infested materials and contact local pest specialists. Don't move infested materials any farther than necessary because doing so promotes the spread of exotic pests to new areas.



Ravenswood neighborhood (Chicago, Illinois) after trees infested with Asian longhorned beetle were removed and new, nonhost trees, were planted.

ADDITIONAL INFORMATION

More information about ALB can be found at many Web sites. One Web site with many links is www.na.fs.fed.us/spfo/alb. This Web site includes data on each infestation, quarantine maps, identification guides, reports, photos, and links to other ALB sites.

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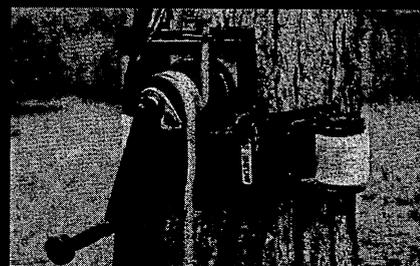
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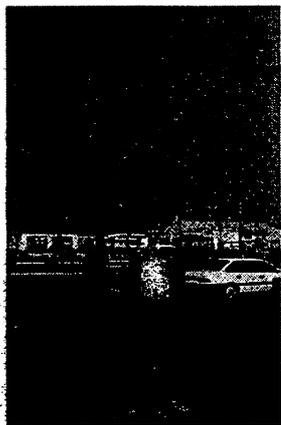
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ARBORIST NEWS

Arbor Day: Give Something Back

Arbor Day activities to help promote tree care and the tree care profession. Also—kids' coloring contest! **Page 6**



Training Young Trees for Structure and Form

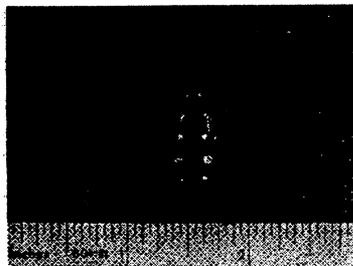
This month's CEU article focuses on the five steps for training young trees and discusses the importance and benefits of the practice. **Page 25**

Milwaukee 2001!

The Wisconsin Arborist Association invites you to A Festival of Trees. **Page 32**

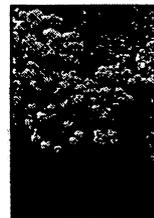
Featured Pest: Be on the Lookout for Asian Longhorned Beetles

Biology, damage, detection, and status of this exotic pest. Also, what arborists can do. **Page 55**



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