

COMMITTEE OF THE WHOLE - FEBRUARY 16, 2004

RESOLUTION **PESTICIDE USE TO COMBAT ASIAN LONG-HORNED BEETLE**

Recommendation

Regional Councillor Linda D. Jackson and Councillor Bernie Di Vona recommend:

THAT Council adopt a resolution to support testing the effectiveness of Imidacloprid and Dinotefuran in combating tree infestations of the pest known as 'Asian Long Horned Beetle',

THAT the test be conducted in conjunction with the City of Toronto, the Province of Ontario and the Federal government,

THAT the test be conducted in a contained location,

THAT the recommended "contained" location for testing purposes be the courtyard gardens at the Dodge Suites Hotel, located at 3600 Steeles Avenue West in Vaughan,

THAT staff investigate possible similar resolutions from area municipalities,

THAT area municipalities be asked to adopt a similar resolution,

THAT staff investigate the feasibility of the proposed test,

THAT the City Clerk communicate this resolution to area municipalities, the Region of York, the Province of Ontario and the Government of Canada, and

THAT the City Clerk request that area municipalities adopt a similar resolution.

Purpose

To adopt an economically and environmentally viable alternative to the elimination of hundreds of mature trees in both the City of Toronto and the City of Vaughan prior to the initiation of the next "active" season for the Asian Long Horned Beetle.

Background - Analysis and Options

Whereas, the corporation of the City of Vaughan and the residents of the City of Vaughan are in jeopardy of losing hundreds of mature trees, and

Whereas, the Government of Canada is financially responsible only for the removal and not for the replacement of the infested trees, and

Whereas, the corporation of the City of Vaughan and the residents of the City of Vaughan are faced with the costs of replacing the affected trees, and

Whereas, there are other viable alternatives which are currently being used in the United States, and

Whereas, Dodge Suites Hotels falls within the infested area, possesses an enclosed courtyard garden which is slated for tree removal and can therefore provide an isolated environment (surrounded by a four-storey structure) for testing purposes, and

Whereas Imidacloprid and Dinotefuran are not approved for any use in Canada, but are currently available on retail shelves in Canada in the form of flea protection products for dogs and lawn pest control products,

It is recommended that the City of Vaughan, in partnership with the City of Toronto, the Province of Ontario and the Government of Canada conduct a test of Imidacloprid and Dinotefuran in combating tree infestations of the pest known as 'Asian Long Horned Beetle'

Relationship to Vaughan Vision 2007

This report is consistent with the priorities previously set by Council through the Vaughan Vision 2007 insofar as it fiscally and environmentally places Vaughan residents FIRST.

Conclusion

It is recommended that Vaughan Council adopt a resolution for the testing of Imidacloprid and Dinotefuran in combating tree infestations of the pest known as 'Asian Long Horned Beetle'

Attachments

1. Copy of 16-page Staff Report from Joe Halstead, City of Toronto Commissioner of Economic Development, Culture and Tourism to the City of Toronto Economic Development and Parks Committee
2. Dodge Suites Hotel letter
3. Nutrite letter
4. Copy of message from CFIA to Diana Dodge
5. 9-page information fax from Diana Dodge

Report prepared by:

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Respectfully submitted,

Linda D. Jackson
Local and Regional Councillor

Bernie Di Vona
Councillor, Ward 3

The logo for the Toronto Staff Report, featuring a stylized building icon to the left of the text "TORONTO STAFF REPORT".

TORONTO STAFF REPORT

January 28, 2004

To: Economic Development and Parks Committee
From: Joe Halstead, Commissioner Economic Development, Culture and Tourism
Subject: Asian Long-Horned Beetle

Purpose:

To report as requested by City Council at its December 2, 2003 meeting on the Asian Long-Horned Beetle (ALHB) eradication plan, funding status, long-term re-forestation strategy and a public awareness strategy for the citizens of the City of Toronto.

Financial Implications and Impact Statement:

The ALHB information currently available allows only preliminary financial estimates to be developed. More research and survey work will be required before more accurate projections can be made. Urban Forestry staff will continue to work together with the Economic Development Culture and Tourism Finance staff and with partner agencies including the Canadian Food Inspection Agency (CFIA) to determine program requirements, cost estimates and budget forecasts for 2004 and beyond. These forecasts will be reported to Council once they are available.

The estimated costs of survey, removal and disposal work required within Toronto is estimated between \$6M and \$8M in 2004 from the data currently available. \$8M gross and \$0 net is requested to be added to 2004 Parks and Recreation Operating Budget. Included in this amount is \$3M gross and \$0 net approved by Council in December 2003. At present, the Federal Government has committed to fund work related to survey, removal and disposal of trees at 100%. It is anticipated that all tree removal of known infested trees will be completed in 2004.

Chemical treatment of the tertiary zone is estimated at a cost up to \$26M over the next four years. A pesticide is not yet registered for control of ALHB and a recommendation to use pesticide should it be registered has not yet been made by CFIA. Funding for chemical treatment by the federal government is not confirmed. The Commissioner of Economic Development, Culture and Tourism will report back on the issues of a potential pesticide treatment using stem and soil injection methods of application, as outlined in the recommendation from the Board of

Health, and financing when more information is available and once the CFIA have provided direction on the use of Pesticides.

The cost of tree replacement on public and private property over the next four years could range from \$4M to \$18M depending on the tree size, replacement ratio and the number of property owners that choose to take part in the program. Generally, trees of 70mm size with a wire basket root ball cost \$550/tree to plant including utility locating, tree purchase, planting and watering; planting smaller 30 to 40mm bare root stock is much less expensive with average planting costs of \$120 per tree. Council, with the efforts of the Mayor and The Tree Advocate will continue efforts to secure funding from the federal and provincial governments and the Commissioner Economic Development Culture and Tourism will report back as more information on funding is available.

Recommendations:

It is recommended that:

- (1) The amount of \$8 million gross and \$0 million net (inclusive of the \$3 million gross, \$0 net already approved by Council on December 04, 2003), recoverable from the Federal government, be referred to the 2004 budget process for consideration for inclusion in the 2004 Parks and Recreation (Forestry) Operating Budget in order to address the survey, removal and disposal currently projected to occur in 2004;
- (2) If CFIA recommends use of pesticide in 2004, the Commissioner of Economic Development, Culture and Tourism report directly to Council on March 2, 2004 with additional financial implications for consideration in the 2004 Operating Budget process;
- (3) City Council, through the Mayor and the Tree Advocate continue efforts to secure funding from the federal and provincial governments for replanting associated with the Asian Longhorned Beetle control program on both public and private property, and the Commissioner of Economic Development Culture and Tourism report back as more information on funding is available;
- (4) The Commissioner of Economic Development, Culture and Tourism, in consultation with staff from Works and Emergency Services and Facilities and Real Estate identify suitable wood disposal sites within the proposed regulatory area so that in the event of a Ministerial Order putting a quarantine in place, Toronto will be prepared to accept tree debris from City operations and from private contractors and private residents within this area;
- (5) Forestry staff continue to work with the Canadian Food Inspection Agency and other partners to complete the necessary research and Asian Longhorned Beetle surveillance to further define eradication protocols;

- (6) The Commissioner of Economic Development, Culture and Tourism report back to Economic Development and Parks Committee on the status of the control program in July 2004;
- (7) This report be forwarded to Budget Advisory Committee for consideration; and
- (8) That the City Clerk forward this report and associated recommendations to the Toronto and Region Conservation Authority, City of Vaughan, York Region, Ontario Ministry of Natural Resources, Association of Municipalities of Ontario, Canadian Forestry Service and the Canadian Food Inspection Agency; and
- (9) The appropriate City Officials be authorized and directed to take the necessary action to give effect thereto.

Background:

At its meeting on December 4, 2003, City Council adopted a motion on actions to be taken to prevent the spread of the Asian Longhorned Beetle, requesting action be taken to obtain written confirmation of financial support from the federal government for surveys, tree removal, chemical control, wood disposal, communications, research assistance, administration and management, and approving expenditure of up to \$3 million gross and \$0 net in 2003 and early 2004 upon receipt of confirmation of federal funding. The motion also requested the Canadian Food Inspection Agency to develop an Ontario action plan to deal with the ALHB, commit to funding tree replacement, include the request in the City's ongoing negotiations with the federal government and that the Commissioner of Economic Development, Culture and Tourism report back to Council through the Economic Development and Parks Committee in February of 2004.

In September 2003, the first Asian Long-Horned Beetle (ALHB) *Anaplophora glabripennis* infestation in Canada was discovered in an industrial area near Weston Road and Steeles Avenue West of Toronto and Vaughan. Four satellite infestations were subsequently found in the Ansley Grove and Russet Way areas of Woodbridge, the Beechwood Cemetery in Concord and the Thistletown residential community of North Etobicoke. The Canadian Food Inspection Agency (CFIA) and the City's Urban Forestry Section and other partners are continuing their efforts with ongoing surveillance of the area. It is possible that the zone currently designated as infested may increase in size if more evidence of infestation is found.

ALHB is an invasive quarantine pest regulated by Canada and many other countries including the U.S.A. and has previously been intercepted in imported wood packaging. ALHB is native to Asia (China, Japan, and Korea) and, if allowed to spread, has the potential to cause severe damage to Canadian hardwood forests, especially sugar maple stands. The Canadian hardwood forest and the maple syrup industries annually generate \$11 billion in wood products and \$100 million in maple syrup. The Urban Forest is also at risk given the heavy reliance on maple and other host species of trees for city tree planting. The ALHB has no natural controls in North America that would prevent its spread. In its native Asian range, ALHB has caused tree mortality and is recognized by the international plant health community as a very significant invasive pest.

Local research into the age of infestation, rate of spread and potential species of host trees is underway. The ALHB is known to feed on broadleaf trees such as maple, birch, elm, willow, horsechestnut, poplar, hackberry and mountain ash. There are no natural controls and beetle populations will increase exponentially if not destroyed. This insect threatens to destroy about 60 to 70% of the trees and canopy of Toronto's urban forest. If not controlled, the ALHB could potentially infest the forests of Ontario and those throughout Canada causing massive ecological degradation.

The insect probably arrived in the Toronto/Vaughan area in wood crating or packing material from Asia about 4 to 6 years ago. ALHB was detected in New York City in 1996, in Chicago in 1998 and New Jersey in 2002. The United States Department of Agriculture (USDA) has spent over \$100 million U.S. conducting surveys, removing trees, applying pesticide and replanting trees. Their efforts are ongoing with targeted completion dates extending to 2018 and expenditures over \$300 million U.S. dollars. USDA continues to study the insect and possible controls. The most effective control is drastic removal of trees, destruction of the wood through chipping or burning, followed by continual surveillance and pesticide application. To date, no pesticide is registered for use on this pest in Canada although the CFIA has made application for emergency registration of imidacloprid to the Pest Management Regulatory Agency (PMRA).

Under the Canadian Food Inspection Agency Act and the Plant Protection Act, the CFIA has the legislative authority and responsibility to lead the federal-provincial process to control the ALHB and has the authority to issue control orders directed at municipalities and their residents to take measures to control ALHB. The Economic Development, Culture and Tourism Department's Urban Forestry Section has the lead responsibility in Toronto to implement ALHB control measures, consistent with the requirements by the CFIA. Toronto Public Health is working collaboratively with Urban Forestry by providing research support regarding the potential use of pesticides against the ALHB. Works and Emergency Services have provided operational support in the areas of survey and mapping and solid waste collections.

Comments:

If not controlled, the ALHB has the potential to devastate the majority of trees in Toronto and natural hardwood forests in the country. If allowed to spread, this will be the most serious forest threat in Canada.

While the CFIA has ultimate responsibility to control and eradicate the ALHB, it is achieving this with the help of many organizations including, City of Toronto, City of Vaughan, Toronto Region Conservation Authority, York Region, Ontario Ministry of Natural Resources, Canadian Forestry Service, United States Department of Agriculture and others - each supplying specialized equipment and staff as needed.

In May 2000, City Council approved a report from the Commissioner of EDCT entitled Asian Long-Horned Beetle and other alien forest pests, which noted that if ALHB was ever found in Toronto, control of ALHB would become Urban Forestry Services first priority over all other work other than emergency hazard control. City of Toronto, Urban Forestry Services currently

has 45 staff of its 180 FTE's dedicated to the ALHB program. This commitment is having the effect of curtailing regular forestry services to bare minimum only in order to avoid hazards and focus the available resources on the ALHB program. Normal tree service backlogs of 6 months during winter months are expanding to summer peak levels of 12 months and summer peak levels will increase to even higher levels. With Federal funds beginning to flow for this effort, staffing levels can now be increased to deal with the additional backlog and loss of service experienced over the Fall and Winter period. Since the timeframe is very tight to eradicate the ALHB prior to mid-May, staff have focused on the removal and inspection program as first priorities and will strive to complete this process in the prescribed timeframe. In the event that the ALHB removals are not yet completed, staff will review the Spring tree planting program in conjunction with the Tree Advocate and determine if the regular planting program will have to be deferred. With the current crisis in the urban forest and the diminishing tree canopy in the City of Toronto, this is a priority that we would like to proceed with and hence why we need to backfill staff positions that are currently dedicated to ALHB so that normal service levels can be maintained with the base budget funding that exists.

Eradication Plan

Eradication of ALHB requires a combination of control tools to be used including the removal of infested trees, multi-year continued surveillance for signs of ALHB, research and education, co-operation between the public, industry and government, public awareness and alertness, multi-year quarantine restrictions - controlled wood disposal and nursery stock movement and planting restrictions - on areas surrounding the infested area, and judicious use of the pesticide imidacloprid, if registered for use against the ALHB by the PMRA.

Previous research done on the ALHB has shown that approximately 99% of ALHB population is found within 400m of the last known infested tree. The adult beetles can fly substantially farther, but less than 1% of the population does. In fact, very close to 100% of the population is found within 800m of the last known infested trees. This information becomes a primary determinant of the eradication protocol.

Other important facts informing the eradication protocol are that fact that since egg laying sites can be negligible in size and can often look like a tiny slit in thin bark. Also, the ALHB is known to survive in branches as small as 2.5 to 3 cm in diameter. Consequently it is very difficult to find all trees that are infested with ALHB. In fact, experience in the U.S.A. shows that ground crews have about a 30% chance of finding infested trees, crews using bucket trucks have a 50% to 60% chance of finding infested trees and tree climbers have a 70% chance of finding infested trees.

Based on this and other information which has been studied by the Science Committee of the ALHB control team, the CFIA has advised that the eradication plan is to remove all infested trees, known as the primary zone, and all host species within 400 metres of the last known ALHB infested trees, known as the secondary zone. Further, in the area between 400 and 800 metres from the last known infested trees, known as the tertiary zone, the plan is to remove or treat all host trees. Treatment of host species in the U.S.A. involves stem injection or injection of soil around host species with a pesticide called imidacloprid which is the subject of a report to

the Board of Health from the Medical Officer of Health dated December 31, 2003, which was considered at the Board of Health's meeting of January 19, 2004. At the moment, imidacloprid is not registered for use on ALHB in Canada but an emergency application for it to be registered for this use is before the PMRA of the Canadian government. Without this chemical as a tool for treatment of host tree species in the 400 to 800 metre zone past the last known infested trees, many more trees will have to be removed. Imidacloprid is not a control on its own, and is only useful in combination with other control measures listed above. If approved by the PMRA, this tree protectant may be utilized as an alternative to removal of host trees within the tertiary zone on the direction of the CFIA. As recommended by the Board of Health at its meeting of January 19, 2004, the City will only consider stem and soil injection application methods, not soil drenching.

In summary, the eradication plan is:

Area	CFIA Plan for ALHB Eradication
Infested area ¹ (primary zone)	- remove and chip all host trees during winter months
400m beyond (secondary zone)	- remove and chip all host trees during winter months
400 to 800m beyond primary zone (tertiary zone)	- treat or remove and chip all host trees - if approved, treatment with imidacloprid annually for four years and survey all treated trees annually to look for signs of ALHB
2400m beyond primary zone (protection zone)	- continued survey of host trees

¹ As known after rapid grid survey.

In the main ALHB infestation area of Vaughan and Toronto Wards 7 and 8, research activity to determine the host tree species, population size, age and rate of spread in the urban forest is currently underway under the direction of the Canadian Forestry Service, the Ontario Ministry of Natural Resources, CFIA and the U.S.D.A. Data is being gathered as forestry crews remove trees. The information derived from this research coupled with information already known about the insect through other research will inform the eradication plan outlined above. It allows the CFIA to develop and implement site-specific eradication protocols for survey, detection and tree removal. This is critical given the unique landscape, neighbourhoods, ravines, parks and cemeteries, and tree species composition and diversity involved in this infestation. It is anticipated that the primary, secondary and tertiary zone boundaries may be dynamic, based on the information that is being gathered on the ALHB dispersal patterns.

The CFIA ALHB eradication plans for this infestation will continue to evolve as a result of the information gathered during the ongoing survey and tree removal process.

At present, tree inventory work is still underway. Approximately 11,000 trees in Toronto plus others in Vaughan need to be removed from the known infestation areas. The cost of removing these trees including stump removal is estimated to be \$3M. The cost to tub grind the wood is

estimated to be \$250,000 and it is anticipated that the chipped remains would be acceptable for composting purposes and could be disposed of at little to no cost.

At time of writing this report, there are a total of 45 City of Toronto Forestry staff including Arborists, Forest Health Care Specialists, Heavy Equipment Operators, Forestry Technicians and Supervisors, 4 contract tree removal crews supplied by Toronto Forestry, 15 TRCA staff, 7-10 CFS/OMNR staff, 3 City of Vaughan staff plus 20 CFIA staff assigned to the program. These staff are assigned to make up 10 tree removal crews, 7 ground survey crews, 3 aerial climbing survey crews and research. As of January 8, 2004, 750 trees have been removed. Progress is reviewed daily to ensure that the targeted objective of having all the necessary trees removed and chipped before beetles would emerge in May is achieved.

In addition to the ALHB surveillance work currently being done and which has covered an area of 169 square km, surveillance and inventory of host trees will continue well into the remainder of 2004 and beyond. Surveillance using aerial climbing crews will be necessary for years to come until it is determined that ALHB has been eradicated. During this entire time public education and on going awareness programs will be necessary to ensure that the public, industry and government remain active and effective in looking for ALHB. Future surveillance and removal costs cannot be determined until final eradication protocols are established by the CFIA but preliminary estimates for 2004 in addition to the \$3M approved thus far by City Council are \$3M to \$5M.

Based on information supplied from previous year contracts in Chicago and New York City where approximately 180,000 trees have been treated with imidicloprid in 2003, treatment if approved for use of imidicloprid, would cost approximately \$130 for an average 40cm diameter tree. Based on random sample inventories of trees in the tertiary zone, it is determined that approximately 50,000 trees might require treatment annually for a total treatment cost of \$6,500,000 annually for four years. Accurate cost projections for application of imidicloprid, as protection for trees is dependent on final eradication protocols and application methods. Further, the funding commitment from the Federal Government for pesticide use has not been clarified and additional efforts to clarify this funding is required. A pesticide is not yet registered for control of ALHB and a recommendation to use pesticide, should it be registered, has not yet been made by CFIA. Furthermore, use of pesticide for control of ALHB may not be funded by CFIA and the City of Toronto may have to decide on its own whether to use stem or soil injection of pesticide with the resulting financial implications.

If the CFIA issues a Ministerial Order placing an area roughly 48 km² in quarantine, wood disposal sites will have to be established immediately to accept public and private wood from the quarantine area. The City Forester has initiated discussions with Solid Waste Management Services, Works and Emergency Services Department for this and is awaiting more information from the CFIA regarding the proposed regulatory zone. As tree debris from the quarantine area would build up at such disposal sites, the material would need to be tub ground into wood chips of a small enough size to eliminate any possibility of ALHB survival in the wood. It would not be the intent to compost wood chips at the wood disposal sites. Chips would be transported off site to other composting facilities. In fine chip form, the wood would be safe for transport and preliminary contact has been made by the CFIA with a facility that could compost this material.

In Windsor where a quarantine is in place for Emerald Ash Borer, the disposal site is set up on City-owned lands, run by the Federal Government. The arrangement for Toronto has yet to be determined.

Should ALHB eradication work result in tree removals in the Black Creek or Humber River ravines, the stability of some slopes may be compromised. TRCA Geotechnical staff will be studying any sloped areas where tree removal may be required and determine and appropriate slope stability measures. Again, funding for such measures, as required, would have to be clarified. At this time, evidence of ALHB in ravine areas has not been found and the CFIA has not directed TRCA, Vaughan or Toronto to remove trees in ravines.

Funding Status

The operationally intensive effort and redeployment of resources required for the task of ALHB survey and eradication has been at the expense of the City of Toronto Urban Forestry Services program. Approximately 25% of the forestry staff are now dedicated to the program and as at December 31, 2003, approximately \$400,000 was spent on the ALHB response program from the Urban Forestry operating budget.

On November 12, 2003, Former Federal Minister of Agriculture and Agri-Food, Mr. Lyle van Clief announced to the media and to ALHB partners that the CFIA will fund eradication of ALHB.

On December 2, 2003, Council recognized the urgent need for action and the expertise that the City of Toronto can bring to bear on this critical issue, and further recognized that eradication of ALHB through reallocation of existing resources is not sustainable over the years required to eradicate ALHB or even for the months to take the first major steps. City Council unanimously endorsed the notice of motion on this issue. Council resolved that the Commissioner of Economic Development, Culture and Tourism request and seek written confirmation from the federal Ministry of Agriculture and Agri-Food of the financial commitment to reimburse expenses incurred by the City of Toronto to eradicate the ALHB, including covering costs for annual surveys, tree removal, chemical control, wood disposal, communication, research assistance, administration and management. Council further authorized that upon receipt of such written confirmation, expenditures from the Parks and Recreation operating budget be authorized for eradication efforts through to the Spring of 2004 and to establish a corresponding receivable to recognize the recovery due from the Federal Government; such expenditure not to exceed \$3,000,000 gross and \$0.00 net. Further removal and surveillance costs are estimated for 2004 to be \$3M to \$5M and cannot be determined until final eradication protocols are established by CFIA. Costs will increase if surveillance reveals further infestation areas.

On January 8, 2004, the CFIA, by letter to the City Forester, submitted written confirmation that as indicated in December, funds are available to cover expenditures incurred as a result of the current ALHB emergency situation. It further requests that we outline our costs for the period of September 12, 2003 to December 31, 2003 and forward supporting documents to the CFIA so that their finance staff can transfer funds to the City. The letter requests a further meeting to discuss payment for the next period of January 1 to March 31, 2004. While there are

encouraging signs around Federal funding for this issue, the letter does not specify in sufficient detail a comprehensive funding commitment. Staff have met with the CFIA and requested additional clarification. The CFIA have advised verbally that they are unable to commit to funding in the 2004 fiscal year, April 1 - March 31, as their budget is still under review.

In the coming weeks, short term staff and contract crews will be engaged to fill key vacancies within Urban Forestry Services created by the reallocation of staff and to proceed with tree removal as well as ALHB surveillance. This will be within the recoverable expenditure authorized by Council in December, 2003.

With respect to replanting, the CFIA has notified its partners that it does not have a mandate or legislated authority to pay for replanting trees or compensation to homeowners for their lost tree assets. Although the Tree Advocate and Staff from the Parks and Recreation Division have initiated discussions with the Tree Canada Foundation, no definite commitments for funding amounts have been made. The OMNR is looking further into the issue of funds for tree replacement as well.

Long-Term Reforestation Strategy

As tree inventory work and research which will inform the eradication plan are still underway, it is yet unknown precisely how many trees will be removed. However, eradication involves removal of approximately 55% of the trees in the industrial area south of Steeles and in the affected residential areas of Humber Summit and Norfinch. Approximately 11,000 trees will be removed from the primary and secondary zones before May and approximately 66% are on private property. It should be noted that massive data gathering, data entry, and analysis for this are in progress.

Tree removal has the effect of changing neighbourhoods into less attractive places and taking away all the positive attributes that trees provide. This also has the negative result of diminishing property values and subsequently diminishing assessment values. It is therefore imperative that the lost crown cover be replaced as soon as possible after removal, especially in light of the diminished level of tree canopy in the City of Toronto over the last decade. However host tree species cannot be replanted in the area again until at least four years after ALHB is eradicated. Planting a diversity of other species is possible. To date confirmed tree genera that are suitable for planting within the ALHB regulated area are Gingko, Honeylocust, Hazel, various oak species, Catalpa and conifers. There are other species currently under review. Research is necessary to broaden the planting pallet, as there is very little information available about other species.

In the ALHB control program of other American jurisdictions, a planting replacement program for trees that had been removed from private property was initiated immediately after the first infestation was found. The tree replacement program is a tree of non-host species be offered for every 10 centimetres of tree removed from private property to a maximum of 5 trees/tree removed. So for example, a 30cm diameter tree that was removed could be replaced by up to 3 replacement trees at no charge to the property owner. A 90cm diameter tree could be replaced by

up to 5 trees. 70mm wire basket replacement trees were the standard replacement size and were replaced in locations requested by the property owners.

A sliding replacement scale is recommended for City of Toronto for private property and city trees should be replaced on a minimum of one for one or better as space permits to maximize tree canopy in future decades. Replacement with a view to re-establishing the neighbourhood feeling of residential areas and ameliorating the harsh built form in the industrial and commercial areas is imperative to a successful reforestation strategy.

The number of property owners that choose to take part in the program will determine the cost of the replacement program and the size and species of trees planted. Generally, trees of 70mm size with a wire basket root ball cost \$550/tree to plant including utility locating, tree purchase, planting and watering. Success for the replanting program will depend on acquisition of funds for planting. Assuming a 3 to 1 replacement ratio of the trees in Toronto, planting could run over \$18,000,000 in a few years if 70mm trees are used as the standard replacement size. Planting smaller 30 to 40mm bare root stock is much less expensive with average planting costs of \$120 per tree which would cost approximately \$ 4,000,000 over the life of the program.

Planting replacement trees cannot begin until funding for the replacement program is found and will be the subject of a further report. The issue of finding funding partners for the replanting efforts on private property is particularly critical since the City of Toronto is not likely to be able to sustain the financial commitment for replanting on private property.

Public Awareness Strategy

The ALHB infestation has triggered a substantial communications effort, led by CFIA with active involvement by City of Toronto staff. Maintaining and increasing public awareness is a key component of the ALHB communications plan. City staff are working to ensure that Toronto residents, especially property and business owners in infested areas, Members of Council, City staff, and the media are aware of the existence of ALHB in Toronto and of measures being taken to control and eradicate the beetle. This work supports CFIA, which is responsible for reaching provincial, national and international audiences in addition to the Greater Toronto market. Furthermore, regular conference calls are held with stakeholders from various industries and governments across North America.

The CFIA has developed basic information about ALHB and distributed it through a number of channels. Products include posters, fact sheets, identification cards, and a regularly updated website, www.inspection.gc.ca. Print materials have been made available through Access Toronto and City recreation centres and public libraries. CFIA and City staff were also contacted by media outlets on 45 occasions in 2003, resulting in 30 ALHB items being published or aired nationally, and through community outlets.

Considerable activity has taken place within the City of Toronto. Fifteen community presentations, meetings, and open houses were held in Toronto by the end of 2003; another seven sessions were conducted with forestry and landscape professionals, public agencies, and environmental groups. An information booth was manned at the 2003 Royal Winter Agricultural

Fair. Toronto staff also produced an information flyer in 10 languages that was distributed through the City's website, www.toronto.ca/trees, at public meetings, and through door-to-door drops in infested areas.

In 2004, Toronto-oriented public awareness activities will continue to be guided by two objectives:

- (1) to provide opportunities for members of the public to become informed about the impact of ALHB on Toronto's trees and how to respond to this pest; and
- (2) to encourage public understanding of and support for efforts to control and eradicate ALHB.

As in 2003, communications in 2004 will incorporate four key messages:

- (1) ALHB is a destructive pest of hardwood trees and a significant threat to Toronto's urban forest;
- (2) Toronto Urban Forestry is working with CFIA to control and eradicate the beetle;
- (3) residents, business owners, and tree care/landscape professionals are encouraged to look for signs of infestation on trees and report suspected sightings to CFIA; and
- (4) the public should not move firewood, fallen or pruned branches, cut trees or nursery stock from infested areas, in order to minimize the risk of spreading ALHB.

Communication materials developed in 2003 will be supplemented in 2004 by new products to continue to promote public awareness. CFIA, together with Toronto, is developing signage for eradication sites, a general information brochure, a weekly information bulletin, a firewood poster, and a school information kit. These materials will complement existing tools, which will be revised as required, see Attachment No. 1. Public meetings and presentations about new developments will continue throughout 2004, as required. If imidacloprid is registered for use against the ALHB in Canada, Urban Forestry will work collaboratively with Toronto Public Health on messaging regarding pesticide use. Toronto staff will also work with CFIA to identify additional media outlets, such as cottage-country magazines and newsletters, which can be used to distribute information about ALHB.

Although the CFIA has a communication strategy, should the City of Toronto wish to supplement their efforts, additional funding of up to \$100,000 should be provided for any City resources that may be required for implementation.

Conclusions:

The serious implications of the infestation of ALHB in Toronto and Vaughan make this one of the most difficult and complex forest health issues to have faced our urban forest since Dutch elm disease, which caused the loss of virtually all of the mature specimens of white elm in North

America. There is still a great deal of intensive work ahead of the combined partnership of organizations involved in eradication of ALHB. While ultimate authority for eradication lies with CFIA, the long-term implications on Toronto's Urban Forestry team and our Urban Forest are enormous. Normal urban forest management activities are reduced to hazard abatement alone until more permanent structure is put to the ALHB team and eradication protocols firm up to permit staffing plans to stabilize and timelines to be projected. In order to stabilize and maintain the historical level of forestry services it is necessary to backfill positions within our organization with temporary full-time employees and augment the forestry operation with contract tree maintenance crews.

Special assistance from EDCT Finance staff is necessary in order to prepare cost estimates, budget forecasts and program requirements for 2004 as eradication protocols are further defined in the upcoming weeks.

The funding issue is still unclear and will require continued efforts in working with Federal officials to clarify and enhance funding for replanting, pesticide application and public education and awareness. The assistance and ongoing efforts of the Mayor and the Tree Advocate are required to ensure that adequate funding is provided to address these specific aspects of the ALHB threat. The issue of funding for replanting on private property is of particular concern.

The ALHB threat is serious, and the damage this particular infestation will have caused will be extensive. But the damage will go beyond the specific impact of the ALHB infestation. It has and will likely continue to exacerbate the already significant stresses on our urban forest by the depletion of existing resources. Long term impact of this infestation will be assessed over time, but are expected to be substantial.

Contacts:

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Email: blibrecz@toronto.ca

Richard Ubbens
City Forester
Parks and Recreation
Tel: 416 392-1894
Fax: 416 392-1915
Email: rubbens@toronto.ca

Concurrence with the financial impact statement provided by: Josie La Vita, Director, Financial Planning Division, Finance Department
Telephone: 416 397-4229
Email: jlavita@toronto.ca

Joe Halstead
Commissioner Economic Development, Culture and Tourism

List of Attachments:

- Attachment No. 1 – ALHB Communication Materials Summary/Update
- Attachment No. 2 – Map of ALHB Zones

Asian Long-horned Beetle Communication Materials Summary/Update
January 2004

Communication Tool	Notes	Target Date	Lead Taken By
1. Public Meetings, Open Houses, Public Events	<ul style="list-style-type: none"> To date, 15 public meetings/presentations in Toronto, as well as booths at Royal Winter Fair (Nov 03) and (upcoming) Canada Blooms (March 04). Primarily in areas of infestation in addition to opportunities for broad public awareness. Meeting notices dropped door-to-door in infested area Meeting advisory via community newspaper advertisements Ongoing to address developments as they unfold. 	Ongoing since September 17/03	CFIA with support from Toronto
2. Website	<ul style="list-style-type: none"> www.inspection.gc.ca (CFIA) www.toronto.ca/trees (Toronto) links to CFIA site address promoted in all media and public materials contains photos, map of infested area, meeting information, background information, questions & answers updates regularly to reflect new information and developments 	Ongoing since September/03	CFIA and Toronto Urban Forestry †
3. Staff Newsletters	<ul style="list-style-type: none"> Toronto Parks & Recreation newsletter UpFront (EDCT newsletter) Inside Toronto (City of Toronto corporate) 	October/03 January/04 January/04	Toronto
4. Commissioner's Report	<ul style="list-style-type: none"> to Council update on infestation, eradication & control new developments determine frequency of communication 	September/03 November/03	Toronto

Communication Tool	Notes	Target Date	Lead Taken By
5. Signage	<ul style="list-style-type: none"> at eradication sites explains reason for tree removal encourages vigilance for signs of infestation notes CFIA Website / phone number for info 	Spring 04	CFIA Toronto (jointly)
6. Poster	<ul style="list-style-type: none"> Full-colour English and French distribution to schools, community centres, libraries, government offices, plant nurseries identifies pest, encourages vigilance and reports of any suspected infestations to CFIA "Don't move firewood" poster in process 	September 03	CFIA
7. Card	<ul style="list-style-type: none"> Full-colour, English and French distribution to schools, community centres, libraries, government offices, plant nurseries, public meetings, presentations identifies pest, encourages vigilance and reports of any suspected infestations to CFIA <p>Notes</p>	September 03	CFIA ?
8. CFIA phone line	<ul style="list-style-type: none"> Toll-free – 1-800-442-2342 Promoted on all public materials 	September 03	CFIA
9. Toronto Phone line	<ul style="list-style-type: none"> 416-338-TREE voice referral to CFIA toll-free line 	September 03	Toronto
10. Power point presentation	<ul style="list-style-type: none"> For use by staff at public meetings / presentations identifies pest, outlines eradication measures to be amended as new developments unfold 	November 03	CFIA
11. Videotape	<ul style="list-style-type: none"> 7-minute tape captures staff presentation to media on occasion of first trees coming down (Nov 20) for use at public meetings / presentations 	November 03	CFIA
12. Education kit	<ul style="list-style-type: none"> teaching tool for use by elementary school teachers 	Spring 04	CFIA

Communication Tool	Notes	Target Date	Lead Taken By
13. Media relations	<ul style="list-style-type: none">• Ongoing media relations since discovery of infestation in early September• Media tools include:• Spokesperson roster• Spokesperson speaking points / key messages• Media events (as required, e.g. when first trees down)• Media kit• Extensive media coverage since discovery of infestation; heavy focus on Toronto• City Forester is Toronto's spokesperson on operational matters and the Tree Advocate is the political spokesperson	Ongoing since September 12/03	CFIA and Toronto (jointly)

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HOTELS

Linda D. Jackson
DEC 30 2003
Regional Councillor

December 22, 2003

The Honourable Mr. Bob Speller
Minister of Agriculture
Agriculture and Agri-Food Canada
Sir John Carling Building
930 Carling Avenue
Ottawa, Ontario
K1A 0C5

Dear Mr. Minister:

Asian Long Horned Beetle

I am writing to you on a matter most urgent to all of us in the Vaughan area in Toronto Region.

We operate a series of hotels, one of which is located on Steeles Avenue in Vaughan. This particular hotel is organized around an inner-garden courtyard area that contains maturing hardwood trees. The area operates as an "inner sanctum" and is surrounded on all sides by a four-storey hotel building.

We are not the infected area for the Long Horn Beetle, but we are in the farthest corner edge of the area adjacent to where the beetle has been found and have been advised by your Ministry officials that all trees on the property must be destroyed. We offer an alternative solution.

There are chemicals that can be injected into the trees to protect against the beetle. We feel that our inner courtyard is a perfect laboratory for such an experiment. Such an experiment will require leadership from the top, i.e., your office, in order to be implemented.

I am enclosing correspondence from our arbourist dated December 17, 2003 to our local Brockville MP, Mr. Joe Jordan, which describes the dilemma. Although there are chemicals that can be useful in treatment, such chemicals have not been approved for use against the Asian Beetle. It seems absurd to us that useful treatments can be overlooked in favour of radical destruction of trees, when we stand ready, willing and able to

WOW

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DODGE
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SERVICES

-2-

become an experimental site. Our site is unique in that it offers a low risk of infection by the beetle, owing to the surrounding building, and an equally low risk of transmission, should the beetle prevail and infect the courtyard. It is worth noting that we are located on the **very southeast perimeter of the primary area of concern.**

We urge you to seriously consider this proposal and direct a high-ranking official to meet with us to further consider this matter. In the future, no one will thank us for cutting down all trees in this area, but if this experiment will lead to avoidance of tree cutting in the future, everyone will be aware of your leadership. Is the whole city of Toronto next? Let us at least ATTEMPT to try to find an alternative solution to the cutting down of all trees in the mega city!

Yours very truly,

Diana Dodge

cc: Samy Watson, Deputy Minister of Agriculture and Agri-Food
Canada
cc: Mayor DiBiase, City of Vaughan
cc: Mayor Miller, City of Toronto
cc: The Honourable Greg Sorbara, MPP
cc: Mr. D. Donnelly, Environmental Defense Fund
cc: Sierra Club of Canada
cc: Bill Fisch, Region of York, Chairman
cc: Bernie DiVona, Ward 3 Councillor
cc: Maurizio Bevelacqua, MP
cc: Regional Councillor, Joyce Frustaglio
cc: Regional Councillor, Mario Ferri
cc: Regional Councillor, Linda Jackson

WOW



GROUNDS MASTER NUTRITE
P.O. Box 452
Brockville (Ontario) K6V 5V6
Tél.: (613) 342-7750

December 17, 2003

Joe Jordan M.P.
27 King St. E.
Brockville, On
K6V 1A7

Dear Mr. Jordan,

Enclosed is some data on Dinotefuran as a treatment for the Long Horned Asian Beetle. Dinotefuran is a sister chemical to Imidacloprid. Dinotefuran is slightly more soluble and a bit more broad spectrum to its sister chemical Imidacloprid. Imidacloprid is registered in Canada as a larvacide, which is used in the control of white grubs in turf and fleas on house pets. We have enclosed one of the many articles available on the Internet on Asian Long Horned Beetles and in this case it deals with imidacloprid in test areas in Chicago.

At this point the Imidacloprid is not registered for use on Asian Long Horned Beetles. As you know each chemical has to be registered separately for each pest, even though it is legal in Canada for other pests it cannot be used unless specifically registered for that pest.

I am attempting to get the most current data for Dinotefuran a sister chemical to Imidacloprid which would give the most up to date test results from the EPA (Environmental Protection Agency) in their field office at Otis Airforce Base in Boston. I feel with this data the Canadian Government should strongly consider immediately doing some testing with Dinotefuran.

As you know one of our mutual acquaintances Mr. Jack Dodge owner of the Dodge Suite Hotel in Toronto is faced with having his highly landscaped Suite hotel cleared of susceptible trees. Even more alarming is the clearance of trees in the enclosed courtyard where any replacement of landscaping would require cranes lifting trees and other material over a four-story hotel.

What we are proposing is to use the hotel property and courtyard specifically as a test plot under a PMRC minor use permit. To this end a supplier of ours Creative Sales, Fremont Nebraska and their supplier of Dinotefuran are willing to donate the product necessary to treat the trees on this property. This product is a systemic insecticide, which means it is

injected into the tree not sprayed into the environment. Creative Sales is the current registrant for Ace Cap systemic implants using another chemical called Orthane of which we had great success in the past in controlling Gypsy Moth without resorting to spraying.

It would only make sense to me that any and all Government agencies should be looking for an immediate solution for the Asian Long Horned Beetle, other than the clear cutting of selected species that is currently being implemented in North Toronto (Vaughan). Quite frankly I am not sure of the process to fast track a potential solution such as this into the current Asian Long Horned Beetle crisis in Toronto. I feel there must be a way to immediately try new products that show great promise in a field trial and prevent the disastrous environmental clear cutting that is currently being implemented as the only solution.

Sincerely,

R. Jeffrey Earle
Grounds Master Nutrite

Cc: Jack Dodge, Jeff Twin, and Warren Wolfe

Fri Dec 5/03.

Good Morning Ms. Dodge, my name is Marie Hanigan and I'm calling from CFI on December 4th, 2003. We just wanted to let you know that we did go in the courtyard, we did survey the trees that are within the inner courtyard at the location of 3600 Steeles Avenue West and the total number of trees that will be scheduled for removal at the later date are 12, consisting of Birch, Horse Chestnut and Manitoba Maple. The notice of disposal to your head office is to follow and we will keep you posted as to when a crew will be coming into remove those trees. Thank-you very much for your time, and if you need to call us at 416-667-4662 and speak to Ed Mather's he is the Survey coordinator for that area. Thank you very much for your time and have a great day.

416 667-5055

Mon. Dec. 8th - Left msg for Ed. Mather.



The Dodge Group

John E. Dodge Holdings Ltd.

Contact Us:
P.O. Box 248, Brockville
Ont. K6V 5V5
Telephone 613-345-2611
Fax 613-345-4526
e-mail rose@thedodgegroup.ca

Fax

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To: Bernie Divona, Linda Jackson **From:** Diana Dodge
Fax: **Pages:** 9
Phone: **Date:** January 20, 2004
Re: Asian Long Horn Beetle -
DINOTEFURAN CHEMICAL

Urgent **Reply Requested** **For Information Only**

Please find attached information regarding the chemical discussed on the telephone yesterday. †
Please also note the last line on Warren Wolfe's letter to Jacques Cardinal.
Sincerely,

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National Arborist Assn.
International Society
of Arboriculture

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p.o. box 501
fremont, ne 68026-0501

November 24, 2003

To: Diana Dodge

FAX TO: JACQUESCARDINAL
HYDRO AGRI CANADA - NUTRITE
BROSSARD, QUE. CANADA
FAX # 450-462-3634

Re: "NEW" MAJOR TREE INSECT PROBLEMS....

DEAR JACQUES,

As discussed per phone I am enclosing several news article reprints regarding:

- ** Asian Longhorned Beetle
- ** Emerald Ash Borer

Both of these insects appear to be a threat to trees in the Great Lakes area and the NE portions of the U.S.A. I'm sure they will also affect areas in Canada (if they haven't already).

CSI is involved with research activity (with the USDA/APHIS and Michigan State University) on both of these insect pests. We are quite pleased with the results in Mich shown for controlling the Emerald Ash Borer using our ACECAP 97 product; and also we are testing a new compound (DINOTSPURAN) ... which is in the same "family" as Imidacloprid.--- we are testing this new compound as a trunk implant on these and other pests.

I will keep you informed regarding both ^{the} status of ACECAP 97, and the new compound as the threat of these pests "may" cause municipal tree care departments in Canada to reconsider their "no pesticide rule" ??

Regards, *Warren Wolfe*

WARREN WOLFE / CSI
12-15-88 10:15 DODGE GROUP BROCKVILLE

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800-759-7
fax (402) 727-4

copy... JEFF ECKHART

OK
R

Dinotefuran

Insecticide

DRAFT 6/15/02

TECHNICAL INFORMATION BULLETIN

For Research Projects

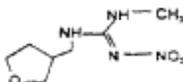
Dinotefuran 20 SG is a new furanicotinyl insecticide, which represents the 3rd generation of neonicotinoid insecticide group. Valent U.S.A. Corporation is developing dinotefuran as part of Integrated Pest Management (IPM) and Insect Resistance Management (IRM) programs for control of sucking and chewing pests in row and tree fruit crops. Pests controlled include Aphids, Plant Bug, Whiteflies, Leafhopper, Thrips, Leafminer, and various other pests. Because Dinotefuran is systemic in plants it is effective in both foliar and soil applications. Since dinotefuran is readily taken up into plant foliage after foliar applications, it is less likely to be removed by rainfall. The excellent translaminar activity of dinotefuran allows it to be active against pests that feed on both the upper and lower leaf surfaces.

CHEMICAL NAME & STRUCTURE

ACTIVE INGREDIENT

Common Name: Dinotefuran (ISO proposed)
Chemical Class: Dinotefuran is a member of the nitroguanidine insecticides.
Trade Names & Other Designations: MTI-446, V-10112,
CAS Number: 165252-70-0

Molecular Formula: C₇H₁₀N₄O₃
Structural Formula:



Chemical Name: (RS)-1-methyl-2-nitro-1-(tetrahydro-3-furylmethyl)guanidine (IUPAC)
N-methyl-N'-nitro-N''-(1-tetrahydro-3-furyl)methylguanidine (CA)

PHYSICAL PROPERTIES

ACTIVE INGREDIENT

Water Solubility: 39 g/L at 20°C
Vapor Pressure: <1.7 x 10⁻⁶ Pa at 30°C
Chemical Stability: stable
Molecular Weight: 202.2
Appearance: white solid
Odor: odorless

FORMULATION

Type: soluble granules
Percent Active Ingredient: 20 %
Appearance: white granules
Bulk Density: 39 lb/ft³ (0.62 g/cc)
pH: 6.2

MODE OF ACTION

Dinotefuran acts through contact and ingestion and results in the cessation of feeding within hours of contact and death shortly after. Following foliar applications, dinotefuran is rapidly translocated into the plant tissue.

Although the mode of action of dinotefuran is still being investigated, preliminary information indicates that the overall mode of action and specific target sites are different than any presently registered insecticide. Dinotefuran does not inhibit cholinesterase or interfere with sodium channels. Therefore, its mode of action is different than

EAB-2

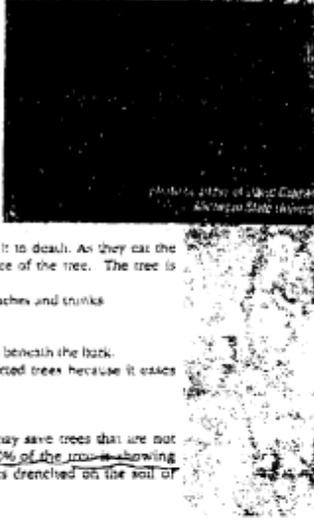
Sometimes the EAB may be mistaken for the brilliant green tiger beetle. The EAB can appear brown in the shade while it is dark green under bright sunlight.

The Signs

The beetle has been known to attack the green, black and white ash trees. Mountain Ash is not true ash and is not affected by EAB. Infestations can go undetected for a couple of years. Some healthy trees can fight off the borer, but most infestations prove to be fatal for the trees.

The larvae cut off food and water to the tree, literally starving it to death. As they cut the cambium layer, it is like cutting a notch around the circumference of the tree. The tree is girdled and dies. Symptoms of infestation can include:

- D-shaped holes about one-eighth inch in diameter on large branches and trunks
- Number of ash sprouts at the base of dead trees
- Die-back on the upper third of the tree
- Vertical splits in the bark and distinct serpentine-shaped tunnels beneath the bark.
- Woodpecker damage - woodpeckers are attracted to ash-infested trees because it eases their search for larvae.



Preventative Treatment

Currently, researchers believe that a preventative treatment may save trees that are not already infested. Treatments need to be applied before 10-20% of the tree is showing symptoms. Preventative treatments include systemic insecticides drenched on the soil or injected into the tree in the spring.

They need to be applied every year and it is not guaranteed to work. With no practical insecticide treatment available to destroy the borer - cutting, chipping and proper disposal of the tree is one remedy.

Information Available

While residents of Illinois are free of the emerald ash borer currently, they are asked to report any suspected sightings or related tree damage to any local Illinois Extension office or the Illinois Department of Natural Resources. For more information go to www.na.fs.fed.us/spfo/eab/index/html or www.news.uiuc.edu/news/03/0908_ashborer.html or www.michigan.gov/mda.

For comments or questions
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Reader Service No. 1541

EAB-1

Dangerous Tree Pest in the US

By Bailey Johnson



The spread of the Emerald Ash Borer (EAB) could decimate the nursery, timber and tourism industries.

In the summer of 2002, state and federal officials in Michigan announced the discovery and identification of a new exotic pest from Asia, the Emerald Ash Borer (EAB). An immediate quarantine on all ash trees and timber products in the affected counties was put into action to help prevent the spread of the infestation. While that action may have stalled the spread it was not entirely successful. Already approximately 6 million trees have died in Michigan from the infestation.

Spreading South

In February 2003, Ohio Department of Agriculture announced the confirmation of the EAB in one county. Now the EAB, which had only been known to exist in North America in Michigan and Canada, was in Ohio. A typical ash tree will die from infestation by this pest in two to three years, Ohio Agriculture Director Fred Dailey said.

Currently, Illinois is nervous about the possibility of an accidental movement of infested firewood being introduced to their state. About 9% of the forestland in Illinois are ash trees. Ash species could be at risk from the threat of the beetle.

The Pest

The EAB belongs to the family of insects known as metallic wood-boring beetles. The adult beetle is metallic green in color, 1/2 inch long and about 1/16 of an inch wide. The adult can be seen on sunny days from late May to late July. They deposit eggs in the crevices of tree bark and about 10 days later, the larvae, cream in color, emerge and feed under the bark. These larvae spend the winter under the bark in the area known as the cambium layer and are about three quarters of an inch in length.

The Beetle That Ate Brooklyn: Stowaway Bug Devours Trees

New York (AP) — It may be called Greenpoint, but Brooklyn's northernmost neighborhood is hardly a sylvan paradise.

On the east side, an elevated stretch of the Brooklyn-Queens Expressway hums like a hive of furious bees. To the west, the Manhattan skyline looms. And the neighborhood's northern boundary is punctuated by gargantuan metal storage tanks.

Maybe there were plenty of trees in 1638, when the Dutch bought the place from the Keshshechquaen Indians, but not today. And especially not since the beetle came.

It appears the Asian long-horned beetle arrived in Brooklyn as a stowaway, buried in blocks of wood used to stabilize a shipload of sewer pipe from China. The beetles may have been in Brooklyn six or seven years before anybody even noticed them but, by last summer, they had saturated the neighborhood, chewing trees to sawdust.

Greenpoint isn't alone. Just about every community in the United States is succumbing to some kind of alien invasion.

In the Great Lakes, up and down the Mississippi River and in many northeastern waterways, the zebra mussel clogs water pipes and blankets piers. The mussels are so abundant in some places that they've driven native species to extinction.

But it is trees that have suffered most. Early this century, a fungus wiped out the nation's chestnut trees, killing every last one. And because of yet another invader from Holland, the nation's elm trees are on the verge of extinction.

"Give me your tired, your poor, Your huddled masses yearning to breathe free," it says on the Statue of Liberty.

But that sentiment wasn't too prevalent on a blustery morning in



THE ASSOCIATED PRESS

A NASTY LITTLE FELLOW: This Asian long-horned beetle arrived in America on a ship from China.

March, when an assortment of politicians, residents and federal officials shuffled around Greenpoint looking at what an inch-long insect from China had done to the neighborhood's trees.

Lorimer Avenue, once a shaded street, now has a series of dirt craters running down either side. Each one marks the spot where a tree used to be. In McCarrén Park, 122 trees are gone. Altogether, officials estimate 30 percent of the neighborhood's tree canopy has been cut down since the beginning of March in an all-out effort to eradicate the Asian long-horned beetle.

Biologists estimate that 4,000 plants and 2,300 animals in the United States came from abroad, introduced either by accident or through good but misguided intentions. Alien species come by sea, riding in cargo holds and the ballast water that ships use to stabilize themselves on the open ocean; by air, in shipments of fruit, plants and soil; and overland.

And as international commerce grows, so does the threat.

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EAB-3

United States
 Department of Agriculture
 Forest Service
 State and Private Forest
 Northeastern Area

NA-PR-074
 Slightly revised September 23

Pest Alert

Emerald Ash Borer

A new exotic beetle from Asia was discovered feeding on ash (*Fraxinus* spp.) trees in southeastern Michigan. It was identified in July 2002 as *Agrilus planipennis* Fairmaire (Coleoptera: Buprestidae). Larvae feed in the phloem and outer sapwood, producing galleries that eventually girdle and kill branches and entire trees. Evidence suggests that *A. planipennis* has been established in Michigan for at least five years. Surveys to determine the extent of the infested area are underway.

Identification

Adults are larger and a brighter green than any of the native North American species of *Agrilus* (Figure 1). The slender, elongate adults are 7.5 to 13.5 mm long, and females are larger than males. The adult body is brassy or golden green overall, with darker, metallic, emerald green wing covers, or elytra. The top of the abdomen under the elytra is metallic coppery red (seen only when the wings are spread). The prothorax, to which the first pair of legs is attached, is slightly wider than the head but the same width as the elytra. The back edges of the covering on the prothorax are sinuate or wavy, and the top is sculptured with tiny, transverse wavy ridges. The surfaces of the elytra are granularly roughened. Tips of the elytra are rounded with small teeth along the edge.

Larvae reach a length of 26 to 32 mm, are cream-colored and dorso-ventrally flattened (Figure 2). The brown head is mostly retracted into the prothorax and only the mouthparts are visible externally. The 10-segmented abdomen has a pair of brown, pincer-like appendages on the last segment.

Biology

The emerald ash borer appears to have a one year life cycle in southern Michigan but could require two years to complete a generation in colder regions. Adult emergence begins in mid to late May, peaks in early to mid June, and continues into late June (Figure 3). The adults are active during the day, particularly when conditions are warm and sunny. Most beetles remain in protected locations in bark crevices or on foliage during rain, heavy cloud cover, high winds, or temperatures above 32°C (90°F). Chinese literature indicates that beetles usually fly within 2 meters of the ground. The likelihood of long distance flights is not known. Adults, which are present into August, feed on up to 0.45 cm³ of foliage per day, leaving irregularly-shaped patches of leaf tissue with jagged edges.

Information from China indicates that male adults live an average of 13 days and females live about 21 to 22 days. Females can mate multiple times and oviposition begins 7 to 9 days after the initial mating. Females lay 65 to 90 eggs during their lifetime. Eggs are deposited individually on the bark surface or in bark crevices on the trunk or branches. In southeastern Michigan, the oviposition period likely extends into mid to late July.

Eggs hatch in 7 to 10 days. After hatching, first instar larvae chew through the bark and into the cambial region. Larvae feed on phloem and the outer sapwood for several weeks. The S-shaped feeding gallery winds back and forth, becoming progressively wider as the larva grows (Figure 4). Galleries are packed with fine frass. Individual galleries usually extend over an area that is 20 to 30 cm in length, though the length of the affected area can range from 10 to 50 cm. In some areas, woodpeckers feed heavily on larvae.

The insect overwinters as a full-grown larva in a shallow chamber excavated in the sapwood. Pupation begins in late April or early May. Newly eclosed adults may remain



Figure 1. Adult beetle



Figure 2. Late stage larva



Figure 3. Newly emerged emerald ash borer



Figure 4. Larval gallery



Figure 5. Damaged ash hole

