

# FOREST *Update* HEALTH

**Region:** southern

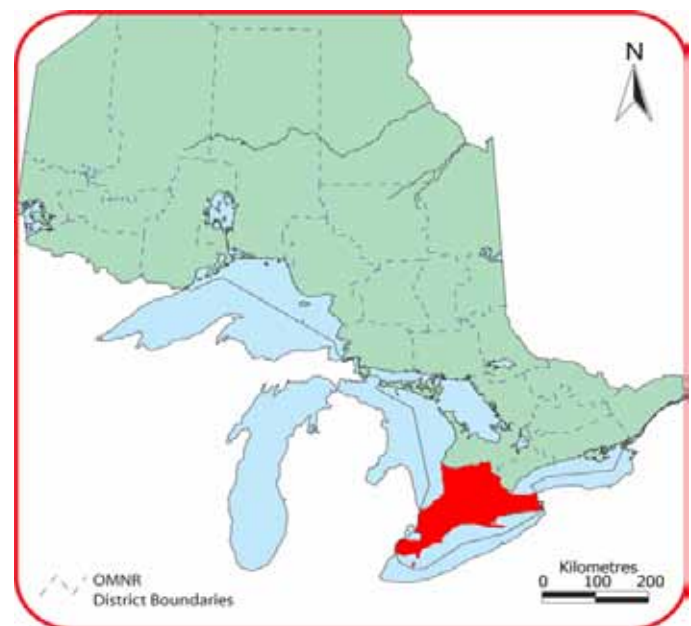
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## Introduction:

The following is a Forest Health Update for the OMNR districts of Aylmer and Guelph, from April to mid July of 2011. This edition will cover major forest disturbances by insect pests, diseases, and abiotic factors affecting trees during the 2011 growing season. This report has been prepared by Rebecca Lidster, acting Forest Health Technical Specialist with the Ontario Ministry of Natural Resources. If you have any questions or observations regarding the information presented in this report, please contact Rebecca Lidster at [rebecca.lidster@ontario.ca](mailto:rebecca.lidster@ontario.ca) or (519) 773-4741.

## Abiotic Factors:

Spring conditions this year seemed to progress slowly, with temperatures below average and above average precipitation for most areas across Southwestern Ontario. The ground completely thawed in the beginning of May and buds on many hardwood species began to break as early as the first week of May in most parts of southwestern Ontario. Temperatures remained moderate through April, May and June, with moderate to high levels of precipitation. July has brought hot, humid temperatures and very little precipitation across the southwest, which has caused drought-like conditions.

For those with seedlings or trees planted in the spring, as well as those with tree species that are less drought resistant, it is advised that the trees are provided with water regularly to reduce stress

caused by dry conditions. This stress can cause damage to trees by leaving them vulnerable to a variety of insects and pathogens. Drought conditions can also lead to tree decline and permanent damage. Incorporating supplemental watering can help in maintaining tree health during drought conditions in both the growing and dormant seasons.

**Storm events**

The middle of April is usually the start of tornado/thunderstorm season in southwestern Ontario and this year was no exception. An intense storm system originating in the American midwest generated a series of strong thunderstorms across southwestern Ontario. On April 27th an F0 tornado touched down in Fergus, causing damage to trees, barns and buildings in Waterloo region and in Wellington County. In addition, destructive winds with gusts from 85 to 110 km/hr ripped through Hamilton to the Niagara region on April 28th, causing damage and uprooted trees as well as knocking down power lines (Figure 1).



Figure 1: Scenes from across Wellington and Haldimand County, as well as the Niagara region on April 29, 2011. Photo: Rebecca Lidster, Ministry of Natural Resources.

**Forest Insects:**

**Japanese Beetle, *Popillia japonica***

Adult Japanese beetles were first noted to have emerged from the soil in early July, from the Niagara region west to Lambton County. These beetles feed in groups on the upper epidermis of leaves between veins, and eventually skeletonize foliage on numerous native and ornamental trees and shrubs. This summer they have been found throughout southwestern Ontario feeding on a variety of trees including white elm (*Ulmus glabra*), silver maple (*Acer saccharinum*), choke cherry, (*Prunus virginiana*), Canada plum (*Prunus nigra*), butternut (*Juglans cinerea*), and black walnut (*Juglans nigra*), as well as on a variety of herbaceous plants. Adults will

typically feed for six to eight weeks, usually until late July, early August. This species also causes damage to trees and shrubs in its larval stage as they feed on roots until they emerge as adults.

Although not considered a major forest pest, these beetles can cause damage on native and ornamental landscape trees and shrubs (Figure 2).

**Fall Cankerworm, *Alsophila pomertaria***



Figure 2: Adult Japanese beetle feeding on an ornamental herbaceous plant in early July, 2011. Photo: Rebecca Lidster, Ministry of Natural Resources.

In spring 2011, fall cankerworm caused light defoliation in a few select woodlots in Aylmer District. This native looper feeds on the foliage of a variety of hardwoods (Figure 3), and this year light defoliation was recorded on approximately 142 ha in Houghton Township in Norfolk County. Feeding damage was noted on white oak (*Q. alba*), red maple (*Acer rubrum*), silver maple (*A. saccharinum*), sugar maple, american beech, white elm (*Ulmus American*), and basswood (*Tilia Americana*).

The fall cankerworm population in Houghton



Figure 3: Fall cankerworm larvae feeding. Inset: Fall cankerworm egg mass, Houghton Township, 2011. Photo: E.Cleland, 2011.

Township reached peak feeding by mid-June, then dropped to the duff layer to pupate.

Adult fall cankerworm emerge as moths in late autumn, they mate, and then eggs are laid in masses on branches (inset photo in Figure 3). These eggs will overwinter until spring, when larvae will emerge.

**Forest Tent Caterpillar (FTC), *Malacosoma disstria***

The cool, moist spring weather seemed to suppress populations of forest tent caterpillar in southern region this year. Although there were several woodlots in Guelph District that were moderately to severely defoliated, populations seem to have declined since 2010.

Approximately 1300 ha of forested areas were severely defoliated in Huron County in the townships of Howick and Morris-Turnberry (Figure 4). Scattered individual occurrences were recorded as well throughout the rest of Guelph and Aylmer districts, however no significant defoliation was aerially mapped.



Figure 4: Photo of woodlot, defoliated quite severely by Forest Tent Caterpillar, in Howick Township in Guelph District on June 21, 2011. Defoliation had ceased and pupation of FTC had begun. Photo: Rebecca Lidster, Ministry of Natural Resources.

Forest tent caterpillar is a general-feeding native defoliator of hardwoods that prefers maple (*Acer* spp.), oak (*Quercus* spp.), American beech, and poplar (*Populus* spp.). Larvae hatch from egg bands wrapped around fine branches in the crown of host trees in early spring. Gregarious feeding begins immediately and continues for six to eight weeks, often causing total defoliation of host trees. Once feeding is complete, larvae spin silken cocoons (Figure 5 inset), usually within leaves,



Figure 5: Late instar FTC, inset- pupation of FTC. Photo: Rebecca Lidster, Ministry of Natural Resources.

where pupation takes place. The brown adult moths emerge after ten days, they mate and lay eggs in bands around fine branching to complete their life cycle.

**European Oak Borer Study**

The Forest Health Monitoring program is again trapping for the exotic European Oak Borer (*Agrilus sulcicollis* Lacordaire) under the guidance of Dr. Krista Ryall of the Canadian Forest Service. Sticky band traps have been deployed throughout the province and are being monitored by Forest Health Technical Specialists over the course of the field season (Figure 6). Plot locations were determined by the presence of potential host species; Oak (*Quercus* Sp.), American beech (*Fagus grandifolia*), Blue-beech (*Carpinus caroliniana*), and American chestnut (*Castanea dentata*).



Figure 6: Forest Health Officer for the Canadian Forest Service, Hugh Evans, assisting in preparing European Oak Borer sticky band traps on White oak near Wardsville. Photo: Rebecca Lidster, Ministry of Natural Resources.

European Oak Borer was first officially identified in Ontario in 2008; the objective of this study will be to delimit the distribution of populations within the province.

### Forest Diseases:

#### Dutch Elm Disease, *Ophiostoma ulmi*

A higher number of white elm trees affected by Dutch elm disease (DED) have been noted this spring in Aylmer and Guelph districts. The disease is a systematic vascular wilt disease caused by a fungus, and has been widespread throughout Canada since the 1980's. White elm (*Ulmus americana*) is susceptible to Dutch elm disease and once affected by the disease the trees display yellowing foliage, followed by wilting and browning (Figure 7). The two vectors of the disease are the native elm bark beetle and the exotic smaller European elm bark beetle. With the cool, moist conditions in May and June, followed by a dry, hot July, a substantial number of open-grown trees succumbing to DED have been recorded throughout southwestern Ontario.



Figure 7: A white elm tree affected by Dutch elm disease in Norfolk County, south of the Town of Simcoe. Photo: Rebecca Lidster, Ministry of Natural Resources.

#### Leaf Spots and Anthracnose

The cool, wet conditions this spring, followed by a hot, humid spell in July has created ideal growing conditions for several species of fungi, including the causal agents of leaf spots and anthracnose. Spores produced by the fruiting bodies are released during the spring and are often carried by wind or rain to newly emerged leaves and young shoots of a tree. These fungi may overwinter in leaf litter and on infected twigs and shoots.



Figure 8: Anthracnose on foliage and branches of a white oak in Niagara-on-the-lake June 15th, 2011. Photo: Rebecca Lidster, Ministry of Natural Resources.

The fungi that cause diseases called anthracnose are host species-dependant, meaning that the fungi that cause anthracnose are different for each host species. However, the symptoms displayed on leaves and twigs of the host are generally the same. Damage usually includes dead leaf tissue (spots), cankering of branches and shoot dieback (Figure 8). Anthracnose has been noted this year primarily on white oak (*Quercus alba*), sugar maple (*Acer saccharum*), and eastern flowering dogwood (*Cornus florida*), although other hardwood species have been affected throughout southwestern Ontario.

Leafspots are a type of localized foliar infection caused by fungal pathogens and/or bacteria. Leafspots generally forms in the spring with the emergence of new foliage. The new, succulent



Figure 9: Tar spot forming on Norway Maple in Elgin County (left), leaf blotch on horse-chestnut in St. Catherines (right). Photos: Rebecca Lidster, Ministry of Natural Resources.

growth has not developed a thick cuticle (waxy protective surface), and the tissue is more susceptible to infection. A variety of different fungi will infect many host tree species and have been noted on trees including, Norway maple (*Acer platanoides*), eastern cottonwood (*Populus deltoides* ssp. *deltoides*), basswood (*Tilia americana*), black cherry (*Prunus serotina*), and black walnut (*Juglans nigra*) (Figure 9).

### Dogwood Anthracnose Research

Dr. Richard Wilson, Forest Program Pathologist with OMNR is again working with Dr. Tom Hsiang at the University of Guelph on a research project focused on Dogwood Anthracnose. Populations of the endangered Eastern Flowering Dogwood (*C. florida*) are being further threatened by this serious fungal disease caused by the pathogen *D. destructiva*.

Symptoms are first seen in the spring and early summer, as leaves develop brown necrotic spots surrounded by purple-brown margins- separating the dead and live leaf tissue (Figure 10). Flowers, fruit, and branches may also be affected by the disease, causing dieback and eventual mortality.



Figure 10: Eastern Flowering Dogwood leaves displaying signs of Dogwood Anthracnose, July, 2011. Photo: Rebecca Lidster, Ministry of Natural Resources.

### Hickory Canker Study

Building upon results of a similar research project conducted in 2009 and 2010 in Aylmer and Guelph districts, Forest Program Pathologist Dr. Richard Wilson is again studying the pathogen *Carya cordiformis* in 2011. This pathogenic organism causes deep, sunken cankers (Figure 11) on the trunk and branches of the host tree, often resulting in epicormic branching and necrotic spots in the



Figure 11: Cankers on bole of Bitternut Hickory. Photo: E. Cleland.

living tissue of the tree. Although most trees are able to persevere through infection, tree health and quality may be compromised, thereby increasing susceptibility to a multitude of other forest health threats including the hickory bark beetle (*Scolytus quadrispinosus*).

Dr. Wilson will again be gathering samples and site information collected by Forest Health Technicians to better understand the pathogen and causal organism.

A Forest Health Conditions Report is produced annually to provide an overview of forest health conditions observed across the province. To access these reports and learn more about forest health monitoring and reporting, please visit: [http://www.mnr.gov.on.ca/en/Business/Forests/2ColumnSubPage/STEL02\\_166919.html](http://www.mnr.gov.on.ca/en/Business/Forests/2ColumnSubPage/STEL02_166919.html)

Cette publication hautement spécialisée *Forest Health Update*, Aylmer and Guelph districts n'est disponible qu'en Anglais en vertu du Règlement 411/97 qui en exempte l'application de la Loi sur les services en français. Pour obtenir de l'aide en français, veuillez communiquer avec Erika Luoma au ministère des Richesses naturelles. [erika.luoma@ontario.ca](mailto:erika.luoma@ontario.ca) or 705 235-1219

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