

BEECH BARK DISEASE (*NECTRIA COCCINEA* VAR. *FAGINATA*) IN ONTARIO

INTRODUCTION:

Accounts from Europe report beech bark disease, caused by the fungus *Nectria galligena* Bres., has been killing beech trees (*Fagus* spp.) since before 1849. Until 1914, the beech scale insect *Cryptococcus fagisuga* (Lind.) was thought to be the causal agent of the damage. It was then learned that the *Nectria* fungus actually infected the trees through the feeding wounds of the insect and resulted in the damage. In North America beech bark disease has been attributed to *N. coccinea* (Pres.:Fr.) Fr. var. *faginata* Lohman, Watson & Ayers, although the native species of *N. galligena* (Bres.) is also known to be a causal agent of beech bark disease.



Beech tree severely cankered by beech bark disease.

The insect and probably the fungus were accidentally introduced into North America around 1890 on imported ornamental beech trees brought from Europe to Nova Scotia. The first recorded incidence of the disease occurred in 1920 in the Halifax area. In 1929 the beech scale was found on ornamental beech in the Boston, Massachusetts area and by 1932, the disease was established in beech stands throughout the Maritime Provinces, and in localized areas in eastern and south-central Maine and in eastern Massachusetts. Beech bark disease was first confirmed in Quebec in 1965. The scale insect has continued to spread northwest

across southern Quebec and Ontario, and to the south and west in the United States.

The pattern and development of the spread of the scale insect, followed by *Nectria* infections and tree death have been classified into three distinct categories:

The Advancing Front - areas that have been recently invaded by the beech scale are characterized by forests with many large, old trees supporting building populations of beech scale.

The Killing Front - areas are characterized by high populations of beech scale, severe *Nectria* attacks, and heavy tree mortality.

The Aftermath Zone - areas where heavy mortality occurred at some time in the past and are now characterized by some residual big trees and many stands of small trees, often of root-sprout origin. In the aftermath zone, young stems are often rendered highly defective through the interactions of established populations of beech scale, and the *Nectria* fungus.

LOCATION:

Since the late 1960s, surveys have detected heavy infestations of beech scale in numerous woodlots in southern Ontario; the insect is now known to be distributed across southern Ontario. Although confirmed samples of beech bark disease from Ontario have not been previously reported, it has been suggested that the disease has been present in Ontario for some 10 years. In 1999, ten positive



Beech scale, *Cryptococcus fagisuga*.

locations with the disease were identified and confirmed in southern Ontario by the Ontario Ministry of Natural Resources and Canadian Forest Service. The first location was in the southern portion of Murray Township in Hastings County, northwest of the city of Trenton.

MANAGEMENT IMPLICATIONS:

In areas of eastern Canada where the disease has been present for a long time, diseased beech trees are typified by the warty appearance on the stem from the numerous cankers. However, in Ontario the disease is in its early stages in most locations



Beech bark disease in early stages. Note the relatively smooth bark surrounding the canker, and dead inner bark in canker region.

and does not always show the classic symptoms typically identified with beech bark disease in more established areas. Diseased trees show dieback in the crown and sunken cankers on the main stem. Clusters of small, red, lemon-shaped fruiting bodies develop on the cankers. The inner bark under these cankers is dead. Spores are released during moist periods throughout the growing season and are spread by wind and rain splash. The spores gain entry into the tree through bark injuries caused by the feeding of the scale insect. Eventually multiple cankers result in the warty ap-

pearance associated with the disease and mortality of severely infected trees.

SOURCES OF RELEVANT INFORMATION:

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