THE FIRST OCCURRENCE OF THE BEECH SCALE INSECT ON AMERICAN BEECH TREES IN ONTARIO

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Abstract. The beech scale insect, *Cryptococcus fagisuga* was found on American beech trees, *Fagus grandifolia* for the first time in Ontario in 1981. The affected trees were located in the Newmarket area north of Toronto.

Field and laboratory investigations of alleged recent rapid decline of beech trees on two adjoining woodlots in the Newmarket area in southern Ontario during 1981 and 1982 resulted in the discovery of the beech scale insect affecting American beech. The scale, on the bark of beech, *Fagus grandifolia* was identified to be *Cryptococcus fagisuga* (Lind.), (Fig. 1).

The scale insect was introduced from Europe into Nova Scotia about 1890 (2) and is present in Quebec and the Maritime provinces of Canada (1,2) and also in northeastern United States (3,5).

Observations of affected trees in the woodlots revealed that some of the beech had fruiting bodies or cankers resembling Nectria canker. But the *Nectria* fungal component of the beech bark disease was not confirmed in Newmarket. The dense mass of insects on approximately 55 trees in the 3 ha woodlot indicated that the insect had been present in southern Ontario for some years.

The infested woodlots near Newmarket located about 60 km north of Toronto (Fig. 2) were comprised of co-dominant mature sugar maple and American beech trees with an understory of white ash, white birch and ironwood. It was estimated that at least 60% of the beech trees of varying ages were infested to some degree with the scale insect. There were trees with all gradations of insect and fungus injury ranging from a few small cankers with fungi to total tree mortality. Brown liquid had seeped down the trunk on heavily infested trees. The affected trees had yellow leaves with brown margins that progressed to branch and crown dieback. Some trees had an open crown appearance. Trees partially girdled by

Fig. 1. The white patches on the bark of mature American beech shows severe infestation by beech scale insect.

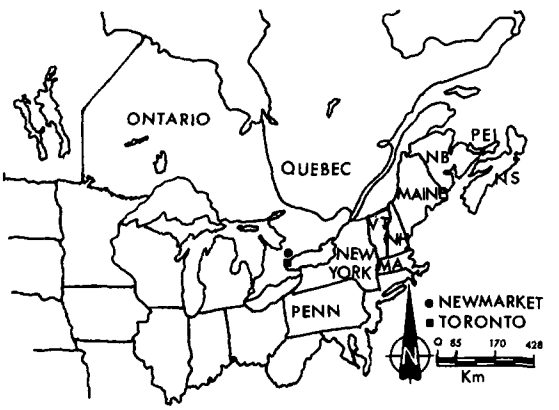

Fig. 2. Distribution of the beech bark disease in eastern North America. The Provinces and States named have reported the occurrence of the scale insect.

fungi and insects remain alive in a weakened state. Sporophores of *Cytosporina* were observed on the dead bark including fruit bodies of *Hypoxylon, Stereum, Polyporus* and *Fomes.* About 30% of these trees displayed symptoms, however no tree yielded the *Nectria* fungus in culture.

The observed scale insect infestation was severe and approximately 20 trees died rapidly in the two adjoining woodlots at Newmarket. The beech scale was also observed in another woodlot in King City about 30 km southwest of Newmarket. The trees at this site had similar dieback symptoms. The aftermath zone advanced by Shigo (4) could be applicable to the disease in Ontario since the bark tissue died so rapidly that conditions for sporulation of *Nectria* spp., which had been present previously, was now passed.

In addition, the owners who maintain the woodlots for amenity and shelter have felled and utilized the badly affected trees. Also a successful spray program using dormant superior oil + ferbam before bud flush followed by sistox + ferbam in mid-June has been instituted during the last three years to contain the disease and control the scale insect.

We believe this to be the first documented occurrence of the beech scale insect in Ontario.

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ABSTRACT

GIBBS, J.N. and D.A. BURDEKIN. 1983. **De-icing salt and crown damage to London plane.** Arboric. J. 6: 227-237.

During the post-war period, crown dieback has occurred periodicaly in London plane planted in London and other British cities. Most affected trees are very close to roadsides but some damage has been recorded in parkland trees more than 45 m from roads. Recent investigations strongly suggest that much of the damage can be attributed to the effect of de-icing salt applied to roads during severe winters. The main symptom of this disorder is the death of foliage shortly after flushing, with some branches typically being more affected than others. Later in the summer, remaining leaves may develop marginal and interveinal scorching. Chloride levels in leaves from affected trees are between 1 and 3% of the dry weight, well above the 0.1-0.3% found in unaffected trees. In certain years quite severe disease in plane can be caused by the anthracnose fungus, *Gnomonia platani,* which can infect buds, shoots, and leaves. It seems likely that this fungus could have been responsible for the damage to trees growing remote from roadsides.