

STATUS OF BEECH BARK DISEASE IN THE PROVINCE OF QUEBEC¹

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Abstract.--The distribution of beech bark disease has not changed significantly in recent years in Quebec. It has remained as scattered infected stands located within relatively old beech-scale-infested areas. This scale covers the southeastern half of the beech natural range in the province and it is spreading slowly westward.

INTRODUCTION

The natural range of american beech (*Fagus grandifolia* Ehrh.) in Quebec follows rather closely the location of most private lands in the province. On these private lands, the gross standing volume of beech is estimated at 12 million cubic meters (Barrette & Langevin, 1979). This represents 3% of the total standing wood volume which is composed of 57% hardwoods and 43% softwoods.

Beech occurs in southern Quebec, mainly at elevations lower than 300 m, from Outaouais river to La Malbaie on the north shore of the St. Lawrence River, and to Rimouski and in the Matapedia Valley on the south shore. Although not a commercially preferred species, beech wood is used in flooring, tool handles, household articles and increasingly as firewood.

THE BEECH BARK DISEASE IN QUEBEC, 1965-1975

In 1976, Lavallée compiled the history of the spread of the disease in Quebec from 1965 to 1975. The causal fungus (*Nectria coccinea* var. *faginata* Lohm. Wats. & Ayres) along with the beech scale (*Cryptococcus fagisuga* Lind.) were found for the first

time at Les Etroits, Temiscouata County in 1965. The following year, the disease complex was found in another beech stand located 6 km east of the first sighting. These were the only known infested areas in Quebec until 1969, despite annual surveys in beech stands located in adjacent counties. In 1969, the scale-fungus complex was found west of Quebec City, about 200 km west of the previously known sites. In 1970, 71 and 72, several new infected stands were discovered in southern Quebec (Lavallée, 1976). Lavallée estimated that 10 000 km² of forest were affected by the disease in 1972. Three years later, this increased to 19 000 km².

In 1975 then, the beech scale occurred south-east of Sherbrooke to Quebec City and Rimouski, and in few infected stands located near Matapedia, Bonaventure County and around Quebec City. The fungus had been found in 22 beech stands appearing as eleven relatively small infected spots scattered throughout these areas.

PRESENT STATUS OF THE DISEASE AND THE SCALE

The most recent intensive survey on this insect-disease complex was done in 1980. We feel the results of this survey are still very up-to-date in 1982, as our field technicians who make regular and numerous survey visits in the forest stands of their respective territories, have not noted appreciable changes in the levels of insect populations or disease incidence, nor have they encountered previously unreported infected stands.

In the 1980 survey, 50 beech stands where the scale, and sometimes the disease

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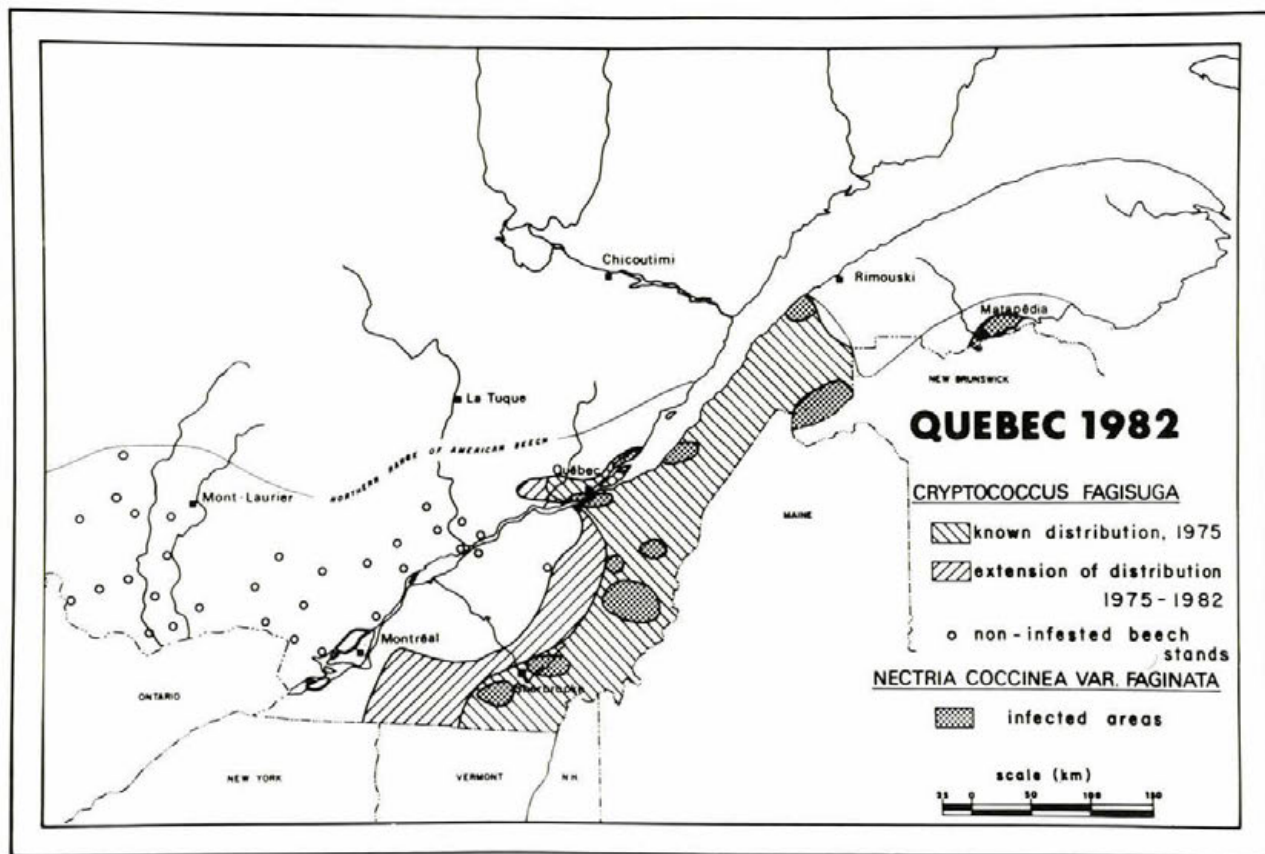


Figure 1.--Distribution of the beech scale and of the beech bark disease in the Province of Quebec in 1982.

had previously been reported were visited. In addition, another 50 beech stands, mostly outside the known range of distribution of the beech scale, were also surveyed. In each stand 5 sample plots of 10 trees each were studied. When present, the scale or the fungus or both were rated on each tree, according to the proportion of stem bark that was affected. Detailed results of this survey were reported in our Annual Forest Insect and Disease Survey Report, 1980 (Lachance *et al.* 1981).

In five years, the insect has spread about 80 km west of its previous known range (see Fig. 1). Its distribution on the south shore of the St. Lawrence River goes eastward south of Montreal, then arches away from the St. Lawrence between that city and Quebec City, and covers all the area to Rimouski. The insect is still present around Matapédia and on the north shore of the St. Lawrence River where it extends as a relatively narrow strip to about 60 km east and west of Quebec City.

Generally, the insect populations surveyed were found to have decreased slightly in the stands where the scale had been reported previously.

The 1980 survey has shown also that areas infected with the beech bark disease have not changed since 1975. They remain as relatively small scattered spots within the 1965-1975 known range of the beech scale. The severity of the disease has declined; there were even places where the fungus could not be detected where it had been found previously. In other cases, we noted that better forest management and cutting of infected and healthy beech trees for firewood reduced dramatically the amount of visible damage by this disease in forest stands.

SUMMARY

The beech scale is present in most of the southern and eastern half of the natural growing range of beech in the Province of

Quebec and it is spreading slowly westward. It now occurs on the south shore of the St. Lawrence River, from Montreal to Rimouski, and at two locations elsewhere, near Matapédia and around Quebec City. Recently the insect populations have remained relatively low.

The beech bark disease on the other hand has not spread in recent years and it remains as scattered infected stands within relatively old scale-infested areas. Better forest management practices and a recent increasing demand for beech as firewood has reduced significantly the visible damage caused by the fungus in the forest.

RESUME

Situation de la maladie corticale du hêtre au Québec

La distribution de la maladie corticale du hêtre a très peu changé ces dernières années au Québec. La maladie ne se retrouve que dans certains peuplements groupés en onze unités dispersées sur le territoire infesté depuis longtemps par la cochenille du hêtre. Cette cochenille se retrouve présentement dans la moitié sud-est de l'aire de distribution naturelle du hêtre et elle avance lentement vers l'ouest.

ZUSAMMENFASSUNG

Zustand der Buchenrinde-nekrose in Québec

Das von der Buchenrinde-nekrose befallene Gebiet in Québec hat sich kaum verändert während der letzten Jahre. Das Vorkommen der Krankheit beschränkt sich auf elf zerstreute Örtlichkeiten im Gebiet wo die Wollschildlaus schon seit langer Zeit Schaden anrichtet. Diese Schildlaus befindet sich nun in der süd-östlichen Hälfte des natürlichen Buchengebiets und dehnt sich allmählich nach Westen aus.

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