

STATUS OF BEECH BARK DISEASE IN PENNSYLVANIA¹

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Abstract.--Results of periodical surveys for beech bark disease in Pennsylvania from 1958 to 1982 reveal that the disease is slowly spreading in a south- and westward direction. Although the disease complex is still confined to the northern and eastern portions of the state, beech mortality is occurring in the areas infested longest.

The beech scale, *Cryptococcus fagisuga* Lindinger, was first found in Pennsylvania at Promised Land State Park in Pike County in 1958 (Drooz 1959). It was not until 1969 that *Nectria coccinea* var. *faginata* was found in association with the scale on one tree near Gouldsboro, Pennsylvania, about 15 miles west of the original scale location (Nichols and Towers 1969). A survey of northeastern Pennsylvania in the summer of 1970 showed evidence of the ingress of the scale into northeastern Pennsylvania in a southwestward movement from New York State. *Cryptococcus fagisuga* infestation became less severe as one moved southwestward from Zone 1 to Zone 3 (Fig. 1). There was no

significant difference in either total basal area of all tree species or beech basal area between zones. Therefore, the difference in scale severity was due to its movement in a southwestward direction. Overall, 62 percent of the beech basal area was infested to some degree with scale, and of the 1,285 trees examined, 64, or 5 percent, displayed *Nectria*-like symptoms (Towers 1971).

A resurvey of northeastern Pennsylvania in 1973 revealed that the scale had spread westward 18 miles from the 1970 survey boundaries while *Nectria* was found 80 miles farther west and 20 miles farther south than in the 1970 survey (Fig. 2). Approximately 40



Figure 1.--County map of Pennsylvania showing counties included in beech zones surveyed in 1970.



Figure 2.--Known distribution of beech bark disease in Pennsylvania in 1973.

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percent of the beech trees in the woodlot in which *Nectria* was first discovered now had obvious fruiting or typical *Nectria* cankers (Towers et al. 1974).

Resurveys in 1977 and 1978 revealed that the scale had moved about 40 miles farther west and about 50 miles southward along the eastern border (Fig. 3) (Nichols 1978), while

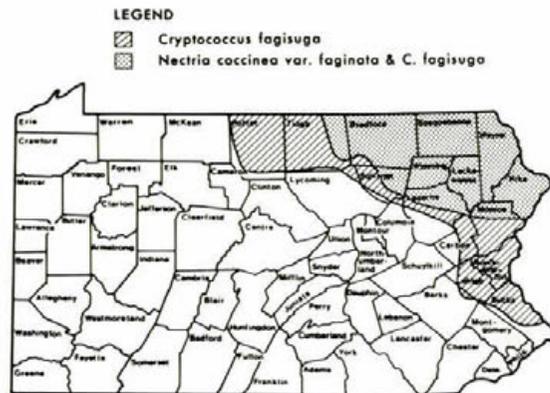


Figure 3.--Known distribution of beech bark disease in Pennsylvania in 1978.

the distribution of *Nectria* remained essentially the same.

It was at this time that populations of *C. fagisuga* decreased drastically throughout Pennsylvania, and only very light infestations of scale could be found on trees throughout the known range of scale.

Mortality and typical "beech snap" began to occur about 1979 in the *Nectria*-infested areas, but to date no surveys designed to determine losses have been conducted. Conservatively, mortality could now be estimated at 5 percent of the beech basal area in the *Nectria*-infested area in northeastern Pennsylvania.

In 1981 the presence of a mealybug, *Phenacoccus serratus* (Ferris), led personnel to incorrectly diagnose the presence of beech scale throughout the eastern one-third of the Commonwealth. In areas where the beech scale is at very low levels, individual *P. serratus* may be mistaken for isolated colonies of *C. fagisuga* unless a hand lens is used for positive identification.

A survey conducted in the late summer of 1982 revealed that both scale and *Nectria* had spread westward of their previous locations in northcentral Pennsylvania (Fig. 4). Future disease development will be monitored through periodic surveys and 12 long-term observation plots scattered throughout Pennsylvania.

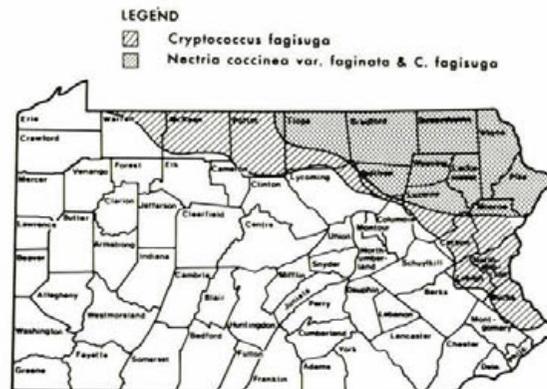


Figure 4.--Known distribution of beech bark disease in Pennsylvania in 1982.

SUMMARY

Periodical surveys from 1958 to 1982 for beech bark disease along the advancing zone in Pennsylvania reveal that the disease complex is slowly spreading in a south- and westward direction. The scale was first observed in 1958 and the *Nectria* component in 1969 when tree mortality began to be reported. The future development of the disease will be monitored through periodic surveys and 12 long-term observation plots scattered throughout Pennsylvania.

RÉSUMÉ

Les résultats de relevés périodiques sur la maladie de l'écorce du hêtre en Pennsylvanie de 1958 à 1982 révèlent que la maladie s'étend lentement en directions sud et ouest. Bien que ce complexe pathologique soit encore confiné aux parties nord et est de l'Etat, la mortalité du hêtre survient dans les aires infestées depuis le plus longtemps.

ZUSAMMENFASSUNG

Die Ergebnisse regelmäßiger Überwachungen der Buchen-Rindennekrose von 1958 bis 1982 zeigen, daß die Krankheit sich langsam nach Süden und Westen ausbreitet. Noch ist sie auf die nördlichen und östlichen Teile des Landes beschränkt. Ein Absterben der Buchen ist in den Gebieten zu beobachten, in denen die Krankheit am längsten vorkommt.

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