

## MICROFUNGI ASSOCIATED WITH DIEBACK OF NATIVE CUPRESSACEAE IN BRITISH COLUMBIA

A. Funk<sup>1</sup>

### Abstract

A total of 12 microfungi were recorded on three native Canadian species of cupressaceae in British Columbia, associated with a dieback disease that flared up in 1969-1970. Damage occurred both in natural forest and in nursery plantings. The disease has now subsided in all areas.

### Résumé

L'auteur signale 12 micro-champignons dans trois espèces indigènes canadiennes de Cupressacées en Colombie-Britannique, associés au Dépérissement qui sévit en 1969-1970 dans les forêts naturelles et dans les pépinières. La maladie s'est maintenant résorbée aux deux endroits.

Pathological dieback of young native cedars (Cupressaceae) is rare in natural forests; Boyce (1961) lists no diseases in this class and my own observations during 16 years in British Columbia indicate that it is very infrequent. The outbreaks recorded here began in 1969-1970 in natural regeneration of western red cedar (*Thuja plicata* Donn) on Vancouver Island, and simultaneously on native cedars in nurseries and ornamental plantings in the Fraser Valley (Funk and Molnar 1972) (Fig. 1). Because of the high value of these trees, as timber and ornamental species, a study was made of the microfungi associated with the condition. Many of these fungi were proven pathogens of other species of conifers; some were new host records or first reports from Canada.

It seems likely that there were special predisposing factors in 1969-1970 that triggered the widespread outbreak of the disease. These factors have not been identified with certainty, but the unusually low temperatures of the previous winter are suspected as one of the probable causes. However, for the same period no increase was noted in dieback of other coniferous groups in B.C.; but in Europe and the U.K. (Morelet 1970; Strouts 1973), as well as in other parts of western North America (Davison and

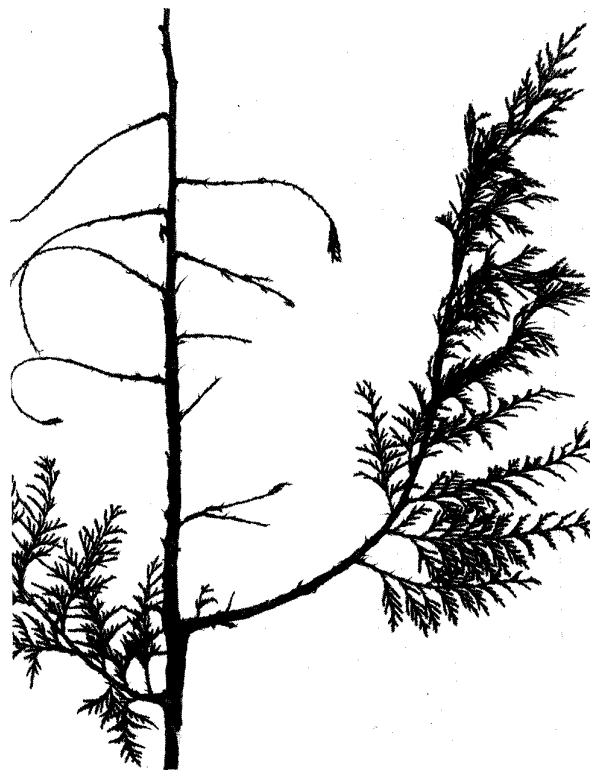


Figure 1. Dieback of yellow cedar

<sup>1</sup>Department of the Environment, Canadian Forestry Service, Pacific Forest Research Centre, Victoria, B. C.

Davidson 1973), there was increased dieback in Cupressaceae. Since then, there has been a general decline of disease incidence in the species mentioned, although the leaf blight caused by seiridium cardinale is still quite common.

## Observations

Records of the microfungi are given in an annotated list under the heading of the host species. Numbers refer to specimens deposited in herb DAVFP, Victoria; some specimens contain more than one fungus. The fungi considered most important in the causation of disease are listed first.

### WESTERN RED CEDAR (Thuja plicata Donn)

1. Diaporthe lokoyae Punk (19438, 19456). A pathogen of conifers, found in natural regeneration and a forest nursery.



Figure 2. Seiridium cardinale, conidia.

2. Seiridium cardinale (Wagner) Sutton & Gibson (19439) (Fig. 2). Leaf and shoot pathogen, found in natural tree regeneration.

3. Kabatina thujae Schneider & v. Arx (no specimen). A pathogen, found only on T. plicata f. atrovirens, an ornament2 form, in Fraser Valley.
4. Velutaria rufo-olivacea (Alb. & Schw. ex Fr.) Korf (19436, 19441). Common wherever dieback occurred. Saprophyte, comes in after primary Pathogens.

### YELLOW CEDAR [Chamaecyparis nootkatensis (D. Don) Spach]

Dieback occurred only in horticultural varieties growing in ornamental nurseries of the Fraser Valley.

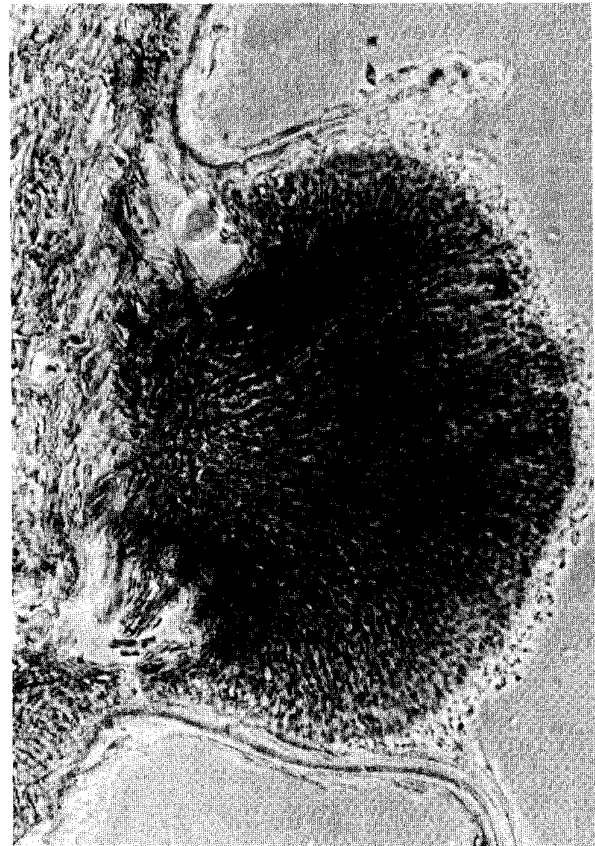


Figure 3. Kabatina thujae, erumpent fruiting body.

1. Kabatina thujae Schneider & v. Arx (19218-19222 incl.) (Fig. 3). A primary pathogen causing serious shoot mortality.
2. Cytospora abietis Sacc. (19205, 19207). A facultative parasite on weakened trees.
3. Pleospora laricina Rehm (19210, 19213). Probably saprophytic on killed branches.
4. Pestalotia funerea Desm. (19208, 19212). saprophyte.

5. Pestalotia thuiiae Sawada (19204).  
Probably saprophytic.

**EASTERN WHITE CEDAR (Thuja occidentalis L.)**

This species is native to eastern Canada but is grown ornamentally in B.C.

1. Phomopsis juniperivora Hahn (19214). A virulent pathogen of junipers, first host record for E.C.
2. Micropera sp. (19215). Status unknown.
3. Seiridium sp. (19216). Status unknown.

**Discussion**

The outbreak of dieback in natural stands of western red cedar has been short-lived but intense and has revealed that several native fungal pathogens are able to inflict considerable damage under certain conditions in this species. In the Kabatina dieback of yellow cedars, the disease was so persistent that, in spite of fungicidal spraying in the nursery, the trees had to be destroyed. Fortunately there has been no recurrence or spreading of any of these diseases and the picture at present is good for these native Cupressaceae.

sporadic diseases of forest and ornamental trees, such as these on native Cupressaceae, are completely unpredictable but have a considerable impact on the development and growth of new stands. Because they are short-lived, it may be difficult to determine the causal organisms with certainty if detection is delayed. This report is intended to aid in the assessment of damage in this class of diseases.

**Acknowledgments**

I thank members of the Mycology Section, Biosystematics Research Institute, Ottawa, for identifying some of these fungi, and members of the Forest Insect & Disease Survey, Victoria, for making collections.

**Literature cited**

1. Boyce, J.S. 1961. Forest pathology, 3rd ed. McGraw-Hill Book Co. New York.
2. Davison, A.D., and R.M. Davidson, Jr. 1973. Apioportha & Monochaetia cankers reported in western Washington. Plant Dis. Rep. 57:522-523.
3. Funk, A. and A.C. McInar. 1972. Kabatina thuiiae on yellow cedar in British Columbia nurseries. Bi-monthly Res. Notes 28:16-17. Environment Canada, Ottawa.
4. Morelet, M. 1971. Sixième bloc-notes mycologiques: Chancres sur Cupressacées. Bull. Soc. Sci. Nat. Archiol. Toulon, 193: 2.
5. Strouts, R.G. 1973. Canker of cypresses caused by Coryneum cardinale Wag. in Britain. Eur. J. For. Pathol. 3: 13-24.