

A new *Nitschka* on western conifers and its probable microconidial state

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A new species, *Nitschka molnarii* (Ascomycetes: Nitschkiaceae), is described from Douglas fir (*Pseudotsuga menziesii* (Mirb.) Franco) and western hemlock (*Tsuga heterophylla* (Raf.) Sarg.) in coastal British Columbia, Canada. A microconidial state closely associated with the ascocarps is described, but not separately named.

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L'auteur décrit une nouvelle espèce, *Nitschka molnarii* (Ascomycètes: Nitschkiaceae), observée sur le Douglas taxifolié, *Pseudotsuga menziesii* (Mirb.) Franco, et sur la Pruche occidentale, *Tsuga heterophylla* (Raf.) Sarg., sur le littoral de la Colombie-Britannique, Canada. Il décrit aussi un état de microconidie étroitement relié aux ascocarpes, mais sans les nommer séparément.

Introduction

Nannfeldt's recent studies in the Nitschkiaceae (Coronophorales) have altered many generic concepts in this group and thereby greatly reduced the number of genera grouped around the genus *Nitschka* (Nannfeldt 1975a, 1975b). This genus now includes all species with turbinate ascocarps, eight-spored or polysporous clavate asci, hyaline and allantoid ascospores, and the unique "Munk pores" in the peridial cells. Also, a "Quellkörper" in the apex of the locule is very common in this group.

Collections of a *Nitschka*, made over several years on diseased Douglas fir (*Pseudotsuga menziesii* (Mirb.) Franco) and western hemlock (*Tsuga heterophylla* (Raf.) Sarg.), can now be recognized as a new species. It is apparently the first member of the group on western conifers. A microconidial state, closely associated with the ascocarps, was found to possess Munk pores in the pycnidial cell walls, and is therefore considered to be the imperfect state. This is possibly the first record of an imperfect state in the Coronophoralean fungi.

Taxonomy

Nitschka molnarii sp. nov. (Nitschkiaceae)

Figs. 1–7

Ascocarpia atra, erumpentia, solitaria vel aggregata, turbinata, cupulato-collapsa, papilla apicali inconspicua vel absunt, tuberculata, e pseudoparenchyma composita, "Munk pores" praesentia, 0.5–0.7 mm × 0.5 mm. Subiculum pseudoparenchymato. "Quellkörper" praesentia. Asci clavati, breve stipitati, annulo apicali incre-

sato, 64 spori, 90–110 μm × 12–15 μm. Ascosporae hyalinae, allantoideae, nonseptatae vel indistincta uni-septatae, 6–8 μm × 1.5–2 μm.

TYPUS: DAVFP 21951 in rami *Pseudotsugae menziesii*.

Ascocarps black, erumpent, solitary or in small clusters, turbinate, collapsing cupulate, apical papilla inconspicuous or absent, tuberculate, composed of brown pseudoparenchyma with Munk pores, 0.5–0.7 mm × 0.5 mm. Subiculum pseudoparenchymatous. Quellkörper present. Asci clavate, short stalked, 64 spored, apical wall thickened, 90–110 μm × 12–15 μm. Ascospores hyaline, allantoid, nonseptate or indistinctly one septate, 6–8 μm × 1.5–2 μm.

Pycnidia black, subglobose to pyriform, single or in small groups on a common subiculum, 200–250 μm diameter, ostiolate, composed of dark-brown flattened cells with Munk pores, locule simple but sometimes convoluted, densely lined with conidiophores. Conidiophores phialidic, subulate, simple, 6–8 μm × 1.5 μm. Phialoconidia rod shaped, hyaline, nonseptate, 3 μm × 1 μm.

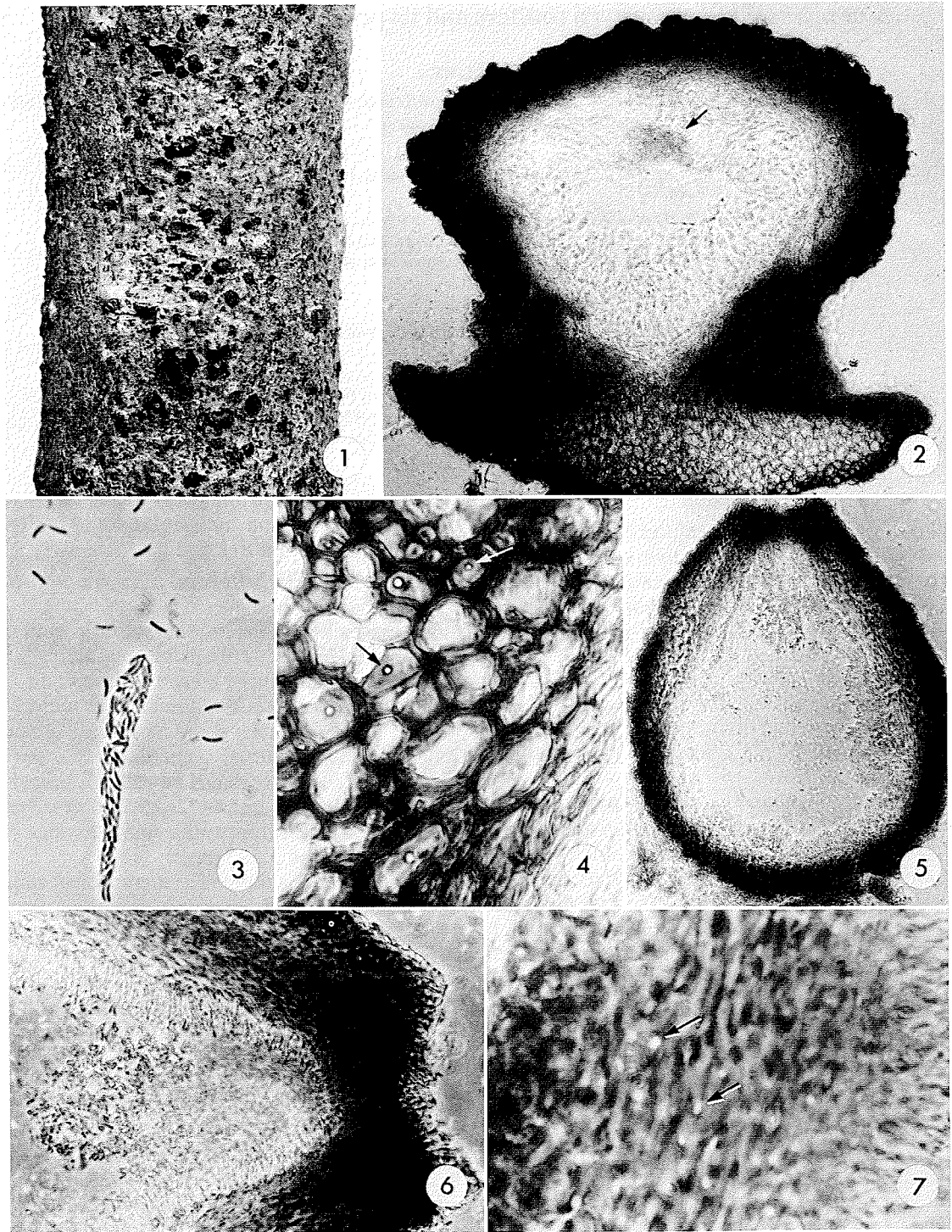
TYPE: DAVFP 21951 in branches of *Pseudotsuga menziesii* at Cowichan Lake, B.C., Canada, 13 March 1969.

SPECIMENS EXAMINED: (All from B.C., Canada) On *Pseudotsuga*: DAVFP 21952, 2.III.1978, Langford; DAVFP 21373, 16.III.1972, Caycuse; DAVFP 21371, 8.IV.1975, Caycuse. On *Tsuga*: DAVFP 21953, 11.XII.1969, Shawnigan Lake.

ETYMOLOGY: The species is named for A. C. Molnar of Denman Island, B.C., forest pathologist in western Canada.

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FIGS. 1-7. *Nitschkia molnarii*. Fig. 1. Habit on Douglas fir bark. $\times 2$. Fig. 2. Ascocarp, median longitudinal section, showing Quellkorper (arrow). $\times 320$. Fig. 3. Ascus and ascospores. $\times 675$. Fig. 4. Munk pores in ascocarp cell walls (arrows). $\times 675$. Fig. 5. Pycnidium, median longitudinal section. $\times 320$. Fig. 6. Pycnidial ostiole, showing phialides. $\times 500$. Fig. 7. Pycnidial wall, showing Munk pores (arrows). $\times 675$.

A conspicuous, black subiculum remains in the base of the pustule after the ascocarps drop off. It is composed entirely of pseudoparenchyma, with no evidence of the spiny hyphal terminations found in some species (Nannfeldt 1975*b*). The pycnidia described above arose from this same subiculum and were sometimes found in the same pustule with the ascocarps.

Several attempts to grow cultures from ascospores have failed. Crushed ascocarps with mature ascospores were streaked on 2% malt agar and incubated at 15 and 23°C. No germination or growth was observed. No attempts were made to grow the microconidia.

Tissue structure in *N. molnarii* is typical Coronophoralean pseudoparenchyma with conspicuous Munk pores in the cell walls (Fig. 4). However, tissues in the pycnidial wall of the microconidial state described here are quite different, consisting of closely appressed, flattened cells, but the Munk pores are evident in many sections. Pycnidial tissue is reminiscent of that found in the ascocarps of *Parkerella* (Funk 1976), which has similar pores, and is tentatively classed in the Coronophorales.

The Quellkörper in *N. molnarii* consists of a dense knot of cells in the central epithelial region, which is not greatly differentiated from the surrounding inner tissues of the ascocarp (Fig. 2).

In most collections, the fungus appears to be a secondary invader of cankers or dieback caused by

other fungi. In the one collection on western hemlock, *N. molnarii* had invaded a dwarf mistletoe swelling that was attacked also by *Nectria macrospora* (Wr.) Ouellette, a known pathogen of these hypertrophied branches (Funk et al. 1973). Specimen DAVFP 21952 was taken from leader dieback of 50 m tall Douglas fir in which no known pathogen was present.

A fungus, found on conifers in Europe, *Fracchiacea coniferarum* Hoehn., is quite close to the new species in ascospore characteristics and general appearance. However, both Fitzpatrick (1924) and Nannfeldt (1975*a*) examined type material and concluded that the mode of growth, shape of the ascocarps, and the long, delicately stalked asci were more typical of a *Coronophora*. Hoehnel (1909) also mentioned the presence of paraphyses, which are absent in the new species.

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