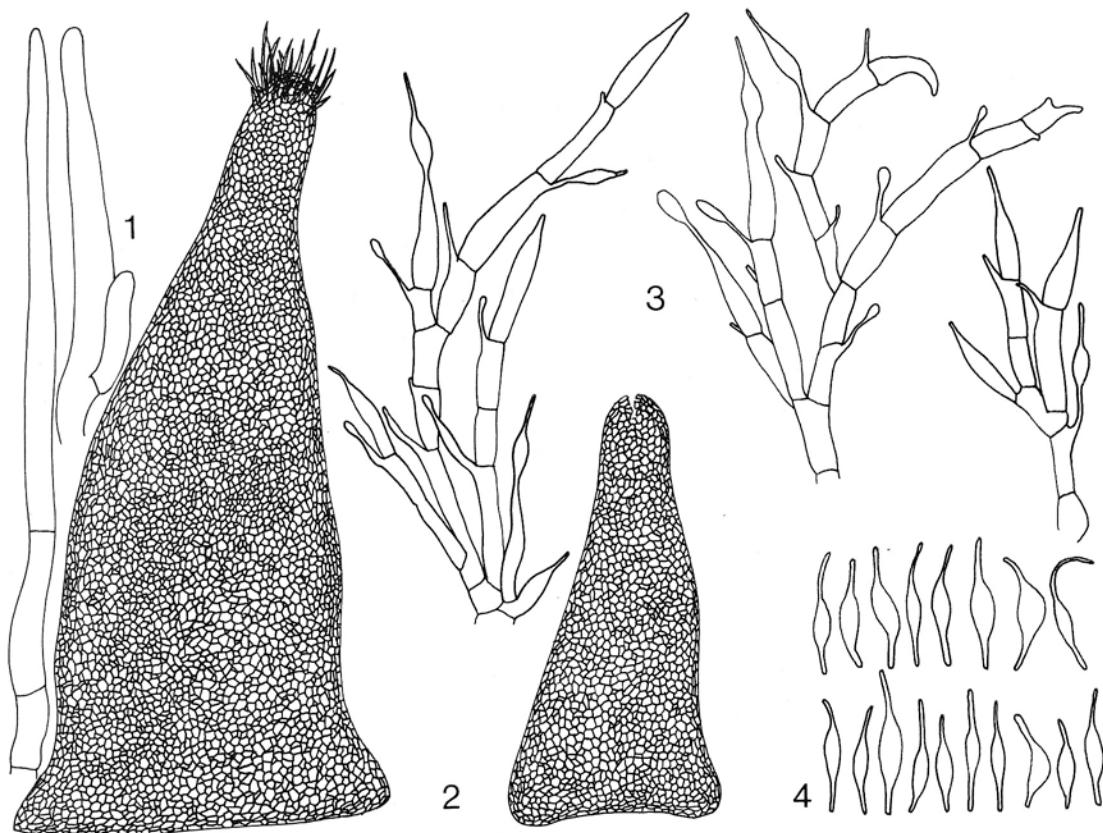


ELEUTHEROMYCES SUBULATUS



1, ostiolar setae ($\times 1500$); 2, pycnidia ($\times 150$); 3, conidiophores ($\times 1500$); 4, conidia ($\times 1500$).

Eleutheromyces subulatus (Tode ex Fr.) Fuckel, Symb. Mycol., Jahrb. Nass. Ver. Natur. 23: 183. 1869.

[\equiv *Sphaeria subulata* Tode, Fungi Mecklenb. 2:44. 1791.]

\equiv *Sphaeronaema subulatum* Tode ex Fr., Syst. Mycol. 2:536. 1823.

\equiv *Sphaeronaemella subulata* (Tode ex Fr.) Grove, Brit. Stem & Leaf Fungi 2: 115-116. 1937.

See Seeler (Farlowia 1: 119-133. 1943) for a fuller synonymy.

PYCNIDIA scattered to gregarious, superficial, ostiolate, pale yellowish to orange, glabrous or with dark red-brown hyphal attachments below, elongate-conical, sometimes nearly cylindrical, setose at apex, brittle, $360-1200\mu$ long (up to 3300μ long according to Seeler, loc. cit.), $110-335\mu$ wide at the base. **PYCNIDIAL PERIDIUM** $15-30\mu$ thick, yellowish, consisting of three layers, (1) an outer noncellular cuticular layer, (2) a middle layer of thick-walled cells, and (3) an inner layer of thin-walled cells. **OSTIOLAR SETAE** arising from the middle peridial layer, hyaline, occasionally septate, $37-65 \times 1.5-5.0\mu$. **CONIDIOPHORES** lining the inner wall of the pycnidium throughout its length, hyaline, branched, closely septate, producing solitary short phialides directly beneath each septum, terminated by solitary flask-shaped phialides, with individual branches about $8-40 \times 1.5-3.0\mu$. **CONIDIA** hyaline, one-celled, smooth, spindle-shaped, composed of an ellipsoidal central body and two terminal extensions, with the basal extension shorter and truncate, $8-13 \times 1.1-2.5\mu$, collecting in a sticky globose mass at the apex of the pycnidium.

SUBSTRATE: Decaying and partially hardened fleshy fungi.

DISTRIBUTION: Ontario and Quebec.

COLLECTIONS: Que., Gatineau Co., Gatineau Park, Moorside, on old agaric, 8 Aug. 1973, DAOM 147458 (Malloch), Kingsmere, on old *Clavaria*, 8 Aug. 1934, DAOM 3710 (Bisby). Ont., Nipissing Dist., Algonquin Prov. Park, Island Lake, on old *Piptoporus betulinus*, 15 Sept. 1939, DAOM 81617 (Cain, TRTC 16050), Lake Timagami, Skunk L.P., on old mushrooms, 19 Aug. 1933, DAOM 81618 (Cain, TRTC 4859), Bear Island, on old mushrooms, 15 Aug. 1933, DAOM 81619 (Cain, TRTC 4858).

NOTES: *E. subulatus* occurs on old fleshy fungi that are hard and blackened and that appear to be more or less mummified. The pycnidia can be recognized in the field as small orange or yellow dots on the host fruiting bodies. Under a lens the pycnidia are quite conspicuous and appear as small yellow conical structures bearing a large drop of spore-containing fluid at the apex.

The spore-drop in *E. subulatus* is similar to that produced by species of *Sphaeronaemella* and *Ceratocystis* and probably plays a role in spore dispersal by arthropods. Presumably an insect or mite brushes against the spore-drop and collects a few of the sticky spores on its body, which are then carried to another decaying fungus. The wide host range of *E. subulatus* implies that the vector visits practically any fungus in a state of decay rather than one particular group of fungi.

E. subulatus has been the subject of a controversy that remained unresolved for 74 years. The original authors of this species (Tode and, later, Fries) did not attempt to explain how the spores were produced. In 1869 Fuckel examined a specimen and reported that the spores were produced in asci. Many later authors, such as Winter, Saccardo, Ellis, and Jaczewski, followed Fuckel's lead and declared it to be an Ascomycete. On the other hand, von Höhnelt, Petrak & Sydow, and Petch examined specimens and reported not asci but conidiophores. This controversy continued for many years, even to 1940 when Shear (*Mycologia* 32: 541-549, 1940) presented an excellently documented case (from the literature) for inclusion of *E. subulatus* in the Ascomycetes. Seeler (loc. cit.), however, had the final word when he examined various collections of *E. subulatus* (including Fuckel's material) and accurately described and illustrated it as an imperfect fungus. Presumably the debate has been laid to rest.

In addition to the Canadian distribution given above, there is a record for Manitoba given by Bisby (*Mycologia* 16: 122-129, 1924). Outside Canada, *E. subulatus* has been reported from Finland, Germany, Great Britain, Italy, Russia, and the United States. Its distribution in the United States is reported to extend as far south as South Carolina and as far west as Ohio. It is undoubtedly commoner than herbarium records would indicate, for most mycologists do not collect the decayed fleshy fungi on which it must be sought.

Eleutheromycella mycophila von Höhnelt is a similar species parasitic on *Coriolus versicolor* that differs in having black, short-necked pycnidia and slenderer conidia. It is described and illustrated by Seeler (loc. cit.) and Morgan-Jones & Kendrick (*Univ. Waterloo Biol. Ser.* 5:24, 1972).

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