Annulohypoxylon minutellum and *Obolarina dryophila* (Xylariales), two stromatic pyrenomycetes on oak new to Norway

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NØKKELORD
Sekksporsopper, pyrenomyceter, kjernesopper, stubbehornordenen, eik

SAMMENDRAG
Sekksporsoppene *Annulohypoxylon minutellum* (Syd. & P. Syd.) Y.M. Ju, J.D. Rogers & H.M. Hsieh og *Obolarina dryophila* (Tul. & C. Tul.) Pouzar rapporteres her for første gang i Norge. *Annulohypoxylon minutellum* er ny for Skandinavia mens *O. dryophila* tidligere er funnet i Sverige og i Danmark. Disse to artene ble funnet på grener på et nylig fallent eiketre i Gullkronene naturreservat i Vestfold. Deres økologi og nomenklatur kommenteres.

ABSTRACT
The ascomycetes *Annulohypoxylon minutellum* (Syd. & P. Syd.) Y.M. Ju, J.D. Rogers & H.M. Hsieh and *Obolarina dryophila* (Tul. & C. Tul.) Pouzar are reported as new to Norway. *Annulohypoxylon minutellum* is new to Scandinavia while *O. dryophila* was previously found in southern Sweden and in Denmark. Both species were found on branches attached to a recently fallen oak in Gullkronene nature reserve in Vestfold.

INTRODUCTION

Ascomycetes of the order Xylariales are important as wood-decayers, parasites and endophytes in woody plants. Despite this their occurrence and distribution are poorly known in many countries, including Norway. During a workshop on pyrenomycetes in Tønsberg in October 2013 a visit was made to Gullkronene Nature Reserve, a forest dominated by beech and old oaks. On a fallen oak I made the first Scandinavian find of *Annulohypoxylon minutellum* (Xylariaceae) and the first Norwegian find of *Obolarina dryophila* (Xylariaceae). The two species, which are large and easy to identify already in the field, are presented here together with notes on their ecology and nomenclature.

Annulohypoxylon minutellum, Figs. 1 and 2.

Description

Stromata cushion-formed, peltate, circular or ellipsoid in outline, (5-) 8-15 mm in diameter and 3-5 mm thick, surface dark brick to blackish. Pigments in KOH vinaceous red. Perithecial contours relatively inconspicuous. Perithecia spherical to ellipsoidal, 400-500 µm in diameter and 500-750 µm high. The papillate ostioles lack a surrounding disc. Asci 130-170 µm × 4-5.5 µm, with inamyloid apical ring, 1.5 µm high and 2 µm broad.

Figure 1. Habitat of *Annulohypoxylon minutellum* and *Obolarina dryophila* in Gullkronene nature reserve, Tønsberg, Vestfold. Both species were found on branches ca 10 cm in diameter. *Annulohypoxylon minutellum* can be seen on the lowermost horizontal branch. *O. dryophila* was found on the uppermost branch but is hardly visible in this picture. Photo: B. Nordén.

Ascospores light brown to brown, ellipsoid-inequilateral, 6.7-8.5 × 3.3-4.5 µm, with perispore dehiscing in 10% KOH. Germ slit short and inconspicous. The material was overripe and asci were found in just one perithecium. The species may be confused with *A. multiforme*, which however never grows on oak and has conspicuous perithecial mounds, olivaceous pigments in KOH, and larger ascospores.

Nomenclature

Annulohypoxylon minutellum (Syd. & P. Syd.) Y.M. Ju, J.D. Rogers & H.M. Hsieh, Mycologia 97(4): 859 (2005). Basionym: *Hypoxylon minutellum* Syd. & P. Syd. 1910. Synonym: *Hypoxylon cohaerens* var. *microsporum* J.D. Rogers & Cand., Mycologia 72: 826 (1980).

Ecology and distribution

Annulohypoxylon minutellum is found on dead branches and trunks of *Quercus robur*. In continental Europe it also occurs on *Castanea sativa* and in other parts of the world it has a broader host range. It is known from Great Britain, France, Portugal, Spain, as well as from India, Taiwan, Colombia, Honduras and Mexico.

Figure 2. Close-up of stromata of *A. minutellum* on the same oak branch as in Fig. 1. Photo: J.B. Jordal.

Material studied
Norway. Vestfold: Tønsberg, Gullkronene nature reserve, near the top of Lille Gullkronen on coarse branches attached to a fallen oak, 59°17'8"N, 10°22'58"E, alt. 30 m. 25.10.2013, leg. B. Nordén (to be placed in O).

Obolarina dryophila, Figs. 3 and 4.
Description
Stromata crust-like, black, 4-70 mm long, 5-20 mm broad and 1-1.3 mm thick, when young covered by a black epistromatic membrane. Perithecia ampulliform 600-1000 µm × 300-400 µm. Asci 52-77 × 10-15 µm, without apical apparatus or with a very faint subapical non-amyloid apical ring. Ascospores, uni- to biseriate, ellipsoidal to bean- or boat-shaped, greyish brown, 13-19 µm × 5-8 µm, with a long helicoid germ-slit, and sometimes with 1 or 2 air guttules. For a more detailed description and a drawing of microcharacters, see Nordén and Sunhede (2001).

Ecology and distribution
Obolarina dryophila develops between the bark and cambium on very recently dead oaks and soon becomes effete. It can be spotted by the black spore deposits (Fig. 3) or in cracks in the bark. The species is known from Sweden, Denmark, France, Czech Republic, and Lithuania.

Nomenclature
Obolarina dryophila (Tul. & C. Tul.) Pouzar; Pouzar, Z, Česká Mykologie 40: 7 (1986). Basionym: *Nummularia dryophila* Tul. & C. Tul.; Tulasne L.R. & Tulasne C, Selecta fungorum carpologia (Paris) 2: 47 (1863). Synonym: *Biscogniauxia dryophila* (Tul. & C. Tul.) Kuntze, (Xylariaceae), Revis. gen. pl. (Leipzig) 2: 398 (1891).

This species was placed in the monotypic genus *Obolarina* due to the lack of an apical apparatus and the presence of a helicoid germ slit (Pouzar 1986). Ju et al. (1998) showed that the species has affinities with *Biscogniauxia* (Xylariaceae), and this was later confirmed by Pažoutová et al. (2010). It should be considered if the species should be treated in *Biscogniauxia*. As the oldest name is *Biscogniauxia dryophila* (Tul. & C. Tul.) Kuntze no new combination would be needed.

Material studied
Obolarina dryophila
Norway. Vestfold: Tønsberg, Gullkronene nature reserve, near the top of Lille Gullkronen on coarse branches attached to a fallen oak log, 59°17'8"N, 10°22'58"E, alt. 30 m. 25.10.2013, B. Nordén . The description is based on material from Sweden (see Nordén and Sunhede 2001) as the Norwegian specimen was relatively old and not in perfect shape.

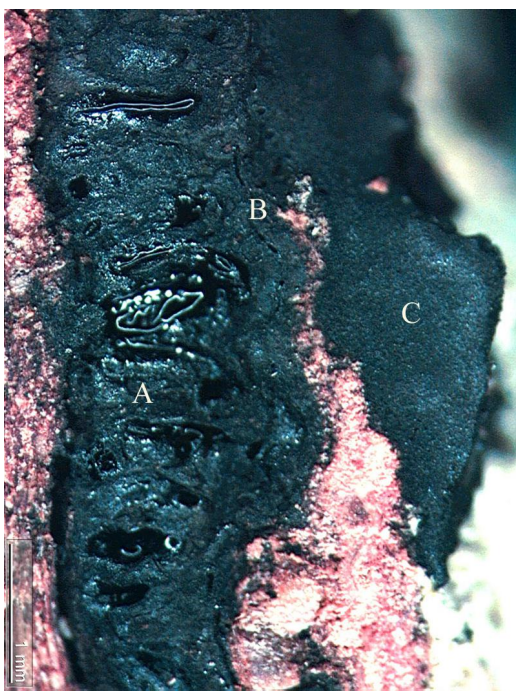

Figure 3. *Obolarina dryophila,* vertical cut through a living stroma situated under the bark of a recently dead oak. A. Perithecial layer. B. Epistromatic membrane. Nordén. C. Sporemass exuded through a crack in the bark. Photo: B. Nordén.

Figure 4. *Obolarina dryophila* stroma on an oak branch, partly covered by the bark. Photo: C. Reisborg.

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