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A new species of *Lopadostoma*, and the anamorph of *Biscogniauxia cinereolilacina*

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Summary – The holomorph of *Lopadostoma pouzarii* sp. nov., and the anamorph of *Biscogniauxia cinereolilacina* are described and compared to known related taxa.

Key words: *Lopadostoma*, *Biscogniauxia*, taxonomy, Xylariaceae.

Zusammenfassung – Das Holomorph von *Lopadostoma pouzarii* sp. nov. und das Anamorph von *Biscogniauxia cinereolilacina* werden beschrieben und diskutiert.

In July 1994 and 1995 the senior author collected xylariaceous fungi in western and southernmost Norway. Several of the nemoral deciduous trees common in central Europe but totally lacking in North Norway (i.e. approx. north of 65° lat.) can be found in this part of the country. Examples are *Fraxinus*, *Quercus*, *Tilia*, *Ulmus*. Thus, one will also find several wood-inhabiting fungi here which are lacking in the north, e.g. *Biscogniauxia cinereolilacina* on its hitherto only known host *Tilia*. Because the anamorph of this species has not been previously investigated we will include a brief description of it in this paper.

At Norum near Sogndal, in the inner part of the 200 km long Sognefjord in western Norway, dead trunks of *Fraxinus excelsior* were inspected for species of Xylariaceae. On one of these, *Hypoxylon vogesiacum* as well as a fungus producing a thin, effused stroma were found in 1994. Microscopical examination proved the latter to be a new taxon. The species was also found the subsequent year in southernmost Norway on dead *Ulmus glabra*, and again at Norum on another dead but still rooted trunk of *Fraxinus*. A similar fungus, for the time being not included in the new species, was later collected in North Norway on *Populus tremula*.

The stromatic features, the host material incorporated in the upper stromatal part, the anamorph similar to that described by Ju & al. (1993) as well as individually erumpent ostioles, all suggested an inclusion of the new taxon in the genus *Lopadostoma* (Nitschke) Traverso, subgenus *Anthostomopsis* Rappaz. A literature search and eventually the examination of a pyrenomycete described and illustrated by Rappaz (1995: 149) from Canada (BAR-specimens) led to the conclusion that our material is conspecific with these collections. This is confirmed by cultural features as well as by the anamorph of our fungus compared to that observed by Rappaz. The BAR-specimens found on *Acer* have, however, been treated by Rappaz (l.c.) as a species of doubtful position and has not been validly published. As the Norwegian material is in good condition and shows both young and older stromata, and has been cultured, we describe it here as a new species.

***Lopadostoma pouzarii* Granmo & L.E. Petrini sp. nov.**

Figs 1–3

Status anamorphosis: *Geniculosporio* similis.

Stromata 1–7 × 0.5–1.5 cm lata, 0.7–1.5 mm crassa, elliptica vel longitudinaliter effusa, per lignum erumpentia et eo arcte adnata, matura initio laete umbrina, partim pruina laete ferruginea tecta, provecta aetate badia, pruina destituta, hic illic marginibus sterilis elevatis 0.2 mm altis limitata. Ectostroma 250–300 µm crassum, dure ligneum, nigrum, nitidum, elementa lignea includens. Entostroma ad 1300 µm crassum sed saepe rudimentarium, ad interstitia inter parietes perithecorum manentia limitatum, fuscum, ligneum, e hyphis et tela lignea carbonificata compositum. Perithecia 400–750 µm lata, parietibus 35–50 µm crassis, globularia vel ovoidea, in entostromate vel in ipso ligno sita. Ostiola 260–330 µm longa, poris punctatis parum distinctis. Asci 84–108 p. sp. × 8–12 µm magni, stipitibus 96–140 µm longis portati, cylindrici, octospori, apparato apicali in JJK caeruleo, disciformi, 4–4.5 × 1–1.5 µm magno. Paraphyses filiformes, septatae, ramificatae. Ascosporae 12–16.5 × 5–7 µm magnae, numeris mediis 14.1 × 6.2 µm, ellipsoides vel subfusiformi-ellipsoides vel ovoides, laeves, obscurae fulvae; fissura germinationis recta, manifesta, unilateralis.

Holotypus die 28 Julii anni 1995 100 m supra mare in comitatu norvegica Sogn & Fjordane ad praedium Norum pagi Sogndal in ligno trunci emortui *Fraxini excelsioris* sub numero 185/95 ab A. Granmo lectus, siccus in Museo Tromsoeensi (TROM) depositus. Isotypus: ZT.

Etymology – *pouzarii* – named in honour of the Czech mycologist Zdenek Pouzar. *Anamorph* – *Geniculosporium* – like.

Stromata 1–7 × 0.5–1.5 cm and 0.7–1.5 mm thick, elliptical or longitudinally ef-

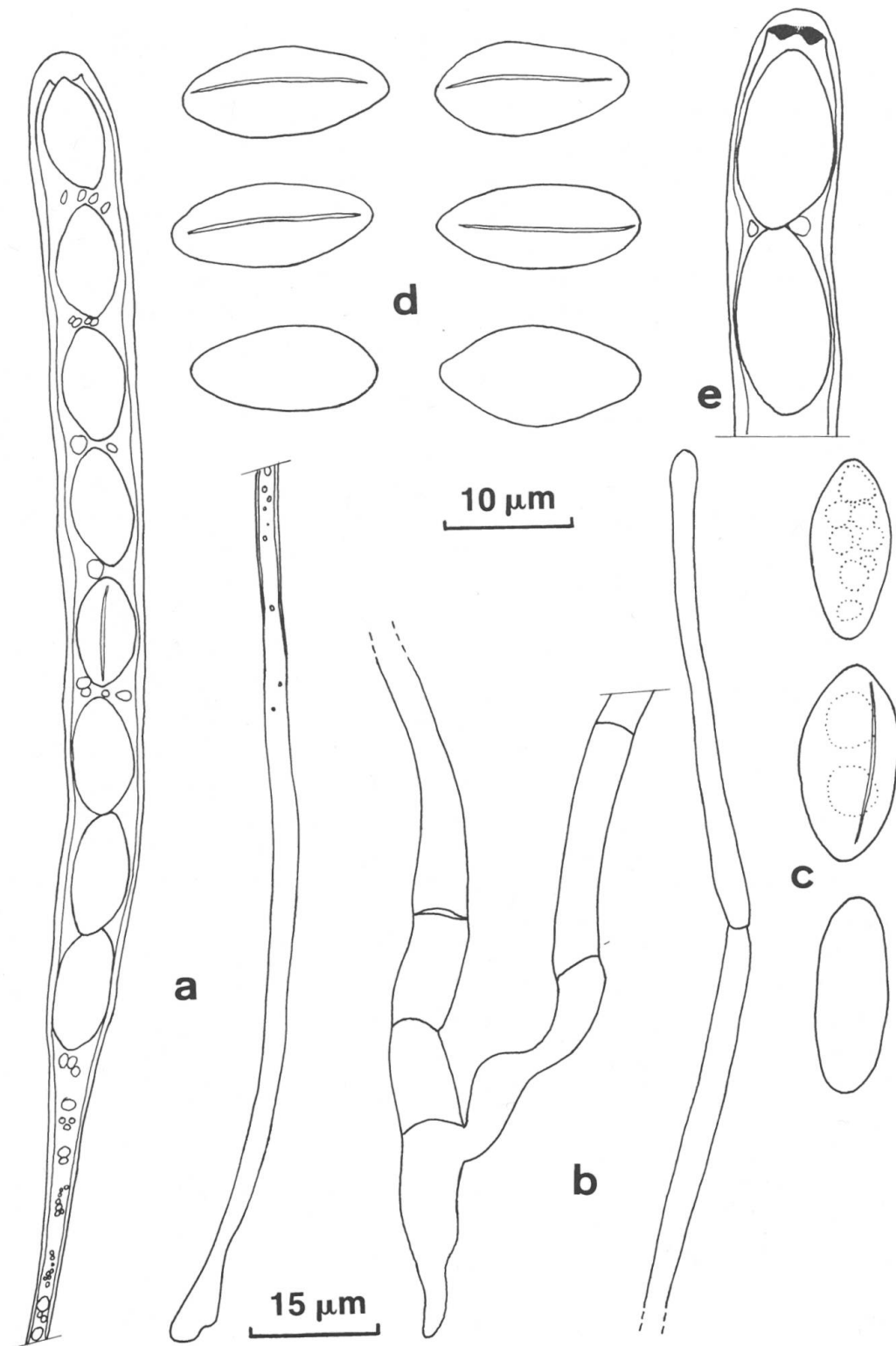


Fig. 1. *Lopadostoma pouzarii* sp. nov. (in water). a. Ascus. b. Lower (branched) and upper part of paraphysis. c. Ascospores from holotype. d. Ascospores (AG 34/94 TROM). e. Upper part of ascus with apical ring (in Lugol's solution).

fused, flat or a little convex, lacking perithecial elevations, erumpent through wood and closely adnate, following unevennesses in the underlying wood. Young, mature stromata light brown (7D4 in Kornerup & Wanscher 1967), partly covered by a light rusty pruina (7B5–7B6, op.cit.) which is especially persistent at the margin of the stroma, circumscribing it as a pale line. Older stromata dark brown, lacking pruina, partly with a 0.2 mm high, erect, sterile margin. From the edge of the stroma, a black zone of carbonized tissue penetrates deep into the wood. *Ectostroma* 250–300 μm , hard woody, black, shining, with wood elements. *Entostroma* including perithecial layer to 1300 μm , but often rudimentary, limited to the interstices of the perithecial walls, brown, woody, composed of hyphae and carbonized wood tissue. *Perithecia* 400–750 μm high, 450–700 μm broad, wall 35–50 μm thick, globose or ovoid, seated in the entostroma or directly in the wood. Ostioles 260–330 μm long, pores indistinct, punctate. *Asci* p.sp. 84–108 \times 8–12 μm , mean 96 \times 10.3 μm , stipe 96–140 μm , mean 120 μm ; cylindrical, 8-spored, with three-toothed apical crown and apical apparatus invisible in water mounts, blue in Lugol's solution, disc-shaped,

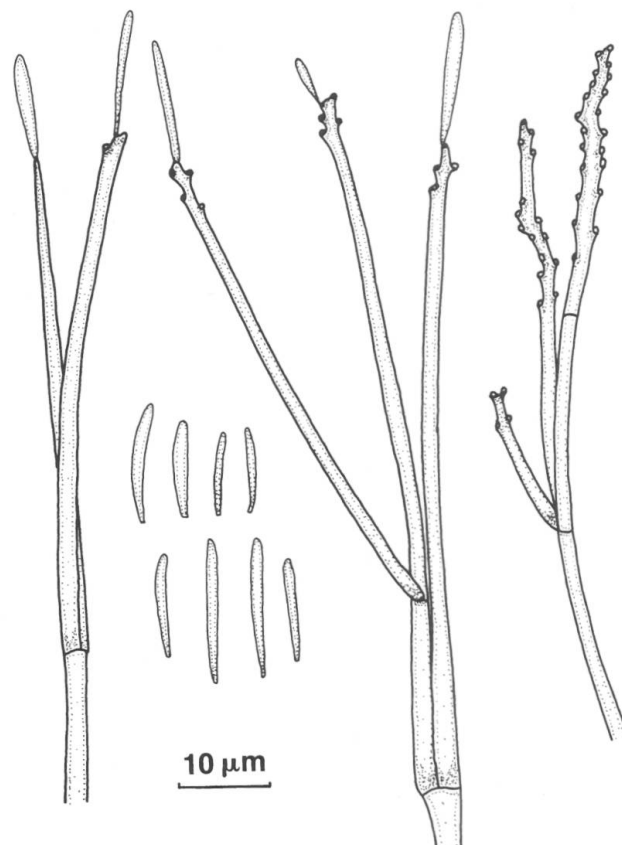


Fig. 2. *L. pouzarii*. Conidiophores and conidia in culture (from AG 34/94 TROM).

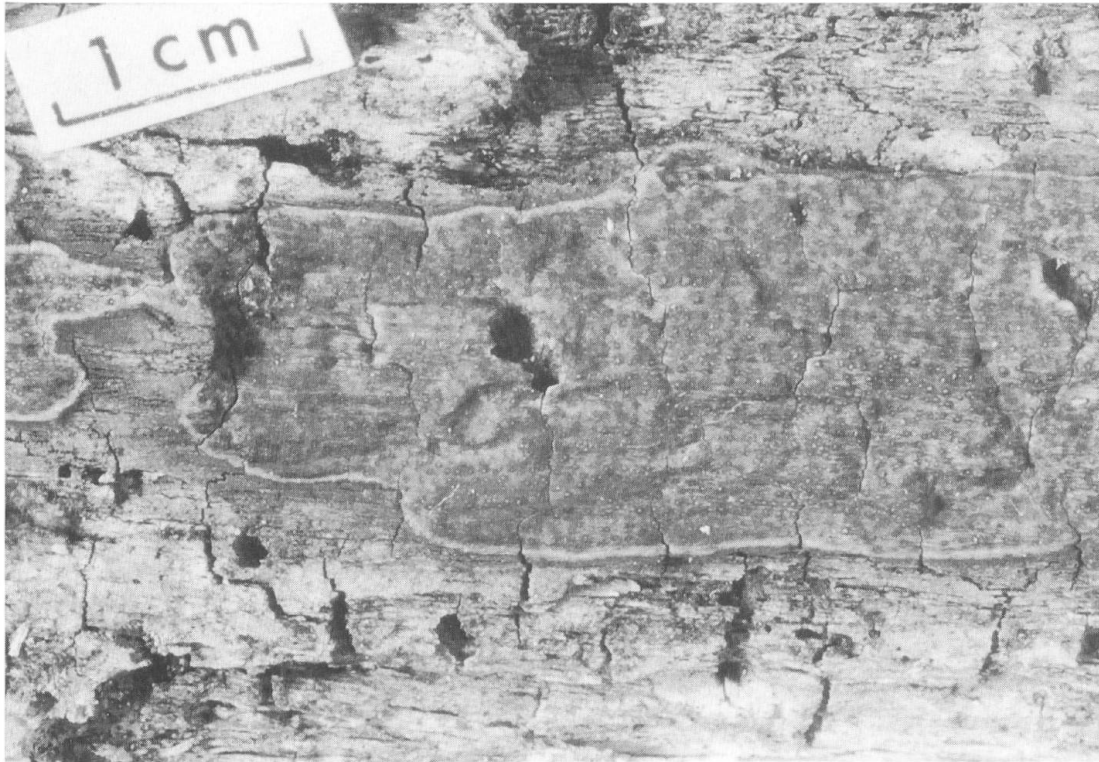


Fig. 3. *L. pouzarii*. Part of holotype.

4–4.5 × 1–1.5 μm . Paraphyses about 7 μm wide at the base, 3.5 μm in the middle, filiform, septate, branched in the lower half. Ascospores 12–16.5 × 5–7 μm , mean 14.1 × 6.2 μm , ellipsoid or slightly fusoid ellipsoid to ovoid, smooth (both by LM and by SEM), with a thin, hyaline perispore, dark reddish brown (8F8, op. cit.); germ slit straight, distinct, unilateral.

Cultures on malt agar after seven days 2.5 cm diam, after 22 days 7.5 cm diam, with entire margin, mycelium felty appressed, initially white turning yellow, then yellow brown, dark brown when old, starting from the center towards the margin, the latter remaining white to light brown. Conidiogenous areas light brown, forming after a month in restricted areas at the margin. Reverse in the centre brown, towards the margin yellow, white, when old dark brown all over. Conidiophores variable in length. Conidiogenous cells up to 70 μm high, 3 μm wide, hyaline to light brown, with pronounced scars formed by conidial detachment. Conidia (8–)13 ± 3 (–25) × 1.52 μm (n=50), oblong ellipsoidal with small truncate base, hyaline to light brown.

Holotype – Norway: Sogn og Fjordane county: Sogndal municipality: Norum, hillside about 500 m N of the church, 100 m alt. In the decorticated part of a dead, still rooted trunk of *Fraxinus excelsior*. July 28 1995 A. Granmo 185/95 (TROM). Isotype at ZT.

Additional collections examined:

NORWAY: Sogn og Fjordane: Sogndal: Norum, hillside 300 m NE of the church, 70 m alt., fallen, decorticated trunk of *Fraxinus excelsior*, Jul 22 1994, A. Granmo 34/94 (TROM); living culture deposited at CBS 103.96. Aust-Agder, Grimstad: Skiftenes nature reserve, 100 m alt., on decayed *Ulmus glabra*, Jul 10 1995, A. Granmo 43/95 (TROM). CANADA: British Columbia: Vancouver Island, Sydney, Halkirk, old wood of *Acer macrophylla*, Sep 19 1990, M. E. Barr 7306 (DAOM). Ibid. Dec 1 1993, M. E. Barr 8604 (DAOM).

Little is known of cultural features of *Lopadostoma*. Ju & al. (1993) described the anamorph of a collection of *L. turgidum* (Pers.: Fr.) Traverso with small ascospores, possibly var. *minus* Sacc.. It differs mainly from *L. pouzarii* by larger, more curved and slimy conidia, and more densely interwoven conidiophores bearing inconspicuous conidial secession scars.

The fungus found in wood of *Populus tremula* in North Norway in late autumn 1995 agrees in essential features with *L. pouzarii*. Asci and spores, however, are substantially smaller (mean of spores: $11.6 \times 4.8 \mu\text{m}$), and the germ slit is less pronounced. We do not include it in *L. pouzarii* pending further investigations.

Comments

Both localities for *L. pouzarii* in Norway are on hillsides with favourable temperature conditions: at Norum it is a boreonemoral tall herb deciduous forest facing southwest, at Skiftenes it is a nemoral mixed oakwood with i.e. *Acer platanoides*, *Frangula alnus*, *Quercus*, *Taxus*, *Tilia* and *Ulmus* situated in a north-south running rift valley. The fungus grows as vertical stripes and elliptical spots on and in the naked wood of trunks from about 0.5 m above the root base to 3 m above it. Young stromata inhabited the still-fresh outer part of the trunks, while old stromata, destitute of asci, were found on decayed wood, sometimes at the top of small wood pillars, formed as the surrounding wood decomposed and eroded. This indicates a primary saprobe that attacks fairly fresh wood and completes its life cycle on deteriorated and rotten woods. Alternatively, it could represent a weak pathogen that invades the host under stress conditions of drought, etc. and remains quiescent until the host dies. Many xylariaceous fungi apparently have this type of life history. The perithecial layer seems to be attacked by mites which bore galleries between ecto- and entostromata.

The species may well be confused with a *Biscogniauxia* or an immature *Hypoxylon*. Comprehensive investigations of *Hypoxylon* s.l. by Granmo (1977) in Norway, Granmo & al. (1989) in the Nordic countries, and Petrini and Müller (1986) in Switzerland have failed to record this fungus, which thus must be considered a rather rare taxon.

Anamorph of *Biscogniauxia cinereolilacina* (J.H. Miller)
Pouzar in culture.

Fig. 4

Anamorph: Nodulisporium.

Cultures on malt agar after seven days 4.5–5 cm diam. with fringed margin, floccose with loose aerial mycelium, white. Conidiogenous areas spreading, eventually covering the whole surface with a powdery appearance, light grey brown to light brown. Reverse cream to light brown, later reddish brown, agar first uncoloured, later light reddish brown. Conidiophores up to 110 μm high, light brown. Conidiogenous cells 10–34 \times 24 μm , light brown, in irregular

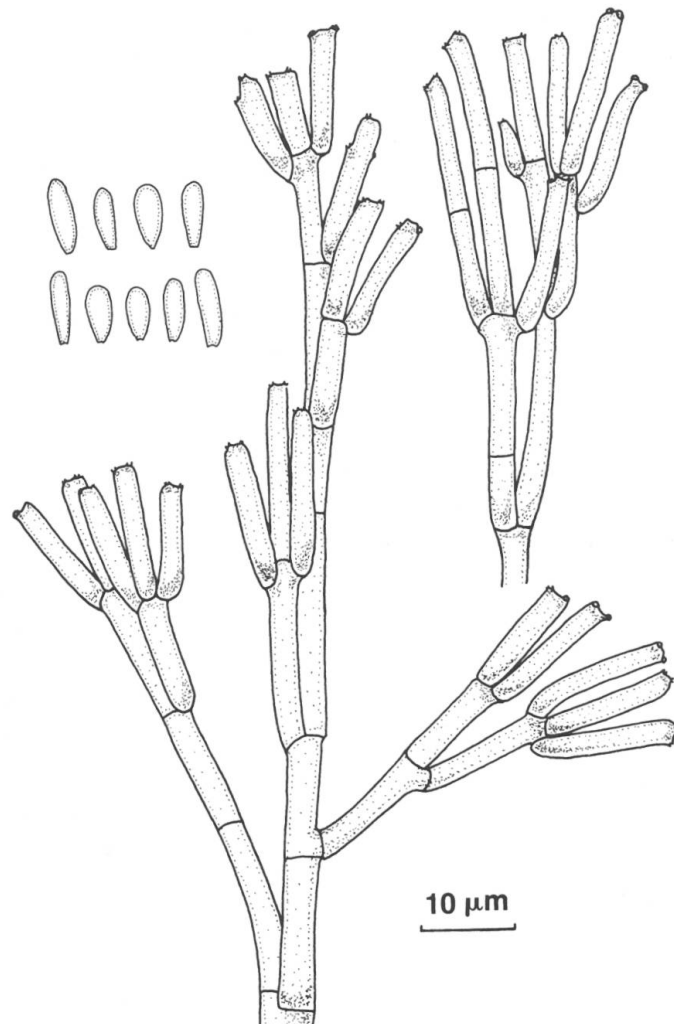


Fig. 4. *Biscogniauxia cinereolilacina*. Conidiophores and conidia in culture (from AG 61/94 TROM).

whorls of 3–4. Conidia $6\text{--}9 \times 2.5\text{--}3\text{ }\mu\text{m}$, ellipsoidal to ovoid with small truncate base, hyaline to light brown.

Cultured specimen: NORWAY: Aust-Agder: Bygland, Åraksbø, Heddevikji, on *Tilia cordata*, Jul 26 1994, A. Granmo 61/94 (TROM, ZT). Living culture deposited at CBS 104.96.

The anamorph of *B. cinereolilacina* is similar to those described for other species of this genus e.g. *B. dennisii*, *B. marginata*, *B. nummularia* (Callan & Rogers 1986, Petrini & Müller 1986).

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