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# XYLARIA DIGITATA AND ITS ALLIES – DELIMITATION AND TYPIFICATION—II

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*Xylaria bulbosa* sensu Rogers is considered to be distinct from *X. bulbosa* s.str. *Xylaria guepini* is described and *X. corniformis*, *X. coronata*, and *X. torulosa* are discussed.

In the first part of this study (Læssøe, 1992) an introduction was given to the study of historical material of *Xylaria digitata* (L.: Fr.) Grev. and related taxa in order to stabilize the nomenclature for the taxa in question. The first part included the study of *Xylaria digitata* (L.: Fr.) Grev., *X. acuta* Peck, *X. cornu-damae* (Schw.) Fr., *X. friesii* Læssøe, and *X. bulbosa* (Pers.: Fr.) Berk. & Br. In addition to the taxa treated there, *X. bulbosa* sensu Rogers, *X. corniformis* (Fr.: Fr.) Fr., *X. guepini* (Fr.: Fr.) Fr., *X. coronata* Westendorp, and *X. tortuosa* Sow. ex Cooke are considered in this part.

## Xylaria bulbosa sensu Rogers (1983) — Figs. 20, 21, 23

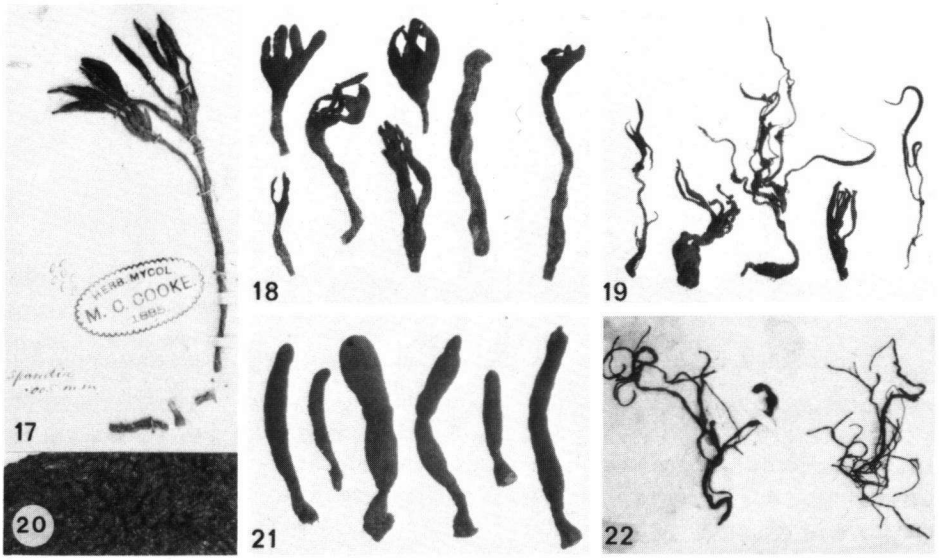
? *Xylaria badia* Pat., J. Bot., Paris (ed. Morot) 5 (19) (1891) 319. — Type specimen: Tonkin, Ke' So', Ha Noi, in vetustos palis, 14.VI.1890, *Bon 4417* (isotype K).

*Illustrations*. Rogers (1983: 459, figs. 10–14; 462, figs. 21–23).

*Description*. Rogers (1983: 458).

*Specimens examined* (selected). U.S.A.: Wisconsin, Sauk Co., Parfrey's Glen, on wood, 4.IX.1953, *C.T. Rogerson R3643* as *X. castorea* (NY); Ohio, *A.P. Morgan 76*, *X. acuta*/*X. bulbosa* det. J.D. Rogers (NYS); New York, Franklin Co., Floodwood, on maple, VIII, *Peck s.n.*, as *X. acuta*/*X. bulbosa* det. J.D. Rogers (NYS).

Rogers (1983) partly followed Miller (1942), when he assumed that *X. bulbosa* was a close relative of *X. digitata* and *X. hypoxylon*. Miller's concept of *X. bulbosa* was fairly confused, but he undoubtedly included *X. corniformis* within it. American specimens named by Miller are typically *X. bulbosa* sensu Rogers and in one case *X. longipes*. Although Rogers (1983) cited the habitat as including not only coniferous litter but also deciduous wood, he did not cite any material on the former substrate nor, indeed, any European specimens. The prime feature of *X. bulbosa* sensu Rogers is the dark yellow outer entostroma, which is not found in *X. bulbosa* in its original sense. Furthermore the original *X. bulbosa* is characterized by a thin, smooth, relatively light brown crust with evident perithecial outlines whilst *X. bulbosa* sensu Rogers is similar to species in the *Xylaria polymorpha* group with a fairly squamulose surface (ectostroma) and non-evident perithecial outlines. The spores in *X. bulbosa* sensu Rogers are dark brown while they are pale golden brown in the original species. *Xylaria bulbosa* sensu Rogers is closely related to the *X. corniformis* group and cannot be named with certainty before this group has been monographed. A likely name for this taxon is *X. badia* Pat., which was




Figs. 17–22. *Xylaria* species — 17–19. *X. guepini*; 17. holotype, *X. scotica* (K); 18. The Netherlands, Bilthoven, IX.1918, *Bouwman* (L); 19. *X. guepini* var. *eupiliaca*, holotype, herb. Cesatianum (RO). — 20 & 21. *X. bulbosa* sensu Rogers, Wisconsin, 4.IX.1953 (NY). — 22. *X. tortuosa*, holotype (K). — Fig. 17 × 0.5; Fig. 18 × 0.6; Fig. 19 × 0.3; Fig. 20 × 6; Fig. 21 × 0.8; Fig. 22 × 0.3. — The numbering of the figures is a continuation of that in the first part (Læssøe, 1992).

characterized by Patouillard (l.c.) as having a "médulle fauve et non blanche". I have examined a very small fragment of the type in the Kew herbarium and found the spores to be (9.9–)10.4–12.8 × (3.8–)4.1–5.1(–5.8) µm (av. 11.2 × 4.6 µm). This is a fraction larger than reported for *X. bulbosa* sensu Rogers. Bertault (1984) accepted all literature references of *X. bulbosa* and could thus 'confirm' that the species grew on substrates other than coniferous needles. He reported a specimen on *Acacia* from Morocco, which should be reinvestigated. *Xylaria digitata* var. *americana* Peck could possibly be conspecific with *X. bulbosa* sensu Rogers, but the material studied by Rogers (1984) was not the holotype cited by Barr et al. (1986). *Xylaria luteostromata* Lloyd is another competing name for this taxon.

## Xylaria corniformis (Fr.: Fr.) Fr.

*Sphaeria corniformis* Fr.: Fr., Elenchus fung. 2 (1828) 57. — *Xylaria corniformis* (Fr.: Fr.) Fr., Summa veg. scand. (1849) 381.

*Misapplied. Xylaria bulbosa* sensu Miller p.p. (1942).

*Illustration and description.* Læssøe (1987: 82–84).

*Xylaria corniformis* was recently (Læssøe, 1987) redescribed from type fragments in the herbaria K and B and from fresh material collected in eastern Poland. Another presumed syntype has since been located in herb. E, communicated by Fries to Greville. This

part is in excellent condition and consists of five undamaged stromata. The taxonomy of the complex around *X. corniformis* is still in disorder and awaits a world monograph and more study of cultures.

A Swiss specimen under *X. digitata* in herb. Fries (UPS, F-02383, 35684) ex Schleicher is *X. corniformis*. It has sterile apices, which explains the misidentification. Three other collections filed as *X. digitata* from around the world (in K) belong in *X. corniformis* s.l. in addition to the collection cited below, named by Miller (1942) as *X. bulbosa*.

*Specimen examined.* SOUTH AFRICA: Transvaal, Pillansberg near Rustenberg, 1.X.1928, *V.A. Wager* (PREM) = *X. corniformis* s.str.(?).

## Xylaria guepini (Fr.: Fr.) Fr. — Figs. 17–19, 24

*Sphaeria guepini* Fr.: Fr., Elenchus fung. 2 (1828) 59. — *Xylaria guepini* (Fr.: Fr.) Fr., Nov. Acta Soc. Sci. Upsal. III, 1 (1851) 128. — Type specimen: France, *Guépin*, herb. E. Fries [holotype, UPS; isotype(?) E].

*Xylaria eupiliaca* Ces., Bot. Ztg 13 (5) (1855) 78. — *Xylaria guepini* var. *eupiliaca* (Ces.) Ces., Comm. Soc. critt. ital. 1 (1861) 71. — Type specimen: Italy, *Hypocrea eupiliaca* Mihi in litt., ex fimi ..., 12.XI.1846, herb. Cesatianum and one marked F. Cavara in gen. herb. (holotype & isotype RO; isotypes K, PC).

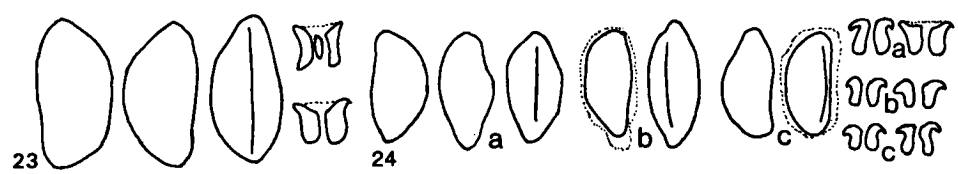
*Xylaria scotica* Cooke, Grevillea 4 (1876) 112. — Type specimen: Scotland, Perth, Meikloner, IX. 1875, *Mr. Matheson* [holotype (7 parts from same source) K; isotype RO in herb. Cesatianum].

*Selected illustrations.* Bull. trimest. Soc. mycol. Fr. 100 (1984) LXIV, fig. 6. — Cesati, l.c. (1861) tab. V.

*Distribution.* Italy, France, The Netherlands, and Scotland.

Stromata rooting in manured soil (always?), very pale yellowish brown to medium brown with fertile parts blackening with age, basal parts palest, very slender, branching up to 3 times, total length up to 10 cm, sterile and fertile parts smooth with more or less substrate sticking to underground parts, fertile parts oblong to cylindrical or bilobed, 5–16 × 1.5–5(–8) mm, with acute sterile apices, perithecial outlines indistinct, ostioles prominent, conical; entostroma white to pale brown, massive and very tough, the outer crust hardly carbonized and very thin; perithecia crowded, elongated c. 0.5 mm long and 0.1 mm broad.

Asci 8-spored (few observed, measurements not obtained), fertile part cylindrical; apical apparatus 1.1–1.3 × 1.3–2.3 µm, staining dark blue in Melzer's Reagent, with strongly flared apical rim; spores light golden brown, inequilaterally ellipsoid to citriform or constricted at one end, often with secondary appendages at both ends and hyaline epi-




Figs. 23 & 24. Ascospores and apical apparati stained in Melzer's Reagent. – 23. *Xylaria bulbosa* sensu Rogers, Wisconsin (NY). – 24. *X. guepini*; a. isotype (E); b. holotype *X. guepini* var. *eupiliaca*, herb. Cesatianum (RO); c. holotype, *X. scotica* (K). — Spores × 1800. Apical apparati × 3000.

spore, (5.7–)6.6–8.3(–9.2) × (2.9–)3.3–4(–5) µm [av. range 6.5–7.9 × 3.3–3.7 µm (–4.1 µm in collapsed spores)]; germ slit often difficult to observe, ventral, variable, mostly 2/3–4/5 of total spore length.

*Specimens examined.* ITALY: Italia bor., ad terram, XI.1846, *Cesati*, ex herb. Sydow (S, immature, possibly part of var. *eupiliaca* type). — FRANCE: Dép. Maine-et-Loire, Angers ("pauvre echantillon, mais le seul qui me reste disponible" in Guépin's handwriting), *Guépin* (PC, possibly isotype of *S. guepini*). — THE NETHERLANDS: prov. Utrecht, Bilthoven, (from potato plot in garden, manured, a former *Pinus* forest. The dung was obtained from animals fed on American fodder), IX.1918, *B.E. Bouwman* s.n. (L 962.286-999); prov. Gelderland, munic. Voorst, Wijkse Weg, Terwolde, on forest litter in hollow in mixed forest plantation (strongly rooting), 23.X.1976, *G. & H. Piepenbroeck 1011* and *1015* (L, both immature but macroscopically very close to *X. guepini*).

It remains uncertain whether *X. guepini* is a truly coprophilous species. A collection in S (ex herb. Rehm, sine loc., IX. 1904, 120, stipite radicoso albo! In stercore) has characters close to *X. friesii* (spores 9.8–11.5 × 3.4–4 µm, av. 10.5 × 3.6 µm; germ slit 1/2–2/3), but is labelled as *X. guepini* and is stated to be coprophilous. The perithecia are smaller than in *X. friesii* but clearly much larger than in *X. guepini* and the ostioles are slightly annulate-papillate. It is possibly a depauperate form of *X. friesii*. The ecology of the type collection was described as follows: "Je l'ai trouvé dans un carré d'artichauts, sur lequel on avait étendu de la fiente de porc." (Guépin in letter to Fries). An immature Dutch collection was described as having a *Phallus impudicus*-like smell when crushed. This collection was also described as having pink tinges. A collection from Brazil [São Leopoldo, in stercore, 1929, *Rick* (FH)] labelled *X. guepini* is immature but looks very much like true *X. guepini*. Material from Borneo (& Sri Lanka?) in RO labelled *X. guepini* is *Xylaria melanaxis* Ces. and *X.* aff. *feejeensis*. Petch (1939) and Cannon et al. (1985) gave *X. scotica* as a synonym of *X. digitata*. Petch even ridiculed Cooke by saying he mistook the cells at the base of the perithecium for spores. Petch stated the specimens to be 'quite immature'. They are, in fact, in very good condition and in every respect match the type of *X. guepini* including the abundant ascospores. *Xylaria scotica* was described as having a rooting stem and to grow on the ground without mention of added manure. Lloyd (1919) stated that records cited by Saccardo (1882) from Ceylon (Sri Lanka) and Borneo were based on misidentified specimens. He also excluded the Italian collections from true *X. guepini* in contrast to the present account. *Xylaria guepini* has a superficial similarity to the *X. nigripes*-group, but species belonging there normally have very dark spores, a tendency to dark entostroma and at least some are associated with termite nests. The very thin crust and conical ostioles also suggest species of *Cordyceps*. *Xylaria divisa* Lloyd was compared by Lloyd (1921) with Cesati's variety *eupiliaca* of *X. guepini* (as *Guepinia*) which Lloyd thought had nothing to do with true *X. guepini*. Judged from his photograph this species cannot be related to *X. guepini*.

### Xylaria coronata Westendorp

*Xylaria coronata* Westendorp, Bull. Soc. r. Bot. Belg. 2, 3 (1863) (5). — Type specimen: not seen.

Westendorp (1863) gave *Sphaeria guepini?* in brackets after his new name, but Kickx (1867) noted that the lignicolous habitat and more robust appearance made this assumption unlikely. Also, the spores were given as 15 µm long, considerably longer than in *X. guepini*. I reserve my opinion until I have seen the Westendorp material.

## Xylaria tortuosa Sow. ex Cooke — Fig. 22

*Xylaria tortuosa* Sowerby ex Cooke., Grevillea 8 (1879) 10. — Type specimen: England, *Sphaeria tortuosa*, found at Mead Place ("I have given Mr. Dickson the first publishing of it. I don't know what Mr. D. will call it."), *Xylaria tortuosa* Sow. mss, ex Herb. Dawson Turner (and a fragment ex herb. Cooke) (holotype, K).

Stromata in very poor condition, branching dichotomously with only a small apical, cylindrical, fertile piece, with the surface eroded, making an accurate description impossible; the sterile parts are almost filiform, smooth and twisted.

Asci and apical apparatus not present; spores 18.4–21.8(–23.0) × (4.9–)5.2–5.7 µm (av. 19.3 × 5.3 µm), (reddish) brown, relatively pale, inequilaterally fusiform with ventral side more or less concave; germ slit straight to slightly oblique, c. 1/4–1/3 of total length, ventral.

Petch (1939) wrote that the specimens were growing in a greenhouse. There is no such indication in the Cooke description, nor on the label, nor, indeed, of Cooke's claim that it grew on the ground. Petch regarded it as an abnormality of *X. digitata* following Lloyd (1924) who referred to it as an anomaly which should be ignored. Although the spores are close to those of *X. digitata* the habit is so different that I cannot accept this synonomy. However, I doubt that we will ever know how to apply this name.

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