Notes on British species of *Byssonectria*

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Notes on the taxonomy of the species reported from Britain as *Byssonectria* and *Inermisia* are presented. Two species, *B. fusispora* and *B. terrestris*, are retained in the British list, although fresh collections are required to confirm the distinction between them. *Byssonectria tetraspora* and *Inermisia pilifera* should be placed in *Octospora*. Observations on the type of *O. pilifera* are provided to update the species description.

Byssonectria P. Karst., originally referred to the Hypocreales Lindau, was shown by Korf (1971) to be an earlier name for *Inermisia* Rifai (Rifai, 1968). The genus has been distinguished from *Octospora* Hedw. on the basis of excipular structure, and the non-bryophilous (Benkert, 1987) or nitrogen-rich (Pfister, 1993) habitat, although Khare & Tewari (1978) treated these names as synonyms.

Three accepted names in *Byssonectria* and *Inermisia*, *B. fusispora* (Berk.) Rogerson & Korf, *B. tetraspora* (Fuckel) Korf and *I. pilifera* (Cooke) Dennis & Itzerott, were listed in Cannon, Hawksworth & Sherwood-Pike (1985). *Byssonectria tetraspora* was maintained in *Octospora* by Dennis & Itzerott (1973) on the basis of excipular structure and association with the moss *Bryum argenteum*, and we accept this placement (Yao & Spooner, 1996).

Among the synonyms commonly assigned to *B. fusispora*, two distinct species can be recognized from British records according to Pfister (1993), namely *B. fusispora* and *B. terrestris* (Alb. & Schwein.) Pfister (Syn. *Peziza aggregata* Berk. & Broome; *P. roumegueri* P. Karst.; *P. roumegueri* var. *carnosissima* W. Phillips). *Peziza aggregata* has proved to be troublesome for contemporary taxonomists although Pfister (1993) has shown that *Thelebolus terrestris* Alb. & Schwein. is an earlier name for it. It was considered as a synonym of *Inermisia fusispora* (Berk.) Rifai (Syn. *Byssonectria fusispora*) by Rifai (1968), Dennis & Itzerott (1973) and Benkert (1987), but was recognized as a distinct species by Svrček (1969), Rogerson & Korf (Korf, 1971) and Pfister (1993). It may be noted also that doubt as to the specific distinction between *P. fusispora* and *P. aggregata* had been expressed by Cooke (1875) when he illustrated these two species from their types. He reduced the latter to a variety of the former.

Byssonectria fusispora, as circumscribed by Pfister (1993), is distinguished from *B. terrestris* in lacking a conspicuous subiculum, in occurring on burnt areas or sandy soil where cyanobacteria grow, and in having larger ascospores (24·0–29·0 × 7·0–11·0 μm). The subiculum is, in fact, variable amongst British collections previously named as either *B. fusispora* or *Peziza aggregata*, ranging from very conspicuous to scanty or even absent. Such variation is seen especially in those collections from plant debris; collections on soil rarely exhibit development of a subiculum. This may imply that the development of subiculum is related to the substrate.

Variation in ascospore size and shape in collections referred to *B. fusispora* has been demonstrated by Rifai (1968), based on examination of type and other collections. The considerably smaller spore size, '(18·2–)21·0–24·5(–26·3) × 7·5–9·5 (–11·0) μm' given by Rifai for this species, is apparently based partly on the type of *B. fusispora*. Spores from the same material in K measured by the present authors are mostly 21·0–23·0 × 8·0–9·0 μm. Another example of a British collection (on peaty ground, Scarborough, 5 Oct., *s. leg.*, K) examined by R. W. G. Dennis (in herb.) has spores 21·0–28·0 × 7·0–9·0 μm, which overlaps the spore ranges given by Pfister (1993) for *B. fusispora* and *B. terrestris* (as '18·4–25·6 × 8·0–9·6 μm'). As pointed out by Pfister (1993), measurement of discharged ascospores from fresh material may resolve the problem of the spore size range and delimitation of species. At present, we follow the species concept provided by Pfister (1993).

Inermisia pilifera presents another problem amongst the species names relevant to *Byssonectria*. Benkert (1987) offered no taxonomic opinion on this species, and Pfister (1993) excluded it from *Byssonectria*, but did not suggest an appropriate generic placement for it. *Peziza pilifera* Cooke was introduced as a new name for *Leucoloma ascoboloides* Rehm to avoid homonymy with *Peziza ascoboloides* Bertero, *P. ascoboloides* De Not., and *P. ascoboloides* Schwein. The subsequent combinations in *Humaria* (Saccardo, 1889), *Inermisia* (Dennis & Itzerott, 1973) and in *Octospora* (Khare &

Tewari, 1978) all failed to use the original epithet provided by Rehm (in Winter, 1872).

Several parts of the type of *Leucoloma ascoboloides* (Rehm *Ascom.* No. 54) are preserved in K, and these contain at least two elements of fungal material. The most prominent element is a pale yellow conidial fungus, which has flattened, lobed fruit bodies growing on or among moss. Another element is a discomycete which has rather inconspicuous apothecia immersed in soil, as indicated by Graddon (1972) and by Dennis & Itzerott (1973). A total of only three apothecia was found in two parts of Rehm *Ascom.* No. 54 examined, from one of which descriptive notes and a slide were prepared by Graddon (in herb.). Examination of these apothecia confirms the observation by Graddon (1972), who published a drawing made from Rehm *Ascom.* No. 54 under the name *Inermisia* sp. The apothecium has a parenchymatous marginal structure reminiscent of *Byssonectria*, but has ellipsoid ascospores typical of *Octospora*, and is bryicolous, being associated with the moss *Ceratodon purpureus* (Hedw.) Brid. Although the excipular structure is not typical of *Octospora*, it seems nevertheless better to retain the species in that genus.

The combination *Octospora ascoboloides* (Seaver) Caillet & Moyne (*Bull. Soc. Mycol. France* **96**: 189, 1980); (syn. *Lamprospora ascoboloides* Seaver in *Mycologia* **6**: 10, 1914) prevents a combination of Rehm's epithet in this genus. The combination of Cooke's epithet in *Octospora* by Khare & Tewari (1978), although incorrect at the time of publication, must now be used. Synonymy for this species and a description based on the type, Rehm *Ascom.* No. 54, is provided here for easy reference.

Octospora pilifera (Cooke) K. B. Khare & V. P. Tewari in *Can. J. Bot.* **56**: 2119 (1978).

Leucoloma ascoboloides Rehm, *Ascom.* No. 54 (1871) [*nom. nud.*].

Leucoloma ascoboloides Rehm, in Winter in *Flora* **55**: 525 (1872).

Peziza pilifera Cooke, *Mycographia* **1**, 50 (1876) [*nom. nov.*].

Leucoloma piliferum (Cooke) Rehm, in *Ber. Naturhist. Vereins Augsburg* **26**: 18 (1881).

Humaria pilifera (Cooke) Sacc., *Syll. Fung.* **8**: 122 (1889).

Inermisia pilifera (Cooke) Dennis & Itzerott in *Kew Bull.* **28**: 22 (1973).

Apothecia 0·5–1·0 mm diam. when dried, scattered, basally immersed in soil amongst moss. *Disc* concave, pale yellow to yellowish brown in dried material. *Receptacle* cupulate, externally smooth or minutely downy, often with adherent sand granules. *Excipulum* a *textura angularis* to *textura globulosa*, cells 10·0–25·0(–30·0) µm diam. in the basal area with smaller cells at the surface, 8·0–15·0(–20·0) µm diam. towards the margin. *Asci* operculate, cylindric, I-, *ca.* 165 × 16·0 µm, uniseriately 8-spored. *Ascospores* unicellular, colourless, ellipsoid to broadly ellipsoid, (13·5–)14·5–18·0(–19·0) × 9·5–13·0 µm, smooth, containing 1(–2) guttules. *Paraphyses* slender, enlarged slightly at the apex, to 3·0–4·0 µm diam.

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Ascospore size, taken from the type, is smaller than that given in the protologue of *L. ascoboloides* (Winter, 1872), but is close to the dimensions given by Cooke (1876) and Massee (1895), who examined the same specimens.

Cooke (1876) described the species as 'on the ground', as indicated in the protologue, but illustrated the apothecia on moss. It is likely that the fungus illustrated by Cooke was based on the conidial element.

This species was reported from Britain by Phillips (1887) and by Mason & Grainger (1937) but no British specimens have apparently been preserved. It is here maintained in the British list, but its presence in Britain requires confirmation from fresh material.

It may be noted that this species is well represented by the type and also by Rehm, *Ascom.* No. 854 and No. 854b.

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