Morphotaxonomic revision of *Ombrophila* species on herbaceous, in particular monocotyledonous hosts

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Abstract: Three species growing on monocotyledonous hosts in semiaquatic habitats are accepted within the predominantly lignicolous genus *Ombrophila*: *O. pileata*, *O. costantinii*, and *O. ambigua*. This result is based on the personal reexamination of the type specimens of *O. ambigua*, *O. aquosa*, *O. pileata*, *O. longispora*, and *O. lacustris*, and various non-type collections. Together with the illustrated protologues of *O. costantinii*, *O. helotioides*, and *Leotiella caricicola*, the following synonymy could be established: *O. longispora*, *O. lacustris*, and *O. helotioides* are certain, probable, or possible synonyms of *O. pileata*, respectively, *Leotiella caricicola* is a synonym of *O. costantinii*, and *O. aquosa* is a possible synonym of *O. ambigua*. The examined type collection of *O. pileata* turned out to be a mixture comprising also *O. costantinii*. Problems regarding species delimitation based on morphological variation are discussed. Two collections on dicotyledonous herbs, treated here as *O.* aff. *ambigua*, could represent a species of its own. The correlation between ascospore shape (elongated vs. broadly ellipsoid) and inhabited substrate (herbaceous vs. woody) suggests that the three accepted herbicolous species form a natural group, for which the genus *Leotiella*, previously synonymised with *Cudonia*, is reduced to a subgenus of *Ombrophila*. *Ombrophila costantinii* is proposed as a new combination based on *Helotium costantinii*.
Keywords: semiaquatic habitat, *Carex*, *Gelatinodiscaceae*, *Glyceria*, *Helotiales*, *Leotiella*.

Introduction

The genus *Ombrophila* Fr. (= *Neobulgaria* Petr.) is characterised by a medullary excipulum of narrow, interwoven hyphae immersed in abundant mucilage ("*textura intricata imbuta*" *fide* Hengstmengel, 2020), an ectal excipulum of thin-walled prismatic to isodiametric cells with hardly noticeable mucilage, and often an external layer of hyphae immersed in mucilage, particularly near the base of the apothecium. Typical is the presence of rhomboid (octahedral) crystals in the tissue which often form druses. The ascus apical ring is usually of the *Calycina*-type, but also reduced, *Hymenoscyphus*-like types occur, though with a thickened basal part of the ring.

Ombrophila differs from *Ascocoryne* J.W. Groves & D.E. Wilson and *Chloroscypha* Seaver (= *Gelatinodiscus* Kanouse & A.H. Sm.), with which it forms the majority of *Gelatinodiscaceae*, in the shape of apical ring and in the absence of a KOH-soluble pigment. Yet, a sharp morphological distinction between *Ombrophila* and *Ascocoryne* proved to be difficult, exemplified by *Ombrophila lilacina* (Fr.) P. Karst., recently transferred to *Ascocoryne* as *A. lilacina* (Fr.) Baral *et al.* Further members of the family are the small genera *Ascotremella* Seaver, *Neocudoniella* S. Imai, and *Phaeangellina* Dennis. All these genera have a more or less strongly mucilaginous excipular texture. However, there is a tendency of *Ombrophila* species to occur in more or less semiaquatic habitats, whereas members of *Ascocoryne* are usually found on damp wood away from streams or ground water. For the ontogeny of the mucilage, which develops from a viscous substance secreted through the cell wall and swelling by water uptake, see Hengstmengel (2020: 547 f.).

Within the genus *Ombrophila*, a strong correlation is observed between ascospore shape and the inhabited substrate. A comparatively large group of species has more or less ellipsoid ascospores with a length:width ratio of approximately 2–3(–4), and this group almost exclusively occurs on woody substrates. Some of them are currently assigned to the genus *Neobulgaria*, although *Neobulgaria* is morphologically not distinct from *Ombrophila* (Baral & Krieglsteiner, 1985: 143). A much smaller group of species has elongated ascospores with a length:width ratio of about 4–10, and this group includes species growing on herbaceous substrates, mainly monocots. As an exception, an unidentified species of *Ombrophila* (H.B. 3070, 3079a, see IVV) with ellipsoid ascospores grew under *Carex* and *Juncus* on debris of unidentified plants but clearly also on *Carex*, in the latter case in association with *O. pileata* (H.B. 3079b). Other exceptions are *O. pileata* once growing on *Equisetum*, given that *O. helotioides* W. Phillips is a synonym, and *O.* aff. *ambigua* growing on dicot herbs (*Lycopus*, *Persicaria*, treated in this paper).

In 1988 I constructed a still unpublished key to 17 personally studied species of *Ombrophila*, 6 of which being without a name (spec. 1–6). The present paper is based on this study but only deals in detail with taxa growing on monocotyledonous hosts. They comprise at least three species (*O. pileata*, *O. costantinii*, *O. ambigua*), to which some further, more or less ascertained synonymous names belong. However, the limits between these three species are not fully resolved because of variation in ascospore size and shape among the collections examined.

In Baral & Krieglsteiner (1985: 144), two of the three species were treated as follows: (1) The name *Ombrophila* cf. *lacustris* Velen. was used for three collections (H.B. 836, 1012, 1677) with sickle-shaped ascospores of *14–18 × 2–2.5 µm (on *Carex vesicaria* from Stuttgart); *O. aquosa* Velen. was considered as a questionable synonym which Velenovský (1934) published in the same work. (2) The name *O.* cf. *longispora* Velen. was used for one collection (H.B. 817) with straight ascospores of *25–28 × 3.5–3.7 µm (on unidentified *Poaceae* from Zug); *O. pileata* (P. Karst.) P. Karst. was given as a questionable earlier synonym.

The confusion about these names increased when I studied in Aug. 1991 a duplicate of Karsten's exsiccatum of *Ombrophila pileata* (P.A.K. 2061) deposited in M (München), which had rather short, often sickle-shaped ascospores. Because of this observation, I changed my opinion and renamed my *O.* cf. *lacustris* samples to *O. pileata* by proposing to use *O. pileata* in this sense in Krieglsteiner (1993) and Beyer (1998). Simultaneously, I continued to use the name *O. longispora* for the taxon with long and straight ascospores. This concept was adopted by Krieglsteiner (1999: 267), who used the name *O.* cf. *longispora* for a collection from Würzburg with long and straight ascospores and stated that *O. pileata* should be used for "*O. aquosa* ss. Baral (?= *O. lacustris*)", i.e., the sickle-spored species.

However, this conclusion turned out to be premature. In Aug. 1998, I studied another duplicate of the *O. pileata* exsiccatum deposited in H (Helsinki) and was surprized that this part of the seemingly same collection had ascospores reminiscent of *O. longispora*. Because the Helsinki specimen is in better concordance with Karsten's protologue and later interpretations of the epithet *pileata*, the unintentional lectotypification of *O. pileata* by Carpenter (1981) based on the specimen in H is followed here in order to fix the name *O. pileata* to the species with long and straight ascospores. For the sickle-spored species I here adopt the name *O. costantinii* Boud., to which I consider *Leotiella caricicola* Plöttn. as a later synonym. This latter conclusion is solely based on the illustrations given by Boudier

(1889) and Plöttner (1900), but appears to be well-founded because of the convincingly illustrated ascospore traits and the tendency of *O. costantinii* to form long-stalked apothecia with eventually convex disc (see Pl. 4 figs 2–3).

In order to better understand Velenovský's (1934) three taxa *O. aquosa*, *O. lacustris*, and *O. longispora*, I revised their type specimens in Dec. 2001. Already in May 1992, I examined a syntype of another taxon of this group, *O. ambigua* Höhn. The resulting observations and new data gained from more recent collections further challenged previous name concepts and posed problems in species delineation. Particular difficulties arose when the curvature of the ascospores was variable within a single apothecium. This was mainly the case in the holotype of *O. lacustris* (Pl. 1 fig. 3), which appears to form a link between straight-spored collections of *O. pileata* (Pl. 1 figs 1–2, 4–6; Pl. 2) and curved-spored ones of *O. costantinii* (Pls 3–4). Because of the prevailing presence of long and almost straight spores in *O. lacustris*, this taxon is here tentatively treated as a synonym of *O. pileata*. The rather short and only slightly curved ascospores in the syntype of *O. ambigua* appear to justify a third species in this group, with which *O. aquosa* might be synonymous. Helpful in this regard proved the observation that the degree of curvature does not noticeably change from living to dead ascospores, which facilitates comparison between fresh and herbarium specimens.

This paper combines observations obtained from all available recent and old collections. The presented species concept needs to be taken with caution, however, particularly because no molecular investigations on the studied samples were undertaken, and no DNA sequences which might belong to any of these species could be found in GenBank.

Material and methods

Macroscopic characters were described based on fresh and rehydrated apothecia. Microscopic characters were studied based on living (*) elements following standards of vital taxonomy (Baral, 1992), in comparison also from dead (†) elements. For further methods see Baral *et al.* (2020).

Abbreviations and explanations: vid. = examined or seen, doc. vid. = documentation (illustration) seen, non vid. = type not examined, in non-type collections no documentation or specimen seen, idem = the same, ibid. = from the same geographical region, ø = unpreserved; IVV = www.in-vivo-veritas.de, → = from immature to mature, OCI = lipid content (range 0–5), H_2O = tap water, KOH = potassium hydroxide (ca. 5%), LBs = oil drops, SCBs = KOH-soluble cytoplasmic bodies, VBs = refractive vacuolar bodies, IKI = 1% iodine (I2) + 3% KI (potassium iodide), MLZ = Melzer's reagent, CRB = Cresyl blue (aqueous). Values in {} indicate the number of collections (T = type). Ascospore length values "*in situ*" were taken straight from pole to pole, whereas "actual length" includes the curvature. Consulted herbaria: H (Helsinki), M (München), PRM (Praha).

Taxonomy

Ombrophila subgenus ***Leotiella*** (Plöttn.) Baral, *comb. et stat. nov.* – MycoBank MB843469

Basionym: *Leotiella* Plöttn., *Beiblatt, Hedwigia,* 39 (6): (197) (1900).

Type: *Leotiella caricicola* Plöttn. (= *Ombrophila costantinii* Boud.)

Diagnosis: Ascospores elongated, straight to strongly curved, length:width ratio in the range of 4–10, as opposed to subgenus *Ombrophila* having ellipsoid-fusoid, ± straight ascospores with a length:width ratio of 2–3(–4); ascus apical ring of *Calycina*-type as in subgenus *Ombrophila* p.p.; concurring with subgenus *Ombrophila* in strongly gelatinous medullary excipulum, non-gelatinous ectal excipulum of horizontally oriented *textura prismatica*, presence of crystals, and strong variation in apothecial stipe length.

Ombrophila pileata (P. Karst.) P. Karst., *Not. Sällsk. Fauna Flora Fenn. Förh.*, 11: 243 (1870) – Pls 1–2.

≡ *Peziza pileata* P. Karst., *Not. Sällsk. Fauna et Fl. Fenn. Förh.*, 10: 150 (1869).

≡ *Helotium pileatum* (P. Karst.) P. Karst., *Bidr. Känn. Finl. Nat. Folk*, 19: 130 (1871) [non *H. pileatum* Peck 1876, *nom. illegit.* = *Cudoniella clavus fide* White, 1942: 178; nec *H. pileatum* Velen. 1922, *nom. illegit.* = *Hymenoscyphus vernus fide* Svrček, 1985: 168].

≡ *Phialea pileata* (P. Karst.) Sacc., *Syll. fung.*, 8: 259 (1889).

≡ *Hymenoscyphus pileatus* (P. Karst.) Kuntze, *Revis. gen. pl.*, 3(2): 485 (1898).

= *Ombrophila longispora* Velen., *Monogr. Discom. Bohem.*: 108, pl. 18: 19–21 (1934) [non *O. longispora* Velen., *nom. illegit.*, *Novitates mycologicae*: 177 (1940)].

(?)= *Ombrophila lacustris* Velen., *Monogr. Discom. Bohem.*: 110, pl. 18: 38 (1934).

?= *Ombrophila helotioides* W. Phillips, *Grevillea*, 16(79): 94 (1888) [non *O. helotioides* Rehm, *nom. illegit.* ≡ *Ciboria helotioides* (Rehm) Höhn.].

≡ *Pachydisca helotioides* (W. Phillips) Boud., *Hist. Class. Discom. Eur.*: 94 (1907).

Key to species of *Ombrophila* on herbaceous hosts, mainly monocots (subgenus *Leotiella*)

1. Ascospores straight to slightly curved (0–20°), rarely a few spores strongly curved (50–90°), *(16–)19–28(–32) [actual length] × (3–)3.3–4(–4.3) µm; asci *95–110 × (7.5–)9–10(–11.3) µm; mainly on *Cyperaceae* (*Carex*, also *Eriophorum*), rarely *Poaceae* ..... ***O. pileata***

1. Ascospores shorter or predominantly strongly curved; asci max. *80–90 × 8–9 µm **2**

2. Ascospores predominantly strongly curved (90–180°), *(13–)14–21(–24) [in situ] × (2.3–)2.5–3(–3.5) µm [actual length 18–25 µm]; asci *(70–)75–90(–100) × (7–)7.5–8.5(–9) µm; mainly on *Cyperaceae* (*Carex*), rarely *Typha* and *Glyceria* ..... ***O. costantinii***

2. Ascospores *9.5–18.5 µm long, straight to slightly (0–30°) or sometimes medium curved (45°) **3**

3. Asci *(55–)60–70(–80) × 5.5–7.2 µm († max. 6 µm wide); ascospores *(9.5–)10.5–15.5(–18.5) × (2.2–)2.5–2.8(–3) µm, inequilateral to medium curved (0–45°); on *Poaceae* (mainly *Glyceria*) ..... ***O. ambigua***

3. Asci *8–9 µm wide (†7–8.3 µm); ascospores 13–17.5 µm long (up to 22.5 µm when 1-septate), straight to very slightly curved (0–10°) **4**

4. Ascospores †15–17 × 2.8–3 µm, ± homopolar; asci †50–60 µm long; on *Phragmites* ..... ***O.* cf. *ambigua***

4. Ascospores *13–17.5 × 3.2–4.2 µm, slightly heteropolar (gradually tapered towards base); asci *80–102 µm long; on dicot stems (*Lycopus*, *Persicaria*) ..... ***O.* aff. *ambigua***

Etymology: *pileata* after the often convex, cap-like disc; *longispora* after the long ascospores; *lacustris* growing in a swamp of a silting lake.

Typification: *pileata*: Finland, Kanta-Häme, Mustiala, 5.X.1868, on *Carex* ?*vesicaria* (P.A.K. 2061, H, lectotype, vid.); *longispora*: Czechia, Mnichovice, on (?)*Poaceae*, 9.X.1929 (PRM 152362, holotype, vid.); *lacustris*: Czechia, Bohemia, Mnichovice, on *Eriophorum*, X.1927 (PRM 150064, holotype, vid.); *helotioides*: Scotland, Aberdeen, on *Equisetum fluviatile*, 1886 (K, holotype, non vid.).

Illustrations: Velenovský (1934: pl. 18 figs 19–21, 38), Dennis (1956: fig. 64), Dennis (1978: pl. 12 L), Ellis & Ellis (1985: fig. 1236), Blank & Dougoud (1992).

Apothecia fresh or rehydrated (1–)2–4(–5) mm diam. {10}, receptacle ~0.3–0.6 mm thick, translucent, very gelatinous, scattered; disc whitish-hyaline to pale greyish(-violaceous), rehydrated whitish-cream to bright greyish-brown, round to slightly undulating, flat, finally convex, margin distinct, smooth, exterior concolorous; stipe (0.6–)1–5(–8) {9} × (0.4–)0.5–1(–1.2) mm {6}, cylindrical to obconical, appearing glassy; receptacle and stipe whitish-pruinose with minute scattered scales, base sometimes darker due to reflection of the substrate, superficially inserted. **Asci** *94–110 {4} × (7.5–)8.5–10.3(–11.3) µm {5}, †(70–)75–100(–110) × (7–)8–9(–10) µm {7}, 8-spored, spores *obliquely biseriate, *pars sporifera* *40–57 µm long {3} (†70–85 µm); **apex** (†) conical, apical ring †2–3.5 → 1–2 µm tall (*1 → 0.7 µm) and †1.2–1.7 µm wide {6}, IKI strongly blue {12} (BB, upper part of ring less reactive in dead asci with expanded dome), *Calycina*-type; **base** gradually attenuated in a short to medium long stalk arising from croziers {6}. **Ascospores** *((14–))(16–)19–28(–32)((–35)) × (3–)3.3–4(–4.3)((–5.2)) µm {11} [*in situ* or actual length], †(13.5–)18–27(–32) × 3–3.7 µm {6}, naviculiform, homopolar, both ends subacute to acute, exceptionally obtuse, straight to inequilateral or slightly curved (0–20°) {11}, rarely some spores medium to sometimes strongly curved (50–90°) {3}; uninucleate, containing either a few small LBs [OCI 0(–1)] {2} or a few to many small LBs and often also 1–4 medium-sized ones of 0.8–1.8 µm diam. in each half [OCI (1–)2–3(–4)] {9}, spores with OCI 0(–1) may contain many globose, very slightly refractive VBs of 0.6–2.3 µm diam. {2} which stain pale violet in CRB, rarely with roundish glycogen regions {1}; without sheath or sometimes enveloped in a delicate sheath that slips off the spore {1}; overmature 1(–3)-septate {2}, germinating without forming conidia. **Paraphyses** apically cylindrical to slightly clavate; terminal cell *33–50 {2} × 3–4.5 µm {3}, †(25–)30–45(–75) × 2.3–3.5 µm {2}, containing hyaline, very elongated, sometimes divided, medium to strongly refractive VBs {5} in upper 20–34 µm, staining turquoise in CRB, unstained in IKI; lower cells *10–17 × 2–2.6 µm {2}, †(3–)8–16 × 1.8–3 µm {1}, containing non-refractive vacuoles; branched only at base. **Subhymenium** hyaline, ~25 µm thick, non-gelatinzed. **Medullary excipulum** hyaline, ~300 µm thick at base of receptacle, of very loose, strongly gelatinised *textura intricata*, hyphae *1–3.5 µm wide, with abundant gel staining distinctly lilac in CRB, sharply delimited from ectal excipulum. **Ectal excipulum** hyaline, of thin-walled, horizontally oriented *t. prismatica* from base to margin, 50 µm thick at stipe and flanks, cells at flanks *15–37(–45) × (5–)7–17(–20) µm {4}, in ?stipe up to 100 µm long {1}; no gelatinous external tissue observed. **Rhomboid crystals** present {8}, rarely absent {1}, (1–)2–8(–13) µm diam., partly forming druses of 9–23 µm diam., sparse to mostly abundant in hymenium and medullary excipulum and on surface of ectal excipulum. **SCBs** in ectal excipular cells globose, 1.5–2 µm diam., strongly refractive, 1 per cell {1}. **Anamorph:** unknown.

Habitat: on previous year's culms and leaves or leaf sheaths of *Carex* sp. {7/2}, *C. rostrata* {2}, *C.* ?*vesicaria* {1}, *Eriophorum* sp. {1}, indet. *Poaceae* {1/1}. **Association:** *Barlaea modesta* {1}, *Mollisina panici* {1}, *Ombrophila* sp. H.B. 3079a {1}, *O. costantinii* {1}. **Drought tolerance:** probably intolerant in all parts (ascospores remain to be tested). **Altitude:** Scandinavia 110–131 m, central Europe 360–2300 m. **Phenology:** VIII–X. **Geology:** Devonian slate, Triassic upper Buntsandstein, granite (including granodiorite and quartzdiorite), micaschist and gneiss, Pleistocene loess over Triassic Muschelkalk, alluvial sediments over Upper Jurassic or loess, Pleistocene calcareous sediments.

Remarks: *Ombrophila pileata* differs from *O. costantinii* mainly in longer, predominantly more or less straight ascospores, but the limits are not sharp in every case (for further differences see under *O. costantinii*).

Variation: Ascospores size of *O. pileata* ranged predominantly at *19–28 × 3.3–4 µm (*in situ* as well as actual size because almost straight spores cover the entire length range). Blank & Dougoud (1992) found slightly longer spores of *20–32(–35) × 3.2–4.1 µm, with an average of 27 × 3.7 µm (from 50 measured spores). A similar spore size of 16–30 × 2.5–4 µm and (15–)17–30 × (2.5–)3–3.5 µm was given by Dennis (1978) and Ellis & Ellis (1985), respectively. The holotype of *O. lacustris* has very similar spores, but some of them deviate by a moderate to strong curvature.

The length of the apothecial stipe varied greatly among the different collections, which probably depends on the situation of the substrate in the wet litter. Karsten (1869, *Peziza pileata*), Velenovský (1934, *O. lacustris* and *O. longispora*), and Dennis (1978, *Hymenoscyphus pileatus*) reported apothecia with a convex disc, whereas most of the here studied specimens showed ± flat disks, including fresh ones (Pl. 1 fig. 1a–b, Pl. 2 fig. 1d–e). However, when comparing fresh with rehydrated apothecia, the convex disc often changed to flat (Pl. 1 figs 2a–b, 3a, 4b) or it was only sometimes convex (Pl. 1 fig. 4a). Dennis (1956: 71) found the disc concave when dry but flat to slightly convex when soaked up. Blank & Dougoud (1992) gave much longer ectal excipular cells of 25–100 × 5–20 µm compared to *15–37 × 7–16 µm in the present study of three samples, perhaps because the authors included the much longer cells of the stipe. However, from Dougoud's unpublished excipulum sketch (see IVV) a cell size of 16–35(–45) × 8–17 µm can be evaluated. The scales in Blank & Dougoud (1992) should be enlarged by about 110–120%. A 120% scale error concerns the spores which would otherwise measure up to 40 × 6 µm, but even the resulting 5 µm width of the largest spore exceeds the data in their description.

Remarks on the types: When studied by me in 1998, a syntype specimen of ***Peziza pileata*** in H (Herb. Karsten 2061, 5.X.1868, Mustiala, "*ad Caric.*") contained about 11 apothecia and a single fruit of *Carex* (Pl. 1 fig. 2c) which resembles that of *C. vesicaria*. Three apothecia were examined (Pl. 1 fig. 2). They concurred with Dennis' (1956: 71) redescription of obviously the same collection, possibly a duplicate in K (as *Helotium pileatum*, Herb. Karsten, 5.X.1868, substrate not indicated). Dennis found straight to slightly inequilateral ascospores but measured them narrower (†16–24 × 2.5–3 µm) compared to my data (16–27 × 2.9–3.1 µm) and the flesh of very loosely woven, narrow hyphae without a mucilaginous matrix. Because of its very low refractivity, Dennis overlooked the mucilage which, in fact, was abundantly present among the widely spaced, often very narrow hyphae (Pl. 1 fig. 2d). The apparent absence of mucilage prompted Dennis to recognise *Peziza pileata* the species in *Helotium*.

A duplicate of P.A.K. 2061 in M, which I had studied already in 1991, contained two apothecia: one showed merely a broken stipe without receptacle, whereas the other differed from the specimen in H in much shorter (when measured *in situ*), strongly sickle-shaped ascospores (Pl. 3 fig. 1). This duplicate is here assigned to *O. costantinii*.

In his monograph of *Crocicreas* Fr., Carpenter (1981: 244) provisionally accepted Karsten's (1870) temporary placement of *Peziza pileata* in *Ombrophila*. Carpenter considered the specimen of P.A.K. 2061 in H as holotype and annotated this on the label with the date 25.IV.1979. According to Karsten's (1869: 150) ecological data, which read "on rotten culms and on earth in wet places throughout south-

ern Finland in September and October", *P. pileata* was based on several collections. Therefore, it seems probable that the protologue includes data of more than one collection. In any case, Carpenter's statement should be taken as an unintentional lectotypification (Art. 9.10 Ex. 11, Shenzhen Code), unless missing conformity with protologue data contradict this.

In fact, Karsten's handwritten note on the label of P.A.K. 2061 (H) differs from that in the protologue of *Peziza pileata*: asci 70–75 × 7.5 µm vs. ~90 × 7–8 µm, ascospores 14–16–20–24 × 3 µm, illustrated ± straight vs. 16–32 × 2.5–4 µm, described as "straight or curved", paraphyses 1.5 µm wide vs. "gracile", respectively. In conclusion, it must be taken into account that Karsten based the protologue on another collection. When transferring *Peziza pileata* to *Ombrophila*, Karsten's (1870: 243) brief report includes 70–90 µm long asci and 1.5 µm wide paraphyses (ascospores not mentioned) and the statement that he had observed the species "at various localities around Mustiala". Although P.A.K. 2061 was collected as early as 1868, Karsten (1969) obviously did not include data from it in the protologue, and only in his 1870 report he gave a combination of data from several samples.

Because no further specimens of *O. pileata* in Karsten's herbarium were available, convolute P.A.K. 2061 deposited in H (Pl. 1 fig. 2) is here regarded as lectotype of *Peziza pileata* for the time being. Since the entire exsiccatum P.A.K. 2061 was found to be heterogeneous, based on the observation of straight ascospores in H and curved ascospores in M, duplicates in other herbaria require reexamination as to which morphotype they contain.

The three apothecia of P.A.K. 2061 in H examined here were undoubtedly conspecific, although one showed slightly wider ascospores (Pl. 1 fig. 2j) than the other two (Pl. 1 fig. 2i). Further observations obtained from the lectotype include rehydrated apothecia 1–3.3 mm diam., stipe 2–4 mm long, ascospores straight or slightly sickle-shaped, rarely 1-septate, asci with apical ring reacting deep blue in IKI (similar as in *Ombrophila pura*; Baral, 1987: fig. 13), paraphyses often densely septate in middle part, medullary excipulum of strongly gelatinous texture with narrow neuron-like hyphae with wide intercellular space filled with non-refractive gel, crystals absent or sparse, somewhat disintegrated (for further data see IVV).

Due to the high amounts of mucilage in the medullary excipulum, the stipe remained stongly flattened when rehydrated (Pl. 1 fig. 2a). Dennis' (1956) placement in *Helotium* and later in *Hymenoscyphus* (Dennis, 1964: 75, 1978) instead of *Ombrophila* was followed, *e.g.*, by Cannon *et al.* (1985). The mucilage is actually only discernible when stained, *e.g.*, by Cresyl blue. Placement in *Hymenoscyphus* is excluded not only by the abundant gel matrix and presence of crystals, but also by the *Calycina*-type of apical ring.

Ombrophila longispora was proposed by Velenovský (1934) for a sample from Mnichovice on remnants of a leaf sheath of (?)*Poaceae* on wet soil among *Juncus bufonius*, with colourless, translucent, ochraceous to clay-coloured, thick, soft-gelatinous apothecia of 5–10 mm diam. Velenovský gave the asci as *100–130 × 10–12 µm, inamyloid (yellow in iodine), and the ascospores as *25–30 × 4–5 µm, straight, cylindrical with ± tapered ends, multiguttulate. All five drawn spores possess a median septum. Judging from the present study of the substrate (leaf sheath) it appears improbable that the fungus grew on *Juncus* (Velenovský gave as substrate "wet soil").

Svrček (1957 *in sched.*) revised the holotype and found it to represent a good species, but apparently he did not publish on it. Because of the shrinking effect, the present reexamination revealed much smaller asci and straight to slightly curved, somewhat shorter and especially narrower ascospores, containing many small LBs (Pl. 1 fig. 4, the larger LBs in the left spore appear to be the result of confluence during drying). Contrary to the protologue, the asci had a strongly euamyloid apical ring (Pl. 1 fig. 4c). The diameter of the rehydrated apothecia was merely 2–5 mm.

Ombrophila lacustris was proposed by Velenovský (1934) for a sample from Mnichovice on *Eriophorum*, with colourless, glassy-translucent, gelatinous apothecia 3–5 mm diam. Velenovský described the ascospores as "slightly curved" but figured them with a mainly moderate curvature. He gave the asci as *100–150 × 12 µm, with an apex stained blue in iodine. For the comparatively narrow ascospores he noted only a single length value of 25 µm. They were acute at both ends and contained one medium-sized LB in each half. Judging from his drawing, the spores might have had a size of *22–28 × 2.8–3.4 µm (*in situ*) and the LBs 1.2–1.7 µm diam. Velenovský's statement of apically 5 µm wide paraphyses is approached by my measurement in H.B. 5326 (*3–4.5 µm). Possibly, Velenovský studied living paraphyses, but he did not illustrate or mention VBs in them. He compared *O. lacustris* with *O. aquosa* and probably meant the much larger asci and ascospores when stating that *O. lacustris* is larger than *O. aquosa* (the apothecia had a similar size).

The present reexamination of the *O. lacustris* holotype revealed slightly to strongly curved ascospores, but with the majority only slightly curved. Their length much varied in the predominant range of about †21–28 µm (*in situ* or actual length) and their width was slightly higher (†3.2–3.6 µm) than estimated from Velenovský's sketch of living spores. They had obtuse to acute ends and contained many small LBs among a few medium-sized ones with about 0.8–2 µm diam. (Pl. 1 fig. 3). Also Svrček (1978: 86) found the ascospores in the holotype considerably variable in size (†16–31 × 2.5–4 µm), straight to clearly curved, mature 1(–3)-septate, narrowed or pointed at both poles. Without giving a description he referred a collection from Horská Kvilda (Šumava) on *Carex rostrata* to *O. lacustris*.

Without description or discussion, Dennis (1972: 471, 1978), followed by Cannon *et al.* (1985), considered ***Ombrophila helotioides*** W. Phillips from near Aberdeen (Scotland) on stems of *Equisetum* (Dennis as *E. limosum*) to be a synonym of *Hymenoscyphus pileatus*. The protologue includes subgelatinous apothecia with a convex disc and slightly flexuous stipe. Although the taxon appears to fit *O. pileata* in its pale apothecia with a disc diameter of 2–4 mm and narrowly fusiform, straight to slightly curved, 5-guttulate ascospores of 20–26 × 2–3.5 µm, this taxon requires reexamination of the holotype.

When Velenovský (1940: 177) proposed ***Ombrophila longispora*** as a new species (on stems of *Lysimachia* from Mnichovice, with narrowly cylindrical, curved, non-septate ascospores of 15–22 × 2 µm), he overlooked that he created a homonym with his previously published species with much larger, straight spores. The holotype examined here (PRM 152254, H.B. 7082, see IVV) contained two closely aggregated apothecia which belong to *Calycina herbarum* (Pers.) Gray s.str. (asci without croziers). The ascospores are distinctly shorter and wider (14–17 × 2.8–3 µm) than stated by Velenovský, and they are mostly 1-septate within the asci. The holotype could have been a mixture but this seems improbable, since Velenovský's statements of 4–6-guttulate spores and apothecia resembling a *Pezizella* fit *C. herbarum*.

Dennis (1956: 72) compared ***Phialea luzulina*** Mouton with *Helotium pileatum*. This species differs by smaller apothecia (0.5 mm diam.), a firm prosenchymatous excipulum, and wider ascospores of 20–22 × 5 µm. In the absence of an illustration or reexamination of the type material, the identity of *P. luzulina* remains unclear.

Ecology: *O. pileata* forms its apothecia on dead parts of different monocots, preferably *Carex* spp. (type of *O. pileata*), rarely *Eriophorum* (type of *O. lacustris*) and unidentified *Poaceae*, at the base of standing plants or on plant remnants lying in wet mud. The species can be found in marshlands at small streams, lakes, or in bogs in close association with standing water. The sample from Odenwald was a *Caricetum vesicariae*, that from Auvergne a drying *Caricetum*, that from Unterfranken the border of a *Caricetum* and *Sphagnum* quaking bog of a silting lake (see also Krieglsteiner, 1999), and that from Swiss Jura a high moor.

Blank & Dougoud (1992) reported the species under the name *Ombrophila longispora* based on three collections on *Carex* from

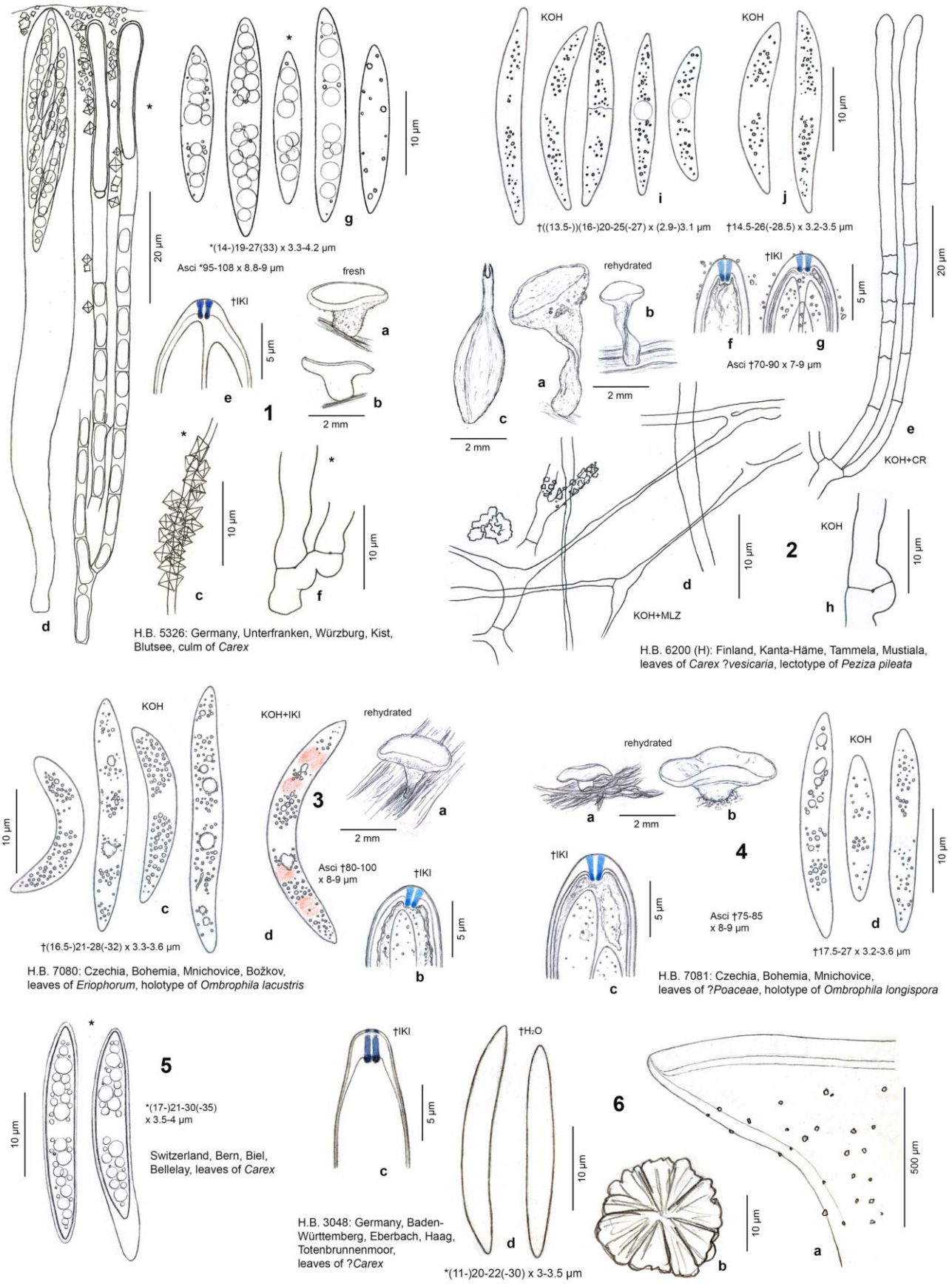

Plate 1 – *Ombrophila pileata*

1a–b, 2a–b, 3a, 4a–b. apothecia; 6a. median section of apothecium; 1c, 2d. hyphae of medullary excipulum covered by rhomboid crystals; 6b. crystal druse; 1d. mature ascus; 1d, 2e. paraphyses; 1e, 2f–g, 3b, 4c. ascus apices with euamyloid ring; 1f, 2h. croziers at ascus base; 1g, 2i–j, 3c–d, 4d, 5, 6d. ascospores (right spore in 1g immature), containing small LBs, living spores also medium- to large-sized, low-refractive VBs (1g, 5). – 2. lectotype of *Peziza pileata*, 3. holotype of *Ombrophila lacustris*, 4. holotype of *O. longispora*; 1–4. *del*. H.-O. Baral.

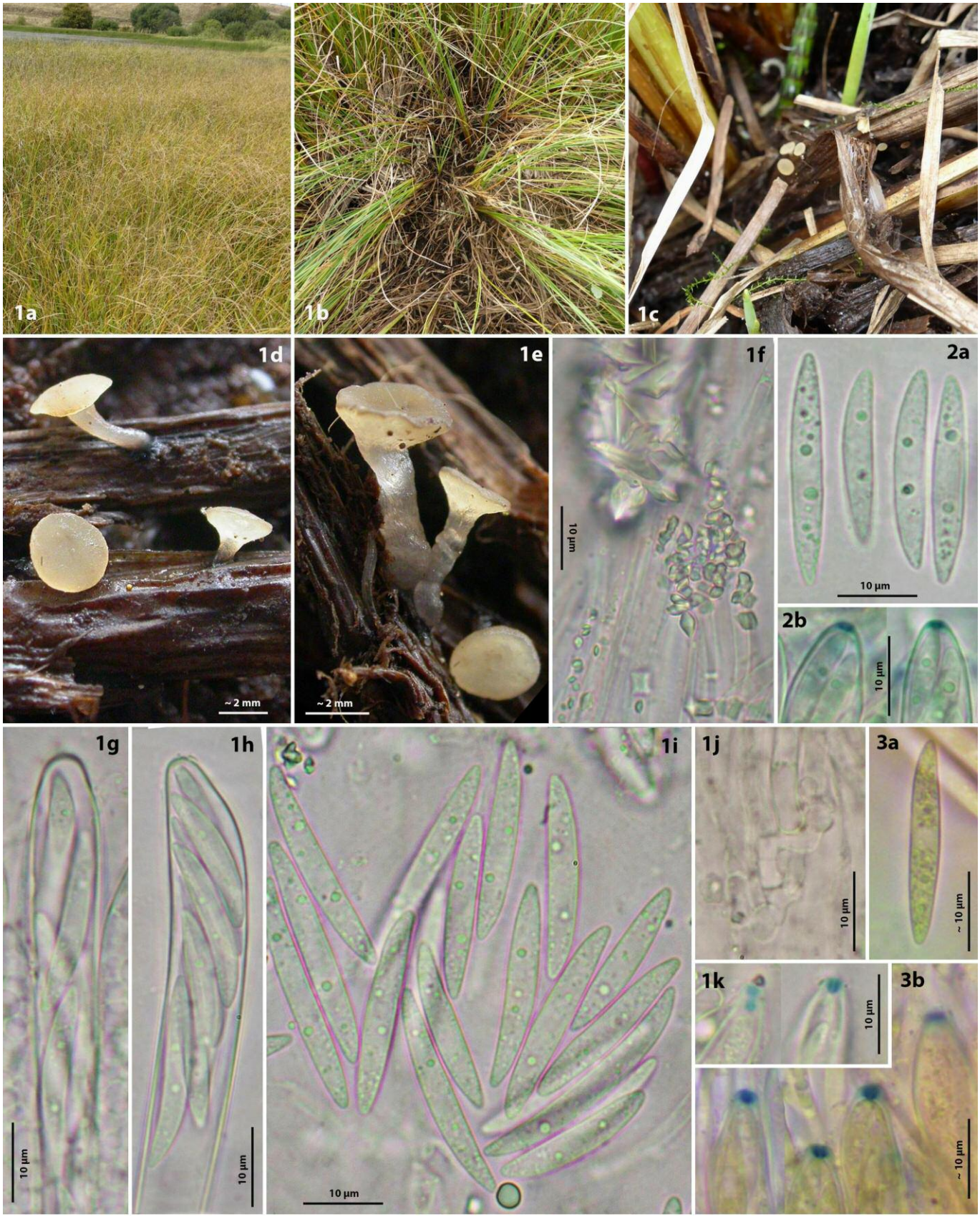

Plate 2 – *Ombrophila pileata*

1a. *Caricetum* wetland; 1b. closeup of collection site; 1c–e. apothecia on dead basal leaf sheaths of *Carex*; 1f. medullary excipular hyphae covered by small rhomboid crystals and a large druse; 1g–h. upper part of living mature asci; 2b. idem, in IKI; 1k, 3b. upper part of dead immature and mature asci, in IKI; 1j. ascus base with croziers; 2a, 3a. living, freshly ejected ascospores. – 1. M.H. 80916. France, Cantal, Le Monteil, *Carex* (photo M. Hairaud); 2. B.C. 280916. France, Puy-de-Dôme, Chastreix, *Carex* (photo B. Capoen); 3. 15.IX.2012. Germany, Sachsen-Anhalt, Benneckenstein, ?*Carex* (photo T. Richter).

Switzerland (the host from Les-Ponts-de-Martel was erroneously given as "(?)*Luzula*", R. Dougoud pers. comm.). Reports from Great Britain under the name *Hymenoscyphus pileatus* are those by Dennis (1978: 135) on debris of marsh plants, and by Ellis & Ellis (1985: 278, 456, 564) on herbaceous plants, grasses (*Poaceae*), and *Equisetum limosum* (= *E. fluviatile*), the latter based on the asserted synonymy of *Ombrophila helotioides*.

The distribution of *O. pileata* (Pl. 9) includes thermoboreal and supra- to orotemperate humid, atlantic to subcontinental and boreal-baltic climatic regions of central and northern Europe at colline to montane altitude.

Specimens included: Finland: North Karelia, 14 km WNW of Outokumpu, 1.8 km SW of Rikkaranta, Lummelampi, 131 m, leaf of *Carex*, 1.IX.2010, M. Pennanen (M.P. 100900F, doc. vid.). – **Southern Finland**, Kanta-Häme (Etelä-Häme), ~8 km E of Forssa, ~1 km N of Tammela, around Mustiala, 110 m, leaves of *Carex* ?*vesicaria*, 5.X.1868, P.A. Karsten (P.A.K. 2061, H, lectotype of *Peziza pileata*, H.B. 6200 ø). – **Czechia: Bohemia**, Praha-Východ, 27 km SE of Praha, Mnichovice, 370 m, leaf sheaths of indet. (?)*Poaceae*, 9.X.1929, J. Velenovský (PRM 152362, holotype of *Ombrophila longispora*, H.B. 7081 ø). – ~1 km SW of Mnichovice, Božkov, Jezérko lake, 380 m, leaves of *Eriophorum*, X.1927, J. Velenovský (PRM 150064, holotype of *Ombrophila lacustris*, H.B. 7080 ø). – **Plžen/South Bohemia**, ~10 km S of Kašperské Hory, SE of Horská Kvilda, Jezerny slat, ~1065 m, culms of *Carex rostrata*, 5.IX.1954, M. Svrček (non vid.). – **Germany: Sachsen-Anhalt**, Harz, 3.2 km NE of Benneckenstein, 2 km W of Trautenstein, Giepenbachwiese, 500 m, culm of ?*Carex*, 15.IX.2012, H. Schubert, vid. T. Richter (doc. vid.). – **Bayern**, Unterfranken, 11 km SW of Würzburg, 2.3 km SSW of Kist, 0.7 km W of Limbachshof, Blutsee, 360 m, culms or leaves of *Carex*, 23.VIII.1995, L.G. Krieglsteiner (H.B. 5326). – **Baden-Württemberg**, Kleiner Odenwald, 7.5 km SSW of Eberbach, 2.5 km ENE of Haag, Totenbrunnenmoor, 360 m, leaves of ?*Carex*, 29.VIII.1985, W. Winterhoff (W.W. 85246, H.B. 3048 ø). – **Switzerland: Zürich**, 8 km N of Zug, ~1 km ENE of Rifferswil, Rifferswilermoos, 600 m, leaf sheaths of indet. *Poaceae*, 8.IX.1976, H.-O. Baral (H.B. 817). – **Bern**, Swiss Jura, 14 km NNW of Biel, 1.5 km SE of Bellelay, Bellelay, 940 m, leaf sheaths of *Carex*, 13. & 14.IX.1986, H.-O. Baral & P. Blank (H.B. 3079b ø). – **Neuchâtel**, Swiss Jura, 15 km W of Neuenburg, SE of Les-Ponts-de-Martel, Marais Rouges, 1000 m, culm base of *Carex*, 9.IX.1989, R. Dougoud (R.D. 11.28.099.89, doc. vid.). – **Graubünden**, Rhätische Alpen, ~3 km SE of Preda, ~2.8 km WSW of Albula-Pass, Murtel digl Crap Alv, 2300 m, leaf sheaths of *Carex rostrata*, 9.IX.1990, H.-O. Baral & E. Batten (H.B. 4214). – **France: Rhône-Alpes**, Ardèche, 5.8 km ESE of St. Cirgues-en-Montagne, 3 km S of Usclades-et-Rieutord, Lac Ferrand, 1255 m, on *Carex*, 21.IX.1990, C.M. Swart-Velthuyzen (ø). – **Auvergne**, Cantal, 10.5 km N of Murat, 2.2 km NE of Le Monteil, Tourbière du Jolan, 1036 m, leaf sheaths of *Carex*, 26.IX.2016, M. Hairaud (M.H. 80916, doc. vid.). – Puy-de-Dôme, 1.7 km SE of Chastreix, Réserve naturelle nationale de Chastreix-Sancy, Tourbière de Rimat, 1172 m, on *Carex*, 30.IX.2016, B. Capoen & M. Hairaud (B.C. 280916, M.H. 130916, doc. vid.).

Ombrophila costantinii (Boud.) Baral, *comb. nov.* – Mycobank MB843470 – Pls 3–4.

Basionym: *Helotium costantinii* Boud. [as '*Costantini*'], *Bull. Soc. mycol. Fr.*, 4(3): 81 (1889) [1888].

≡ *Phialea costantinii* (Boud.) Sacc. [as '*Constantini*'], *Syll. fung.*, 8: 260 (1889).

≡ *Hymenoscyphus costantinii* (Boud.) Kuntze [as '*Constantini*'], *Revis. gen. pl.*, 3(2): 485 (1898).

= *Leotiella caricicola* Plöttn., *Beibl., Hedwigia*, 39: [(197)] (1900).

Etymology: *costantinii* after the collector, the French botanist and mycologist and friend of Émile Boudier, Julien Noël Costantin; *caricicola* after the substrate, *Carex*.

Typification: *costantinii*: France, Île-de-France, Montmorency, ~120 m, *Carex* leaves, autumn 1886 (?PC, non vid.); *caricicola*: Germany, Brandenburg, Rathenow, 1899, on *Carex* (?B, non vid.).

Illustrations: Boudier (1889: pl. 17 fig. 1), Plöttner (1900: figs a–c), Beyer (1998: figs 56–57).

Apothecia fresh (1–)1.5–3(–4) mm diam. {8}, receptacle 0.3–0.6 (–1) mm thick, translucent, round, also with distinctly undulating margin, very gelatinous, scattered to subgregarious; disc whitish to pale greyish-cream or carneous, slightly concave to flat or slightly to strongly convex, margin distinct, smooth, exterior concolorous; stipe (0.4–)1–7(–10) × (0.25–)0.4–1 mm {8}, below receptacle 0.5–1.6 mm wide, cylindrical to slightly obconical, carneous-brownish, appearing glassy, especially near base sometimes darker due to reflection of the substrate, superficially inserted; receptacle and stipe smooth or uneven due to slime. **Asci** *(70–)75–90(–100) × (7–)7.5–8.5(–9) µm {4}, †66–80 × (5.5–)6–7(–7.3) µm {5}, 8-spored, spores *obliquely biseriate, *pars sporifera* *34–48 µm long {2} (†57–68 µm), mature *asci protruding 3–10 µm beyond paraphyses; **apex** (†) conical, apical ring †2.3–3.2 × 0.8–1(–1.3) → 1.3–2.5 × 1–1.4 µm {3}, IKI strongly blue (BB) (upper part of ring less reactive) {7}, *Calycina*-type; **base** with short stalk arising from croziers {4}. **Ascospores** *(13–)14–21(–24) [*in situ*] × (2.3–)2.5–3(–3.5) µm {9} [actual length *~18–25 µm], †(11–)13–19(–21.5) × (2.3–)2.4–2.9(–3.3) µm {4}, cylindric-fusoid, homopolar, both ends obtuse to subacute, medium to mostly (very) strongly (by 90–180°) curved, OCI 2–4 {6}, with various small and 2–5(–10) medium-sized LBs, the latter 0.6–1.3 (–1.8) µm diam., without sheath, wall surface consistently strongly lilac in CRB {1}; overmature 1-septate {2}. **Paraphyses** apically cylindrical to slightly clavate; terminal cell *16–27 × 2.5–3.5 µm {1}, †25–45 × 2.8–3 µm {2}, containing hyaline, ± large, globose (multiguttulate) to elongated cylindrical, medium refractive VBs {7} in upper 9–20 (–25) µm, staining turquoise in CRB, unstained in IKI; lower cells *15–20 × 2–2.2 µm {1} (at base *12–20 × 2.5–5 µm), containing non-refractive vacuoles; branched only towards base. **Subhymenium** not observed. **Medullary excipulum** hyaline, ~200–400 µm thick at base of receptacle, of medium to very loose, strongly gelatinised *textura intricata*, hyphae *1–3 µm wide, covered by a (1–)1.5–2 (–2.5) µm thick, invisible or weakly refractive gel coat, gel staining distinctly lilac in CRB; hyphae towards ectal excipulum (*t. porrecta*) and hymenium (*t. intricata*) denser, cells *25–80 × 2–5.5 µm, gel sheath weakly to medium refractive; sharply delimited from ectal excipulum. **Ectal excipulum** ± hyaline, of thin-walled, horizontally oriented *textura prismatica* from base to margin, 50–60 µm thick at stem and flanks, cells *25–55 × 15–25(–35) µm {1}, †22–46 × 9–15 µm {1}; externally covered by a 10–20 µm thick, dense layer of *2–3 µm wide hyphae immersed in gel {2} which stains deep lilac in CRB. **Rhomboid crystals** present {4}, 1–2 up to 4–10 µm diam., sometimes forming large druses, abundant in complete tissue, *e.g.*, on some hyphae of medullary excipulum, but especially on surface of hymenium and ectal excipulum at stipe and flanks. **SCBs** not observed. **Anamorph:** unknown.

Habitat: on previous year's culms and leaves or leaf sheaths of *Carex* sp. {3}, ?*Carex riparia* {1}, *C. rostrata* {1/1 or *Eriophorum angustifolium*?}, *C. vesicaria* {3}, indet. ?*Cyperaceae* {1}, *Glyceria maxima* {1}, *Typha latifolia* {1}. **Association:** *Ombrophila pileata* {1}. Drought tolerance: probably intolerant in all parts, except that many ascospores survived 2 weeks in the dry state. **Altitude:** Scandinavia 110 m, central Europe 102–850 m. **Phenology:** IX–XI. **Geology:** granite, Triassic reed sandstone and alluvial sediments over clay and marl of Middle Keuper, or Pleistocene loess.

Remarks: *O. costantinii* differs from *O. pileata* in predominantly strongly curved ascospores, apparently also in shorter terminal cells of paraphyses and their VBs, and in wider ectal excipular cells, perhaps also in the presence of a gelatinous external tissue.

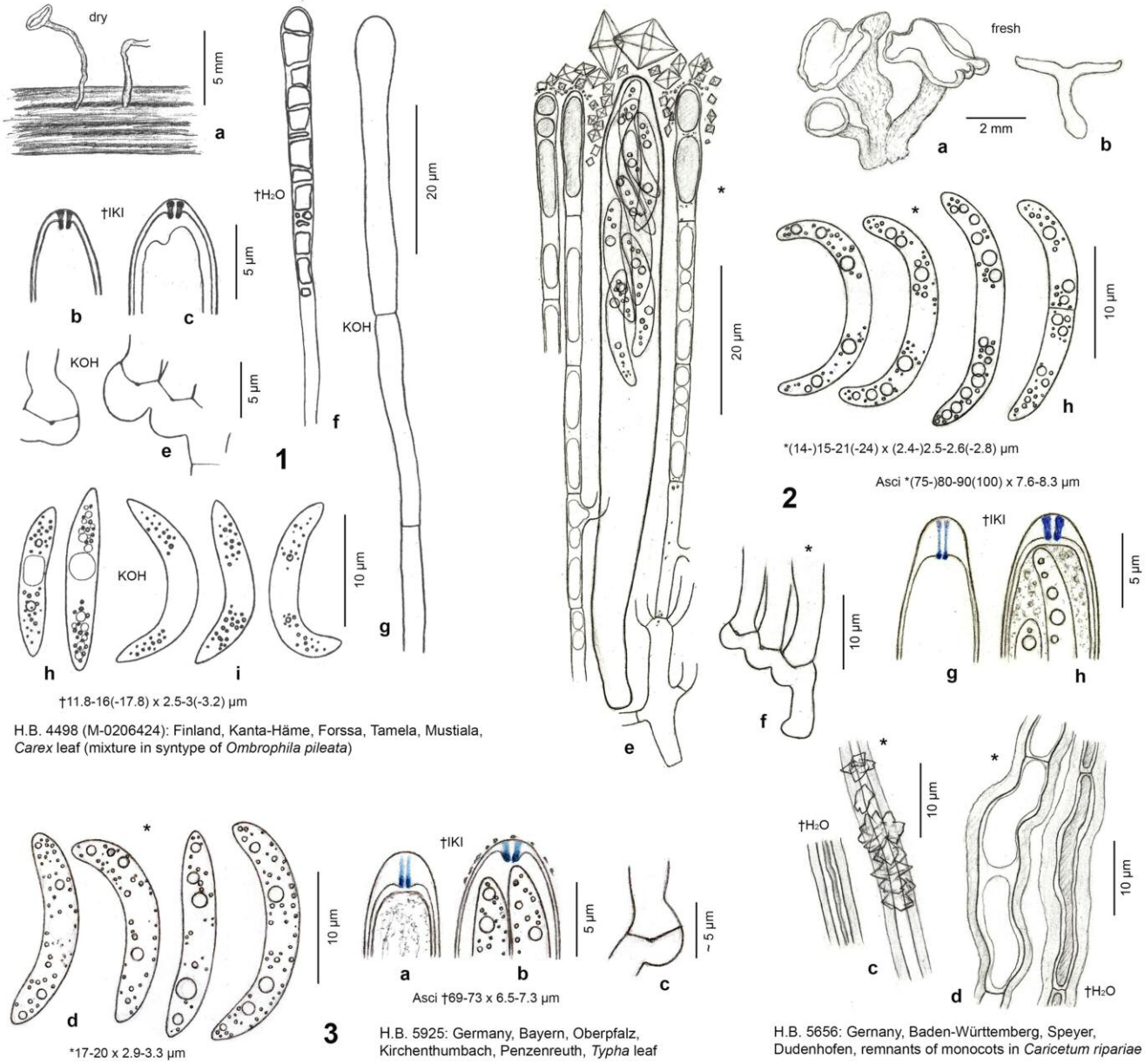

Plate 3 – *Ombrophila costantinii*

1a, 2a. apothecia; 2b. median section of apothecium; 2c–d. hyphae of medullary excipulum covered by rhomboid crystals; 1f–g, 2e. paraphyses, mature ascus; 1b–c, 2g–h, 3a–b. ascus apices with euamyloid ring; 1e, 2f, 3c. croziers at ascus base; 1h–i, 2h, 3d. ascospores. – 1–3. *del*. H.-O. Baral. Note presence of VBs in living (2e) and dead (1f) paraphyses, disappearing in KOH (1g).

Variation: The ascospores in the samples from Stuttgart (Pl. 4 fig. 1) concur perfectly in size and shape (consistently strongly falcate) with the holotype of *O. costantinii* as illustrated by Boudier (see Pl. 4 fig. 2). The collection from Speyer (Pl. 3 fig. 2) showed slightly longer ascospores similar as illustrated in the protologue of *Leotiella caricicola* (Pl. 4 fig. 3). The duplicate of Karsten's collection of *Peziza pileata* from Finland deposited in M (Pl. 3 fig. 1) deviates from other collections of *O. costantinii* solely by predominantly slightly curved ascospores, besides some strongly curved ones, containing comparatively small LBs. Judging from the refractive remnants of VBs in the paraphyses observed in water, which disappeared in KOH (Pl. 3 fig. 1f–g), these reached further down than in the fresh samples studied. Also in his collection from Oberpfalz, Beyer (1998: 189, as *O. pileata*) described and illustrated strongly sickle-shaped but sporadically straight or only slightly curved spores of *15–22 × 2–3 µm (*in situ*) but *15–23 × 2.5–3.8 µm when evaluated from the unpublished scale in his sketch and *17–20 × 2.9–3.3 µm when examined by me from the dried specimen two weeks after Beyer had studied it (Pl. 3 fig. 3). In the two samples from Vosges, of which I did not see a specimen or illustration, J. Deny (pers. comm.) observed 90 × 6 µm large asci and strongly sickle-shaped ascospores of about 18 × 2 µm.

The apothecial disc diameter varied among the samples between 1–2 and 2–4 mm, and the stipes between 0.4–1.3 × 0.25–0.5 and 3–7.5 × 0.8–1.5 mm. N. Filippova's (pers. comm.) single apothecium from Kanthy-Mansi had a stipe of ~10 × 0.6–1.6 mm. P. Thompson (pers. comm.) gave for his sample from Staffordshire only 0.5 mm diam. and stipes of 0.2–0.3 × 0.15–0.2 mm. Beyer (1998) reported stipes up to 13 × 0.5 mm, which appears to be an error for 1.3 mm because his sketch shows stipes of about 0.4–1.3 × 0.4–0.5 mm. Thompson's small apothecia I did not include in the description, as I omitted the extraordinarily long stipes of 10–20 × 1–1.5 mm reported by Plöttner (1900, see Pl. 4 fig. 3), because the given disc diameter of 2–4 mm entails a stipe length of only about 3–10 mm.

Remarks on the types: *Ombrophila costantinii* was collected by J.N. Costantin on rotten *Carex* leaves in a sandy marshland at Montmorency (Paris). Boudier's detailed drawing of living asci, paraphyses, and ascospores (Pl. 4 fig. 2) leaves no doubt about its

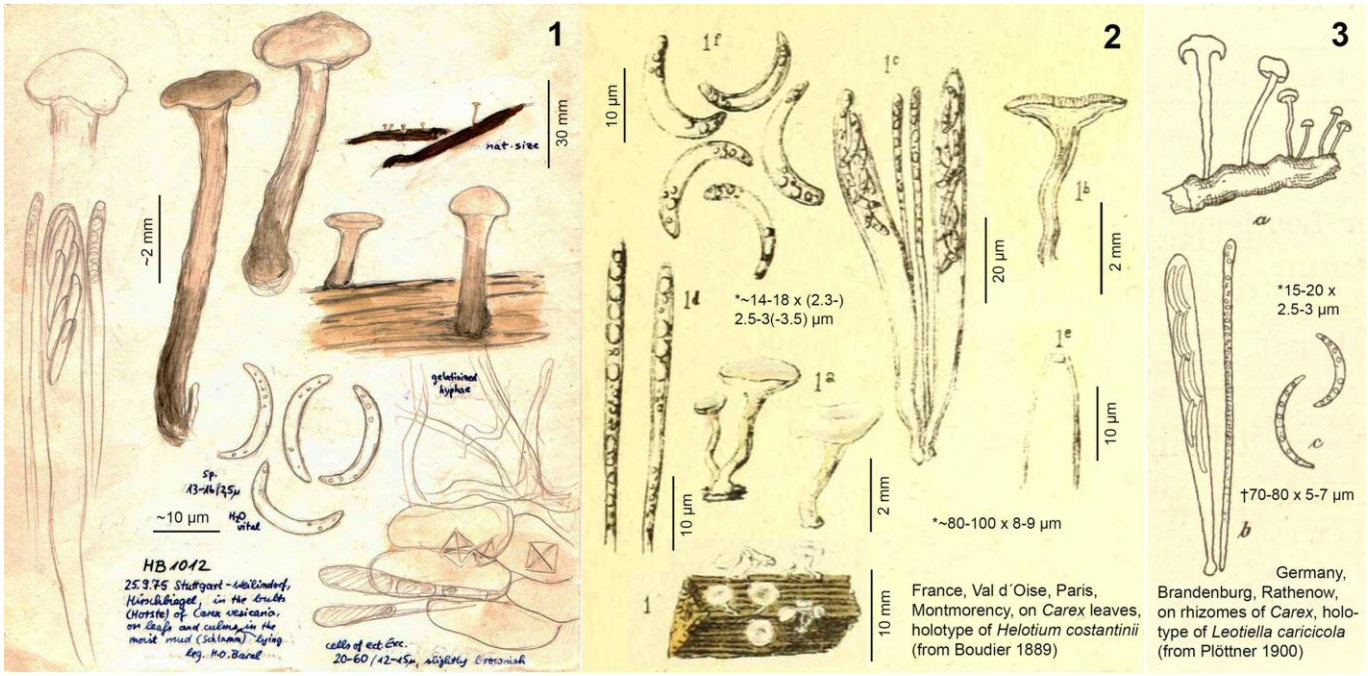

Plate 4 – *Ombrophila costantinii*

1. collection from Stuttgart-Weilimdorf on *Carex vesicaria* (*del*. H.-O. Baral); 2. holotype of *Helotium costantinii*; 3. holotype of *Leotiella caricicola*.

conspecificity with the present collections. Both apothecial diameter and height was given by Boudier (1889) as 2–3 mm, whereas from his scales (1×, 4×, 5×) a disc diameter of 1–4 mm and a stipe size of 1.3–3.3 × 0.2–0.6 mm can be evaluated. Ascospore size was given by him as *15–18 × 3 µm (obviously *in situ*), which corresponds to what can be evaluated from his sketch at 820× (*14.2–17.3 × 2.3–3.6 µm), whereas inside the living asci (475×) they would measure only *11–14.5 × 1.7–2.3 µm. Although the ascus turgor compressed the included spores by around 5% in both length and width in this species (evaluated from H.B. 5656, Pl. 3 fig. 2e vs. h), the spores would be around 15–30% smaller in the two living asci of Boudier's drawing, which suggests an erroneous scale for the asci. In fact, Boudier gave an ascus size of *170–190 × 7–8 µm, although from his sketch at 475× a size of *90–92 × 8.5–9.3 µm can be evaluated. Possibly, Boudier meant *70–90 × 7–8 µm. However, when comparing herewith the living ascus of H.B. 5656 (Pl. 3 fig. 2e), which measures *83 × 8.3 µm, it appears that the evaluated width of *8.5–9.3 µm could be closer to the truth, so I assume that the 475× magnification was correct. Boudier illustrated 4–6 large, subglobose to shortly elongated VBs in the upper part of the paraphyses and referred to them as '*granulis oleosis repletae*', but he did not see septa.

Leotiella caricicola Plöttn. was described by Plöttner (1900) from two samples on *Carex* rhizomes in muddy wetlands near Rathenow (Brandenburg, Pl. 4 fig. 3). It perfectly matches *O. costantinii* in its strongly sickle-shaped ascospores of *15–20 × 2.5–3 µm with 6(–8) oil drops and asci of †70–80 × 5–7 µm. Remarkable are the strongly convex cups and the multiguttulate paraphyses, the latter possibly due to alteration (dead state?). Höhnel (1911: 387), who followed Clements (1909), believed that *L. caricicola* belongs to the genus *Cudonia*. Therefore, *Leotiella* was wrongly considered a synonym of *Cudonia* (*Cudoniaceae*, *Rhytismatales*) up to now (Index Fungorum).

Velenovský (1934: 202) misidentified a collection on *Juncus communis* as *Helotium costantinii* (misspelled as '*Constantini*'), which Svrček (1985: 139) reidentified as *Phaeohelotium vasaense* (P. Karst.) Svrček. Velenovský and Svrček described it with soft (non-gelatinous), originally pale but now dark red-brown apothecia with short and thick stipes with a subiculum-like mycelium, multiguttulate paraphyses, and straight, fusoid-clavate, guttulate ascospores. From this collection, Velenovský (1934: *loc. cit.*) separated *Helotium costantinii* var. *ochraceum* Velen. on *Juncus articulatus* (as *J. lamprocarpus*), which Svrček (1985: *loc. cit.*) reidentified as *Hymenoscyphus scutula* (Pers.) W. Phillips. This had white apothecia turning ochre-brown with age, a thin stipe, multiguttulate paraphyses, and fusoid-clavate ascospores, some with a fine bristle below.

Ecology: *O. costantinii* occurs in similar marshlands as *O. pileata*. Most of the records were on *Carex* but one on *Typha*. My first samples were made in 1975–76 near Stuttgart in a *Fagus-Quercus* forest in a very small bog of a few meters diameter, with *Carex vesicaria*, *Salix caprea*, *Alnus glutinosa*, *Betula pendula*, and *Pinus sylvestris*. The sample from Speyer was from a *Caricetum ripariae* on humous-clayey soil and those from France and Russia from *Carex rostrata* peat bogs. The apothecia usually emerge from previous year's leaves, but sometimes occurred on mud close to leaf litter, or on decaying *Sphagnum* remnants buried in peat.

The distribution of *O. costantinii* (Pl. 9) includes supra- to orotemperate humid, atlantic to subcontinental regions of western and central Europe, and the middle taiga subzone of oroboreal (subarctic) humid, continental western Siberia (northwestern Asia), at colline to montane altitude.

Specimens included: Finland: Southern Finland, Kanta-Häme (Etelä-Häme), ~8 km E of Forssa, ~1 km N of Tammela, around Mustiala, 110 m, leaf sheaths of *Carex*, 5.X.1868, P.A. Karsten (P.A.K. 2061, M-0206424, H.B. 4498 ø, as *Helotium pileatum*, mixture in syntype of *O. pileata*). — **Great Britain: West Midlands**, Staffordshire, 15 km WNW of Stafford, Jackson's Marsh, 100 m, leaf of *Glyceria maxima*, 24.VII.2011, P. Thompson (doc. vid.). – idem, 14.VII.2014 (doc. vid.). — **Germany: Brandenburg**, ~SE of Rathenow, Rathenower Staatsforst, ~35 m, 1899, rhizomes of *Carex*, T. Plöttner (holotype of *Leotiella caricicola*, non vid.). – **Bayern**, Oberpfalz, 3.3 km NNE of Kirchenthumbach, 0.9 km N of Penzenreuth, Fußweiher, 440 m, at base of *Typha latifolia*, 27.IX.1997, G. Wölfel, mis. W. Beyer (H.B. 5925). – **Baden-Württemberg**, 5.5 km NW of Speyer, 4 km N of Dudenhofen, northern part of Haderwiese, 102 m, on soil among remnants of ?*Carex riparia*, 9.XI.1996, W. Winterhoff (W.W. 96154, H.B. 5656). – 6 km WNW of Stuttgart, 2 km SSW of Weilimdorf, 0.5 km SE of Bergheim, Vogelsang, 400 m, culms and leaf sheaths of *Carex vesi-*

caria, 25.IX.1975, H.-O. Baral (H.B. 1012). – idem, 21.IX.1976, H.-O. Baral (H.B. 836). – idem, 6.X.1976, H.-O. Baral (H.B. 1677 ø). — **France: Île-de-France**, Val d'Oise, ~15 km N of Paris, Montmorency, ~120 m, *Carex* leaves, autumn 1886, J.N. Costantin (holotype of *Helotium costantinii*, non vid.). – **Lorraine**, Vosges, 3 km NW of Gérardmer, 0.3 km S of le Petit Liézey, Le Rain de la Cagne, le Beurson, Ruisseau de Liézey, 820 m, remnants of ?*Carex rostrata* (or *Eriophorum angustifolium*), 15.X.1991, J. Deny (ø, non vid.). – 4 km NW of Gérardmer, 1 km NNE of le Petit Liézey, la Haute Pinasse, la Goutte Loiselot, 850 m, culms of (?)*Cyperaceae*, 9.X.1991, J. Deny (ø, non vid.). — **Russia: Kanthy-Mansi**, 24 km ENE of Kanthy-Mansiysk, 3.5 km S of Shapsha, 45 m, leaf sheaths of *Carex rostrata*, 18.IX.2012, N. Filippova (doc. vid.).

Ombrophila ambigua Höhn., *Sber. Akad. Wiss. Wien, Math.-naturw. Kl., Abt. 1*, 127(4–5): 363 (1918) – Pls 5–7.

?= *Ombrophila aquosa* Velen., *Monogr. Discom. Bohem.*: 110, pl. 18: 37 (1934).

Etymology: *ambigua* apparently after the ambiguous relationship; *aquosa* growing in an aquatic habitat.

Typification: *ambigua*: Sachsen, Königstein an der Elbe, on *Glyceria maxima*, 26.VII.1916 (M, syntype, vid.); *aquosa*: Central Bohemia, Mnichovice, on *Glyceria maxima*, IX.1928 (PRM 151722, lectotype, non vid.); ibid., on *Phragmites australis*, IX.1924 (PRM 149406, paralectotype, vid.).

Illustrations: Velenovský (1934: pl. 18 fig. 37), B. Grauwinkel (1987 unpublished, IVV).

Apothecia fresh (0.5–)1–2.5(–5) mm diam. {2}, rehydrated 0.3–0.9 mm diam. {T}, receptacle 0.15–0.25 mm thick, translucent, gelatinous, scattered to subgregarious; disc snow to milky-white, turning pale greyish-cream or carneous-brownish with age, round to slightly undulating, flat or slightly to strongly convex, margin distinct, smooth, exterior concolorous; stipe (0.2–)0.5–2(–3) × 0.2–0.3(–1) mm {2}, (0–)0.1–0.4 × 0.1–0.25 mm {T}, cylindrical to obconical, sometimes with bulbose base, hyaline, glassy-translucent, shining, near base darker due to reflection of the substrate, superficially inserted; receptacle and stipe smooth to whitish-powdery. **Asci** *(55–)60–70(–80) × (5.5–)6–7(–7.2) µm {3}, †58–66 × 5.8–6 µm {T}, 8-spored, spores *obliquely biseriate, *pars sporifera* *21–33 µm long {3}, mature *asci protruding 6 µm beyond paraphyses; **apex** (†) conical, apical ring †1.6–1.8 × 0.8 → 0.8–1.1 × 1–1.3 µm {2}, IKI medium to strongly blue (BB) (upper part of ring less reactive) {4}, *Calycina*-type; **base** with short stalk arising from croziers {4}. **Ascospores** *(9.5–)10.5–15.5(–18.5) × (2.2–)2.5–2.8(–3) µm {3} [*in situ*], †11.8–14.5 × 2.3–2.7 µm {T}, fusoid, homopolar, both ends obtuse to subacute, inequilateral to slightly (10–30°) or sometimes medium (45°) curved, OCI 4–5 {4}, with (3–)4 large LBs 1.2–2.2 µm diam. and some small and intermediate ones, with a very delicate sheath that forms a sphere at the base when detaching {1}, wall surface consistently distinctly lilac in CRB {1}; sometimes forming also smaller spores of *6.5–11 × 2–2.3 µm, with OCI 0–1 {1}; overmature 1-septate, *11.3–17.5 × 2.5–3 µm {2}, not observed to germinate at senescence. **Paraphyses** apically cylindrical to slightly clavate; terminal cell *25–31 {1} × 2–3 µm {2}, †1.7–2 µm wide {T}, containing hyaline, very elongated, sometimes divided, weakly to medium refractive VBs {2} in upper 10–18 µm, staining turquoise in CRB, unstained in IKI; lower cells *7–13 × 2–2.7 µm {1} (at base *3.5–4 µm wide); branched only at base. **Subhymenium** not distinct from medullary excipulum. **Medullary excipulum** hyaline, ~100–200 µm thick at base of receptacle, of very loose, strongly mucilaginous *textura intricata*, hyphae *1–3(–4) µm wide (†0.7–2 µm), mucilage staining deep lilac in CRB, sharply delimited from ectal excipulum. **Ectal excipulum** hyaline to very faintly brownish, 80 µm thick at lower flanks and 50 µm towards margin {T, *fide* Höhnel, 1918}, of thin-walled, horizontally oriented *textura prismatica* from base to margin, cells at lower flanks *(15–)20–50(–58) × (8–)10–16 µm {2}, †15–35 × 10–13 µm {T}, at mid flanks *15–25 × 8–17 µm; externally covered by a ~20 µm thick layer of *3–8 µm wide hyphae which sometimes contain elongate VBs and which are embedded in mucilage that stains deep lilac in CRB, cytoplasm in stipe base staining deeply red-brown in IKI (orange-red when KOH-pretreated) {T}. **Rhomboid crystals** present {4}, 1–3 up to 12–17 µm diam., often forming large druses 15–25 µm diam., abundant in complete tissue, especially on surface of ectal excipulum and in medullary excipulum. **SCBs** observed in prismatic paraphysogenous cells in subhymenium of older apothecia, globose, refractive, ~2.5 µm diam., swelling and disappearing when KOH is added {1}. **Anamorph:** unknown.

Habitat: on previous year's, medium decayed culms or sometimes leaf sheath bases of *Glyceria* sp. {3}, *G. maxima* {6}, *Phalaris arundinacea* {1}. **Association:** ?*Calycellina microspis* {1}, *Hymenoscyphus* sp. {1}, ?*Psilachnum eburneum* {1}. Drought tolerance: probably intolerant in all parts (ascospores remain to be tested). **Altitude:** 5–120 m. **Phenology:** VI–X. **Geology:** alluvial sediments over Upper Cretaceous, Pleistocene moraine clay or sand dunes, Holocene fluviatile mud and sand.

Remarks: *O. ambigua* differs from *O. costantinii* and *O. pileata* in shorter ascospores (9.5–18.5 compared to 18–28 µm, actual length), which are predominantly straight to slightly curved. Dennis (1978: 118) illustrated the species on *Glyceria aquatica* (= *G. maxima*) from Great Britain (without location), with whitish to light grey apothecia 1–2 mm diam. and a medium short, slender stalk, asci of †45–55 × 5–7 µm, and fusoid, straight to inequilateral ascospores of †9–16 × 2–2.5 µm which are eguttulate on his illustration. Ellis & Ellis (1985: 498, fig. 1882) appear to refer mainly to the same collection but figured short-stalked (subsessile) apothecia and 2–3 conspicuous guttules in the straight to slightly curved ascospores (†10–16 × 2–2.5 µm).

Variation: The apothecia from Bremen achieved a disc diameter of 4–5 mm, but measured mainly 1–2.5 mm, sometimes only 0.6 mm, whereas in the syntype from Königstein I found them rehydrated only 0.3–0.9 mm diam. But Höhnel (1918) gave a diameter of 1–2 mm, which is just what T. Richter observed in his sample from Ratzeburg and about the same what S. Helleman found in his sample from Boxmeer (1.3–2.5 mm).

The sample from Bremen showed a distinct heterospory within the apothecium which I studied. A majority of living mature asci contained only small, almost eguttulate spores, whereas a minority of asci contained larger, conspicuously guttulate spores (Pl. 5 fig. 1i–l). The larger ascospores predominated among the free, ejected spores. A mixture of both spore types within a single ascus was not observed. However, the larger spores and their LBs were still smaller compared to those from Ratzeburg, Königstein, and Boxmeer, although in B. Grauwinkel's analysis the spores were of the same size [*12–16(–18) × 2.5–3 µm] as in those samples. Similarly, the sample from Ratzeburg showed much smaller LBs in the mature, non-septate spores when examined by me (Pl. 6 fig. 3d), compared to those drawn by T. Richter (Pl. 5 fig. 2), although the living mature asci were in good shape (Pl. 6 fig. 3c).

Remarks on types: Höhnel (1918: 363) described ***Ombrophila ambigua*** from a specimen on *Glyceria aquatica* (= *G. maxima*) collected in 1916 in Sachsen, with white, gelatinous apothecia 1–2 mm diam., with an up to 0.5 mm long, thick or thin stalk. He found the medullary excipulum to consist of †1.5–3 µm wide hyphae embedded in rich mucilage, and the ectal excipulum of elongated cells of †20–35 × 10–18 µm. The asci measured †48–50 × 5–5.5 µm and had a very small amyloid ring, the 8 biseriate ascospores (†12–16 × 2 µm) were fusoid with subacute ends, mostly slightly curved. Höhnel obviously studied a dry sample because he did not observe oil drops in the spores, instead only an indistinctly bipartite cytoplasm. He

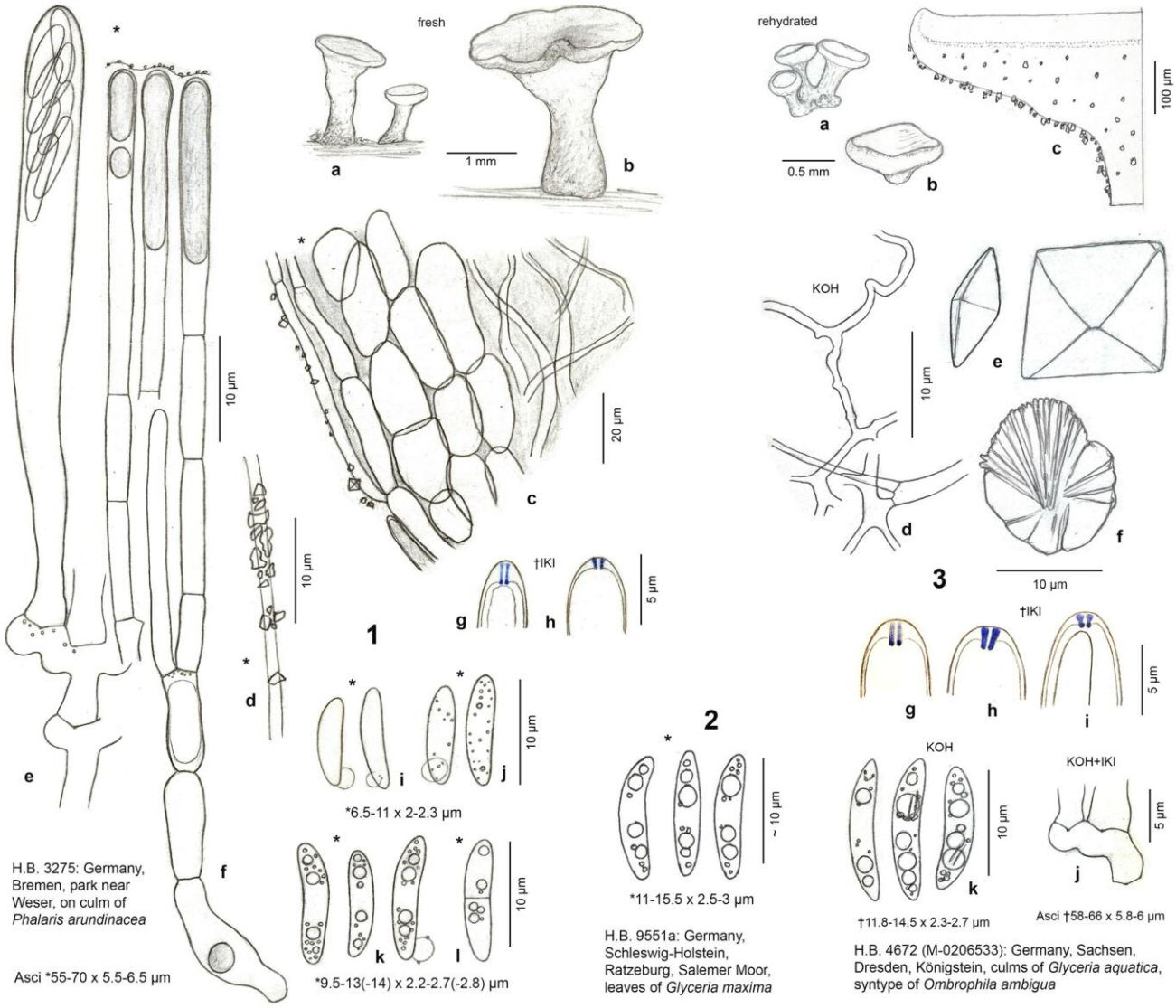

Plate 5 – *Ombrophila ambigua*

1a–b, 3a–b. apothecia; 3c. median section of apothecium (with crystals in medullary and on ectal excipulum); 1c. median section of ectal and medullary excipulum at flanks; 1d, 2d. hyphae of medullary excipulum (in 1d covered by crystals); 3e. rhomboid crystals; 3f. crystal druse; 1e. mature ascus; 1f. paraphyses with VBs in terminal cell and SCB in basal paraphysogenous cell; 1g–h, 3g–i. ascus apices with euamyloid ring; 1e, 3j. croziers at ascus base; 1i–l, 2, 3k. ascospores containing LBs (1i–j small eguttulate variant found in majority of mature asci). – 1–2. from fresh collections made in 1987 and 2011; 3. syntype of *O. ambigua*. – 1, 3. *del*. H.-O. Baral; 2. *del*. T. Richter.

mentioned a red-brown iodine reaction of the ectal excipulum in contrast to the unstained medullary excipulum and observed numerous large crystal druses in the entire excipular tissue.

The present reexamination of a syntype in M showed distinctly smaller apothecia (rehydrated 0.4–0.9 mm), larger asci, and broader ascospores which contained several large LBs (Pl. 5 fig. 3). In the other features the specimen matches the protologue very well. A red-brown stain of the ectal excipulum in IKI was only seen towards the apothecial base.

Höhnel compared *O. ambigua* with *Phialea* (Pers.) Gillet (= *Cyathicula* De Not.), because he considered narrow ascospores as unusual within *Ombrophila*. Yet, he excluded *Phialea* because that genus has a very different ectal excipular structure of strictly narrow-fibrous hyphae, in contrast to *O. ambigua* which he described with thin-walled, much larger, prismatic excipular cells. A further reason for Höhnel to place the species in *Ombrophila* instead of *Phialea* was the medullary excipulum of narrow hyphae (1.5 µm wide, sometimes over 3 µm) embedded in abundant mucilage which included large crystal druses.

Not included collections: Svrček (1978: 87) suggested that the two syntype collections of Velenovský's *Ombrophila aquosa*, here called *O.* cf. *ambigua*, belong to *O. petasata* (P. Karst.) Boud. However, he only revised the one mentioned by Velenovský in the first place. This specimen (PRM 151722, [Mnichovice], drained pond near Vyžlovka, on *Glyceria spectabilis* [= *G. maxima*]) was considered by Svrček as "type". Regrettably, Svrček did not provide a documentation, but only mentioned that the asci were amyloid, contrary to the protologue saying "*jodo lutei*" which means inamyloid. This collection requires reexamination, as Svrček's declaration as "type" should be interpreted as lectotypification (Art. 9.10 Ex. 11, Shenzhen Code).

The second mentioned collection (PRM 149406, Mnichovice, in a muddy place near Třemblat, on *Phragmites australis*) was reexamined by me (Pl. 7). It contained only one apothecium, which agreed well with Velenovský's protologue and ascospore sketch, except for his obviously wrong statement of inamyloid asci. The protologue gives 12–16 µm long, "often curved" ascospores, which contradicts Velenovský's spore sketch showing straight to somewhat inequilateral spores with a width of 2.2–2.6 µm when calculated from their length:width ratio. Spore size in this paralectotype appears to be a

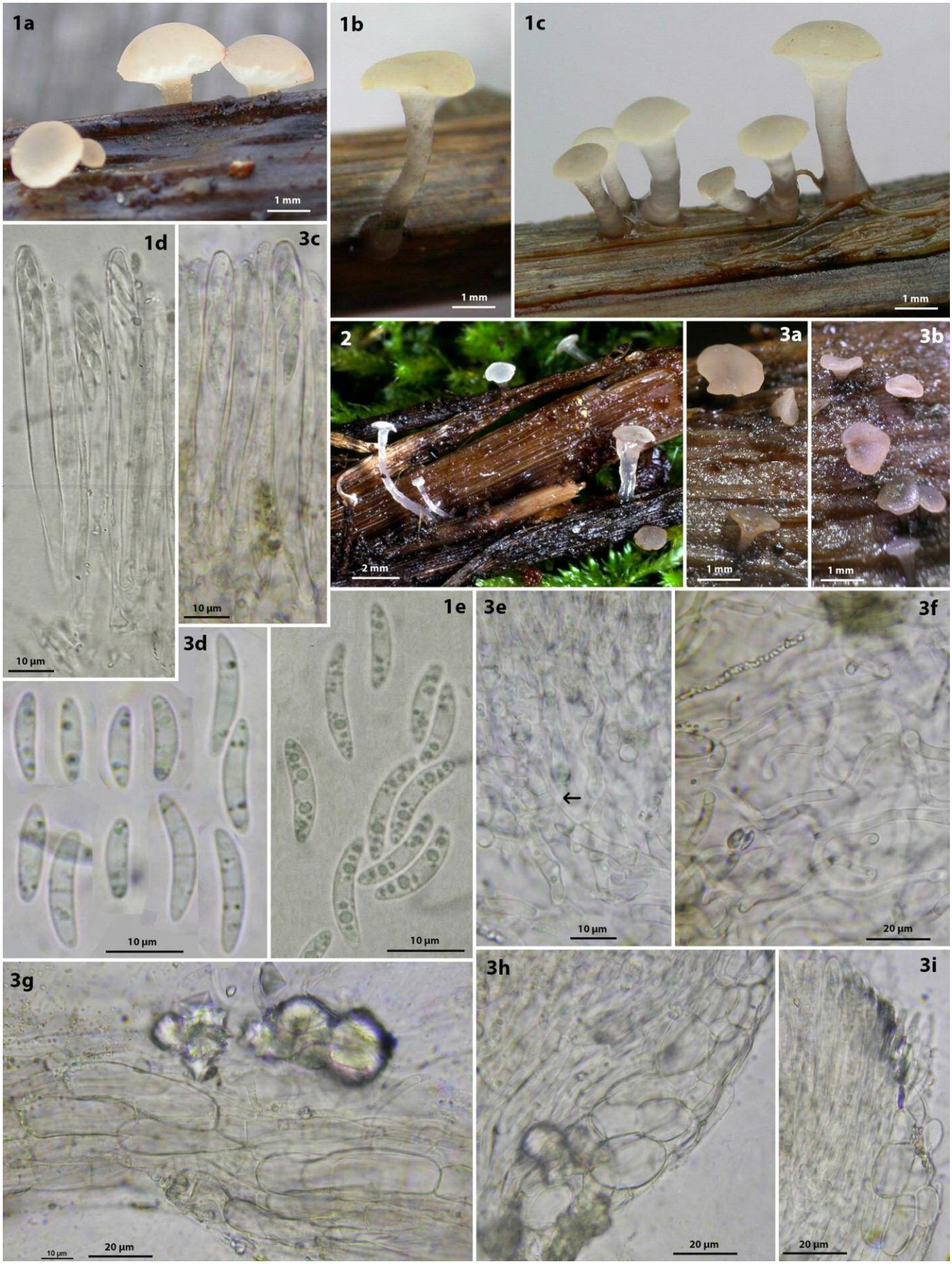

Plate 6 – *Ombrophila ambigua*

Ombrophila ambigua from three collections from The Netherlands and Northern Germany. 1a–c, 2. fresh apothecia; 3a–b. rehydrated apothecia; 1d, 3c. living asci and paraphyses; 1e, 3d. living, freshly ejected ascospores (some overmature with septum); 3e. median section of subhymenial, ascogenous hyphae with croziers; 3f. median section of medullary excipulum; 3g. idem, ectal excipulum at lower flanks, with crystal druses; 3h. idem, at mid flanks. – 1. S.H. 442 (photo S. Helleman), 2. H.B. 3275 (photo B. Grauwinkel), 3. H.B. 9551a (photo H.-O. Baral).

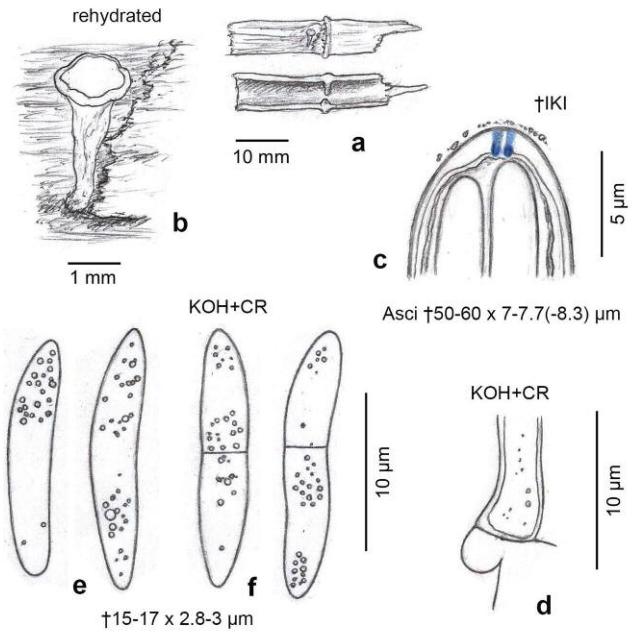

Plate 7 – *Ombrophila* cf. *ambigua*
a. culm fragment of *Phragmites australis* with apothecium; b. closeup of apothecium inserted near edge of detaching epidermis; c. ascus apex with euamyloid ring; d. crozier at ascus base; e–f. ascospores (in f undoubtedly overmature). – *del*. H.-O. Baral.

bit too large in order to assign it to *O. ambigua*. Unlike typical *O. ambigua* (see Pl. 5 fig. 3k), the spores in the paralectotype of *O. aquosa* do not contain large LBs (Pl. 7e-f). This difference might be due to overmaturity of the specimen, which is supported by the frequent presence of septate spores. In this regard it does not matter that most of the septate spores were inside the asci (for a definition of maturity see Baral, 1992: 376). In fact, Velenovský's spore sketch shows 2–3 medium-sized LBs in non-septate ascospores. Possibly, his sketch originated from the other lectotype on *Glyceria*. In addition, the asci were much too wide in comparison to the present concept of *O. ambigua*, in which the living asci are narrower (*5.5–7.2 µm) than the dead asci of *O. aquosa* (Pl. 7c), given that the latter were not artificially flattened by pressure. Velenovský's ascus measurements of 50–75 × 6–8 µm for *O. aquosa* probably also refer to dead asci. Because *O. pileata* has much longer asci and ascospores, *O. aquosa* could represent an intermediate species of its own. For the time being I prefer to exclude Velenovský's *O. aquosa* from either description.

In addition to the lectotype of *O. aquosa*, Svrček (1978: 86) identified three southern Bohemian collections on *Glyceria maxima* or sometimes *Carex* as *O. petasata*, but did not provide microscopic data or illustrations. Moreover, he considered also *O. ambigua*, which he compared from Lundell & Nannfeldt's *Fungi exsiccati Suecici* no. 1175, as conspecific with *O. petasata*.

Ombrophila petasata was described by Karsten (1869) as *Peziza petasata* P. Karst., based on a collection on *Phragmites* (Tammela, Kyto, 3.XI.1866, P.A.K. 2047, H, non vid.), with fusoid-elongate, straight, non-septate ascospores of 10–15 × 2–2.5 µm, and asci of 48–50 × 4–5 µm with indistinctly amyloid apex. Dennis (1956: 26, as *Phialea petasata*; 1975, as *Cyathicula petasata*) reexamined the holotype and treated it as a species distinct from *Cyathicula cyathoidea* (Bull.) Thüm. because of its ascospores exceeding 12 µm in length (12–17 × 2–3 µm, asci 55–65 × 6 µm, minute apical ring staining blue in MLZ) but excluded a relationship with *Ombrophila*. Contrary to Dennis, Carpenter (1981: 76) found the measurements of asci and ascospores in the holotype to fall within the expected range of *Cyathicula cyathoidea* var. *cyathoidea* (as *Crocicreas*).

An unidentified member of subgenus *Leotiella*, here called ***Ombrophila* aff. *ambigua***, was collected by B. Capoen and M. Hairaud on two different dicot stems (*Lycopus europaeus* and *Persicaria hydropiper*) on alluvial soil over granite in Bretagne. The two samples were studied and documented by M. Hairaud (Pl. 8). They differ from *O. aquosa* in rather large apothecia (up to 5–6 mm diam.), broader asci (*80–102 × 8–9 µm), and larger, straight ascospores (mature *13–17.5 × 3.2–4.2 µm and non-septate, overmature *17.5–22.5 × 3.2–3.5 µm and 1-septate). Only in these collections on dicots a delicate spore sheath was observed, which detaches from the ascospores soon after discharge. Because of these differences, it appears possible that the two samples represent a species of its own. Although spores in the two samples have quite the same size and only slightly deviating shape, they contain very differently sized LBs: *Persicaria* *13.5–17 × 3.2–4 µm, ends ± subacute, LBs up to 0.5–1.2 µm diam.; *Lycopus* *13–17.5 × 3.2–4.2 µm, ends ± obtuse, LBs up to 1.5–2.3 µm diam.

Ecology: *O. ambigua* grew on medium decayed culms of mainly *Glyceria* (but once *Phalaris fide* B. Grauwinkel, pers. comm.) lying on very moist ground, partly covered by remnants of mud. The collection site in Bremen was a *Caricetum* with *Juncus* and *Phalaris*, that in Ratzeburg an *Alnetum* with adjacent *Magnocaricion*. Collection sites of German samples were in the riparian lowlands along the rivers Elbe and Weser and the Pleistocene lakes of the Mecklenburg Lake Plateau. The distribution of *O. ambigua* s.l. (Pl. 9) comprises supra- to mesotemperate humid, especially atlantic (including data from FRDBI) but also subcontinental regions, at low altitude (5–120 m, planar to colline), but in Czechia at higher altitude (400–512 m, colline). The two collections on dicots from Bretagne were in a treeless wetland near a lake on alluvial sediments over granite.

Specimens included: Great Britain: Northeast Yorkshire, 21 km NE of York, Castle Howard estate, 85 m, substrate and collector not indicated, 8.IX.1983, BMS autumn foray (FRDBI Record No. 789079, non vid.). – **Southwest Yorkshire**, 7.5 km SE of Wakefield, Wintersett, 65 m, culm of *Glyceria*, 16.VII.2000, F.C. Remblance (FRDBI Record No. 605146, non vid.). – **Warwickshire**, 3.5 km ENE of Tamworth, Alvecote Pools (Pooley Fields), 65 m, culm of *G. maxima*, 17.VIII.1980, M.C. Clark, vid. B. Spooner (FRDBI Record No. 1035968, non vid.). – **West Midlands, Staffordshire**, 15 km WNW of Stafford, Jackson's Marsh, 100 m, leaf of *G. maxima*, 24.VII.2011, P. Thompson (doc. vid.). – **South Lincolnshire**, 20 km NNW of Peterborough, Baston Fen, 4 m, leaf of *Glyceria*, 17.IX.1994, collector unknown, vid. T.J. Bruning (FRDBI Record No. 310930, non vid.). – **Norfolk**, without location, *G. maxima*, 1978, E.A. Ellis (IMI 237526, non vid.). – **Suffolk**, without location, *G. maxima*, 1982, M.B. Ellis (IMI 277289, non vid.). – ibid., 1985, [M.B.] Ellis (IMI 299262, non vid.). — **Netherlands: Noord-Brabant**, 5 km NNW of Boxmeer, 1.5 km NW of Beugen, De Vilt, 13 m, culm of *Glyceria*, 23.VI. & 1.VII.2007, S. Helleman (S.H. 442, doc. vid.). — **Germany: Niedersachsen**, Bremen, park left of river Weser, 5 m, culms of *Phalaris arundinacea*, 20.IX.1986, B. Grauwinkel (non vid.). – ibid., 12.IX.1987 (doc. vid.). – idem, 2.X.1987 (H.B. 3275). – **Schleswig-Holstein**, 5 km ESE of Ratzeburg, 2.8 km NNE of Salem, Salemer Moor, NW-part of Plötscher See, 60 m, leaf sheaths of *Glyceria maxima*, 4.VI.2011, T. Richter (H.B. 9551a ø). – **Sachsen**, 27 km SE of Dresden, near Königstein/Elbe, "Lache", ~120 m, culm of *G. maxima* (as *G. aquatica*), 26.VII.1916, K.W. Krieger & G. Feurich (M-0206533, syntype of *O. ambigua*, H.B. 4672 ø).

Not included (*O. aquosa*): Czechia: Central Bohemia, 28 km SE of Praha, ~3 km E of Mnichovice, near Třemblat, ~450 m, culms of *Phragmites australis*, IX.1924, J. Velenovský (PRM 149406, paralectotype of *O. aquosa*, H.B. 7083 ø). – ~7.5 km km NE of Mnichovice, near Vyžlovka, ~420 m, on *Glyceria maxima* (as *G. spectabilis*), IX.1928,

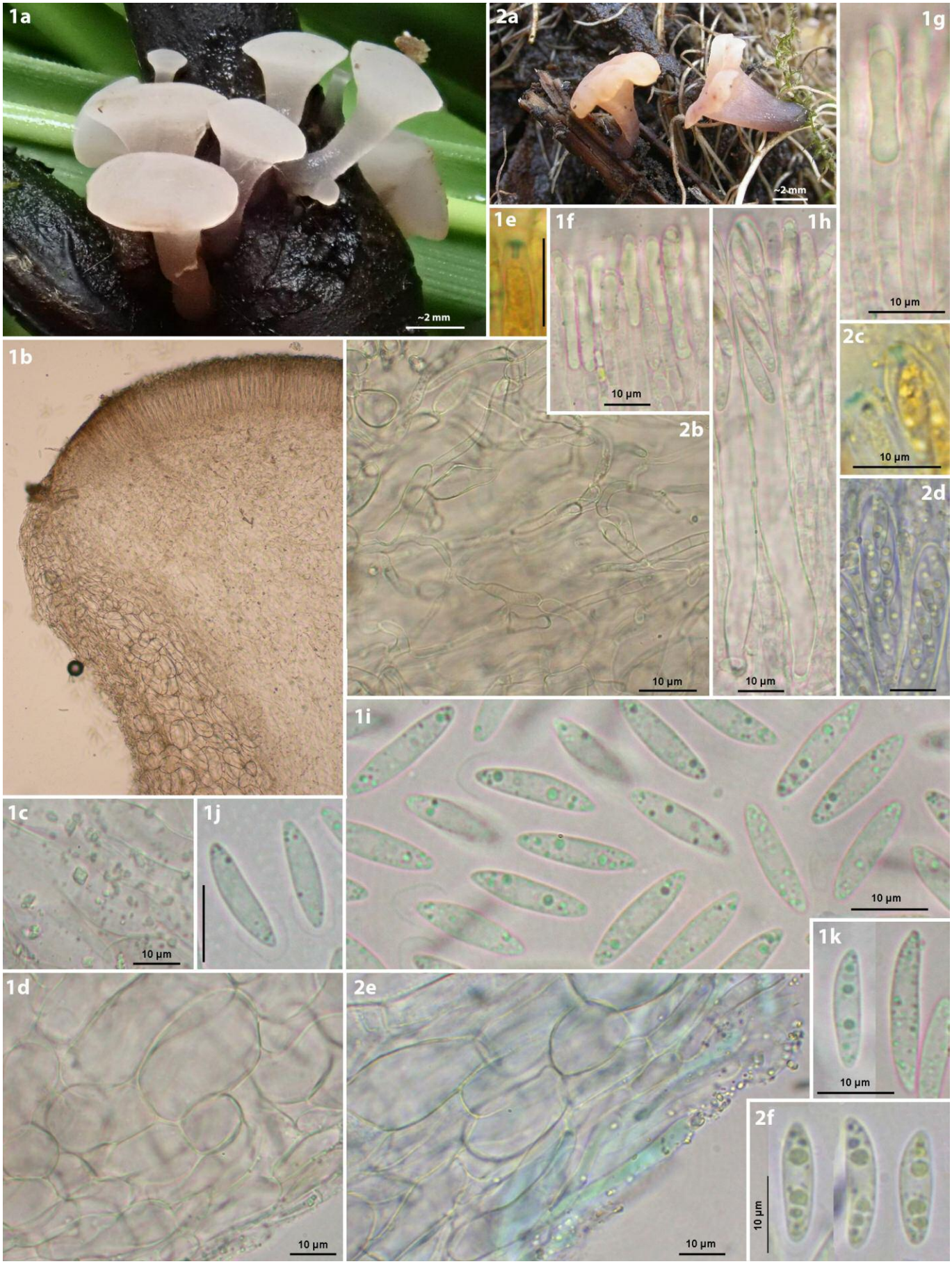

Plate 8 – *Ombrophila* aff. *ambigua*

1a, 2a. fresh apothecia; 1b. median section of apothecium; 2b. idem, closeup of medullary excipulum; 1d, 2e. idem, ectal excipulum at flanks, with small crystal on cortical hyphae; 1c. crystals in surface view on ectal excipulum; 1e, 2c. ascus apices with amyloid ring; 1f–g. paraphyses containing VBs; 1h, 2d. living asci containing mature spores; 1i–k, 2f. living, freshly ejected ascospores, some with delicate detaching sheath. – 1. M.H. 30718 (on *Persicaria*), 2. M.H. 140712 (on *Lycopus*); 1–2. photos M. Hairaud.

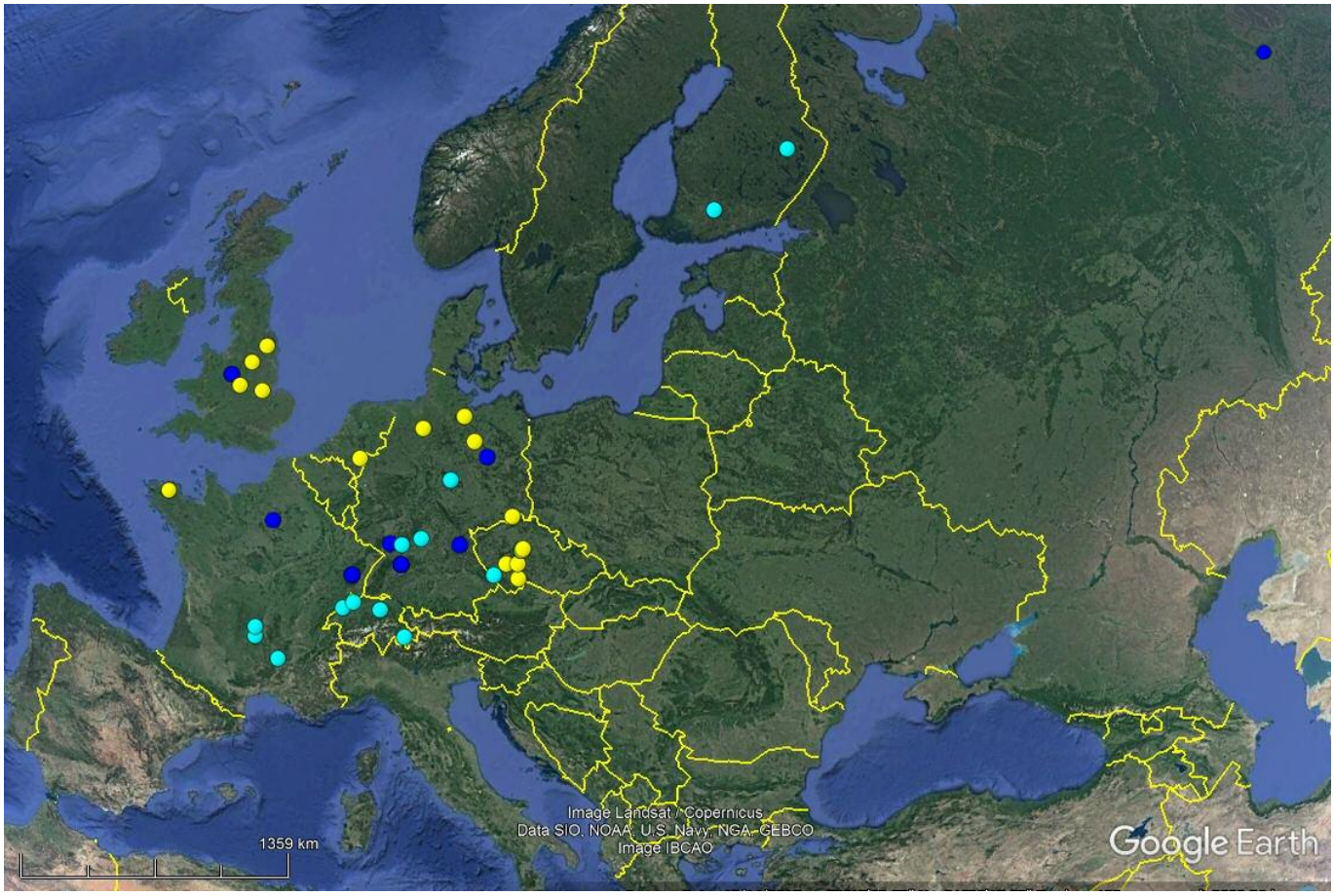

Plate 9 – Known distribution of *Ombrophila* spp. growing on herbaceous stems and leaves monocots or rarely dicots in Europe: cyan = *O. pileata*, blue = *O. costantinii*, yellow = *O. ambigua* s.l.

J. Velenovský (PRM 151722, lectotype of *O. aquosa*, non vid.). – **South Bohemia**, 12 km NNW of Tabor, 1.2 km NE of Borotín, Šebor ('Šeborák') pond, 512 m, leaves of *Carex* and *Glyceria maxima*, 17.VIII.1947, M. Svrček (?PRM, non vid.). – 16 km NNW of Pisek, Smetanova Lhota, near Čimelic, Skalice river, ~400 m, *Glyceria maxima*, 31.VII.1962, M. Svrček (?PRM, non vid.). – 21 km ENE of Ceske Budejovice, 5 km E of Horní Slověnice, 4.5 km SSE of Lomnice nad Lužnicí, Dolní přesecký pond, 430 m, leaves of *Glyceria maxima*, 14.VII.1962, J. Kubička & M. Svrček (?PRM, non vid.).

Not included (on dicots): France: Bretagne, Côtes-d'Armor, 11.5 km SSE of Plestin-les-Grèves, 1.5 km WSW of Plounérin, Étang du Moulin Neuf, 178 m, stems of *Lycopus europaeus*, 28.VII.2012, M. Hairaud (M.H. 140712, doc. vid.). – ibid., stems of *Persicaria hydropiper*, 30.VII.2018, B. Capoen & M. Hairaud (M.H. 30718, doc. vid.).

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