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THE GENUS *ABSCONDITELLA* (STICTIDACEAE, ASCOMYCOTA LICHENISATI) IN POLAND

URSZULA BIELCZYK & JÓZEF KISZKA

Abstract: *Absconditella* Vězda is a little-known genus represented by very inconspicuous lichens forming ephemeral thalli with very minute apothecia. Eight species of the genus are known in Europe; one of them, *A. lignicola* Vězda & Pišút, has already been found in Poland. Two further species, *A. delutula* (Nyl.) Coppins & H. Kilias and *A. sphagnorum* Vězda & Poelt, are here reported as new for the country, and new localities for *A. lignicola* Vězda & Pišút are provided. The morphology of Polish specimens of *Absconditella* species, their ecology and general distribution are discussed. A key to all European species is provided.

Key words: Taxonomy, ecology, ephemeral lichens, chorology, key to European *Absconditella*, Poland

Urszula Bielczyk, W. Szafer Institute of Botany, Polish Academy of Sciences, Lubicz 46, PL-31-512 Kraków, Poland; e-mail: bielczyk@ib-pan.krakow.pl
Józef Kiszka, Institute of Biology, Pedagogical University of Kraków, Podbrzezie 3, PL-31-054 Kraków, Poland

INTRODUCTION

The genus *Absconditella*, described by Vězda in 1965, comprises very fine, crustose species forming grey-greenish, thin thalli with a chlorococcoid photobiont, usually intermixed with algal films, and often gelatinous when moist. Apothecia are urceolate-concave, usually pale-colored, immersed to emergent. The entire true exciple is composed of more or less pseudoparenchymatous or conglutinated parallel hyphae. The hymenium is negative with K/I, and sometimes slightly yellowish with I, and the hypothecium is shallow and often indistinct. The paraphyses forming the hamathecium are simple or rarely a few, apically-branched, indistinctly septate, and slender with slightly to distinctly swollen apices. The 8-spored asci [except *A. duplicella* (Nyl.) Rossman, which has 2 or 4 ascospores per ascus] are cylindrical to cylindrical-clavate, thin-walled, with a distinct apical dome which sometimes has a narrow ocular chamber. The ascospores are ellipsoid, fusiform or fusiform-acicular, 1–3(–5)-septate, hyaline, thin-walled and smooth. Conidiomata are not known in the genus. All species of the genus are characterized by a negative reaction with all chemical reagents (Coppins 1992). They occur mostly on acid, moist substrata usually covered by a thin algal film.

The genus is represented in Europe by eight species (Poelt & Vězda 1977; Rossman 1980; Vězda & Pišút 1984), all known from only a few localities. According to many authors the genus is more common in reality, but as its representatives have very thin, inconspicuous, ephemeral thalli and very minute apothecia they are often overlooked and their distribution is very poorly documented.

The species of *Absconditella* are morphologically similar to representatives of *Dimerella* Trevis. and *Gyalecta* Ach., but are distinguished by the absence of *Trentepohlia* sp. as photobiont. The species of the genus also can be confused with *Bryophagus gloeocapsa* Nitschke *ex* Arnold, which differs in its yellow-brown hymenium, reacting positive with I, and thicker ascus apex.

Only one species of *Absconditella*, viz. *A. lignicola* Vězda & Pišút, has been reported from Poland previously (Kiszka & Piórecki 1992; Kiszka 1997a, b; Nowak 1998; Czyżewska *et al*. 2001). In 2000, during researches devoted to lichens of the Carpathians, two other species of this genus were found: *A. sphagnorum* Vězda & Poelt and *A. delutula* (Nyl.) Coppins & H. Kilias. Another four species also can be expected in Poland, as they are reported from neighboring countries. *A. pauxilla*

Vězda & Vivant was recently discovered in the Czech Republic (Palice 1999), *A. celata* Döbbeler & Poelt was found in the Czech Republic and Slovakia (Palice 1999), *A. fossarum* Vězda & Pišút is already known from Slovakia (Vězda & Pišút 1984) and *A. trivialis* (Willey *ex* Tuck.) Vězda was reported from the Czech Republic (Vězda 1970; Palice 1999) and Germany (Wirth 1995). According to Nowak and Tobolewski (1975) the presence of *A. annexa* (Arnold) Vězda in Poland also is very probable because of its occurrence as close to the border as the Slovak part of the Tatra Mts.

MATERIAL AND METHODS

The study is based mostly on voucher specimens collected by the authors and/or their colleagues and deposited in GPN, KRAM, KRAP, LOD and OLS (acronyms of herbaria follow Mirek *et al.* 1997). The apothecia were cut into sections, and I and K/I were used to check the color reaction of the hymenium. Additionally, the size, shape and structure of apothecia and ascospores were examined by lens and light microscopy. In the 'specimens examined' sections the numbers 1, 2, 3, etc., given at each collection of a particular species, match the numbers on the map (Fig. 1).

REVIEW OF THE GENUS *ABSCONDITELLA* IN POLAND

Absconditella lignicola Vězda & Pišút

Nova Hedwigia **40**: 344. 1984.

Thallus crustose, very thin, dark green, granular-leprose, swelling when wet, usually intermixed with algal films. Photobiont chlorococcoid. Apothecia 0.1–0.2(–0.27) mm in diameter, *ca* 0.05 mm high, sessile. Disc concave at first, then flat or slightly convex, pale cream. True exciple entire, 10–15 μm wide below, increasing to 40–50 μm wide above, colorless, formed by conglutinated parallel hyphae. Hymenium 60–65 μm high, hyaline. Hypothecium shallow. Paraphyses simple, crowded, slender, 0.5–0.8 μm wide, the apices slightly swollen. Asci cylindrical-clavate, 40–50 × 8–10 μm, thin-walled, with a distinct apical dome, 8-spored. Ascospores hyaline, ellipsoid, smooth, thin-walled, 3-septate, 10.0–15.0 × 4.5–6.5 μm.

NOTE. The color and size of apothecia are similar to *Dimerella pineti* (Ach.) Vězda but that species has *Trentepohlia* as photobiont, an I+ blue hymenium and asci without any distinct apical thickening. *Absconditella annexa* and *A. pauxilla* are similar, but have considerably different spores (see key below).

SPECIMENS EXAMINED. POLAND. POJEZIERZE EŁCKIE LAKELAND, Puszcza Borecka forest: 1 – Borki forest inspectorate [54°08'N/22°03'E] near Kruklanki village; on decaying trunk in *Tilio-Carpinetum*, 15 May 1997, *leg. A. Zalewska* (OLS); 2 – Lipowy Jar nature reserve [54°07'N/22°09'E]; on decaying stump in *Tilio-Carpinetum*, 22 Apr. 1996, *leg. A. Zalewska* (OLS). WYSOCZYZNA BIAŁOSTOCKA, Puszcza Knyszyńska forest: 3 – Budzisk nature reserve, 12 June 1999, *leg. K. Czyżewska* (LOD). WESTERN CARPATHIANS, Beskid Żywiecki Mts: 4 – Przywarówka village, 8 km WSW of Zubrzyca Górna town, alt. *ca* 950 m; on spruce stump in forested slope of Babia Góra Mt., 24 Oct. 1967, *leg. J. Nowak* (KRAM); Beskid Wyspowy Mts: 5 – Kostrza Mt. near Rupniów village, 5 km NNW of Tymbark town, alt. *ca* 515 m; on spruce stump on SE-facing forested slope, 06 June 1967, *leg. J. Nowak* (KRAM); 6 – Lubogoszcz Mt., 5 km NE of Mszana Dolna town, alt. *ca* 870 m; on decaying spruce stump on SE-facing forested slope, 20 May 1967, *leg. J. Nowak* (KRAM); Beskid Mały Mts: 7 – Łysina village near Kocierz Moszczawnicki, 10 km NE of Żywiec town, alt. *ca* 515 m; on spruce stump, 24 July 1967, *leg. J. Nowak* (KRAM); Beskid Makowski Mts: 8 – Borkówka village near Krzywice and Obajtki, 8 km W of Wiśniowa town, alt. *ca* 535 m, on spruce stump on S-facing forested slope of Działek Mt., 31 May 1967, *leg. J. Nowak* (KRAM); 9 – Pcim town, U Fudalego hamlet, alt. *ca* 520 m, on decaying spruce stump, in spruce monoculture, 05 July 1996, *leg. J. Nowak* (KRAM); 10 – Harbutowice village, Jaworze hamlet, alt. *ca* 550 m, on decaying spruce stump, in spruce monoculture, 16 July 1996, *leg. J. Nowak* (KRAM); Gorce Mts: 11 – valley of Kamienica River, near path to Bieniowe glade, alt. 940 m, on spruce stump, 12 Feb. 2000. *leg. P. Czarnota* (GPN); 12 – valley of Kamienica River above Przełęcz Borek pass, alt. 1050 m, on fir trunk, 31 Oct. 2000, *leg. P. Czarnota* (GPN); 13 – near Roztoka stream at base of Kopieniec Mt., alt. 860 m, on spruce stump, 16 Apr. 2001, *leg. P. Czarnota* (GPN); Pieniny Mts: 14 – Zielone Skałki

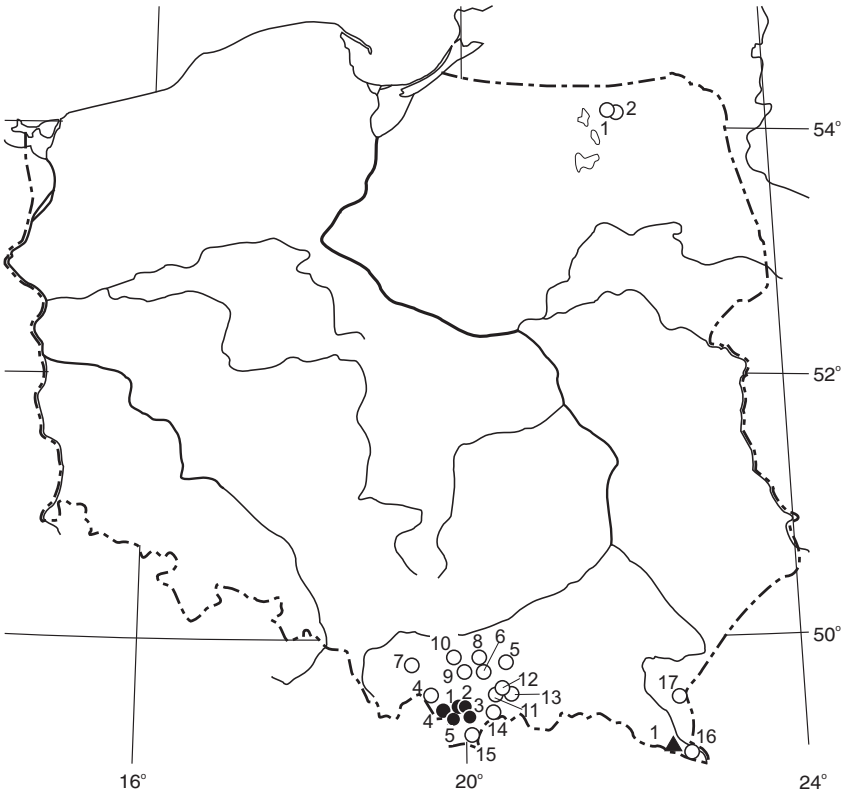

Fig. 1. Distribution of discussed species of *Absconditella* Vězda in Poland. ○ – *A. lignicola* Vězda & Pišút (1–17), ● – *A. sphagnorum* Vězda & Poelt (1–5), ▲ – *A. delutula* (Nyl.) Coppins & H. Kilias (1).

nature reserve, alt. *ca* 600 m, on decaying spruce stump in forest, 17 Apr. 1996, *leg. J. Kiszka* (KRAP); High Tatra Mts: 15 – Dolina Olczyska valley [49º15'N/ 19º47'E] forest near Polana Olczyska glade, alt. 950 m, on decaying spruce stump, 20 Sept. 1998, *leg. U. Bielczyk* (KRAM). EASTERN CARPATHIANS, Góry Słonne Mts: 16 – Góry Słonne ridge, near Wańkowa village, 6 km NW of Olszanica, alt. *ca* 640 m, on decorticated fallen trunk, 30 June 1992, *leg. J. Kiszka* (KRAP); Bieszczady Mts: 17 – Terebowiec stream on Tarnica ridge, alt. *ca* 720 m, on decaying spruce stump, 5 Aug. 1996, *leg. J. Kiszka* (KRAP).

ADDITIONAL RECORD (not seen). UKRAINE. EASTERN CARPATHIANS, Zakarpatska oblast, Velyky Berezny district, Novostuzhytzian forestry district, 'Yasynny ridge' [49º05'N/22º34'E], alt. *ca* 1050 m, on fallen decorticate *Fagus* trunk with *Catillaria erysiboides*, 31 May 1998, *leg. B. J. Coppins, S. Y. Kondratyuk et al. 19453* (E).

HABITAT AND ECOLOGY. *Absconditella lignicola* grows on wood, particularly on the upper surface of decaying stumps and logs of coniferous trees, mainly *Picea*, always in wet and shady places. It is known mainly from foothills and the lower montane belt. Nevertheless, it was also found in the lowlands in the Puszcza Borecka forest (Zalewska 2000) and the Puszcza Knyszyńska forest (Czyżewska *et al.* 2001), where it occurred on very decomposed moist wood (stumps) in shady sites within hornbeam forest *Tilio-Carpinetum*. The lichen is often accompanied by other species such as *Micarea prasina* Fr., *M. misella* (Nyl.) Hedl. and *Placynthiella icmalea* (Ach.) Coppins & P. James. In its other European localities, *A. lignicola* occurs also on decaying stumps and logs in moist and shady places. Rarely it has also been recorded on bark, and on dead

mosses or *Peltigera* thalli (Coppins 1994; Palice 1999). It is difficult to recognize in the field because of its very inconspicuous thalli and minute apothecia, so it was found in scattered localities. However, the species is considered to be not rare and it occurs in native forests as well as in spruce monocultures (Kocourková-Horáková 1998; Palice 1999).

GENERAL DISTRIBUTION. In Europe the species is known from the British Isles (Coppins 1994), Sweden (Santesson 1993), Austria (Hafellner 2000), Estonia (Halonen *et al.* 2000), Germany (Palice 1999), France (van den Boom *et al.* 1996), Portugal (van den Boom & Giralt 1996), Slovakia (Vězda & Pišút 1984) and the Czech Republic (Vězda 1995; Liška 1997; Kocourková-Horáková 1998; Palice 1999; Halda 1999). It was also found in the Eastern Carpathians in the Ukraine. The localities from North America (Nash *et al.* 1998) and Siberia (Palice 1999) extend the distribution of the taxon in the Northern Hemisphere.

In Poland *Absconditella lignicola* was earlier recorded from only six locations in the Carpathians: Góry Słonne Mts (Kiszka & Piórecki 1992), Beskid Żywiecki Mts (Nowak 1998), Beskid Wyspowy Mts (Nowak 1998), Pieniny Mts (Kiszka 1997a) and Bieszczady Mts (Kiszka 1997b). Another eight stations from the Carpathians are given in this paper (Beskid Mały Mts, Beskid Makowski Mts, Gorce Mts and Tatra Mts). Moreover, the species is known from three scattered localities in northeastern Poland (Zalewska 2000; Czyżewska *et al.* 2001).

Absconditella delutula (Nyl.) Coppins & H. Kilias

Lichenologist **12**: 106. 1980.

Lecidea delutula Nyl., Flora **62**: 223. 1879. – *Catillaria delutula* (Nyl.) Zahlbr., Catal. Lich. Univ. **4**: 36. 1926.

Lecidea modesta Hegetschw. in Stizenb., Ber. St. Gallischen naturwiss. Ges. 1980/81: 413. 1882. – *Gyalecta modesta* (Hegetschw.) Zahlbruckner, Verh. zool.-bot. Ges. Wien **40**: 288. 1890. – *Secoliga modesta* (Hegetschw.) Arnold, Ber. bayer. bot. Ges. 1/Abh.: **66**. 1891. – *Microphiale modesta* (Hegetschw.) Lettau, Hedwigia **52**: 123. 1912. – *Dimerella modesta* (Hegetschw.) Grummann, Catalogus Lichenum Germaniae: 18. 1963. – *Absconditella modesta* (Hegetschw.) Vězda, Preslia **37**: 243. 1965.

Thallus crustose, effuse, very thin, smooth, irregularly cracked when old, grey-green to dark olive-green (ochre to greenish when wet). Photobiont: *Trebouxia*-like – numerous large cells up to 25 μm in diameter in loose concentrations. Apothecia numerous, 0.07–0.15 mm in diameter, usually sessile or slightly emergent. Disc concave, smooth, whitish to waxy-yellow. True exciple entire, 15–20 μm wide below, increasing to *ca* 30 μm wide above, hyaline. Hymenium 70–90 μm high, hyaline. Hypothecium shallow, often indistinct. Paraphyses simple, sometimes slightly apically branched, slender, *ca* 1.0–1.7 μm wide, sometimes slightly swollen at the tips (1.7–2.5 μm). Asci cylindrical, 50–70 × 8–10 μm, thin-walled, walls to 3 μm thick, apical apparatus absent, 8-spored. Ascospores uniseriate, colorless, ellipsoid to oblong-ellipsoid, sometimes tapering at one end, smooth, thin-walled, 1-septate, 11.0–16.0 × 3.5–5.0(–6.5) μm.

NOTE. 1-septate ascospores are characteristic also for *A. sphagnorum* Vězda & Poelt but the two species differ in apothecia size and ecology.

SPECIMEN EXAMINED. POLAND. EASTERN CARPATHIANS, Bieszczady Mts: Bieszczady National Park, at mouth of Mała Rawka stream, alt. *ca* 750 m, on shaded, non-calcareous sandstones, 26 Aug. 2000, *leg. J. Kiszka* (KRAM).

HABITAT AND ECOLOGY. *Absconditella delutula* was recorded in Poland in the Bieszczady National Park, Eastern Carpathians. It was found there on large decalcified sandstone stones on the bank of a stream. It formed small thalli, 2–3 cm in diameter, among other lichens: *Bacidina inundata* (Fr.) Vězda, *Trapelia coarctata* M. Choisy, *Porpidia crustulata* (Ach.) Hertel & Knoph, and primordia of specimens belonging to *Verrucaria* subgen. *Hydroverrucaria*. Although the species has not been found outside the Bieszczady National Park its occurrence in other mountain and submontane regions of the country is very probable.

Elsewhere in Europe the species occurs in similar habitats. It usually grows in moist and

shady places on small stones or siliceous rocks, more rarely on dense soil or plant tussocks (Poelt & Vězda 1977; Wirth 1995; Coppins 1992); in Sweden it also has been recorded on wood (Santesson 1993). A population growing among *Thelocarpon laureri* (Flot.) Nyl. in the Czech Republic was considered to be probably threatened because of extensive growth of *Trapeliopsis flexuosa* (Fr.) Coppins & P. James and *Placynthiella icmalea* (Kocourková-Horáková 1998). The species is probably more common in mountain and submontane elevations but as it forms very inconspicuous thalli it is likely to be overlooked.

GENERAL DISTRIBUTION. *Absconditella delutula* is known from scattered localities in Europe, being found in England, Scotland and Ireland (Coppins 1992), Wales (Woods & Orange 1999), Sweden (Santesson 1993), Norway (Tønsberg 1995), Holland (Spier 2000), Germany (Wirth 1995), Austria (as *A. modesta*, Vězda 1965), Slovakia (Pišút *et al.* 1996) and the Czech Republic (Kocourková-Horáková 1998). The Polish locality reported here is the only one in the country and extends the distribution of the species to the eastern part of Central Europe.

Absconditella sphagnorum Vězda & Poelt

Preslia **37**: 242. 1965.

Thallus crustose, effuse, very thin (up to 100 μm thick), almost invisible in some places or disappearing, smooth, grey-olive-green to grey-black. Algae green, belonging to *Cystococcus* group. Thalli often formed among colonies of *Gloeocystis*-like algae. Apothecia numerous, scattered or sometimes in big concentrations (then borders distorted), sessile or slightly emergent, 0.2–0.4 mm in diameter and *ca* 0.15 mm high. Disc strongly concave, smooth, whitish, yellowish or flesh-colored. True exciple entire, *ca* 20 μm wide below, increasing up to *ca* 50 μm wide above, hyaline. Hymenium hyaline, 65–85 μm high. Hypothecium shallow. Paraphyses usually simple, slender, 0.8–1.0 μm wide, the apices thickened to almost clavate (up to *ca* 2.5 μm wide). Asci cylindrical-clavate, 60.0–75.0 × 6.5–7.5 μm, thin-walled, with a distinct apical dome (up to 5 μm in height, well visible in I). Ascospores uniseriate, hyaline, ellipsoid to oblong-elipsoid, smooth, 1-septate, 9.5–14.2 × 2.5–4.0(–5.0) μm.

NOTE. According to its morphology and ecology, the species is similar to *Bryophagus gloeocapsa*, which has an even more strongly concave (urceolate) apothecium and 3–4-septate ascospores. An excellent color photograph of *A. sphagnorum* is published by Wirth (1995).

SPECIMENS EXAMINED. POLAND. WESTERN CARPATHIANS, Nowy Targ Basin: 1 – Bór na Czerwonem nature reserve [49º26'N/20º03'E], alt. 620 m, on decaying *Sphagnum* raised peat bog, 29 Sept. 2000, *leg. U. Bielczyk* (KRAM). 2 – W of Ludźmierz town, peat bog, alt. *ca* 520 m, on decaying *Sphagnum*, 06 Apr. 2000, *leg. J. Kiszka* (KRAP); 3 – peat bog near Baligówka village, W of Czarny Dunajec town, alt. *ca* 500 m, on bryophytes, 06 July 2000, *leg. J. Kiszka* (KRAP); Kotlina Orawska basin: 4 – Puścizna Wielka peat bog near Jabłonka, alt. *ca* 600 m, on bryophytes, 14 Aug. 2000, *leg. J. Kiszka* (KRAP); 5 – Puścizna Mała peat bog, 3 km SW of Jabłonka, alt. *ca* 580 m, on *Sphagnum* tufts, 14 Aug. 2000, *leg. J. Kiszka* (KRAP).

HABITAT AND ECOLOGY. *Absconditella sphagnorum* was found at five locations, on peat bogs of the Podhale region. Its small thalli with numerous fructifications occurred on the tufts formed by living or dead *Sphagnum* stems. At these locations it was accompanied by *Placynthiella icmalea* or pycnidia of *Micarea* sp. The taxon is probably more common in Poland, particularly in the Carpathians and Sudety Mts. It should sought at other stations within peat bogs, on peat mosses and liverworts during autumn, when it forms abundant populations.

In Europe the species occurs usually on peat bogs, where it grows on tufts of *Sphagnum fuscum* as well as other species of *Sphagnum*, *Polytrichum* and the liverwort *Mylia anomala*. It was also recorded on overhangs of mosses in a glacial cirque, along a stream, and on wood in mixed primeval forest (Palice 1999).

GENERAL DISTRIBUTION. *Absconditella sphagnorum* is known from Scotland (Coppins 1992), Sweden (Vězda 1965; Santesson 1993), Norway

(van den Boom & Masselink 1999; Santesson 1993) and Finland (Huuskonen 1976). In Central Europe it has been recorded in Germany (Vězda 1965; Wirth 1995), Slovakia (Guttová & Palice 1999) and the Czech Republic (Kocourková-Horáková 1998; Palice 1999; Vězda 1995). In North America it is reported from Ohio (Vězda 1965). New locations from southern Poland, reported in this paper, have increased the range of its known geographical distribution. However, it should be pointed out that the species is probably more widespread in the boreal and temperate zones of the Northern Hemisphere, so further investigations are needed to reveal its real distribution.

KEY TO THE EUROPEAN SPECIES OF *ABSCONDITELLA*

1. Ascospores acicular-fusiform, up to 3.5 μm wide . . 2
1*. Ascospores fusiform to fusiform-ellipsoid, 4–10 μm wide 3

2. Apothecia 0.3–0.4 mm diam. Ascospores 5–7-septate, 35.0–40.0 × 3.5 μm. On mosses and plant debris in subalpine and alpine belts . . . . . *A. annexa* (Arnold) Vězda
2*. Apothecia 0.15–0.25 μm diam. Ascospores 3-septate, 25.0–30.0 × 1.8–2.0 μm. On mosses growing on rocks; on wood or plant debris . . . . . *A. pauxilla* Vězda & Vivant

3. Ascospores 1-septate 4
3*. Ascospores 3-septate 5

4. Apothecia 0.2–0.4 mm diam. Ascospores 9.5–14.2 × 2.5–4.0(–5.0) μm. On tufts of *Sphagnum* sp., *Polytrichum* sp., rarely on decaying wood and plant debris . . . . . *A. sphagnorum* Vězda & Poelt
4*. Apothecia 0.07–0.15 mm diam. Ascospores 10.0–15.0(–17.0) × 3.0–5.0(–6.5) μm. On shaded stones, sometimes on dense soil, turf or wood . . . . . *A. delutula* (Nyl.) Coppins & H. Kilias

5. Apothecia orange-red to red-brownish 6
5*. Apothecia whitish or pale yellowish 8

6. Apothecia 0.05–0.10 mm diam. Ascospores 15–16 × 6–7 μm. On various acid substrata (decaying *Sphagnum* sp., wood or dense soil) . . . . . *A. celata* Döbbeler & Poelt
6*. Apothecia larger 7

7. Apothecia 0.10–0.15 mm diam. Ascospores 12.0–14.0 × 4.0–4.5 μm. On mineral soil . . . . . *A. fossarum* Vězda & Pišút
7*. Apothecia 0.19–0.27 mm diam. Ascospores 40–44 × 8–10 μm. On mosses . . . . . *A. duplicella* (Nyl.) Rossman

8. Apothecia 0.2–0.4 mm diam. Ascospores 19–28 × 5–6 μm. On acid mineral soil rich in humus . . . . . *A. trivialis* (Willey *ex* Tuck.) Vězda
8*. Apothecia 0.15–0.20 mm diam. Ascospores 10.0–15.0 × 4.5–6.5 μm. On fallen conifer trunks, stumps, mossy bark or moribund mosses and lichens . . . . . *A. lignicola* Vězda & Pišút

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