

## Two ephemeral species of the lichen genus *Absconditella* (Stictidaceae) new to Tasmania

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### Abstract

The lichen genus *Absconditella* Vězda is recorded from Tasmania for the first time. It is represented by two very inconspicuous species, *A. delutula* and *A. lignicola*, which occur in regenerating wet forest logging coupes. These species are described briefly and illustrated, and the features that distinguish them from related or superficially similar genera are noted.

### Introduction

Lichens are frequently associated with extreme longevity and slow growth, features that make them useful in dating biogeographical and archaeological features (see Nash 1996). However, not all lichen species are long-lived, as demonstrated by the ability of many to colonise relatively short-lived substrata such as living leaves. Poelt & Vězda (1990) discussed a suite of temperate European species they termed 'kurzlebige Flechten' (short-living lichens) that complete the cycle from diaspore to fertile thallus to diaspore in a very short time, often just a few months. These lichens are typically associated with habitats where competition from other organisms is relatively low and the substratum is rather unstable.

An ongoing study of lichen recolonisation following logging and regeneration in wet eucalypt forest in southern Tasmania has revealed that so-called short-living lichens are represented in the process of forest re-establishment (G. Kantvilas & J. Jarman, unpublished data). Within about a year of regeneration treatment (typically burning), one of the earliest colonisers of muddy soil is the lichen *Steinia geophana* (Nyl.) B. Stein (Kantvilas 2004). Approximately three years after treatment, the recolonising flora includes species of *Absconditella*, a lichen genus not recorded previously from Tasmania. A brief account of these collections is presented here.

### Methods

Morphology was studied via low-power microscopy. Anatomy was examined by high-power light microscopy, using hand-cut sections mounted in water, 15% KOH and Lugol's Iodine after pretreatment with dilute KOH (referred to in text as K/I). Tasmanian collections were compared with herbarium material housed in HO (listed below).

### Comparative material examined:

*Absconditella delutula* (Nyl.) Coppins & Kiliyas: Austria: Steiermark, Koralpe, Stainz, in valle "Mausegger Graben", 5.vii.1992, H. Pittoni *et al.* (A. Vězda: Lich. Rar. Exsicc. 41) (HO).

*Absconditella lignicola* Vězda & Pišút: Czech Republic: Bohemia, montes Sumava, reservatum naturae Stožecká, 13.viii.1995, Z. Palice (A. Vězda: Lich. Rar. Exsicc. 191) (HO).

*Bryophagus gloeocapsa* Nitschke ex Arnold: Germany: Bavaria, Haidmühle, Mount Dreisselberg, 18.x.1998, A. Vězda *et al.* (A. Vězda: Lich. Rar. Exsicc. 371) (HO).

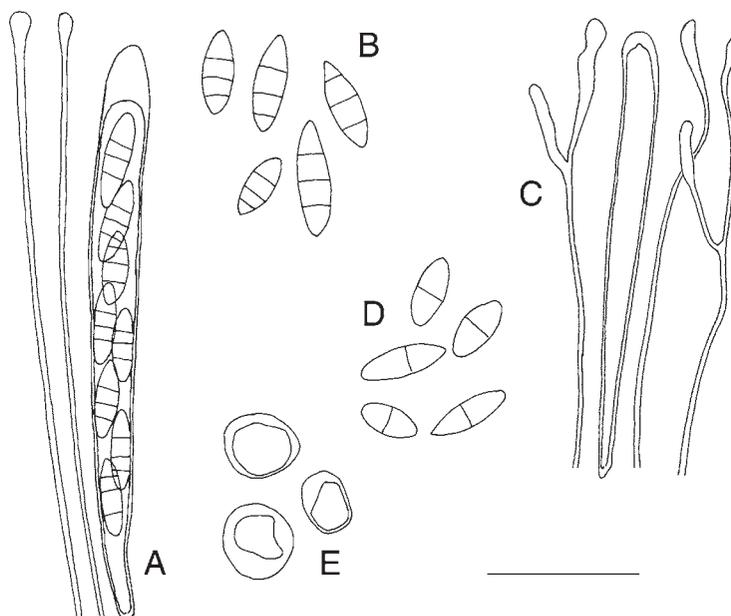
*Bryophagus minutissima* (Vězda) D.L. Hawksw.: Tasmania: Queenstown, 42°05'S 145°33'E, 6.ii.1984, P. James & G. Kantvilas 191/84 (BM, herb. Vězda, HO).

*Coenogonium lutescens* (Vězda & Malcolm) Malcolm: Tasmania: West of Tahune Bridge in the Warra SST, 'Big Coupe', 43°06'S 146° 41'E, 19.v.1999, *J. Jarman s.n.* (herb. Vězda, HO).  
*Dimerella pineti* (Schrad.) Vězda: Poland: Pomerania, Stowinski National Park, 18.v.1995, *J. Miadlikowska* (A. Vězda: Lich. Rar. Exsicc. 198) (HO).  
*Gyalidea hyalinescens* (Nyl.) Vězda: Tasmania: West of Tahune Bridge in the Warra SST, 'Top Coupe', 43°06'S 146° 41'E, 4.vi.2003, *G. Kantvilas* 468/03 (HO).  
*Gyalidea lecideopsis* (A. Massal.) Lettau ex Vězda: Austria: Steiermark, Fischbacher Alpen, 27.v.1990, *J. Poelt* (HO).

### The species

The genus *Absconditella* (family Stictidaceae) was erected by Vězda (1965) and currently comprises nine species that are comprehensively treated by Bielczyk & Kiszka (2001). The genus is characterised by an effuse, crustose thallus, chlorococcoid photobiont, tiny, pale-coloured, urceolate to concave apothecia, simple or occasionally branched paraphyses with typically swollen apices, eight-spored asci with a distinct, non-amyloid apical dome, and fusiform to ellipsoid, mostly 1–3-septate, colourless spores (Fig. 1; see also Coppins 1992). Species of *Absconditella* are extremely inconspicuous and easily overlooked. Indeed, all collections cited in this study were made fortuitously, and were detected only in the laboratory at low power magnification. They occurred on soil or wood fragments collected for other purposes, commonly associated with a thin algal film or intermixed with other lichens.

Several other genera are superficially similar to *Absconditella* and can be distinguished from each other only by careful anatomical study. In the Tasmanian lichen flora, these include *Bryophagus* Nitschke ex Arnold, *Coenogonium* Ehrenb. (including *Dimerella* Trevisan) and *Gyalidea* Lettau, which are characterised mainly by a combination of photobiont type and the structure of the ascus and paraphyses (Bielczyk & Kiszka 2001; Kantvilas 2002). The salient features of these genera are summarised in Table 1.



**Figure 1.** Anatomy of *Absconditella* species. A. *lignicola* (HO 526237): A- asci, spores and paraphyses; B- spores. A. *delutula* (HO 41035): C- young ascus and paraphyses; D- spores; E- photobiont cells. Scale= 20  $\mu$ m.

**Table 1:** Comparison of major characters in *Absconditella* and superficially similar genera.

	photobiont	hymenium	ascus	paraphyses	spores
<i>Absconditella</i>	chlorococcoid, cells $\pm$ globose	K/I- or very weakly reddish brown	narrowly cylindrical with thickened apex; all parts K/I-	$\pm$ simple, indistinctly septate, with expanded apices	ellipsoid to fusiform, transversely septate
<i>Bryophagus</i>	<i>Gloeocystis</i> (colonies of $\pm$ globose cells in a gelatinous sheath)	K/I+ blue	narrowly cylindrical with thickened apex; wall K/I+ blue	simple, straight, non-septate; apices not expanded	bacilliform to fusiform, transversely septate
<i>Coenogonium</i>	<i>Trentepohlia</i> (cells in short filaments)	K/I+ blue	narrowly cylindrical with K/I+ blue wall; apex not prominently thickened	sparsely branched with swollen, distinctly septate, $\pm$ moniliform apices	ellipsoid, 1-septate
<i>Gyalidea</i>	chlorococcoid, cells $\pm$ globose	K/I+ reddish brown	with thickened, K/I- apex; ascoplasm truncate to concave at the apex, K/I+ reddish brown	simple, septate, with unexpanded apices	ellipsoid, transversely septate or muriform, slightly constricted at the septa, sometimes with a gelatinous perispore

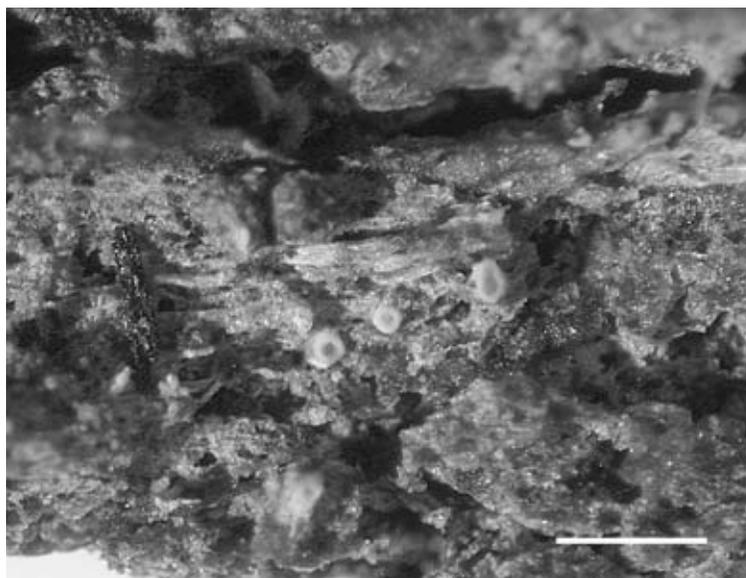
*Absconditella delutula* (Nyl.) Coppins & Kiliyas, *Lichenologist* 12: 106 (1980)  
 = *Absconditella modesta* (Hegetschw.) Vězda, *Preslia* 37: 243 (1965).

This species has the following diagnostic characteristics: thallus effuse, very thin, greenish and rather glossy, with photobiont cells irregularly roundish, 7-15  $\mu$ m diam.; apothecia minute, scattered, initially rather sunken but soon superficial, 0.07-0.15 mm wide, with a plane to concave, pale brownish disc and whitish, persistent proper margin; paraphyses entangled but predominantly simple or only sparingly branched, 0.7-1  $\mu$ m thick, with apices unpigmented, irregularly swollen to 1-3.5  $\mu$ m thick; ascospores ellipsoid, 1-septate, 8-12 x 3-5  $\mu$ m (Figs 1 C-E, 2). A full description is provided by Bielczyk & Kiszka (2001). Tasmanian material has somewhat smaller spores than reported by these authors, but nevertheless compares favourably with reference material from Europe. Furthermore, in the Tasmanian specimens, the hymenium is only very weakly K/I+ reddish brown.

This species was found on rotting wood and on consolidated soil in a regenerating logging coupe that was originally *Eucalyptus obliqua* L'Hérit.-dominated wet forest. The thallus forms a glossy, greenish, film-like scum over the substratum, associated with and in places growing amongst the thallus granules of *Placynthiella icmalea* (Ach.) Coppins & P. James. This species is very closely related to *A. lignicola* (see below) which differs only by its 3-septate spores. Within the Tasmanian lichen flora, it is very similar to *Coenogonium lutescens*, which inhabits similar habitats in unlogged forest but is distinguished by a suite of anatomical characters (Table 1).

*Absconditella delutula* is widespread in the cool temperate latitudes of Europe (see Bielczyk & Kiszka 2001), and was first recorded for the Southern Hemisphere from Queensland by Hafellner *et al.* (1989) (as *A. modesta*). This is the only mainland Australian record for the species.

*Specimens examined:* Tasmania: West of Tahune Bridge in the Warra SST, 'Top Coupe', 43°06'S 146°41'E, 200 m altitude, 27.iii.2002, *J. Jarman s.n.* (HO 41035); *ibid.*, 4.vi.2003, *J. Jarman s.n.* (HO 526206); *ibid.*, 'Big Coupe', 180 m altitude, 25.v.2004, *J. Jarman s.n.* (HO 526778).



**Figure 2.** Habit of *Absconditella delutula*, showing minute apothecia (HO 56206). Scale = 0.5 mm.

*Absconditella lignicola* Vězda & Pišút, *Nova Hedwigia* 40: 344 (1984)

This species has the following diagnostic characteristics: thallus crustose, effuse, sometimes rather granular or goniocyst-like, with photobiont cells irregularly roundish, 12-28  $\mu\text{m}$  diam.; apothecia minute, scattered, superficial, rather urceolate, 0.1-0.15 mm wide, with a plane to concave, pale brownish disc and whitish, persistent proper margin; paraphyses straight, simple, 0.7-1  $\mu\text{m}$  thick, with apices unpigmented, irregularly swollen to 2  $\mu\text{m}$  thick; ascospores fusiform-ellipsoid, 3-septate, 8-15 x 3-5  $\mu\text{m}$  (Figs 1 A-B). Further descriptions are provided by Bielczyk & Kiszka (2001) and Vězda & Pišút (1984); the latter authors also illustrate this taxon. Tasmanian specimens correspond closely to European material except that occasionally the asci are longer [up to 80  $\mu\text{m}$  long compared to 40-50  $\mu\text{m}$  as cited by Bielczyk and Kiszka (2001)].

Like *A. delutula*, *A. lignicola* has been collected on consolidated soil and rotting wood in a regenerating logging coupe that once supported *Eucalyptus obliqua* wet forest. It was also found in the unlogged forest on soil and the rotting leaf bases of the large rosette sedge, *Gahnia grandis* (Labill.) S.T. Blake. Further collections are from buttongrass (*Gymnoschoenus*) moorland, where it grew on the underside of a loose clod of peaty soil, and from a roadside eucalypt stump in rainforest, associated with *Micarea micrococca* (Körber) H. Gams. The species is distinguished from *A. delutula* by its 3-septate spores.

*Absconditella lignicola* is widespread in cool temperate areas of Europe and has also been recorded from Siberia and North America (Bielczyk & Kiszka 2001). This is the first report of the species from the Southern Hemisphere.

*Specimens examined:* Tasmania: West of Tahune Bridge in the Warra SST, 'Middle Coupe', 43°06'S 146°42'E, 100 m altitude, 30.vii.1998, *J. Jarman s.n.* (HO 502948); West of Tahune Bridge in the Warra SST, 'Big Coupe', 43°06'S 146° 41'E, 120 m altitude, 30.xi.1998, *G. Kantvilas* 251/98 (HO); West of Tahune Bridge in the Warra SST, 'Top Coupe', 43°06'S 146°41'E, 200 m altitude, 4.vi.2003, *J. Jarman s.n.* (HO 526237); at foot of Hamilton Moraine, 41°59'S 145°34'E, 600 m altitude, *G. Kantvilas* 197/98 p.p. (HO); Western Explorer Road, 41°22'S 145°02'E, 380 m altitude, 14.x.2003, *G. Kantvilas* 571/03B (HO).

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