

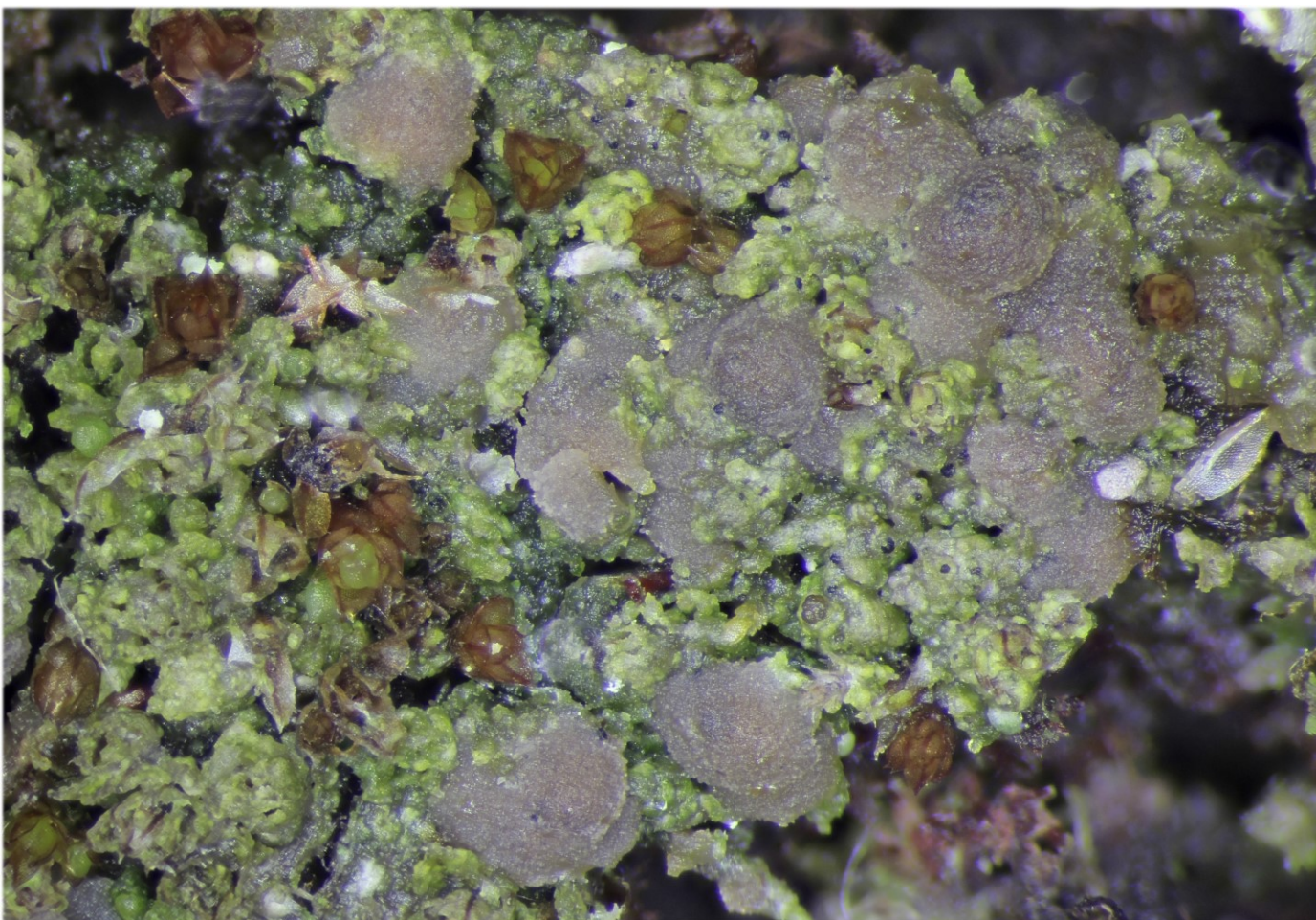
Revisions of British and Irish Lichens



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Veizdaeaales: Veizdaeaceae

Cover image: *Veizdaea aestivalis*, overgrowing bryophytes on soil over limestone, Malham, Yorkshire.

Revisions of British and Irish Lichens is a free-to-access serial publication under the auspices of the British Lichen Society, that charts changes in our understanding of the lichens and lichenicolous fungi of Great Britain and Ireland. Each volume will be devoted to a particular family (or group of families), and will include descriptions, keys, habitat and distribution data for all the species included. The maps are based on information from the BLS Lichen Database, that also includes data from the historical Mapping Scheme and the *Lichen Ireland* database. The choice of subject for each volume will depend on the extent of changes in classification for the families concerned, and the number of newly recognized species since previous treatments.

To date, accounts of lichens from our region have been published in book form. However, the time taken to compile new printed editions of the entire lichen biota of Britain and Ireland is extensive, and many parts are out-of-date even as they are published. Issuing updates as a serial electronic publication means that important changes in understanding of our lichens can be made available with a shorter delay. The accounts may also be compiled at intervals into complete printed accounts, as new editions of the *Lichens of Great Britain and Ireland*.

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Veizdaeales: Veizdaeaceae

including the genus *Veizdaea*

by

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VEZDAEACEAE Poelt & Vězda ex J.C. David & D. Hawksw. (1991)

The family contains the single genus *Veizdaea*, so the generic description below constitutes that of the family. It is also the only representative of the order Veizdaeales (Lücking *et al.* 2016). No molecular data are available. Morphological characteristics are very distinctive, including the thallus composed of spiny goniocysts, the ascus form and the paraphyses that are often entwined around the asci.

VEZDAEA Tscherm.-Woess & Poelt (1976)

Thallus crustose, of soredium-like corticate granules (goniocysts), sometimes initially subcuticular within bryophyte leaves, plant debris etc., or below the cortex of lichens, also developing superficially. **Photobiont** *Leptosira*. **Ascomata** apothecia, ± hemispherical or turbinate, sometimes appearing irregular, minute and hardly visible when dry in most species. **True exciple** and **hypothecium** absent. **Hamathecium** of branched paraphyses, variably developed, sometimes clasping and entwining the asci when well-developed. **Hymenium** without a gelatinous matrix. **Asci** 8-spored, ± cylindrical, thick-walled, the apex thickened, K/I+ blue, except for an apical pore. **Ascospores** aseptate to multiseptate, colourless, with smooth or verrucose walls. **Conidiomata** unknown, but conidiogenous cells producing colourless aseptate conidia may be present on thallus hyphae. **Chemistry**: lichen products not detected by TLC. **Ecology**: mainly in terricolous habitats on moribund bryophytes, lichens, biofilms on soil and plant debris, often on metal-rich substrata, rarely corticolous.

The apothecia are short-lived and for identification purposes material is best collected in late winter and early spring. Some *Micarea* species may appear superficially similar in the field, but these have hymenial gel, a true exciple, distinct conidiomata, lichen products and a quite different ascus structure. Non-lichenized *Mniaecia* species can appear similar to some *Veizdaea* species, but have K/I– asci.

In some species of *Veizdaea*, including *V. retigera* and *V. rheocarpa*, it is common to see what appear to be colourless elongate cellular appendages developing from one or both ends of the ascospores. These may well be germ tubes as suggested by Coppins (1987), but they can be found on immature ascospores and even within the ascus.

Literature

Coppins (1987), Czarnota & Kukwa (2009), Giralt *et al.* (1993).

- | | | |
|------|--|-------------------|
| 1 | Ascospores needle-shaped, 7- to 11-septate, >60 µm long | <i>acicularis</i> |
| | Ascospores ellipsoidal or cylindrical, aseptate or 1- to 3-septate, <30 µm long | 2 |
| 2(1) | Ascospores 1(-3)-septate, smooth-walled or weakly verrucose at maturity | 3 |
| | Ascospores aseptate, the wall smooth or distinctly verrucose-warted | 6 |
| 3(2) | Apothecia sessile or appressed, not stalked; ascospores >15 µm long, 1- to 3-septate | 4 |
| | Apothecia distinctly stalked or constricted below, often turbinate at first, the stalk sometimes hidden among the goniocysts; ascospores <15.5 µm long, 1-septate | 5 |
| 4(3) | Apothecia minute, subsessile, mostly 0.1–0.2 mm diam., ± invisible when dry, white, with a crystalline appearance and an irregular surface caused by protruding ascus apices, surface tomentum absent; ascospores (17–) 20–28 (–31) × (7–) 8–10 (–11) µm | <i>cobria</i> |
| | Apothecia larger, adnate-convex, mostly 0.3–1 mm diam., dull reddish-brown, appearing tomentose especially when dry; ascospores 15–19 × 5–7 µm | <i>aestivalis</i> |

- 5(3) Thallus distinctly granular, goniocysts well-developed; paraphyses abundant, conspicuous, flexuose.....*leprosa*
 Thallus filmy, thin, scarcely developed, goniocysts absent or inconspicuous; paraphyses few, poorly developed.....*stipitata*
- 6(2) Ascospores verrucose-warted; apothecia turbinate or sometimes irregular, the ascus apices often protruding; paraphyses short, not clearly entwining individual asci*rheocarpa*
 Ascospores smooth; apothecia neatly hemispherical, with a ± smooth surface; paraphyses long, entwining individual asci*retigera*

Veizdaea acicularis Coppins (1987)

Thallus thin, effuse, of dull, dark green ± globose goniocysts; goniocyst surface smooth or with shallow, blunt papillae to 2 µm tall. Apothecia 0.2–0.4 mm diam., scattered or confluent in clusters of two or three, convex and appressed but sometimes shortly turbinate when young, grey-white to pink-brown, matt, sometimes surrounded by a weakly developed tomentose layer. Paraphyses sparse, rarely reaching the surface of the hymenium. Ascospores 60–85 × 2–2.5 µm, 7- to 11-septate, filiform; the apex rounded, lower end tapered to a narrow point. **BLS 1641.**

Over moribund bryophytes and algal films in sheltered, moist situations, on mine sites, sea cliffs, below wire fences and in pinewoods, mostly but not exclusively on metal-contaminated ground; rare. N. England, N. & C. Wales, Scotland, S.W. Ireland.

Readily distinguished by the long, needle-shaped ascospores. *Bacidia* and *Bacidina* species may appear similar, but have a well-developed exciple, mostly unbranched apically swollen paraphyses, the hymenium within a gel matrix and a quite different ascus structure. An albino morph with colourless apothecia is known from N. Wales (Caernarfonshire).

Nb



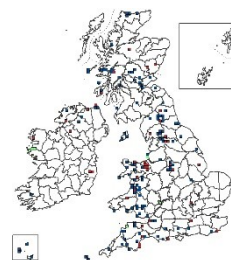
Veizdaea aestivalis (Ohlert) Tscherm.-Woess & Poelt (1976)

Goniocysts dark olive-green, ± contiguous, with short conical processes. Apothecia 0.3–1 mm diam., convex, appressed or immersed in the thallus, white to grey, dull reddish brown or buff, matt, often appearing ± grey-white tomentose (visible especially when dry) due to development of a hyphal mat that bears a hyphomycetous anamorph; paraphyses strongly contorted and anastomosed, entwining individual asci. Ascospores 15–19 (–22) × 5–7 (–8) µm, 1(–3)-septate, verrucose when mature. **BLS 1520.**

On mosses and plant remains amongst or on ± calcareous rocks, in limestone grassland and mine sites, on walls, rubble, building ruins and waste ground, in shaded or moist sites, also amongst mosses on trees with base-rich bark; locally common. Throughout Britain and Ireland, but scarce in S.E. England.

The largest and most conspicuous species of the genus. Superficially similar to *Bilimbia sabuletorum*, which has a well-developed hypothecium and exciple, ± simple paraphyses not clasping the asci, larger, septate ascospores and different asci.

LC



Veizdaea cobria Giralt, Poelt & Suanjak (1993)

Thallus ± leprose, of small light green goniocysts (8–) 10–15 µm diam., mostly containing a single algal cell, the surface with distinct aculeate papillae (3–) 4–6 µm high. Apothecia minute, mostly 0.1–0.2 mm diam., hardly visible when dry, sessile, crystalline-white, surface appearing minutely verrucose from the protruding loosely bound ascus apices; asci cylindrical, (75–) 95–120 (–130) × (22–) 25–30 (–35) µm; paraphyses thin, 1–1.5 (–2) µm diam., anastomosing, closely clasping the asci. Ascospores ellipsoidal, smooth, 1(–3)-septate, (17–) 20–28 (–31) × (7–) 8–10 (–11) µm. **BLS 1420.**

Colonising plant debris, algal films and dead and dying bryophytes in a variety of moist sheltered habitats, including turf-capped brick walls, metal-polluted river shingle, mine spoil tips and disused railway track beds. Also found in native woodland on rock outcrops, N-facing clay banks and track sides with other ephemerals, such as *Absoconditella delutula*, *Coppinsia minutissima*, *Thelocarpon* spp., *Thrombium epigaeum* and *Mniaecea jungermanniae*; rare, but probably overlooked. C. Wales (Cardiganshire, Merionethshire, Radnorshire), E. England (E. Suffolk), Scotland (Mid Perth, Argyll).

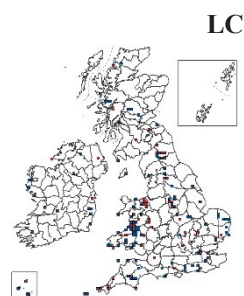
Nb



***Veizdaea leprosa* (P. James) Vězda (1977)**

Thallus conspicuous, minutely granular, dark to light green, goniocysts slightly warted, rarely with spines. Apothecia 0.3–1 mm diam., stalked or ± sessile when crowded amongst goniocysts, turbinate when young, becoming convex to globose, pale flesh-pink or orange-brown; paraphyses abundant, flexuose, not entwining individual asci. Ascospores ± cylindrical or narrowly ellipsoidal with rounded apices, smooth, (0-)1-septate, 10–15.5 × 2.5–4 µm. **BLS 1521.**

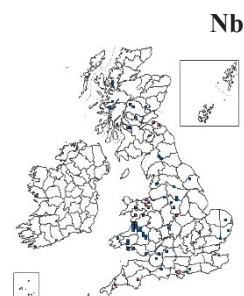
On disturbed soils and decaying vegetation in transient, open habitats, including mine spoil tips, beneath roadside crash barriers, electricity pylons, lightning conductors, barbed wire fences and on coastal cliffs, particularly in heavy metal (zinc and lead) enriched habitats. Rarely on tree bark in the vicinity of fencing wire staples; frequent in suitable habitats throughout Britain and Ireland.

***Veizdaea retigera* Poelt & Döbbeler (1977)**

Thallus dark green when moist, ± leprose, in small patches; goniocysts with short spines, to 2 µm long. Apothecia rather small, mostly < 0.3 mm diam., occasionally to 0.4–0.6 mm diam., white to pale flesh-tan, brownish when old, hemispherical to semi-globose; paraphyses 0.7–1.5 µm diam., numerous, entwining individual asci. Ascospores persistently aseptate, ellipsoidal, smooth, (14-) 15–22 (–24) × 7–11 (–13) µm. **BLS 1522.**

In damp situations, on decaying bryophytes and lichens on base-rich soils and bark, in a wide range of habitats including woodland, limestone grassland, old mortared walls, dune slacks and waste ground, also on *Osmunda* rhizomes, decaying wood, limestone chippings and railway ballast. Tolerant of heavy metals and a characteristic species of abandoned metal mine sites in Wales. Throughout Britain and Ireland.

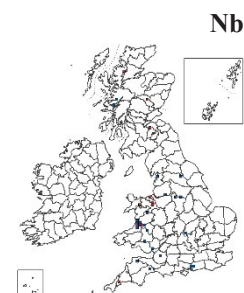
V. rheocarpa has marginally larger and distinctly warted ascospores, and sparse, short paraphyses that do not become entwined around individual asci.

***Veizdaea rheocarpa* Poelt & Döbbeler (1977)**

Thallus inconspicuous, dark green, ± gelatinous when moist; goniocysts 18–40 µm diam., with pointed conical spines 1–2.8 (–4) µm in length (lengths of 4–15 µm reported by Poelt & Döbbeler 1975), the spines best developed on the exposed surfaces of superficial goniocysts. Apothecia white to pallid brown, often indeterminate in size and form, usually 0.2–0.35 mm diam., the surface appearing minutely verrucose from the protruding ascus tips; paraphyses rather sparse and short, not entwining individual asci, never reaching the height of mature asci. Ascospores aseptate, ellipsoidal, (18-) 20–24 (–25) × 8–11 (–12) µm, eventually becoming distinctly warted. **BLS 1523.**

In similar but perhaps less base-rich situations compared with *V. retigera*, on lead-contaminated soil on disused metal mines and river shingle, moribund thallose liverworts (*Marchantia*) and the mossy trunks of old *Quercus* and *Ulmus*; rare and scattered throughout the British Isles. S.W. (Devon) and N. England (Derbyshire), Wales, W. Scotland.

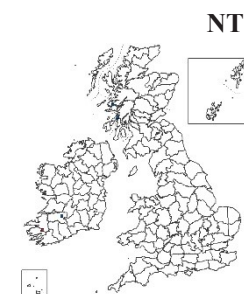
Similar to *V. retigera*, which has smooth ascospores and numerous long paraphyses that become entwined around individual asci. British populations have goniocysts with much shorter spines than those reported for the type; Coppins (1978) suggested that this might be a consequence of difference in habitat.

***Veizdaea stipitata* Poelt & Döbbeler (1977)**

Similar to *V. leprosa*, but thallus indistinct, thin and filmy, scarcely visible, goniocysts absent. Apothecia turbinate at first; paraphyses absent or few, then slender and confined to the lower half of the hymenium, not clasping the asci. Ascospores 1-septate, narrowly ellipsoidal with rounded ends, smooth, (12.5-) 13–15 (–16) × 3–3.5 µm. **BLS 1421.**

Overgrowing the thallus of *Polychidium muscicola* on bark of *Fraxinus excelsior*; very rare. W. Scotland (Westernness & Argyll) and W. Ireland (Clare & N. Kerry).

V. stipitata is found on mosses and hepatics in alpine regions of C. Europe and the tropics. Morphs of *V. leprosa* with inconspicuous goniocysts and overwhelmed by thick cyanobacterial films are not unusual on mine sites in Wales. They can be identified by their abundant paraphyses.



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