

Revisions of British and Irish Lichens



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Lecanorales: Tephromelataceae

Cover image: *Tephromela atra*, thallus on maritime granite, Duirinish, Port Bàn, Wester Ross, Scotland.

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.

Key to map date classes

- 2000–
- 1960 - 1999
- 1650 - 1959

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. Conservation assessments use the [codes](#) listed in the BLS website. The four-digit number at the end of each description refers to BLS numbers which are part of the recording scheme; they link to species rather than names, and are unchanged (with rare exceptions)

when names alter following improvements in taxonomy.

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to compile new printed editions of the entire lichen biota of Britain and Ireland is extensive, and many parts are out-of-date even as they are published.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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Lecanorales: Tephromelataceae

including the genera *Calvitimela*, *Mycoblastus*, *Tephromela* and *Violella*.

by

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TEPHROMELATACEAE Hafellner (1984)

Thallus crustose. **Photobiont** chlorococcoid. **Ascomata apothecia**, large, sessile, the disc black, the tissues below the hymenium often pigmented. **Thalline margin** absent, or present (in *Tephromela*). **True exciple** poorly developed and often evanescent. **Hamathecium** of unbranched or branched gelatinized paraphyses. **Asci** with an apical dome that stains blue in iodine, sometimes with a central tube-like structure, and surrounded by a I+ gelatinous coat, 1-, 2- or 8-spored. **Ascospores** aseptate, colourless, sometimes with very thick layered walls. **Conidiomata** pycnidia, immersed in the thallus. **Conidia** usually bacillar, sometimes formed from lateral buds on the conidiophores.

The Tephromelataceae contains four genera, all of which are represented in Great Britain and Ireland. Hafellner (1984) recognized the Mycoblastaceae as a separate family based on morphological criteria (primarily ascospore number and size). Spribille *et al.* (2011) and Bendiksby *et al.* (2015) demonstrated that *Mycoblastus* occupies a sister clade to the other three genera, and that the combined unit is monophyletic.

Literature

Bendiksby *et al.* (2015), Hafellner (1984), Spribille *et al.* (2011).

- | | | |
|------|--|--|
| 1 | Asci clavate, 1- or 2- (or 3-) spored, with an enormous apical cap visible when immature 2 | |
| | Asci ± cylindrical, 8-spored, the apical cap not especially well-developed 3 | |
| 2(1) | Thallus Pd– or Pd+ yellow; epithecium and hymenium blue-black or in part olive-brown, non-granular <i>Mycoblastus</i> | |
| | Thallus Pd+ rust-red; epithecium and hymenium densely interspersed with violet granules, K+ dissolving to vivid blue-green <i>Violella</i> | |
| 3(1) | Apothecia with a persistent thalline margin; asci <i>Bacidia</i> -type <i>Tephromela</i> | |
| | Apothecia lacking a thalline margin, the true exciple soon excluded; asci <i>Lecanora</i> -type <i>Calvitimela</i> | |

CALVITIMELA Hafellner (2001)

Thallus crustose, areolate, smooth to warted; prothallus sometimes visible. **Soralia** present in some species, **isidia** absent. **Photobiont** chlorococcoid. **Ascomata** apothecia, black, immarginate, becoming markedly convex, glossy when young. **Thalline margin** absent. **True exciple** thin, inconspicuous, soon excluded. **Epithecium** aeruginose. **Hypothecium** hyaline to pale ochraceous. **Hamathecium** of unbranched or sparingly branched paraphyses, each with a gelatinous coat swelling strongly in water. **Asci** clavate, 8-spored, *Lecanora*-type. **Ascospores** aseptate, colourless, thick-walled, without an perispore. **Conidiomata** pycnidia, immersed, with green pigment around the ostiole. **Conidia** bacilliform, straight, aseptate, colourless. **Chemistry**: various depsidones and aliphatic acids in the medulla and atranorin, and/or usnic acid in the cortex. **Ecology**: on siliceous rocks and lichenicolous.

Similar to *Tephromela* but differing in having convex immarginate glossy ascomata with an aeruginose epithecium and no thalline margin. The poorly developed true exciple and *Lecanora*-type asci separate it from *Lecidea*.

The genus has been shown to be phylogenetically diverse by Bendiksby *et al.* (2015) and Fjelde (2021), including four deeply divergent clades that could be considered as different genera.

Literature

Bendiksby *et al.* (2015), Brodo (2009), Fjelde (2021), Fryday (2011), Gilbert (2009), Hertel & Rambold (1985).

- 1 Medulla Pd+ orange; cortex KC+ yellow; ascospores 5-8 μm diam. *aglaea*
 Medulla Pd+ yellow; cortex KC+ red; ascospores 3-5 μm diam. *armeniaca*

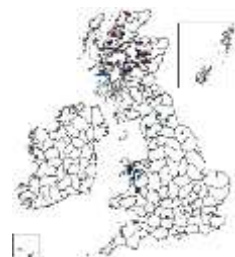
Calvitimela aglaea (Sommerf.) Hafellner (2001)

Thallus rather thick, warted-areolate, wide-spreading, to *ca* 10 cm diam.; areoles to 2 mm diam., mostly contiguous, convex or flat, at times wrinkled, almost sub-squamulose, grey, greenish, brownish or yellowish white, \pm glossy; prothallus black, indistinct; photobiont cells 7-14 μm diam. Soredia absent. Apothecia 0.5-2 (-3) mm diam., black, immersed or \pm appressed; disc at first flat, later becoming irregularly convex; thalline margin absent; true exciple excluded, much reduced, visible in the upper part only as a narrow green-black zone continuous with the epithecium; epithecium blue-green to green-black; hymenium 60-80 μm tall, \pm colourless; hypothecium colourless above, pale yellowish brown below. Ascospores (7.5-) 8-14 (-16) \times 5-8 μm . Conidia 5.5-9 \times 1-2 μm . Cortex C-, K+ yellow, KC+ yellow, Pd-; medulla C-, K+ yellow, KC+ yellow, Pd+ orange (atranorin, \pm usnic, and bourgeanic acids). **BLS 0693.**

On exposed siliceous rocks in the uplands. Throughout North Wales, Cumbria and highland Scotland, rare in Ireland.

The thallus colour varies from grey to yellowish green depending on the concentration of usnic acid. *C. aglaea* was placed in *Calvitimela* subgenus *Severidea* by Bendiksby *et al.* (2015).

The broad-spectrum parasite *Endococcus propinquus* (Körb.) D. Hawksw. (1979) has been recorded once as an associate of this species.



Nb

Calvitimela armeniaca (DC.) Hafellner (2001)

Thallus thick or moderately thick, areolate to almost sub-squamulose, wide-spreading, to *ca* 10 cm diam.; areoles 0.4-2 (-4) mm diam., \pm angular, contiguous, convex or flat, greyish or dark yellowish-green when fresh, becoming red-brown or brownish yellow in dried collections, shiny, often minutely wrinkled or becoming secondarily cracked; prothallus black, sometimes visible between the areoles; photobiont cells 7-18 μm diam. Soredia absent. Apothecia 0.8-2 (-4.5) mm diam., immersed; disc flat, black; thalline margin absent, true exciple \pm absent; epithecium bluish green-black, in part brownish; hymenium 45-55 μm tall; hypothecium mostly colourless, but pale ochraceous in the lower part. Ascospores (8-) 9-12 \times (3-) 3.5-4.5 (-5) μm . Pycnidia not seen in British material. Conidia 6.5-10 \times 1.5-1.8 μm (European specimens). Cortex C-, K \pm yellow or orange-red, KC+ red, Pd-; medulla C-, K-, KC \pm red, Pd+ yellow (alectorialic and \pm protocetraric acids). **BLS 0697.**

On exposed, very hard siliceous rocks and almost exclusively on very steep to vertical rock faces above *ca* 1000 m alt.; rare. Scottish Highlands (Cairngorms, Breadalbanes, Ben Nevis).

The distinction is poorly understood between *Calvitimela armeniaca* and *C. melaleuca* (Sommerf.) R. Sant. 2004 [not yet recorded from our region], and the latter species is paraphyletic with respect to *C. armeniaca* (Bendiksby *et al.* 2015). *C. melaleuca* as currently circumscribed has psoromic acid rather than alectorialic and protocetraric acids.

Specimens in dried collections become deep reddish brown and in time, adjacent paper may take on a pinkish discoloration indicating the presence of alectorialic acid.



Nb

MYCOBLASTUS Norman (1853)

Thallus crustose, continuous or granular, sometimes irregularly cracked-areolate, very variable, whitish grey to grey. **Prothallus** sometimes present, grey or blackish. **Photobiont** chlorococcoid, possibly trebouxoid. **Soralia** often present. **Ascomata** apothecia, flat to convex or subglobose, sessile or appressed, black. **Thalline margin** absent, but ascomata formed on a basal cushion of dense intertwined hyphae which forms a ring around young ascoma and is often excluded at maturity. **True exciple** reduced, formed of hyphae similar to the paraphyses. **Epithecium** with dull greenish to green-blue or blue-black pigment, K⁺ blue-green and N⁺ crimson, that frequently extends into the upper layers of the hymenium. **Hymenium** colourless, blue-black or brownish, I⁺ blue. **Hypothecium** colourless, pale brown or red. **Hamathecium** of anastomosing paraphyses, intergrading imperceptibly into the hyphal network of the hypothecium. **Asci** 1- to 2- (to 3-) spored, cylindrical-clavate, very thick-walled; apical dome strongly K/I⁺ blue, with a distinct ocular chamber (especially when young); outer layer thickened above, forming a K/I⁺ dark blue cap over the ascus apex. **Ascospores** medium to very large; walls strongly thickened and laminar in construction, aseptate, cylindrical or ellipsoidal, colourless, multinucleate. **Conidiomata** pycnidia, immersed in the thallus, visible as minute black dots; wall green in the upper part, K⁻, N⁺ reddish. **Conidiogenous cells** short. **Conidia** bacilliform, aseptate, colourless. **Chemistry**: atranorin, usnic acid, fatty acids, depsides, depsidones and pigments. **Ecology**: on ± acidic substrata, predominantly on bark and wood, more rarely on rocks and associated mosses.

An anatomically distinct group of closely related species, unified by their apothecia which lack a true thalline margin, distinctive ascospore morphology and anastomosing paraphyses.

Mycoblastus fucatus was included in this genus by James & Watson (2009), but has violet granules in the hymenium and ascospores with brownish inner walls, and is phylogenetically distinct from *Mycoblastus*. It was transferred to the new genus *Violella* (q.v.) by Spribille *et al.* (2011a).

Literature:

James & Watson (2009), Kantvilas (2009, 2016), Spribille *et al.* (2011a, b), Tønsberg (1992).

- | | | |
|------|---|------------------------|
| 1 | Soralia absent; apothecia usually present | 2 |
| | Soralia present; apothecia often absent | 4 |
| 2(1) | Hypothecium and adjacent medullary tissue under apothecia carmine-red; asci 1(-3)-spored; ascospores cylindrical with rounded apices, 70–100 × 35–45 μm | <i>sanguinarius</i> |
| | Hypothecium and adjacent medullary tissue under apothecia colourless or pale straw brown; asci (1-)2(-3)-spored; ascospores ellipsoidal with ± pointed apices, 25–70 (–100) × 15–42 μm | 3 |
| 3(2) | Epithecium and hymenium blue-black or in part olive-brown, non-granular, K ⁻ ; thallus Pd ⁻ | <i>affinis</i> |
| | Epithecium and hymenium densely interspersed with violet granules, K ⁺ dissolving to vivid blue-green; thallus Pd ⁺ rust-red | <i>Violella fucata</i> |
| 4(1) | Soralia bright yellow to yellow-green (usnic acid present), efflorescent, ± contiguous, Pd ⁻ | <i>alpinus</i> |
| | Soralia grey to bluish grey (no usnic acid), punctiform to ± contiguous, Pd [±] rust-red | 5 |
| 5(4) | Soralia widely dispersed in scattered groups, often few in number, rounded, discrete, pale, Pd ⁻ (but cortex Pd ⁺ yellow); apothecia usually abundant; medullary tissue and hypothecium carmine-red | <i>sanguinarius</i> |
| | Soralia flat or ± excavate, yellow-grey to blue-grey, ± contiguous, Pd [±] rust-red | 6 |
| 6(5) | Thallus and soralia Pd ⁻ , UV ⁺ white (perlatolic acid); prothallus and soredia suffused bluish grey | <i>caesius</i> |
| | Thallus and soralia Pd ⁺ rust-red, UV ⁻ (fumarprotocetraric acid); prothallus and soralia dark to light grey | <i>Violella fucata</i> |

Mycoblastus affinis (Schaer.) T. Schauer (1964)

Thallus rather thick, irregular, granular-warted, pale grey or green-grey; soralia absent. Apothecia 0.5–1.5 mm diam., matt, black, strongly convex even when young, ± sessile; epithecium ± opaque, blue-black, rarely in part pale brown or olive-brown; hymenium paler below, K–; hypothecium colourless, pale straw or pale brown, intensifying in K, or K+ red-brown. Asci (1-) 2-spored. Ascospores (40–) 47–70 (–100) × (25–) 30–42 μm, ellipsoidal, thin-walled. Pycnidia often present. Cortex K+ yellow; medulla C–, K–, KC–, Pd–, UV+ white (atranorin, planaic acid). **BLS 0907.**

On acid bark, especially of conifers or *Betula*, less frequently overgrowing mosses on rock, rarely directly on rock in well-wooded sites; local. S.W. England, Wales, C. & W. Scotland.

Differs from *M. sanguinarius* in the pale base to the apothecia, the 2-spored asci and ellipsoidal, not cylindrical, ascospores. See also *M. alpinus*.

Nb

**Mycoblastus alpinus** (Fr.) Th. Fr. ex Hellb. (1893)

Thallus ± spreading, film-like, effuse, with scattered to contiguous grey, low warts; prothallus grey to blackish; soralia at first scattered, punctiform, bright or citrine-yellow, bursting from low warts, often becoming efflorescent and forming irregular granular-sorediate patches, ± covering the entire thallus. Apothecia very rare, bluish black, glossy, < 1 mm diam., similar to those in *M. affinis*. Asci 1-spored, spores 50–80 × 30–38 μm, wall uniformly thickened, 1 or 2 aborted spores often also present in the asci. Thallus C–, K± yellow, KC± yellow, Pd–, UV– (atranorin, planaic acid, usnic acid is restricted to the soralia). **BLS 1780.**

Lignicolous on fallen pine trunks in native pinewoods, on oak lignum in upland rainforests, or on rocks (north-facing vertical granite crags, or sandstone outcrops); rare. N.E. & S.W. Scotland (Kirkcudbright), England (Peak District), N. Wales.

Spribile *et al.* (2011a, b) found that populations of *Mycoblastus alpinus* clustered within a strongly supported *M. affinis* clade, and their separation in Britain merits further study. It appears that the number of spores per ascus and the thickness of the spore wall in the two ‘species’ is not convincingly diagnostic. The thalli of both species have an identical chemistry including atranorin and planaic acid; usnic acid in *M. alpinus* is strictly confined to the yellow-green soralia in that species. Sparingly sorediate but fertile specimens have sometimes been assigned to *M. affinis* and suggest that there may be a continuum between the two ‘species.’

Sterile morphs of *M. alpinus* resemble *Ochrolechia inaequatula*, which is C+ red.

Nb

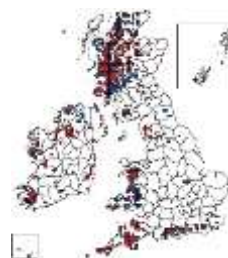
**Mycoblastus caesius** (Coppins & P. James) Tønsberg (1992)

Thallus effuse and wide-spreading, or forming small, poorly delimited patches amongst other species, thin, ± continuous, pale grey and rather scabrid or (especially on smooth bark) with scattered areoles on a dark thin blue-grey prothallus; soralia numerous, efflorescent, discrete, 0.2–1 mm diam., or often confluent, whitish to bluish grey; soredia 30–80 (–100) μm diam., external hyphae often blue-grey, N+ red. Apothecia and pycnidia unknown. Thallus, medulla and soralia C–, K–, KC–, Pd–, UV+ very bright white (perlatolic acid). **BLS 0550.**

On smooth and rough acid bark and wood, also on shaded siliceous rocks (vertical surfaces), mainly in woodland where it is probably much over-looked; common in the west, very rare elsewhere. N. & W. Britain and Ireland, extending locally to S. and S.E. England.

On smooth bark, easily recognized when well-developed by the conspicuous, uniform blue-grey colour of the thallus and its soralia; paler morphs on rough bark and wood are often confused with *Loxospora elatina* or *Violella fucata* which have K+ yellow-brown, Pd+ yellow-orange or red, UV– soralia. *Buellia griseovirens* often has a bluish tinge, but its soralia are smaller, excavate, K+ and Pd+ yellow or reddish and UV–. *Fuscidea pusilla*, *Hertelidea botryosa*, *Lecidea nylanderii* and *Ropalospora viridis* all occur on acid bark or wood and have poorly delimited soralia with identical reactions, due to the presence of divaricatic or perlatolic acids, however none of these species has a blue-grey pigment in the prothallus or soralia. Sequence data are currently lacking for *M. caesius*, so its relationships are not completely clear. The presence of perlatolic acid suggests a link to the *Mycoblastus dissimulans* group, a primarily southern-hemisphere assemblage with similarities to *Japewia* that

LC



Kantvilas (2009) suggested might merit a separate genus.

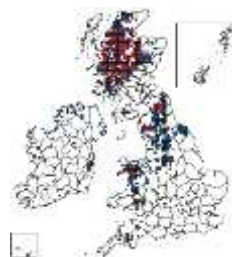
The lichenicolous fungus *Skyttea caesii* Diederich & Etayo (2000) has been reported from *M. caesius* on a number of occasions in western and northern areas of Britain.

Mycoblastus sanguinarius (L.) Norman (1926)

LC

M. sanguinarius forma *leprosus* Nád. (1951)

Thallus pale to dark grey, often very irregular and uneven, thick and \pm coarsely verrucose or papillose-warted, appearing marbled, continuous or \pm cracked, more rarely thin with scattered low warty papillae, a pale to dark grey prothallus sometimes present. Soralia rare; when present rounded, scattered, often few or confined to a few areas on a thallus, concolorous with or paler than the thallus, convex, efflorescent. Apothecia 0.5–1.7 (–3.0) mm diam., usually frequent, black, becoming convex or hemispherical, sessile or slightly constricted beneath, developing on a bright carmine-red thalline cushion that may be exposed when the thallus is damaged or abraded. Asci 1- (to 3-) spored. Ascospores 70–100 \times (28–) 35–45 μ m, cylindrical with rounded ends; wall 6–7 μ m thick. Pycnidia often present, 40–50 μ m diam, wall dark green; conidia bacilliform, 6–9 \times ca 1 μ m. Cortex C–, K+ yellow, Pd+ yellow; medulla K+ red (in part), UV– (atranorin, chloratranorin, rhodocladonic acid (= mysaquinone), caperatic acid); soralia Pd–; hypothecium and tissue under the apothecium carmine to blood-red, K+ bright red, pigment diffusing into solution. **BLS 0909.**



On trees, particularly *Betula*, occasionally on wood, hard siliceous rocks and over mosses; frequent. Upland areas of Scotland, extending locally to N and S.W. England & Wales.

Usually distinguished by the carmine-red tissue under the apothecia. Rarely, this pigmentation is absent, thus leading to confusion with *M. affinis*. However, it is possible that some at least of the non-pigmented forms are referable to *M. sanguinarioides*, a semi-cryptic segregate of *M. sanguinarius* with pruinose apothecia and hymenial crystals that appears to be widespread in the Northern Hemisphere but has not to date been reported from the British Isles (Spribille *et al.* 2011b). Those authors also showed that *M. sanguinarius* s. str. has variation in fatty acid composition that appears to be clade-linked, that may be evidence of the early stages of speciation.

Morphs with soralia are infrequent and have been treated as *M. sanguineus* f. *leprosus*, but nearly always also have abundant apothecia. They are mainly confined to upland Scotland. From current knowledge their separation does not appear to be justified.

Lichenicolous fungi associated with this host include the broad-spectrum species *Lichenodiplis lecanorae* (Vouaux) Dyko & D. Hawksw. (1979) and *Spirographa fusisporella* (Nyl.) Zahlbr. (1903), an unidentified species of *Nectriopsis* and a record of *Sclerococcum simplex* D. Hawksw. (1979) [perhaps referable to *S. boreale* (Holien & Ihlen) Ertz & Diederich (2018), apparently restricted to this host].

TEPHROMELA M. Choisy (1929)

Thallus crustose, warted or rimose-cracked-areolate, white to pale grey (sometimes obscured by dark soredia), \pm glossy; medulla I–. **Prothallus** occasionally visible between the areoles, often forming a dark border to the thallus. **Photobiont** chlorococcoid, cells 6–18 μ m diam. **Ascomata** apothecia, initially immersed, appressed to sessile, disc black, flat to strongly concave. **Thalline margin** persistent. **True exciple** thin, \pm inconspicuous. **Epithecium** and **hymenium** with purplish, N+ red pigments. **Hypothecium** \pm ochraceous to brown below. **Hamathecium** of paraphyses, unbranched or sparingly branched, each with a gelatinous coat swelling strongly in water; apices not swollen, but often with a pigmented hood. **Asci** clavate, 8-spored, *Bacidia*-type. **Ascospores** aseptate, colourless, ellipsoidal, without a distinct perispore, \pm thick-walled. **Conidiomata** pycnidia, immersed in the thallus; wall colourless except for green pigmentation around the ostiole. **Conidiogenous cells** short hyphae with lateral conidiogenous loci. **Conidia** cylindric-ellipsoidal to thread-like, \pm straight, aseptate, colourless. **Chemistry**: various depsidones in the medulla and atranorin or lichexanthone in the cortex. **Ecology**: mostly on rocks, sometimes on bark or wood.

Distinguished from *Lecanora* and *Lecidea* by the combination of a poorly developed true exciple, *Bacidia*-type asci, paraphysis structure and conidiogenous cells in chains. Differs from *Calvitimela* in having a persistent thalline margin, flat to concave apothecia, hymenium purple-violet rather than colourless and epithecium purple-violet to dark red-brown rather than blue-green to black.

Several lichenicolous fungi are known to occur on *Tephromela* species; see Hafellner (2007) for an overview.

Literature

Bendiksby *et al.* (2015), Cestaro *et al.* (2016), Fryday (2011), Hafellner (2007), Hertel & Rambold (1985), Lambley & Purvis (2009), Muggia *et al.* (2008, 2014), Spribille *et al.* (2011a).

- 1 Soredia absent *atra*
 Soredia present 2
- 2(1) Thallus with discrete, scattered soralia; soralia UV+ white *pertusarioides*
 Thallus ± continuously sorediate; all parts UV- *grumosa*

Tephromela atra (Huds.) Hafellner (1983)

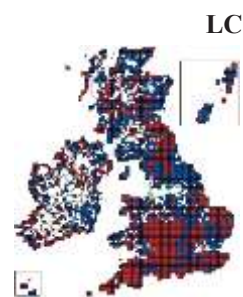
Thallus rather thick, warted-areolate, ± continuous, often secondarily incompletely rimose-cracked into larger ‘areoles’, white, grey-white or grey-green, wide-spreading to 30 cm or more in diam.; areoles 0.3–1.5 mm diam., mostly ± contiguous and fused, irregular, often warted-wrinkled; prothallus blackish. Apothecia 1–2.5 mm diam., round or irregular, immersed or sessile, black; disc flat or concave; thalline margin conspicuous, persistent, swollen, entire to flexuose at maturity; epithecium dark red-brown; hymenium 50–60 µm tall, dark purplish brown or purple-violet, pale purple-violet in upper part, ochraceous (K+ yellow intensifying) in the lower part; hypothecium dark. Ascospores 10–15 × 5–8 µm. Conidia 12–21 (–24) × ca 1 µm, thread-like. Cortex C–, K+ yellow, KC+ yellow, Pd–; medulla UV+ ice-white (atranorin, α-collatolic and ± alectoronic acids). **BLS 0630.**

On siliceous and slightly calcareous nutrient-rich rocks and walls, rarely timberwork and trees; common. Throughout Britain and Ireland.

A cosmopolitan and very variable species, which appears to contain a number of cryptic taxa (Muggia *et al.* 2008, 2014). *Tephromela atra* can be confused with *Lecanora gangaleoides*, and the two species may occur intermixed in the xeric-supralittoral zone. *L. gangaleoides* usually produces orange (K+ purple) anthraquinones in the medulla, especially below the apothecia, and does not have a purple-tinged hymenium. *L. pannonica* can resemble a sterile *T. atra*. *Rinodina confragosa* can be easily overlooked for less well-developed colonies of *T. atra*, but has quite different asci and spores.

Lecanora sulphurea (Lecanoraceae) often starts as a parasite on *T. atra*, and a range of lichenicolous fungi has been reported on this host. These include the common *Minutoexcipula tephromelae* V. Atienza, Etayo & Pérez-Ort. (2009), as well as *Sclerococcum tephromelarum* Etayo & Calat. (1998) and *Skyttea elachistophora* (Nyl.) Sherwood & D. Hawksw. (1981). The polyphagous *Muellerella lichenicola* (Sommerf.) D. Hawksw. (1979) and *M. pygmaea* (Körb.) D. Hawksw. (1979) are also recorded, and an unidentified species of *Taeniolella*.

Tephromela atra var. *torulosa* (Flörke) Hafellner (1992) **BLS 2349** [Nb; map right] differs from var. *atra* in the reduced size of the thallus and apothecia (<1 mm diam.); when fresh the thallus has a slight but distinct greenish hue. On trees, especially branches of broad-leaved trees, occasional; very rare. N. Scotland. Muggia *et al.* (2008) considers that this may be a different species, but there are phylogenetically distinct populations involved and further research is needed.



Tephromela grumosa (Pers.) Hafellner & Cl. Roux (1985)

Like *T. atra*, but the thallus surface is \pm totally covered in dense dark blue-grey \pm granular soredia, 50–100 μ m diam., the pigment K–, N+ red; thallus usually delimited by a blue-black prothallus. Apothecia rare; thalline margin sorediate. Pycnidia not seen. Thallus and soredia C–, K+ yellow, KC–, Pd–, UV– (atranorin and unidentified substance). **BLS 0654**.

On exposed siliceous rocks, rarely on timberwork, mainly upland; local, but frequent in NE England and SE Scotland.

Differs from *Lecanora pannonica* in having a thallus covered by blue-grey soralia with diffuse soredia formed by the breakdown of the upper cortex. In *L. pannonica* the soredia are in discrete flat or excavate soralia, though they can eventually become confluent.

LC

**Tephromela pertusarioides** (Degel.) Hafellner & Cl. Roux (1985)

Like *T. atra*, but with large (0.4–2 mm diam.) scattered hemispherical white or blue-grey maculate soralia. Soralia C–, K+ yellow, KC \pm pinkish, Pd–, UV+ ice-white (atranorin and α -collatolic acid). **BLS 1810**.

On exposed siliceous rocks and mica-schist in upland areas; rare. N. Wales, Lake District, N. Scotland.

Perhaps only a sorediate morph of *T. atra*. It was not included in the phylogenetic research paper of Muggia *et al.* (2008).

Nb

**VIOLELLA** T. Sprib. (2011)

Thallus crustose, areolate to rimose, prothallus not differentiated. **Photobiont** chlorococcoid. **Ascomata** apothecia, black, thin and plate-like. **Thalline margin** absent, but ascomata formed on a rudimentary thalline cushion composed of tightly intertwined hyphae, forming a ring around young ascomata but becoming excluded. **True exciple** reduced, composed of hyphae similar to the paraphyses. **Epithecium** not differentiated as a distinct layer. **Hymenium** interspersed with violet granules ('Fucus-violet') that react N+ dark pinkish red, K+ peacock blue. **Hamathecium** of broad straight or slightly curved paraphyses with thinner anastomoses. **Asci** *Biatora*-type, moderately amyloid in Lugol's reagent with the contents remaining visible, usually 2-spored. **Ascospores** aseptate, initially with a single wall, eventually becoming laminar with a differentiated internal wall that turns brown. **Conidiomata** pycnidia, apparently rare, colourless or with light brown pigment around the ostiole, sunken in thallus areoles. **Conidiophores** *Parmelia*-type. **Conidia** bacilliform. **Chemistry**: with atranorin, a depsidone and a fatty acid. **Ecology**: on smooth acid to neutral bark, also on worked wood.

Similar to *Mycoblastus* but with a hymenium containing violet granules, ascospores with brownish inner walls and distinct chemistry. Spribille *et al.* (2011a) discovered a closer phylogenetic relationship with *Tephromela* rather than *Mycoblastus*, which has a similar apothecial anatomy; that work was confirmed by Bendiksby *et al.* (2015).

The single British and Irish species is included in the key to *Mycoblastus* above.

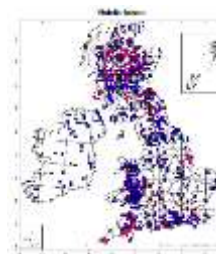
Literature

Bendiksby *et al.* (2015), Spribille *et al.* (2011a).

Violella fucata (Stirt.) T. Sprib. (2011)*Mycoblastus fucatus* (Stirt.) Zahlbr. (1926)

LC

Thallus effuse, immarginate, pale slate or dark grey, occasionally with a bluish tinge, rather thin, partly or ± continuously faintly rimose, surface smooth or partly uneven with low spreading warts 0.1–0.3 mm diam., which often erode and become sorediate; soralia ± diffuse, sometimes well-defined, round or oval, to 1.5 mm diam., or irregular, excavate; soredia pale yellowish green to deep blue-grey, granular, often forming a ± continuous thick patchy granular-sorediate crust. Apothecia 0.5–1.5 mm diam., not common, often few, scattered, black, shiny, thin and plate-like, closely appressed, flat or slightly concave; true exciple thin, often excluded at maturity; epithecium, hymenium and upper part of hypothecium ± densely interspersed with numerous minute vivid purple-violet granules which dissolve in K to a bright aeruginose-blue, lower part of hypothecium pale violet or colourless, rarely spotted red-brown in part (intensifying in K). Asci (1-) 2- (to 3) spored. Ascospores (25-) 30–48 (–52) × 15–21 µm, ellipsoidal; wall 2.5–4 µm thick, laminar and with the inner part becoming brownish at maturity. Thallus C–, K± brownish, KC+ dull brown, Pd+ rust-red, UV– (fumarprotocetraric acid, atranorin, chloratranorin). **BLS 0908**.



On smooth acid to neutral bark of young trees, or the flat surfaces of rough bark, especially *Betula* and *Alnus*, as well as *Fraxinus* in acidified sites, in wayside and woodland habitats, on wood and fence posts where it is most likely to be fertile, possibly also on rocks; locally frequent. Throughout Britain and Ireland.

Fertile specimens may be ± devoid of soralia but are recognized by the large, aseptate ascospores and vivid purple colouring in the hymenium, which is K+ bright peacock-blue. Sterile specimens can resemble *Buellia griseovirens*, *Megalania pulverea*, *Mycoblastus caesius*, *Pertusaria pupillaris* and *Xylographa vitiligo*, all of which also occur on wood. *Mycoblastus caesius* is Pd–, UV+ white, *B. griseovirens* is K+ yellow or yellow→red (crystals), *X. vitiligo* is Pd+ orange and has a ± immersed thallus. *P. pupillaris*, like *V. fucata*, contains fumarprotocetraric acid, but in the former the soralia are rather scattered, punctiform and evenly distributed. *V. fucata* superficially resembles *Fuscidea lightfootii* but differs in the Pd+ rust-red reaction of the soralia.

The thallus is often host to two lichenicolous fungi, *Tremella lichenicola* Diederich (1986) and *Skyttea gregaria* Sherwood, D. Hawksw. & Coppins (1981).

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