

## Lichens of Great Britain & Ireland edn 3

Draft genus account version 1.1, January 2018

Prepared by Paul Cannon, based on the LGBI2 account by James & Watson (2009)

### 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 exciple** 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<sup>+</sup> blue-green and N<sup>+</sup> crimson, that frequently extends into the upper layers of the hymenium. **Hymenium** colourless, blue-black or brownish, I<sup>+</sup> 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<sup>+</sup> blue, with a distinct ocular chamber (especially when young); outer layer thickened above, forming a K/I<sup>+</sup> dark blue cap over the ascus apex. **Ascospores** medium to very large; walls strongly thickened and laminar in construction, aseptate, oblong or ellipsoid, colourless, multinucleate. **Conidiomata** pycnidia, immersed in the thallus, visible as minute black dots; wall green in upper part, K<sup>-</sup>, N<sup>+</sup> reddish. **Conidiogenous cells** short. **Conidia** bacilliform, simple, 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. **Distribution**: c. 15 species, mostly in boreal and austral habitats.

An anatomically distinct group of closely related species, unified by their apothecia which lack a true thalline exciple, 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, P.W. & Watson, M.F.** (2009). *Mycoblastus*. In *Lichens of Great Britain and Ireland* (Smith, C.W., Aptroot, A., Coppins, B.J., Fletcher, A., Gilbert, O.L., James, P.W. & Wolselsey, P.A. eds): 615-618. London: British Lichen Society.
- Kantvilas, G.** (2009). The genus *Mycoblastus* in the cool temperate Southern Hemisphere, with special reference to Tasmania. *Lichenologist* **41**: 151-178.
- Kantvilas, G.** (2016). Observations on some tropical species of the lichen genus *Mycoblastus* Norman (Mycoblastaceae). *Austrobaileya* **9**: 539-545.
- Spribille, T., Goffinet, B., Klug, B., Muggia, L., Obermayer, W. & Mayrhofer, H.** (2011a). Molecular support for the recognition of the *Mycoblastus fucatus* group as the new genus *Violella* (Tephromelataceae, Lecanorales). *Lichenologist* **43**: 445-466.
- Spribille, T., Klug, B. & Mayrhofer, H.** (2011b). A phylogenetic analysis of the boreal lichen *Mycoblastus sanguinari* (Mycoblastaceae, lichenized Ascomycota) reveals cryptic clades correlated with fatty acid profiles. *Molecular Phylogenetics and Evolution* **59**: 603-614.
- Tønnsberg, T.** (1992). The sorediate and isidiate, corticolous, crustose lichens in Norway. *Sommerfeltia* **14**: 1-331.

#### Key to species of *Mycoblastus* and *Violella*

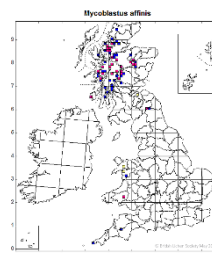
- 1     Soralia absent; apothecia usually present ..... 2  
      Soralia present; apothecia often absent ..... 4

- 2(1) Hypothecium and adjacent medullary tissue under apothecia carmine-red; asci 1(-3)-spored; ascospores cylindrical with rounded apices,  $70-100 \times 35-45 \mu\text{m}$ ..... *sanguinarius*  
 Hypothecium and adjacent medullary tissue under apothecia colourless or pale straw brown; asci (1-)2(-3)-spored; ascospores ellipsoid with  $\pm$  pointed apices,  $25-70(-100) \times 15-42 \mu\text{m}$  ..... 3
- 3(2) Epithecium and hymenium blue-black or in part olive-brown, non-granular, K-; thallus Pd- ..... *affinis*  
 Epithecium and hymenium densely interspersed with violet granules, K+ dissolving to vivid blue-green; thallus Pd+ rust-red ..... *Violella fucata*
- 4(1) Soralia bright yellow to yellow-green (usnic acid present), efflorescent,  $\pm$  contiguous, Pd- ..... *alpinus*  
 Soralia grey to bluish grey (no usnic acid), punctiform to  $\pm$  contiguous, Pd $\pm$  rust-red ..... 5
- 5(4) Soralia widely dispersed in scattered groups, often few in number, rounded, discrete, pale, Pd-; apothecia usually abundant; medullary tissue and hypothecium carmine-red..... *sanguinarius*  
 Soralia plane or  $\pm$  excavate, yellow-grey to blue-grey,  $\pm$  contiguous, Pd $\pm$  rust-red ..... 6
- 6(5) Thallus and soralia Pd-, UV+ white (perlatolic acid); prothallus and soredia suffused bluish grey..... *caesius*  
 Thallus and soralia Pd+ rust-red, UV- (fumarprotocetraric acid); prothallus and soralia dark to light grey..... *Violella fucata*

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

LC

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,  $\pm$  sessile; epithecium  $\pm$  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)  $\times$  (25-) 30-42  $\mu\text{m}$ , ellipsoid, thin-walled. Pycnidia often present. Cortex K+ yellow; medulla C-, K-, KC-, Pd-, UV+ white (atranorin, planaic acid). **BLS 907.**



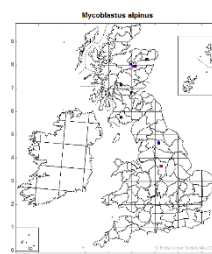
On acid bark, especially conifer or *Betula*, less frequently overgrowing mosses on rock, rarely directly on rock in well-wooded sites; local. S.W. England, Wales, C. & W. Scotland. N. Europe, mountains of C. Europe, N. America, Asia.

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

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

LC

Thallus  $\pm$  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,  $\pm$  covering the entire thallus. Apothecia very rare, bluish black, glossy,  $< 1 \text{ mm}$  diam., similar to those in *M. affinis*. Asci 1-spored, spores  $50-80 \times 30-38 \mu\text{m}$ , wall uniformly thickened, 1 or 2 aborted spores often also present in the asci. Thallus C-, K $\pm$  yellow, KC $\pm$  yellow, Pd-, UV- (atranorin, planaic acid, usnic acid is restricted to the soralia). **BLS 1780.**



Lignicolous, on fallen pine trunks in native pinewoods or N.-facing vertical granite crags; rare. N.E. & S.W. Scotland (Kirkcudbright). Europe, Macaronesia, N. America, Japan.

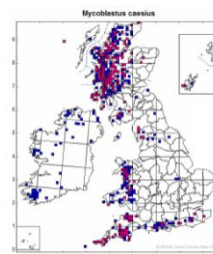
Spribile *et al.* (2011a, b) found that populations of *Mycoblastus alpinus* clustered within a strongly supported *M. affinis* clade, and their separation in Britain merits further study. It appears that the number of spores per ascus and the thickness of the spore wall in the two 'species' is not convincingly 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.

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

LC

Thallus effuse and wide-spreading, or forming small, poorly delimited patches amongst other species, thin,  $\pm$  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 c. 30-80 (-100)  $\mu$ m diam., external hyphae often blue-grey, N+ red. Apothecia and pycnidia unknown. Thallus, medulla and soralia C-, K-, KC-, Pd-, UV+ white (perlatolic acid). **BLS 550.**



On smooth and rough acid bark and, occasionally, wood, rarely on shaded siliceous rocks (vertical surfaces), mainly in woodland; common in the west, very rare elsewhere. N. & W. British Isles, extending locally to S.E. England. Europe, Macaronesia, N. America.

On smooth bark easily recognized by the conspicuous, uniform blue-grey colour of the thallus and its soralia: on rough bark and wood 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 nylanderi* 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. No sequences are currently available 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 Kantvilas (2009) suggested might merit a separate genus.

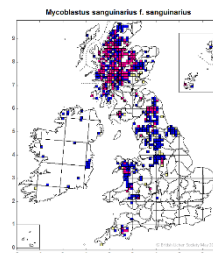
The lichenicolous fungus *Skyttea caesii* Diederich & Etayo (2000) has been reported from *M. caesius* on a number of occasions in western and northern areas of the British Isles.

### ***Mycoblastus sanguinarius*** (L.) Norman (1926)

LC

*M. sanguinarius* f. *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  $\mu$ m, cylindrical with rounded ends; wall 6-7  $\mu$ m thick. Pycnidia often present, 40-50  $\mu$ m diam, wall dark green; conidia bacilliform, 6-9  $\times$  1  $\mu$ m. Cortex C-, K+ yellow, Pd+ yellow; medulla K+ red (in part), UV- (atranorin, chloratranorin, rhodocladonic acid (= mysakinone), caperatic acid); soralia Pd-; hypothecium and tissue under the apothecium carmine to blood-red, K+ bright red, pigment diffusing into solution. **BLS 909.**



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. Europe, Macaronesia, N. America, Asia, Africa.

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 relatively infrequent and have been treated as *M. sanguineus* f. *leprosus*, but nearly always also have abundant apothecia. Their separation does not appear to be justified.