

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 Giavarini & Purvis (2009)

DIRINA Fr. (1825)

Thallus crustose, superficial, effuse or delimited, the surface becoming cracked, often slightly verruculose or areolate, white to grey-brown, usually \pm pruinose; prothallus present, brown to black-brown. **Upper cortex** with anticlinally arranged, colourless hyphae immersed in a pale yellow-brown gelatinous matrix, often with crystals; epicortex absent. Soralia when present punctiform or maculate, concolorous with or paler than the surrounding thallus. **Photobiont** *Trentepohlia*. **Ascomata** apothecia, discrete or aggregated, sessile, concolorous with the thallus, strongly pruinose. **Thalline exciple** present, often undulating or contorted. **True exciple** thin or inconspicuous. **Epithecium** brownish. **Hymenium** colourless. **Hypothecium** black, opaque, or dark brown, clearly defined. **Hamathecium** of narrow pseudoparaphyses, branched and intertwined, the apices smooth or ornamented, \pm coloured. **Asci** 8-spored, clavate, fissi- or semi-fissitunicate, the apex thickened with a small internal K/I+ blue ring, *Opegrapha*-type. **Ascospores** 3-septate, colourless, fusiform, straight or \pm curved. **Conidiomata** pycnidia, immersed or slightly elevated, appearing as black or dark brown dots. **Conidia** filiform and sickle-shaped. **Chemistry**: orcinol depsides, erythrin, and unidentified substances. **Ecology**: below dry overhangs and shaded rock faces in calcareous and siliceous environments and on bark. **Distribution**: c. ten species, cosmopolitan.

The lichen *Paralecanographa grumulosa* is initially parasitic on thalli of *Dirina* species (Ertz & Tehler (2011), and eventually produces its own thallus. Lichenicolous fungi associated with *Dirina* include the hyphomycetes *Verrucocladosporium dirinae* (Crous et al. 2007) and *Milospium graphideorum* (Hawksworth 1975). The orange hyphomycete referred to as *Spiloma auratum* Sm. (Laundon 2005) could be immature *M. graphideorum*, but the name was considered to be based on discordant elements (Hawksworth 1975).

Literature:

- Crous, P.W., Braun, U., Schubert, K. & Groenewald, J.Z. (2007). Delimiting *Cladosporium* from morphologically similar genera. *Studies in Mycology* **58**: 33-56.
- Ertz, D. & Tehler, A. (2011). The phylogeny of Arthoniales (Pezizomycotina) inferred from nucLSU and RPB2 sequences. *Fungal Diversity* **49**: 47-71.
- Giavarini, V. & Purvis, O.W. (2009). *Dirina*. In *Lichens of Great Britain and Ireland* (Smith, C.W., Aptroot, A., Coppins, B.J., Fletcher, A., Gilbert, O.L., James, P.W. & Wolsley, P.A. eds): 370-371. London: British Lichen Society.
- Hawksworth, D.L. (1975). A revision of lichenicolous fungi accepted by Keissler in *Coniothecium*. *Trans. Br. mycol. Soc.* **65**: 219-238.
- Tehler, A. (1983). The genera *Dirina* and *Roccellina* (Roccellaceae). *Opera bot.* **70**: 1-86.
- Tehler, A., Ertz, D. & Irestedt, M. (2013). The genus *Dirina* (Roccellaceae, Arthoniales) revisited. *Lichenologist* **45**: 427-476.

- 1 On calcareous siliceous rocks (sandstones); thallus pale brownish grey, \pm thin.....*fallax*
On limestone, mortar etc.; thallus usually chalk-like, often thick and irregular..... *massiliensis*

Dirina fallax De Not. (1846)

NE

Thallus 0.1-1.5 mm thick, plane to slightly rugose-verruculose, pale grey-brown; cortex 30-60 μ m thick, not pruinose; medulla chalklike but with loose hyphae near the base, white. Soralia (usually in the absence of

ascomata) punctiform to maculate, similar to those of *D. massiliensis*; soredia 0.02-0.05 mm diam., coarsely granular. Apothecia rarely seen, 0.1-2 mm diam., sessile, circular in outline, the base constricted; thalline margin present, entire to undulating; disc pale grey, pruinose, often with an irregularly cracked surface. Ascospores 18-24 × 5-6 µm, 3-septate. Thallus (cortex) C+ faintly red, K-, KC+ red, Pd-, UV-; medulla C-, K-, KC-, Pd-, UV± pale yellow (erythrin, lecanoric acid). **BLS 2622**.

On vertical or overhanging calcareous siliceous rocks, usually in shaded habitats near the coast; S.W. England and Channel Is, GBI distribution currently under investigation. Oceanic W. Europe and W. Mediterranean region, Macaronesia.

Limonaea soredata is somewhat similar to the sorediate morph of *D. fallax* but differs in its thallus with pinkish rather than grey-brown tinges. The C+ red reaction is instantaneous in *L. soredata* but much slower in *D. fallax*. The rare, coastal *Arthonia endlicheri*, which is also C+ red but contains lecanoric acid, resembles *D. fallax* but with slightly larger soredia. TLC may be needed for confirmation.

Dirina massiliensis Durieu & Mont. (1847)

LC

D. massiliensis f. *soredata* (Müll. Arg.) Tehler (1983)

Thallus 0.2-3.5 mm thick, chalk-like, usually smooth, but sometimes uneven or verruculose or ± rimose-cracked, white to pale grey, often with a violet tinge; cortex 40-70 µm thick, pruinose, densely packed with small crystals; medulla chalk-like throughout; prothallus brown or black-brown, often with black zone lines separating colonies. Soralia where present to 0.4 mm diam., usually paler than the thallus, pale brown-grey, yellowish or whitish grey, at first punctiform, becoming confluent and spot-like, flat or convex; soredia 0.02-0.05 mm diam., coarsely granular. Apothecia 0.5-3 mm diam., ± sessile; disc whitish dark grey, concolorous with the thallus, ± white-pruinose; thalline exciple smooth, at first regular, often becoming ± undulate, sometimes contorted; hymenium 50-140 µm tall; pseudoparaphyses 1-2 µm wide, apices 1-3 µm wide. Asci 70-120 × 12-18 µm. Ascospores 20-24 × 4-6 µm, 3-septate. Thallus surface C+ red; medulla C-; disc C+ faintly red yellowish (erythrin, ± lecanoric acid); in sorediate morphs UV- or glaucous, the medulla UV+ glaucous or rarely ± yellowish. **BLS 499**.

On dry vertical or overhanging calcareous rocks, plaster or mortared walls, especially on the E. & N. sides of churches; throughout the British Isles, common and apparently increasing. Morphs with apothecia are rare and local, found on dry, hard limestones, usually on ± vertical cliffs and rocky outcrops on or near the coast of S. & S.W. British Isles to N. Wales. Throughout Europe and the Mediterranean region.

Sorediate forms are much more common in the British Isles, while apothecial morphs predominate in southern Europe and the Mediterranean. The sorediate morphs were distinguished as *D. massiliensis* f. *soredata* by Giavarini & Purvis (2009), but according to Tehler *et al.* (2013) they cannot be separated using standard molecular tools.

Additional references

Crous, P.W., Braun, U., Schubert, K. & Groenewald, J.Z. (2007). Delimiting *Cladosporium* from morphologically similar genera. *Studies in Mycology* **58**: 33-56.

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