

DIPLOSCHISTES

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Diploschistes Norman, *Nyt. Mag. Naturvidensk.* 7: 232 (1853); from the Greek *diploos* (double) and *schistos* (split, divided), in reference to the morphology of the ascomatal margin in the type species.

Type: *D. scruposus* (Schreb.) Norman

Thallus superficial on the substratum, grey, with greenish, pale brown, yellowish or whitish tones, rarely dark, with brownish or yellowish tones when shaded, with an epinecral layer, lacking a true cortex or protocortex. Photobiont trebouxoid. Prothallus thin to indistinct, white. Ascomata \pm rounded, perithecioid, urceolate or apothecioid. Proper exciple free, dark brown, non-amyloid. Hymenium non-amyloid; paraphyses straight, unbranched; tips not or slightly thickened; lateral paraphyses conspicuous, usually clearly separated from the proper exciple (lacking in *D. ocellatus*); columella absent. Epihymenium hyaline to pale brown, rarely pale yellowish, with or without granules. Asci 1–8-spored, clavate, non-amyloid; tholus initially thick, thin at maturity. Ascospores 1–4-seriate, submuriform to muriform, hyaline to brown, non-amyloid to strongly amyloid, non-halonate; ascospore wall thin to thick. Conidiomata pycnidial, with bacilliform conidia.

Chemistry: Containing orcinol depsides or β -orcinol depsidones, or secondary metabolites lacking.

Diploschistes is one of two genera in the Thelotremataceae with a trebouxoid photobiont. It is characterised by a carbonised proper exciple with lateral paraphyses and the absence of a columella. Thallus chemistry differs from the majority of Thelotremataceae in being dominated by orcinol depsides. Most other genera commonly have β -orcinol depsidones, but in *Diploschistes* these are found only in *D. ocellatus*. *Ingvariella*, the other genus with a trebouxoid photobiont, lacks a proper exciple, and the ascomatal margin consists of decaying hymenial elements. *Diploschistes* differs from *Thelotrema* by its photobiont and its carbonised exciple, while *Schizotrema*, with which it shares a carbonised exciple and lateral paraphyses, can be distinguished by having a distinctly layered proper exciple and a trentepohlioid photobiont.

Australian *Diploschistes* species grow on soil and siliceous or calcareous rocks from sea level to 2000 m. The only taxon that can inhabit bark is *D. muscorum* subsp. *bartlettii*, which is a juvenile parasite on *Cladonia* spp. Most species are found in semi-arid regions, but some also occur in temperate areas or as pioneers on roadsides at subtropical latitudes. A number of taxa have a wide distribution; 17 of the c. 30 species are known from Australia, and two are endemic.

H.T.Lumbsch & J.A.Elix, A new species of the lichen genus *Diploschistes* from Australia, *Pl. Syst. Evol.* 150: 237–239 (1985); H.T.Lumbsch, Eine neue Subspecies in der Flechtengattung *Diploschistes* aus der Sudhemisphäre, *Herzogia* 7: 601–608 (1987); H.T.Lumbsch, Die holarktischen Vertreter der Flechtengattung *Diploschistes* (Thelotremataceae), *J. Hattori Bot. Lab.* 66: 133–196 (1989); H.T.Lumbsch & J.A.Elix, Taxonomy of some *Diploschistes* spp. (lichenized ascomycetes, Thelotremataceae) containing gyrophoric acid, *Pl. Syst. Evol.* 167: 195–199 (1989); H.T.Lumbsch, Studien über die Flechtengattung *Diploschistes* I, *Nova Hedwigia* 56: 227–236 (1993); R.Guderley & H.T.Lumbsch, The lichen genus *Diploschistes* in South Africa (Thelotremataceae), *Mycotaxon* 58: 269–292 (1996); H.T.Lumbsch, R.Guderley & G.B.Feige, Ascospore septation in *Diploschistes* (Thelotremataceae, lichenized Ascomycota) and the taxonomic significance of macro- and microcephalic ascospore types, *Pl. Syst. Evol.* 205: 179–184 (1997); H.T.Lumbsch & J.A.Elix, The lichen genus *Diploschistes* (Thelotremataceae) in Australia, *Biblioth. Lichenol.* 86: 119–128 (2003); M.P.Martín, S. La

Greca & H.T.Lumbsch, Molecular phylogeny of *Diploschistes* inferred from ITS sequence data, *Lichenologist* 35: 27–32 (2003); H.T.Lumbsch & A.Mangold, *Diploschistes elixii* (*Ostropales: Thelotremataceae*), an overlooked terricolous species from Western Australia, *Lichenologist* 39: 459–462 (2007).

1	Ascomata perithecioid	2
1:	Ascomata urceolate or apothecioid	11
2	Thallus whitish-pruinose, on calcareous rocks or soil (1)	3
2:	Thallus epruinose, on siliceous rocks or soil	4
3	Thallus containing diploschistesic acid, on soil (2)	11. D. hensseniae
3:	Thallus lacking diploschistesic acid, on calcareous rocks	3. D. candidissimus
4	Thallus on soil (2:)	7. D. elixii
4:	Thallus on siliceous rocks	5
5	Thallus lacking depsides, C- (4:)	8. D. euganeus
5:	Thallus containing depsides, C+ red	6
6	Thallus containing gyrophoric acid as a major compound (5:)	7
6:	Thallus containing lecanoric acid and/or diploschistesic acid as major compound(s)	8
7	Thallus uneven, containing 2''-O-methylgyrophoric acid; ascospores broadly ellipsoidal, 20–30 × 14–18 μm (6)	10. D. gyrophoricus
7:	Thallus smooth, lacking 2''-O-methylgyrophoric acid; ascospores ellipsoidal, 19–29 × 10–15 μm	16. D. sticticus
8	Thallus red-brown to brown or bronze-coloured, thick; ascospores 16–26 × 8–18 μm (6:)	2. D. aeneus
8:	Thallus whitish grey or bluish grey to dark grey, thin to thick	9
9	Thallus to 0.7 mm thick; ascospores 10–18 × 8–13 μm (8:)	7. D. microsporus
9:	Thallus to c. 1.7 mm thick; ascospores larger	10
10	Thallus whitish grey to grey; ascospores 16–32 × 10–20 μm (9:)	1. D. actinostomus
10:	Thallus bluish grey to dark grey; ascospores 30–52 × 15–26 μm	6. D. diploschistoides
11	Thallus on siliceous or calcareous rocks (1:)	12
11:	Thallus on soil, mosses or lichenicolous	13
12	Thallus on calcareous rocks, whitish-pruinose; asci 4-spored (11)	9. D. gypsaceus
12:	Thallus on siliceous rocks, epruinose; asci 6–8-spored	15. D. scruposus
13	Thallus K+ yellow → red, containing norstictic acid; ascomatal disc apothecioid (11:) ...	14. D. ocellatus
13:	Thallus K- or K+ yellow, containing depsides; ascomatal disc urceolate	14
14	Juvenile parasite of <i>Cladonia</i> spp. (13:)	13. D. muscorum subsp. bartlettii
14:	Not lichenicolous	15
15	Thallus containing gyrophoric acid as a major compound (14:)	4. D. conceptionis
15:	Thallus containing lecanoric acid and/or diploschistesic acid as major compound(s)	16
16	Ascospores 16–28 μm long (15:)	17. D. thunbergianus
16:	Ascospores 20–38 μm long	5. D. diacapsis