DIMELAENA

John A. Elix[1]

Dimelaena Norman, *Nyt Mag. Naturvidensk.* 7: 231 (1852)

From the Greek *di* (two) and *melos* (black), in reference to the dark, 2-celled ascospores of the type species.

Type: *D. oreina* (Ach.) Norman

Thallus crustose, thin to thick, placodioid, with radiate-plicate marginal lobes, rimose-areolate towards the centre. Upper phenocortex pseudoparenchymatous; prothallus brown, dark brown or black at the margins of the thallus, occasionally with radiate-plicate margins, or prothallus absent. Isidia, soredia and lobules absent. Upper surface white, yellow-white, yellow, pale grey to grey, grey-brown, pale or dark brown, dull or glossy, with or without pruina. Photobiont a unicellular green alga, forming a continuous layer. Medulla ±well defined, of loosely interwoven hyphae. Lower cortex present; rhizines absent. Ascomata apothecia, initially cryptolecanorine, becoming lecanorine, biatorine or lecideine, immersed to sessile or adnate, ±round, glossy; disc black, rarely brown-black, ±plane or becoming convex with age, usually epruinose, rarely white-pruinose. Thalline exciple present or absent. Proper exciple colourless to brown, 5–20 µm thick. Epihymenium brown to dark brown, ±aeruginose; hymenium colourless; hypothecium colourless to pale or dark brown. Paraphyses simple or sparingly branched, expanded and pigmented at the apices. Asci clavate to cylindrical, *Bacidia*-type, 8-spored; apex wall layers thickened; apex amyloid, with a distinct conical axial mass. Ascospores becoming 1-septate, of the *Beltraminia*-type, olive-brown, then grey-brown or dark brown at maturity, broadly ellipsoidal, ±constricted at the septum, usually lacking internal wall thickenings, occasionally with apical wall-thickenings; immature hyaline ascospores with apical internal wall-thickenings appearing after the septum is inserted (type-A ontogeny); torus present; spore surface smooth or finely ornamented. Conidiomata pycnidial, immersed in the thallus, globose to pyriform; conidiophores of type V (Vobis, 1980), acrogenous. Conidia simple, bacilliform.

Dimelaena is a cosmopolitan genus of c. eight species; three are known from siliceous rocks in Australia.

References

Mayhofer, H., Matzer, M., Wippel, A. & Elix, J.A. (1996), The genus *Dimelaena* (lichenized Ascomycetes, Physciaceae) in the Southern Hemisphere, *Mycotaxon* 58: 293–311 (1996).

Sheard, J.W. & Mayrhofer, H. (1984), Two new species of the lichenized ascomycete genus *Dimelaena* Norm., *Bryologist* 87: 246–248.

Vobis, G. (1980), Bau und Entwicklung der Flechten-Pycnidien und ihrer Conidien, *Biblioth. Lichenol.* 14: 1–141.

Key

1 Thallus yellowish white to pale yellow; xanthones present ..... **2. D. elevata**
1: Thallus white, grey or brown; xanthones absent 2
2 Thallus white, grey or pale grey-brown; ascospores 7–10 µm long; 3,5-dichloro-2'-*O*-methylanziaic acid present ..... **1. D. australiensis**
2: Thallus pale to dark brown; ascospores 9–14 µm long; gyrophoric and 5-*O*-methylhiascic acids present ..... **3. D. tenuis**

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http://www.anbg.gov.au/abrs/lichenlist/Dimelaena.pdf (2011).

1. Dimelaena australiensis H.Mayrhofer & Sheard, *in* J.W.Sheard & H.Mayrhofer, *Bryologist* 87: 247 (1984)

T: Parlour Mtn area, 35 km NW of Armidale, N.S.W., alt. c. 1000 m, 11 Oct. 1981, *H.Mayrhofer 3492*; holo: GZU *n.v.*; iso: MEL.

Illustration: H.Mayhofer, M.Matzer, A.Wippel & J.A.Elix, *Mycotaxon* 58: 295, fig. 2 (1996).

Thallus thin, rimose-areolate; margin of radiating lobes, limited by a narrow black prothallus. Upper surface white to pale grey, grey or pale grey-brown. Apothecia 0.1–0.3 mm wide, initially immersed, becoming adnate and cryptolecanorine; disc black, ±plane or convex, epruinose; thalline exciple to 50 µm thick, concolorous with the thallus, poorly developed, often incomplete or excluded; the margin becoming lecideine, black and carbonaceous, 25–50 µm thick. Epihymenium 10–15 µm thick, dark brown to aeruginose, K–, N+ red; hymenium 40–70 µm thick; hypothecium 60–125 µm thick, colourless to pale brown. Paraphyses 1.5–2.0 µm wide below; apical cells swollen, to 3–4 µm wide, forming a dark brown cap. Ascospores broadly ellipsoidal, 7–10 × 5–7 µm; many non-septate ascospores present. Pycnidia globose; conidia 4–6 × 1 µm.

Chemistry: Thallus K–, C+ red, P–, UV± blue-white; containing 3,5-dichloro-2'-*O*-methylanziaic acid [major], 3,5-dichloro-2'-*O*-methylstenosporic acid [minor], 3-chloro-2'-*O*-methylanziaic acid [minor], unknown [minor].

Occurs on siliceous rocks in open dry sclerophyll forest in temperate areas of southern and eastern Australia (W.A., S.A., Qld, N.S.W., A.C.T., Vic. and Tas.); also in South Africa and South America.

W.A.: Torndirrup Natl Park, S of Albany, *H.Mayrhofer 8468, D. & M.Mayrhofer* (GZU). S.A.: Borthwick Rd, 6.5 km E of Tungkillo, Mount Lofty Ra., *J.A.Elix 9486* (CANB). Qld: Pyramid Rd to Storm King Dam, 1.5 km N of Girraween Natl Park, 30 km SE of Stanthorpe, 10 Sept. 1992, *A.Wippel* (BRI, CANB, GZU, M, MEL). N.S.W.: Federal Hwy, above shore of L. George, 42 km NE of Canberra, *H.Mayrhofer 10647, D.Mayrhofer & E.Hierzer* (CANB, GZU, M, MEL). A.C.T.: Molonglo Gorge, 5 km N of Queanbeyan, *M.Lambauer 0095 & J.A.Elix* (CANB, GZU). Vic.: Mount Arapiles Forest Park Picnic Ground, 35 km W of Horsham, *H. & M.Mayrhofer 2952* (GZU). Tas.: New Norfolk, *H.Mayrhofer 10657, E.Hierzer & G.Kantvilas* (CANB, GZU, HO).

This species is characterised by the white to pale grey, grey or pale grey-brown, crustose thallus with radiate-plicate margins, the broadly ellipsoidal ascospores, and aeruginose (N+ red) epihymenium and by the presence of 3,5-dichloro-2'-*O*-methylanziaic acid.

2. Dimelaena elevata Elix, Kalb & Wippel, *in* H.Mayhofer, M.Matzer, A.Wippel & J.A.Elix, *Mycotaxon* 58: 298 (1996)

T: Litchfield Natl Park, c. 100 km S of Darwin, N.T., 13°07'S, 130°45'E, alt. 200 m, 8–9 Sept. 1992, *A. & K.Kalb 25584*; holo: CANB; iso: GZU, herb. Kalb.

Illustrations: H.Mayhofer, M.Matzer, A.Wippel & J.A.Elix, *op. cit.* 295, fig. 3; 296, fig. 6.

Thallus thick, rimose-areolate; margin of plicate-radiating lobes; areolae convex, constricted at the base, ±loosely attached to the substratum; prothallus absent. Upper surface yellowish white to pale yellow. Apothecia 0.1–0.6 mm wide, initially cryptolecanorine, becoming lecideine, adnate to sessile; disc black, ±plane to weakly convex; thalline exciple absent; proper exciple brown, distinctly paler than the disc, 15–30 µm thick. Epihymenium 10–15 µm thick, brown, K–, N–; hymenium 75–100 µm thick; hypothecium 150–200 µm thick, dark brown. Paraphyses 2–3 µm wide below; apical cells swollen to 4–5 µm wide, forming a red-brown cap. Ascospores ±narrowly ellipsoidal, 10–16 × 5–9 µm; many non-septate ascospores present; with or without internal apical wall-thickenings. Pycnidia pyriform; conidia 5–8 × 1 µm.

Chemistry: Thallus K+ yellow or yellow and then orange-brown, C+ yellow to orange or red, P+ yellow. Chemotype I containing atranorin [minor], chloroatranorin [minor], norstictic acid [major], connorstictic acid [minor], 6-*O*-methylarthothelin [major], thiophanic acid [minor], arthothelin [trace], 4,5-dichloro-6-*O*-methylnorlichexanthone [trace]; chemotype II containing atranorin [minor], chloroatranorin [minor], stictic acid [major], cryptostictic acid

[minor], norstictic acid [minor], 6-*O*-methylarthothelin [major], arthothelin [trace], 4,5-dichloro-6-*O*-methylnorlichexanthone [trace].

This endemic species occurs on siliceous rocks in tropical W.A., N.T. and Qld.

W.A.: Inglis Gap, King Leopold Ra., 46 km NE of Lennard River Crossing, *J.A.Elix 22195, H.Streimann & D.J.Galloway* (CANB). N.T.: UDP Falls, 92 km SE of Jabiru, Kakadu Natl Park, *J.A.Elix 22542 & H.Streimann* (CANB). Qld: Carr Ck, between Mareeba and Mount Molloy, *H.Mayrhofer 11356 & E.Hierzer* (BRI, CANB, GZU, M, UPS).

Dimelaena elevata is characterised by the thick, loosely attached, yellowish, crustose thallus with radiate-plicate margins, lecideine apothecia and by the presence of norstictic or stictic acids together with a cohort of chloroxanthones.

3. Dimelaena tenuis (Müll.Arg.) H.Mayrhofer & Wippel, *in* H.Mayhofer, M.Matzer, A.Wippel & J.A.Elix, *Mycotaxon* 58: 304 (1996)

Catolechia tenuis Müll.Arg., *Flora* 64: 510 (1881). T: Faxinia, Brazil, June 1880, *J.I.Puiggari 1200*; lecto: G *n.v.*, *fide* H.Mayhofer, M.Matzer, A.Wippel & J.A.Elix, *loc. cit.*

Rinodina diffractella Müll.Arg., *Bull. Herb. Boissier* 3: 634 (1895). T: *s. loc.*, Qld, 1893, *J.Shirley 1908*; holo: G *n.v.*

For further synonymy, see Mayhofer *et al.* (1996).

Illustrations: H.Mayhofer, M.Matzer, A.Wippel & J.A.Elix, *op. cit.* 295, fig. 5; 296, fig. 7.

Thallus thin, areolate; margin of plicate-radiating lobes; lobes elongate; prothallus absent. Upper surface pale to dark brown, smooth and glossy. Apothecia 0.1–0.4 mm wide, adnate, initially lecanorine, becoming biatorine or lecideine; disc black, ±plane to weakly convex; thalline exciple to 50 µm thick, concolorous with the thallus, poorly developed, often incomplete or excluded, becoming lecideine with age, black and carbonaceous, 25–50 µm wide. Epihymenium 8–14 µm thick, dark brown, K–, N–; hymenium 50–80 µm thick; hypothecium 60–100 µm thick, colourless to pale brown. Paraphyses 1.5–2.0 µm wide below; apical cells swollen to 3.5–4.0 µm wide, forming a brown cap. Ascospores broadly ellipsoidal, 9–14 × 4.5–8.0 µm, rarely non-septate. Pycnidia globose; conidia 5–8 × 1 µm.

Chemistry: Medulla K–, C+ red, P–; containing 5-*O*-methylhiascic acid [major], gyrophoric acid [minor], hiascic acid [trace], lecanoric acid [minor], 4-*O*-methylhiascic acid [trace], 5-*O*-acetylhiascic acid [minor or trace], minutellic acid [minor].

Occurs on siliceous rocks in open, dry sclerophyll forest and savannah in tropical W.A., N.T. and Qld; also in Africa, South America, Papua New Guinea and New Caledonia.

W.A.: 7 km NW of Drysdale River Stn, *H.Streimann 48478* (B, CANB). N.T.: Curtain Falls, Litchfield Natl Park, 38 km WSW of Batchelor, *J.A.Elix 27605, 27609, H.Streimann & H.T.Lumbsch* (CANB). Qld: Bruce Hwy, 46 km NW of Townsville, *H.Streimann 28290* (B, CANB); Beaudesert, Mount Barney Natl Park, East Peak, 12 Sep. 1992, *A.Wippel* (BRI, CANB, GZU, HO, M, MEL, WELT).

This species is characterised by the pale to dark brown, crustose thallus with radiate-plicate margins with elongated lobes, the broadly ellipsoidal ascospores, the dark brown (N–) epihymenium and by the presence of 5-*O*-methylhiascic and gyrophoric acids.