

DIPLOICIA

John A. Elix¹

Diploicia A.Massal., *Ric. Auton. Lich. Crost.* 86 (1852)

From the Greek *diploos* (two-fold), in reference to the 2-celled ascospores.

Type: *D. canescens* (Dicks.) A.Massal.

Thallus crustose to subcrustose, thin to thick, placodioid with radiate-plicate marginal lobes, continuous or rimose-areolate towards the centre, ±forming rosettes. Prothallus absent. Isidia and blastidia absent; soredia present or absent. Upper surface whitish, grey-white, lead-grey, blue-grey or glaucous green, ±plane to convex or concave at the periphery, dull or glossy, pruinose or not at the lobe tips. Upper cortex pseudoparenchymatous, formed by vertically arranged hyphae, densely packed with minute diamond-shaped crystals that are insoluble in K. Medulla well defined, white to pale yellow, yellow-brown, orange or pale red. Lower cortex present; rhizines absent. Ascomata apothecia, lecideine, at first immersed, then emergent and adnate; disc black or brown-black, ±plane or becoming convex, epruinose or grey-white-pruinose. Thalline exciple absent. Proper exciple thin and becoming excluded with age, concolorous with the disc. Epihymenium dark brown, granular, K–; hymenium colourless, I+ blue, interspersed with oil globules; hypothecium brown to dark brown, semi-opaque. Paraphyses simple to sparingly branched; apical cells enlarged, pigmented. Asci clavate to oblong-ellipsoidal, *Lecanora*-type. 8-spored; apex wall layers thickened; apex amyloid, with a distinct axial mass. Ascospores *Dirinaria*-type, 1-septate, brown, ellipsoidal, thick-walled; apical internal wall-thickenings appearing before the septum is inserted (type-B ontogeny); torus thin or absent; spore surface smooth. Conidiomata pycnidial, immersed in the thallus, brown-black; conidiophores of type V (*sensu* Vobis, 1980), acrogenous. Conidia bacilliform.

Diploicia is a genus of four species, two of which occur in temperate Australia where they grow on rock, wood and bark. Initial molecular studies indicated that species of *Diploicia* and *Diplotomma* formed a monophyletic clade (Molina *et al.*, 2002; Crespo *et al.*, 2004) and, consequently, those authors considered the two genera to be synonymous. This was rejected in a genetic analysis carried out by Helms *et al.* (2003), a view that is adopted here.

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¹ Research School of Chemistry, Building 33, Australian National University, Canberra, Australian Capital Territory 0200.

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Molina, M.C., Crespo, A., Blanco, O., Hladun, N. & Hawksworth, D.L. (2002), Molecular phylogeny and status of *Diploicia* and *Diplotomma*, with observations on *Diploicia subcanescens* and *Diplotomma rivias-martinezii*, *Lichenologist* 34: 509–519.

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Key

Thallus sorediate **2. D. canescens**
Thallus lacking soredia **1. D. africana**

1. *Diploicia africana* (Tuck.) Matzer, H.Mayrhofer & Rambold, *Nordic J. Bot.* 17: 433 (1997)

Lecidea africana Tuck., *Proc. Amer. Acad. Arts Sci.* 4: 406 (1860); *Buellia africana* (Tuck.) Tuck., *Lichens of California, Oregon and the Rocky Mountains* 25 (1866); *Catolechia africana* (Tuck.) Müll.Arg., *Flora* 64: 510 (1881); *Diplotomma africana* (Tuck.) Szatala, *Ann. Hist.-Nat. Mus. Nat. Hungar.*, n.s., 7: 278 (1956). T: hills near Simonstown, [Cape of Good Hope, South Africa], C.Wright, *U.S. Exploring Exped.*; holotype: FH–Tuck 3320 n.v.

Illustrations: M.Matzer, H.Mayrhofer & G.Rambold, *op. cit.* 434, fig. 1; 435, figs 4, 5.

Thallus crustose, placodioid, continuous or becoming areolate in the centre, ±forming rosettes, 3–20 mm wide; lobes radiating or irregular, discrete or usually confluent and plicate, 0.2–0.8 mm wide. Upper surface white, grey-white or yellow-grey, ±plane to weakly convex at the periphery, epruinose at the blackened lobe tips; soredia absent. Medulla white to pale yellow. Apothecia common, 0.3–1.0 mm wide, adnate; disc plane to convex, epruinose. Excipulum 50–70 µm thick. Epihymenium 10–15 µm thick; hymenium 80–100 µm thick; hypothecium to 250 µm thick, dark brown. Paraphyses 1–2 µm wide; apical cells slightly broader, 2.5–4.0 µm, with brown caps. Ascospores 13–20 × 6–10 µm. Pycnidia common, 0.06–0.13 mm wide; conidia 6–8 × c. 1 µm.

Chemistry: Cortex K⁺ yellow-orange, C[–], P[–]; white medulla, K[–], C[–], P[–]; pigmented medulla K⁺ orange, C⁺ yellow, P[–]; containing diploicin (major), dechlorodiploicin (minor), ±canesolide (minor), ±unknown secalononic acids (major, minor or trace).

Very rare on rocks in the A.C.T.; reported here for the first time from Australia. Also in South Africa.

A.C.T.: Booroomba Rocks, 11 km SW of Tharwa, *J.A.Elix* 6169, 6169A (CANB).

2. *Diploicia canescens* (Dicks.) A.Massal., *Ric. Auton. Lich. Crost.* 86 (1852)

Lichen canescens Dicks., *Fasc. Pl. Crypt. Brit.* 1: 10 (1785); *Buellia canescens* (Dicks.) De Not., *Giorn. Bot. Ital.*, ser. 2, 1: 197 (1846); *Diplotomma canescens* (Dicks.) Flot., *Jahresb. Schles. Ges. Vaterl. Kult.* 1849: 129 (1849). T: “in muris et truncis arboreum passim”, [Great Britain]; lectotype: the illustration *Fasc. Pl. Crypt. Brit.* tab. 2, fig. 5, *vide* R.Moberg, *Nordic Lichen Fl.* 2: 71 (2002).

Thallus subcrustose, placodioid, continuous, forming rosettes, effigurate, 3–30 mm wide, becoming verrucose and cracked-areolate in the centre; lobes radiating or irregular, discrete or usually confluent and plicate, 0.5–1.0 mm wide. Upper surface white, grey-white or pale blue-grey, ±plane to convex or concave at the periphery, usually pruinose at the blackened lobe tips, sorediate. Soralia in scattered erose patches, marginal to laminal; soredia white to green-white or developing grey tips, finely granular. Medulla white to pale yellow, yellow-brown, orange or pale red. Apothecia very rare, 0.3–1.0 mm wide, initially immersed, but soon adnate to sessile. Excipulum 50–70 µm thick. Epihymenium 8–12 µm thick; hymenium 35–55 µm thick; hypothecium c. 150 µm thick, dark brown, Paraphyses simple to moderately branched, c. 2 µm wide; apical cells slightly broader, 2.5–4.0 µm, with brown caps. Ascospores 8.5–15.0 × 4.0–7.5 µm. Pycnidia rare, 0.05–0.50 mm wide; conidia 5–8 × c. 0.7 µm.

This species is characterised by the subcrustose, placodioid thallus with distinctly plicate margins and the sorediate upper surface.

Two subspecies are separated by thallus chemistry.

Canesolide and buellolide present **2b. *D. canescens* subsp. *australasica***
Canesolide and buellolide absent **2a. *D. canescens* subsp. *canescens***

2a. *Diploicia canescens* (Dicks.) A.Massal. subsp. *canescens*

Illustrations: V.Wirth, *Die Flechten Baden-Württembergs*, 2nd edn 377 (1995); I.M.Brodo, S.D.Sharnoff & S.Sharnoff, *Lichens of North America* 303, pl. 311 (2001).

Chemistry: Cortex K+ yellow, C-, P- or P+ pale yellow; white medulla, K-, C-, P-; pigmented medulla K+ red, C+ yellow, P-; containing atranorin (major), chloroatranorin (minor), diploicin (major), dechlorodiploicin (minor), isofulgidin (minor), dechloro-*O*-methyl diploicin (minor or trace), ±secalonic acids A, B, C (minor or trace).

Scattered on rocks and wood in southern Australia (W.A., S.A., Vic. and Tas.); also in Europe, Asia, Africa, North and South America and New Zealand.

W.A.: Boxer Is., Recherche Archipeligo, 9 Nov. 1950, *J.H.Willis* (MEL). S.A.: Talbots Reserve, 4.5 km W of Tepko, *J.A.Elix* 9420 (CANB). Vic.: Rhyll inlet, Phillip Is., 1 May 1982, *S.Platt* (MEL). Tas.: Curtis Is., Bass Str., *R.B.Filson* 12102 (MEL).

2b. *Diploicia canescens* subsp. *australasica* Elix & Lumbsch, in J.A.Elix, G.A.Jenkins & H.T.Lumbsch, *Mycotaxon* 33: 463 (1988)

Diplotomma canescens subsp. *australasica* (Elix & Lumbsch) D.J.Galloway, *New Zealand J. Bot.* 42: 115 (2004). T: Mystery Bay, N.S.W., on rocks on coastal cliffs, 25 Apr. 1976, *J.A.Elix* 2087; holo: CANB; iso: MEL.

Illustrations: J.A.Elix, G.A.Jenkins & H.T.Lumbsch, *op. cit.* 465, fig. 7 (1988); H.T.Lumbsch, P.M.McCarthy & W.M.Malcolm, *Key to the Genera of Australian Lichens: Apothecial Crusts* 6 (2001).

Chemistry: Cortex K+ yellow, C-, P- or P+ pale yellow; white medulla, K+ yellow, C-, P+ yellow; pigmented medulla K+ red, C+ yellow, P-; containing atranorin (minor), chloroatranorin (minor), diploicin (major), dechlorodiploicin (minor), isofulgidin (minor), buellolide (major), canesolide (minor), secalonic acids A, B, C (major or minor).

Scattered on rocks and wood in southern W.A., N.S.W., A.C.T., Vic. and Tas.; also in North America and New Zealand.

W.A.: track to Hayward Peak, 22 km ESE of Mt Barker, Porongorup Ra., Porongorup Natl Park, *J.A.Elix* 41449 (CANB). N.S.W.: near Melville Pt, 13 km S of Batemans Bay, *J.A.Elix* 30328 (CANB). A.C.T.: Molonglo Gorge Reserve, 16 km SE of Canberra, *J.A.Elix* 11764, *P.W.James* & *D.Verdon* (CANB). Vic.: Mt Eccles, near Macarthur, *H.T.Lumbsch* 8883a & *W.H.Ewers* (CANB). Tas.: Middle Pasco Is., Furneaux Group, Bass Str., *J.S.Whinray* 820 (MEL); Harry Walker Tier, Cockatoo Gully Rd, 6.5 km W of Dysart, *J.A.Elix* 40341 & *G.Kantvilas* (CANB).