



LECANACTIS ¹

Gintaras Kantvilas ²

Lecanactis Körb., Syst. Lich. Germ.: 275 (1855).

Type: *L. abietina* (Ach.) Körb.

Thallus crustose, leprose or byssoid, ecorticate, lacking a prothallus. Photobiont trentepohlioid, with cells subglobose to oblong-ellipsoid, 7–20 × 6–18 µm, occurring singly or in short chains or clumps. Ascomata apothecia, roundish, lecideine, basally constricted. Disc black, typically thickly grey-pruinose, persistently plane or becoming convex with age. Proper exciple well developed, persistent, black, commonly pruinose, in section cupulate, dark brown, K+ greenish, composed of highly gelatinised hyphae and remaining opaque with the addition of K (all Tasmanian species) or with the hyphae weakly gelatinised, intertwined and becoming clearly visible with the addition of K. Hypothecium hyaline to pale yellowish brown, poorly differentiated from the exciple. Hymenium hyaline, not interspersed, hemiamyloid, KI+ pale blue, usually overlain by a dark yellow-brown, K+ olive-yellow epithelial layer. Asci cylindrical, 8-spored, of the *abietina*-type: walls and tholus non-amyloid apart from a very thin outer cap at the apex, and faintly amyloid “shoulders” around a short, blunt ocular chamber. Paraphysoids simple to sparingly branched and anastomosed, 1.5–2 µm thick; apices sometimes a little expanded. Ascospores transversely septate, straight or a little curved, hyaline, fusiform, non-halonate; locules cylindrical, rounded or rhomboid. Conidiomata pycnidia, usually immersed but conspicuously stalked in one species. Conidia frequently of two sizes, with narrowly fusiform to bacilliform macroconidia and microconidia. Chemistry: variable; gyrophoric, lepralic or schizopeltic acids are commonly present.

A genus of c. 25, chiefly corticolous species, widely distributed throughout the world in temperate to tropical latitudes, especially in oceanic climates. Species of *Lecanactis* (and related genera such as *Cresponea*, *Lecanographa* and *Ocellomma*) are frequently associated with narrow ecological niches or fragmented, relict vegetation types, and are therefore often significant for nature conservation. Most Tasmanian species are associated with old trees in rainforest or occur in highly sheltered microhabitats.

Key references: Egea & Torrente (1994); Kantvilas (2004, 2022).

1	Thallus saxicolous in sheltered underhangs, typically thickly leprose	2
	Thallus corticolous or lignicolous, smooth, scurfy or byssoid, never leprose	3
2(1)	Thallus containing schizopeltic acid (P–)	6 <i>L. scopulicola</i>
	Thallus containing psoromic acid (P+ yellow)	2 <i>L. aff. dilleniana</i>
3(1)	Thallus byssoid, containing lepralic acid only	4 <i>L. mollis</i>
	Thallus smooth or scurfy, containing schizopeltic or gyrophoric acid	4
4(3)	Apothecial disc C+ red; thallus containing gyrophoric acid; ascospores 20–30 × 5–7 µm	3 <i>L. latispora</i>
	Apothecial disc C–; thallus containing schizopeltic acid	5

1 This work can be cited as: Kantvilas G (2023). *Lecanactis*, **version 2023:1**. In MF de Salas (Ed.) *Flora of Tasmania Online*. 5 pp. (Tasmanian Herbarium, Tasmanian Museum and Art Gallery: Hobart). <https://flora.tmag.tas.gov.au/lichen-genera/lecanactis/> (accessed 28 October 2022).

2 Tasmanian Herbarium, Tasmanian Museum & Art Gallery, PO Box 5058, UTAS LPO, Sandy Bay, TAS 7005, Australia.

5(4) Ascospores 25–44 × 3.5–6 µm; pycnidia emergent, cylindrical, with white, pruinose tips, C+ red (gyrophoric acid)

1 *L. abietina*

Ascospores 20–32 × 5.5–7 µm; pycnidia immersed, C–

5 *L. neozelandica*

1 *Lecanactis abietina* (Ach.) Körb.

Syst. Lich. Germ.: 275 (1855); —*Lichen abietinus* Ach., *Kongl. Vetensk. Akad. Nya Handl.* 16: 139 (1795).

Thallus crustose, thin and scurfy, whitish grey to cream-grey, sometimes with a faint pinkish tinge, forming diffuse, irregular patches to 30 cm or more wide, frequently intermixed with other lichens. Apothecia 0.5–1.5 mm diam., sessile and constricted at the base, typically thickly covered with a grey to yellowish grey pruina, seen in section to contain crystals that fluoresce golden whitish in polarised light, slowly dissolve yellowish in K, but soon reprecipitate as feathery clusters of hyaline, acicular crystals; proper exciple remaining opaque in K, 45–90 µm thick laterally. Hymenium 70–100 µm thick; asci 55–75 × 15–20 µm. Ascospores 3(–4) septate, 25–32.7–40(–44) × 3.5–4.6–5.5(–6) µm. Pycnidia conspicuous and emergent, cylindrical, 0.2–0.3 mm wide, tipped with a coarse, white pruina; macroconidia 11–17 × 2–3.5(–4) µm; microconidia 9–13(–15) × 0.8–1.2 µm.

Chemistry: schizopeltic acid (major); thallus K–, C–, KC–, P–, UV+ vivid white to yellowish or purplish white; tips of pycnidia C+ reddish (gyrophoric acid).

A characteristic species of old trees and old forests in cool temperate regions throughout the world. In Tasmania, it is most commonly found on the dry, flaky bark of mature *Nothofagus cunninghamii* in rainforest, where it is associated with *L. mollis* and a diverse suite of crustose lichens, including calicioid species. This species is recognised by the combination of schizopeltic acid in the thallus, the conspicuous, cylindrical pycnidia with C+ red apices, unique for the genus, and the relatively long, narrow, 3-septate ascospores. The superficially similar *L. latispora* and *L. neozelandica* both have shorter, broader ascospores and immersed pycnidia.

Mt Victoria Track, 41°20'S 147°50'E, 900 m, 1981, G. Kantvilas s.n. (HO); Boyd Lookout, 42°49'S 146°21'E, 550 m, 1981, G. Kantvilas 547/81 & P. James (BM, HO); Weindorfers Forest, Waldheim, 41°38'S 145°56'E, 900 m, 1992, G. Kantvilas 8/92, B. Fuhrer & J. Jarman (HO).

2 *Lecanactis* aff. *dilleniana* (Ach.) Körb.

Syst. Lich. Germ.: 276 (1855); —*Lichen dillenianus* Ach., *Lichenogr. Suec. Prodr.*: 57 (1798).

Thallus leprose, to 1(–2) mm thick and spreading in continuous, diffuse patches to 30 cm wide, pale greenish grey with an orange-pink tinge when fresh, fading to pale grey in storage. Apothecia unknown in Tasmanian specimens, reported (by Egea & Torrente 1994) as being to 1.5 mm diam., with the proper exciple remaining opaque in K and with 3(–5)-septate ascospores, (21–)23–30(–33) × (3.5–)4–5 µm.

Chemistry: psoromic acid; thallus K–, C–, KC–, P+ yellow, UV–.

All Tasmanian collections are sterile and therefore only provisionally identified. They were collected from large, overhanging bluffs of Triassic sandstone in dry eucalypt woodland, mainly in the Bluff River Gorge area of the south-east. Whereas psoromic acid is a frequently-occurring substance, it is unknown in any other Tasmanian lichen with these morphological characters. *Lecanactis dilleniana* is widespread in Europe where it is reported to have a habitat ecology similar to the Tasmanian collections. It is currently classified in the genus *Psoronactis*.

Bluff River Gorge, 42°31'S 147°40'E, 250 m, 2017, G. Kantvilas 37/17 (HO); Eldon Road, 42°29'S 147°27'E, 300 m, 2019, G. Kantvilas 274/19 (HO).

3 *Lecanactis latispora* Egea & Torrente

Biblioth. Lichenol. 54: 90 (1994). Type: Tasmania, South West National Park, 5 km WNW of Strathgordon, along Serpentine River below Serpentine Dam, 42°46'S 145°59'E, c. 550 m, on leaves of *Richea pandanifolia*, 10 March 1981, L. Tibell (holo—UPS).

Thallus crustose, thin, smooth, whitish cream, forming diffuse, irregular patches. Apothecia 0.2–1.5 mm diam., sessile, constricted at the base, thickly covered with a whitish grey, C+ red pruina; proper exciple remaining opaque in K, 50–80 µm thick laterally. Hymenium 90–120 µm thick; asci 65–80 × 16–18 µm. Ascospores 3-septate, (20–)21–24.7–29(–30) × 5–6.3–7 µm. Pycnidia immersed, 0.15–0.2 mm wide; macroconidia 8–12 × 2.5–4 µm; microconidia 5–8 × 1–1.2 µm.

Chemistry: gyrophoric acid; thallus and apothecial pruina K–, C+ red, KC+ red, P–, UV± faint mauve.

A species of old wet forests in Tasmania, also recorded from the Auckland Islands. Originally described from the dead leaves *Richea pandanifolia*, a rich microhabitat for lichens, it also occurs on the dead, dry lignum of mature forest trees as well as on the papery bark of *Leptospermum lanigerum*. The presence of gyrophoric acid (thallus and apothecial pruina C+ red) readily distinguishes this species from the two most similar Tasmanian species of the genus, *Lecanactis abietina* and *L. neozelandica*, both of which contain schizopeltic acid.

Yarlington Tier, 42°32'S 147°18'E, 620 m, 1987, G. Kantvilas 85/87 (HO, PRA-V); Lake Sydney, 43°17'S 146°36'E, 680 m, 1998, G. Kantvilas 61/98A (HO); track to Nevada Peak, 42°55'S 146°40'E, 1100 m, 2005, G. Kantvilas 41/05 (HO).

4 *Lecanactis mollis* (Stirt.) Frisch & Ertz

Fungal Diversity 70: 44 (2015); —*Sagenidium molle* Stirt., *Proc. Phil. Soc. Glasgow* 10: 305 (1877).

Thallus byssoid and cotton wool-like, sometimes rather compacted and crust-like centrally, pale bluish or whitish grey, paler and whitish at the margins, forming extensive, often ± circular patches to c. 50 cm wide, sometimes coalescing into extensive, continuous, spreading mats. Apothecia 0.5–1.2 mm diam., shortly stipitate, thickly covered with a whitish grey pruina; proper exciple remaining opaque in K, 30–80 µm thick laterally. Hymenium 90–110 µm thick; asci 60–96 × 15–19 µm. Ascospores 5–6-septate, (26–)28–31.0–35 × 5–6.2–7 µm. Pycnidia not seen.

Chemistry: lepranic acid; thallus and apothecial pruina K–, C–, KC–, P–, UV–.

Widespread and common in the rainforests of Tasmania and New Zealand, and also recorded in Victoria. Easily recognised by the whitish grey, cotton wool-like thallus, this is one of the most eye-catching lichens in rainforest. It forms extensive patches on the dry sides of trunks of the oldest, largest trees, especially *Nothofagus cunninghamii*, as well as on the undersides of larger canopy branches where it is protected from direct moisture. This species has also occasionally been collected away from rainforest in wet gullies in drier areas where its occurrence is interpreted as being a relict of former times when rainfall was higher and wet, closed, continuous forest more extensive. As well as being associated with a rich complement of equally hydrophobic crustose lichens, the byssoid thallus of this species provides a highly specialised habitat for the lichenicolous fungi, *Arthonia sagenidii* Kantvilas & Vězda and *Chaenothecopsis sagenidii* Tibell.

Hartz Road, 43°10'S 146°47'E, 280 m, 1965, G.C. Bratt 2225 & J.A. Cashin (AD, BM, HO, MEL); Mueller Rd, 3 km W of Styx Road, 560 m, 1984, G. Kantvilas 652/84 (distributed as A. Vězda: *Lich. Sel. Exsicc.* no. 2012) (HO); King William Saddle, 42°13'S 146°07'E, 820 m, 2019, J. Jarman s.n. (HO).

5 *Lecanactis neozelandica* Egea & Torrente

Biblioth. Lichenol. 54: 91 (1994).

Thallus thin, effuse, greyish white, forming diffuse, irregular, extensive patches to 30 cm wide. Apothecia 0.2–1 mm diam., sessile and constricted at the base, covered with a whitish grey, C– pruina, seen in section to contain crystals that fluoresce golden whitish in polarised light, slowly dissolve yellowish in K, but soon reprecipitate as feathery clusters of hyaline, acicular crystals; proper exciple remaining opaque in K, 50–80 μm thick laterally. Hymenium 90–110 μm thick; asci 70–90 \times 15–20 μm . Ascospores (2–)3-septate, (20–)22–26.7–31(–32) \times 5.5–6.3–7 μm . Pycnidia immersed, 0.1–0.15 mm wide; macroconidia not seen in Tasmanian specimens, reported (by Egea & Torrente 1994) as 8–13 \times 3–3.5(–4) μm ; microconidia 5–8 \times 1–1.2 μm .

Chemistry: schizopeltic acid; thallus K–, C–, KC–, P–, UV+ vivid white to yellowish or purplish white.

Known in Tasmania only from the Mt Anne area, where it occurs in dry microhabitats in wet forest; also present in New Zealand. Anatomical and chemical observations are required to distinguish it from the superficially similar *L. abietina* and *L. latispora*. It is chemically identical to *L. abietina*, which differs by its characteristic, emergent, C+ red pycnidia and longer, narrower ascospores, 25–44 \times 3.5–6 μm , whereas *L. latispora* differs by containing gyrophoric acid.

Manuka Swamp, Huon River, 42°56'S 146°21'E, 320 m, 1991, G. Kantvilas 91/91 (HO); North-East Ridge Track, 42°54'S 146°24'E, 340 m, 2022, G. Kantvilas 317/22 (HO).

6 *Lecanactis scopulicola* Kantvilas

Lichenologist 53:99 (2021). Type: Tasmania: southern slope of South Sister, 41°32'S 148°10'E, 640 m, on rock in shaded underhangs of dolerite cliffs and boulders, 31 August 2006, G. Kantvilas 324/06 (holo—HO!; iso—H!).

Thallus leprose, pale yellowish, forming soft cushions 0.5–2 mm thick and to 25 mm wide, contiguous in a continuous lumpy thallus to c. 20 cm across, or rather dispersed over the substratum and intermixed with other lichens. Apothecia to 1.3(–2) mm diam., sometimes appearing \pm zeorine due to adhering, yellowish, thalline fragments, mostly neatly discoid, single or occasionally in clusters of 5–10, regenerating on moribund apothecia and then somewhat distorted in shape, covered with a coarse, whitish grey, C– pruina, seen in section to contain crystals that fluoresce golden whitish in polarised light, slowly dissolve yellowish in K, but soon reprecipitate as feathery clusters of hyaline, acicular crystals; proper exciple remaining opaque in K, 30–80 μm laterally. Hymenium 85–100 μm thick; asci 68–82 \times 15–20 μm . Ascospores 3-septate, (19–)21–24.8–30 \times (4.5–)5–5.3–6 μm . Pycnidia not found.

Chemistry: schizopeltic acid (major) with traces of demethylschizopeltic acid, porphyritic acid, methylporphyllate and lepranic acid; thallus K–, KC–, C–, P–, UV+ yellowish.

Known only from Tasmania, where it occurs in shaded, sheltered underhangs of dolerite cliffs in dry sclerophyll woodland, and is seemingly restricted to the drier, mid-elevation (mostly < 1000 m) pinnacles of the east. It is most similar morphologically to *L. aff. dilleniana* in that both taxa have a leprose thallus and occur in sheltered habitats on rocky bluffs. They differ chiefly by their chemistry, with *L. dilleniana* containing psoromic acid, easily detected by the P+ yellow reaction.

Woods Quoin, 42°18'S 147°05'E, 880 m, 2013, G. Kantvilas 44/13 (HO); track to Mt Hobbs, 42°31'S 147°31'S, 610 m, 2019, G. Kantvilas 194/19 (HO); western slopes of Tanina Bluff, 42°39'S 147°02'E, 860 m, 2019, G. Kantvilas 269/19 (HO).

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