



CANDELARIA ¹

Gintaras Kantvilas ²

Candelaria A.Massal., *Flora* 35: 567 (1852).

Type: *C. vulgaris* A.Massal. [= *C. concolor* (Dicks.) B.Stein]

Thallus squamulose, minutely fruticose to small-foliose, typically bright yellow to greenish yellow, lacking a prothallus; upper surface with a cortex of isodiametric or rectangular cells; lower surface corticate or ecor-ticate, sometimes with rhizines. Photobiont a green alga with cells ± globose, 8–24 µm diam. Ascomata apothecia, lecanorine, sessile, with a persistent thalline margin. Hypothecium hyaline. Hymenium hyaline, I+ blue, not interspersed, separating readily in K, overlain by a yellow-brown, granular epithecium insoluble in K. Paraphyses simple or sparsely branched towards the tips; apices a little expanded. Asci 8- or multisporous, of the *Candelaria*-type: clavate, with a well-developed tholus, in the lower part intensely amyloid and penet-rated entirely by a non-amyloid, cylindrical *masse axiale* with parallel flanks; ocular chamber not developed. Ascospores simple, hyaline, ellipsoid to rather oblong. Conidiomata pycnidia, immersed in warts on the thallus surface. Conidia ellipsoid, c. 2–2.5 × 1 µm. Chemistry: calycin, pulvinic acid and their derivatives; these compounds convey the characteristic yellow colour of the genus.

A genus of about 4–5 species, found on wood and bark, or more rarely on rocks, in temperate areas of the world, easily recognised by the bright mustard- or egg yolk-yellow colour of the thallus and apothecia. Its ± squamulose growth form distinguishes it from the related *Candelariella*, which has a crustose or entirely granular or sorediate thallus, although the distinction between the two requires further study (Westberg & Arup 2011).

Key references: Filson (1992); Westberg & Arup (2011); Cannon *et al.* (2021).

- 1 Corticolous, typically on exotic trees in urban or agricultural situations; lower surface corticate; upper surface ± evenly coloured 1 *C. concolor*
Saxicolous in sheltered underhangs in low rainfall areas; lower surface ecor-ticate; upper surface ± mottled and maculate 2 *C. pacifica*

1 *Candelaria concolor* (Dicks.) B.Stein

In F.J. Cohn, *Krypt.-Fl. Schlesien* 2(2): 84 (1879); —*Lichen concolor* Dicks., *Fasc. Pl. Crypt. Brit.* 3: 18 (1793).

Thallus usually bright yellow, minutely foliose or squamulose, initially forming small rosettes to c. 10 mm wide, usually soon coalescing to form extensive colonies. Lobes sorediate, 0.2–0.4(–0.6) mm wide, 100–120 µm thick, imbricate, concave to plane to slightly convex, with the upper surface ± smooth and emaculate; apices crenulate, decumbent or ascending; margins crenulate, much-divided, becoming digitate to micro-phylline, ascending or erect; lower surface pale cream-grey, with scattered whitish rhizines and a rather incomplete cortex of isodiametric cells 5–8 µm wide; soredia concolorous with the thallus, coarsely gran-ular, at first marginal but soon spreading and frequently forming a sorediate mass in the thallus centre. Apothecia 0.4–1.2 mm wide; disc ± concolorous with the thallus or yellow-orange, epruinose, concave to plane; thalline margin entire, smooth or sometimes developing minute squamules that become sorediate, in

1 This work can be cited as: Kantvilas G (2024). *Candelaria*, version 2024:1. In MF de Salas (Ed.) *Flora of Tasmania Online*. 2 pp. (Tasmanian Herbarium, Tasmanian Museum and Art Gallery: Hobart). <https://flora.tmag.tas.gov.au/lichen-genera/candelaria/>

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

section 60–80 mm thick. Hypothecium 60–100 µm thick. Hymenium 100–120 µm thick; paraphyses 2–3 µm thick, with the apices expanded to 3.5–6 µm; asci multispored, 68–80 × 22–30 µm. Ascospores (6–)6.5–8.2–10(–11) × (3–)4–4.4–5 µm.

Cosmopolitan. Locally abundant in Tasmania almost exclusively on exotic trees in parks and urban roadsides; interestingly, although common across the north of the island, it has not been recorded from south of Campbell Town. Its habitat ecology suggests it could have been introduced, as the only collection from a native host tree was from the bark of a dead roadside *Acacia* in farmland. This species is commonly associated with the somewhat similarly coloured *Xanthoria parietina* (L.) Beltr., from which it is usually readily distinguished by its more mustard-yellow (rather than yellow-orange) hue; *Xanthoria* also react K+ purple.

Campbell Town, 41°56'S 147°35'E, 200 m, 2002, G. Kantvilas 572/02 (HO); Devonport, along Esplanade near the Ellimata Hotel, 41°11'S 146°22'E, 5 m, 2006, G. Kantvilas 409/06 (HO); Westbury Green, 41°32'S 146°50'E, 170 m, 2021, G. Kantvilas 52/21 (HO).

2 *Candelaria pacifica* M.West. & Arup

Biblioth. Lichenol. 106: 358 (2011).

Thallus usually greenish to greyish yellow, squamulose, forming scattered or continuous rosettes c. 5–10 mm wide. Lobes sorediate, 0.1–0.3(–0.6) mm wide, 100–120 µm thick, imbricate, plane to convex, with the upper surface indistinctly mottled-maculate; apices crenulate, mostly decumbent; margins crenulate, much-divided, deflexed; lower surface mottled pale greenish grey, with scattered cream to pale brown rhizines, ecorticate; soredia concolorous with the thallus, coarsely granular to blastidiate, arising from the underside and the margins of the lobes. Apothecia and pycnidia unknown.

Reported here for the first time from Australia. In the absence of fertile material, identification of Tasmanian specimens is tentative. This species is characterised chiefly by having 8-spored asci and an ecorticate lower surface (Westberg & Arup 2011). The Tasmanian specimens are distinguished from *C. concolor* principally by their starkly different habitat ecology, having been recorded exclusively from sheltered underhangs on bluffs of Triassic sandstone in dry sclerophyll forest. Morphologically, they differ from *C. concolor* by having generally more gnarled, usually convex, narrower lobes, coarser, blastidiate soredia, and rather mottled upper and lower surfaces through which the photobiont can be seen under low-power magnification.

The Hunting Grounds near Dysart, 400 m, 1981, G. Kantvilas 485/81 & P. James (BM, HO); Old Beach Road, opposite the Cadburys factory, 50 m, 1984, G. Kantvilas 283/84 & P. James (BM, HO); Chauncy Vale, 42°37'S 147°16'E, 300 m, 2014, G. Kantvilas 441/14 (HO).

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