Flora of Tasmania online

CETRARIA [1]

Gintaras Kantvilas [2]

Cetraria Ach., *Methodus*: 292 (1803).

Type: *C. islandica* (L.) Ach.

Thallus foliose or fruticose, yellowish green to dark chestnut-brown, with lobes terete to flattened and dorsiventral, often canaliculate, sometimes with marginal, cilia-like projections, commonly pseudocyphellate; pseudocyphellae white, marginal or laminal. Photobiont trebouxioid. Ascomata apothecia, lecanorine, predominantly marginal; proper exciple cupulate. Asci 8-spored, of the *Cetraria*-type: narrowly clavate, with a well-developed, amyloid tholus, pierced entirely by a narrow, non-amyloid *masse axiale* with parallel flanks and an intensely amyloid ring; ocular chamber conical, with a narrow beak. Paraphyses rather stout, straight, sparsely branched; apices swollen. Ascospores simple, hyaline, broadly ellipsoid. Conidiomata pycnidia, immersed in marginal, spine-like projections; conidia variable, oblong, bifusiform or citriform. Chemistry: the genus has a diverse chemistry that can include depsides, depsidones, usnic acid, vulpinic acid (the *Vulpicida* group) or fatty acids.

Cetraria is a highly diverse and conspicuous genus in boreal and cool temperate environments in the Northern Hemisphere, but is represented in Tasmania by only three, highly localised and uncommon species that are confined to the highest mountain plateaux. There it grows in alpine heathland and microshrubbery, mostly where conifers such as *Microchacrys tetragona* occur, suggesting a long-absence of fire. The genus has had a chequered taxonomic history which has seen its delimitation variously broaden and narrow as new data have become available. Recent molecular research (Divakar *et al.* 2017) has again redefined the genus somewhat, although none of this has concerned Tasmanian species.

Key references: Kärnefelt (1979); Filson (1994); Kantvilas (1994); Kantvilas *et al.* (2002).

1	Lobes terete to subterete	1 C. aculeata
	Lobes distinctly flattened throughout	2
2(1)	Lobes 1–6 mm wide, strongly canaliculate, with inrolled margins and scattered marginal and laminal pseudocyphellae; spine-like marginal projections generally absent	3 C. islandica subsp. antarctica
	Lobes ≤ 2mm wide, mostly plane or only weakly canaliculate; pseudocyphellae marginal only; spine-like projections abundant	2 C. australiensis

1 Cetraria aculeata (Schreb.) Fr.

Nov. Sched. Crit. Lich.: 32 (1826); —*Lichen aculeatus* Schreb., *Spic. Fl. Lips.*: 125 (1771); *Cornicularia aculeata* (Schreb.) Ach., *Methodus*: 32 (1803); *Coelocaulon aculeatus* Link, *Grundr. Krauterk.* 3: 165 (1833).

Thallus fruticose, erect, decumbent or scrambling, forming loosely attached clumps to c. 4 cm high and 10 cm wide, reddish brown to dark brown or blackened. Lobes ± terete, radially symmetrical, to 1 mm wide, richly branched and entangled, terminating in stiff, spine-like projections to 0.3 mm long; surface glossy to matt, smooth to longitudinally furrowed, occasionally a little faveolate. Pseudocyphellae sparse to common, white, elliptical to ± slit-like, to 1 mm long. Apothecia unknown in Tasmania. Conidia 7–7.5 × 0.5–0.8 µm.

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Chemistry: lichesterinic and protolichensterinic acids (all spot tests negative).

A bipolar species with a highly localised Tasmanian distribution. It occurs loosely on soil or amongst bryophytes and other lichens, or scrambling over microshrubbery in heathland on exposed mountain plateaux. *Cetraria aculeata* displays a remarkable morphological resemblance to some forms of *Cladia aggregata*, and it has frequently been confused with this species in earlier literature and herbarium collections. It can be distinguished by its white, loosely packed medulla (the thallus is hollow in *Cladia*), and by its pseudocyphellae that can somewhat resemble the perforations of *Cladia*, but which are white and filled with medullary hyphae. *Cetraria aculeata* is also generally tougher and more spinous than *Cladia*.

Eliza Plateau, 42°58′S 146°24′E, 1971, *G.C. Bratt 71/817 & M.A. Cutliffe* (AD, HO); Crater Peak, 41°39′S 145°56′E, 1200 m, 1984, *G. Kantvilas 399/84 & P. James* (BM, HO); summit of Mt Rufus, 42°08′S 146°06′E, 1410 m, 2004, *G. Kantvilas 147/04* (HO).

2 Cetraria australiensis W.A.Weber ex Kärnefelt

Bot. Not. 130: 127 (1977).

Thallus fruticose, decumbent, essentially unattached and scrambling over the substratum in loose clumps sometimes up to a metre wide, pale to dark chestnut-brown or black-brown. Lobes flattened, to 2 mm wide, plane or weakly canaliculate, richly dichotomously branched and entangled, dorsiventral, with the lower surface usually a little paler; apices truncate; spine-like projections marginal and apical, to 0.5 mm long; surface glossy to matt, smooth. Pseudocyphellae occasional, strictly marginal, punctiform, white. Apothecia unknown in Tasmania. Conidia *c.* 6 × 1 µm.

Chemistry: lichesterinic and protolichensterinic acids (all spot tests negative).

Very localised in Tasmania at high elevations, chiefly on the Central Plateau but also recorded from Ben Lomond in the North-East; also known from alpine areas of the south-eastern Australian mainland. It forms extensive, loose mats on the ground in heathland and bolster moor, intermixed with species of *Cladia* and *Cladonia*. Alpine fires, for example in the Lake MacKenzie area in 2016, have had a severe impact on this uncommon lichen. At many locations, it has a clearly relict distribution, being restricted to small, surviving patches of coniferous microshrubbery.

Sandbanks Tier, 41°50′S 146°52′E, 1969, *G.C. Bratt 69/210* (AD, HO); Long Tarns, 41°47′S 146°21′E, 1270 m, 2006, *G. Kantvilas 397/06* (HO, O); Blue Peaks, 41°43′S 146°23′E, 1290 m, 2006, *G. Kantvilas 419/06* (HO).

3 Cetraria islandica (L.) Ach. subsp. **antarctica** Kärnefelt

Opera Bot. 46: 90 (1979).

Thallus fruticose, erect or decumbent, essentially unattached and forming entangled clumps to *c.* 5 cm tall, pale to dark chestnut-brown or black-brown. Lobes flattened, 1–6 mm wide, canaliculate and/or with the margins thickened and inrolled, dichotomously branched, convoluted, with both surfaces ± identical; apices rounded or truncate, often a little reflexed; spine-like projections absent but secondary, chiefly marginal lobules present rarely; surface glossy to matt, smooth, often a little wrinkled. Pseudocyphellae white, roundish or elongate, mostly marginal and forming lines or rows, sometimes also laminal. Apothecia unknown in Tasmania. Conidia *c.* 6 × 1 µm.

Chemistry: lichesterinic and protolichensterinic acids; most Tasmanian specimens also contain additional fumarprotocetraric acid (medulla P+ red).

Found in Tasmania, south-eastern Australia, New Zealand, southern South America and New Guinea. This lichen is the Southern Hemisphere's counterpart to subspecies *islandica*, a widespread lichen across the boreal zone and in Northern Hemisphere mountains, which, under the name Iceland Moss, is also the ingredient in medicines such as throat lozenges. Whereas subspecies *islandica* tends to be very abundant and luxuriant, subspecies *antarctica*, at least in Tasmania, is highly localised and rarely abundant, and is formally listed as "rare" under the Tasmanian *Threatened Species Protection Act 1995*. The broader, canalicu-

late lobes and general absence of marginal projections distinguish *C. islandica* subsp. *antarctica* from *C. australiensis*. Curiously, these taxa are rarely seen growing together, even though their habitats are not greatly dissimilar. In Tasmania, this lichen has been recorded from the Mt Field massif and Cradle Plateau, where it is locally common, with smaller populations at Black Bluff, Mersey Crag, Falling Moutain and Nevada Peak. It occurs on the ground, typically where winter snow persists the longest, in low alpine vegetation dominated by cushion plants, species of *Oreobolus*, and low shrubs and herbs. Like the other Tasmanian representatives of the genus, it is confined to sites where fire appears to have been absent for an extended time.

Tarn Shelf, 42°41′S 146°34′E, 1968, *G.C. Bratt 68/334 & M.H. Bratt* (HO); Snowdrift Tarns, Nevada Peak, 42°55°S 146°38′E, 1270 m, 2005, *B. de Villers & G. Kantvilas 25/05* (HO); Falling Mountain, 41°55′S 146°06′E, 1480 m, 2011, *G. Kantvilas 122/11* (HO, O).

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