

# Cladonia darwinii

## SYNONYMS

*Cladonia anomaea*, *Cladonia ramulosa* sensu Malcolm, W.M.; Galloway, D.J. (1997)

## FAMILY

Cladoniaceae

## AUTHORITY

*Cladonia darwinii* S.Hammer

## FLORA CATEGORY

Lichen – Native

## ENDEMIC TAXON

No

## ENDEMIC GENUS

No

## ENDEMIC FAMILY

No

## STRUCTURAL CLASS

Lichens - Fruticose

## CURRENT CONSERVATION STATUS

2018 | Not Threatened | Qualifiers: SO

## BRIEF DESCRIPTION

Characterised by large, persistent, esorediate basal squamules; narrow, cylindrical, gently undulating and tapering podetia, to 4 cm tall, and 1–3 mm diam., with subulate apices or rarely narrowly cup-forming; a surface covering of corticate granules, squamules and corticated areas (giving a distinctly “shaggy” appearance), but without soredia; brown, somewhat flattened, terminal apothecia; and fumarprotocetraric acid as major secondary metabolite.



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## DISTRIBUTION

**North Island:** Northland (Kawerua), South Auckland (Mangaotaki Valley King Country, Tokoroa, S of Rotorua, Thunderbolt Ridge, Kaimanawa Ranges), Taranaki (Stratford Mountain House), Wellington (Whariti Ruahine Ranges, Pongaroa, Kitchener Park Feilding, Wai-iti Stream, Otaki River Tararua Ranges, Rimutaka Ranges). **South Island:** Nelson (Cobb Valley near Lake Sylvester, Botanical Hill, Kaiteriteri, Takaka Hill, Lake Rotorua, Whisky Falls Lake Rotoiti, Travers Valley, Tophouse, S. of Westport), Marlborough (Mt Fishtail, Molesworth, Hapuka River, Onamalutu), Westland (Greymouth, Kelly Range, Pegleg Creek Otira, Ngatau River), Canterbury (Lewis Pass, Arthur's Pass, Cass, Riccarton Bush Christchurch, Governor's Bush Mt Cook, Ben Ohau Range, Kirkliston Range), Otago (Canyon Creek Ahuriri Valley, Mt Brewster, Wills Valley, West Matukituki, Olivine Ledge, Theatre Flats, Rockburn, Sugarloaf Saddle, Paradise, N branch Routeburn, Coronet Peak, The Remarkables, Hector Mts, Pisa Range, Dunstan Mts, Mt Bengier, Old Man Range, Butcher's Dam near Alexandra, St Bathans Range, Poolburn Reservoir, Mt Kyeburn, Rock & Pillar Range, Mt Pisgah Kakanui Mts, Breakneck Road near Herbert, St Marys Range, Waikouaiti, Leith Saddle, Mt Charles Otago Peninsula, Mt Cargill, Flagstaff, Saddle Hill, Akatore, Maungatua, Blue Mts), Southland (Cascade Cove Dusky Sound, Stuart Mts, Cascade Creek, Manapouri, Lake Monowai, Ben Bolt Hokonui Hills, East Dome Garvie Mts, Mt Burns, Greenhills, Seaward Bush, Awarua Bay, Waihopai Scenic Reserve, Bluff Hill). **Stewart Island:** (between Albion Bay and Belltopper Falls, Wilson Bay, Port Pegasus). **Campbell Island:** (Camp Cove). **Antipodes Islands:** ("Tilted Crag").

Known also from eastern Australia and Tasmania.

## HABITAT

Very common on a variety of organic substrata. Rotting wood, mosses over thin soil, sometimes directly over thin soil, fellfield, peat soils, old logs, rotting stumps, sandy soil in litter under forest trees, clay banks coastal and inland, s.l. to 1500 m.

## DETAILED DESCRIPTION

**Primary thallus** squamulose, persistent or evanescent, subentire to crenate-lobate, ascending, sometimes luxuriant, especially towards base of podetium, without soredia, margins and **lower surface** with granules and small cortical lobules, squamules to 5 mm long and 1–4.5 mm wide, greenish to glaucous-green above, whitish, smooth to arachnoid below, darkening to ochraceous or blackish. Podetia marginal or laminal from upper side of basal squamules, to 4 cm tall, 1–3 mm wide, whitish to glaucous-green to brownish, cylindrical, straight to sinuate, apices acicular to subulate to blunt, rarely narrowly cup-forming, cups closed, occasionally widening to 3 mm, occasionally with short to long (1–5 mm) subulate proliferations, rarely with further tiers of cups on elongate (to 2 cm) proliferations from cup margins; unbranched or rarely sparsely laterally branched; surface variable, sometimes with a thickened cortical layer at lower base (1–2 mm), or with minute to large, luxuriant, imbricating squamules especially near base, podetial squamules occasionally continuing up podetia to  $\frac{1}{3}$  from top, podetia often curved downwards with exposed upper side bearing squamules, region above base ecorticate or with scattered corticate granules, or in indistinct soralia-like aggregations, ecorticate areas whitish to brownish, sometimes exposing smooth, semi-pellucid, whitish to yellow-brown inner layer. **Apothecia** brown,  $\pm$ flattened, sometimes clustered at apices and around deformed cup margins. **Pycnidia** not seen.

**Chemistry:** Cortex K<sup>-</sup>, Pd<sup>+</sup> orange; containing fumarprotocetraric acid.

## SIMILAR TAXA

Specimens have commonly been misidentified as *C. coniocraea*, *C. ochrochlora* or *C. ramulosa*, none of which have the distinctive "shaggy" appearance of *C. darwinii*. The podetia of *C. darwinii* may curve at the tips, approaching *C. corniculata*, a common species in New Zealand, but the characteristic farinose soredia and the sometimes very long podetia of the latter distinguish it.

## SUBSTRATE

Corticolous, terricolous

## ETYMOLOGY

**darwinii**: This species is named for the great evolutionary theorist Charles Darwin, whose understanding of variation as an engine of evolution was central to his model of descent with modification. Darwin was convinced of the importance of variation, but he was unable to pinpoint the mechanisms by which it arose and was maintained in populations. Variability and its role in evolution are more completely understood at present, but variability in *Cladonia* lichens, in which sexual reproduction is poorly understood, and in which asexual reproduction is preponderant, remains a difficult question. Perceived morphological variability and misinterpretations of superficial similarity, evidenced by the many names under which this species has been mislabelled, have long been obstacles to understanding the taxonomy of *Cladonia*.

## ATTRIBUTION

Fact sheet prepared by Marley Ford (11 September 2021). Brief description, Distribution, Habitat, Features and Similar taxa sections copied from Galloway (2007) & Hammer (2003).

## REFERENCES AND FURTHER READING

Galloway D.J. 2007: *Flora of New Zealand: Lichens, including lichen-forming and lichenicolous fungi*. 2nd edition. Lincoln, Manaaki Whenua Press. 2261 pp.

Hammer S. 2003: Notes on Cladoniaceae in New Zealand. *Bryologist* 106(3): 410-430.

## MORE INFORMATION

<https://www.nzpcn.org.nz/flora/species/cladonia-darwinii/>