

A NEW AUSTRALIAN LICHEN: CLADONIA KURINGAIENSIS

by

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INTRODUCTION

The fruticose lichen genus *Cladonia* contains a number of species which are placed together in the *Cladonia verticillata* group. This group is characterised by esorediate, corticate, cup-shaped podetia (scyphi), with each scyphus producing central proliferations in the form of further scyphi. The typical species of the group, *Cladonia verticillata* (Hoffm.) Schaer. and the related species *Cladonia calycantha* Nyl., *Cladonia gymnopoda* Vain., *Cladonia pseudogymnopoda* Asah. and *Cladonia verticillaris* (Raddi) Fr. contain the β -orcinol depsidone fumarprotocetraric acid as the only lichen compound present (Zopf 1908, Asahina 1940, 1970, 1943). Other members of the group contain fumarprotocetraric acid with atranorin — *Cladonia krempelhuberii* (Vain.) Vain. (Asahina 1956) and *Cladonia subcervicornis* (Vain.) Kernst. (Asahina 1943) — or fumarprotocetraric acid with homosekikaic acid — *Cladonia calyciformis* Nuno (Nuno 1972) — or lack fumarprotocetraric acid and contain other lichen compounds; *Cladonia dissimilis* Asah. contains atranorin and homosekikaic acid (Asahina 1940) and *Cladonia rappii* Evans contains psoromic acid (Evans 1952). *Cladonia verticillata* and *Cladonia krempelhuberii* are the only members of this group reported to occur in Australia (Weber and Wetmore 1972).

A recent chemical examination of specimens of *Cladonia verticillata* sens. lat. from the Sydney region showed that specimens with squamulose scyphi contained stictic acid in addition to fumarprotocetraric acid (Archer 1979); esquamulose specimens contained only fumarprotocetraric acid and were identified as *Cladonia verticillata* (Hoffm.) Schaer. The specimens with stictic acid and squamulose scyphi are now differentiated as a separate species.

DESCRIPTION

***Cladonia kuringaiensis* A.W. Archer, sp. nov.**

Habitus thalli ut in *Cladonia verticillata* sed squamulis in marginibus scyphorum et acidum sticticum acido fumarprotocetrarico usuali continentia.

The appearance of the thallus as in *Cladonia verticillata* but with squamules on the margins of the scyphi and containing stictic acid as well as the usual fumarprotocetraric acid.

Primary squamules persistent or disappearing, up to 5 mm long, irregularly wedge-shaped, resembling the squamules on the scyphi; upper side green to olive-green, below white. *Podetia* dull whiteish-green to olive-green, esorediate, with or without squamules, arising from the upper side of the primary squamules, 20-40 mm tall and up to 1.5 mm diam., expanding into small cups to 5 mm diam., appearing wider due to the presence of marginal squamules; each podetium with one or more proliferations from the centre of the closed cup; margins of the scyphi squamulose with irregularly crenate squamules 2-4 mm long and 0.5-1 mm wide; *cortex* continuous or areolate, the areoles smooth and the interspaces white; *Apothecia* sessile or on short stipes, 0.3-0.5 mm in diam.; pale brown to reddish-brown, flat, becoming convex; *ascospores* 8/ascus, simple, ellipsoid, colourless, 10-15 x 3-4 μ m.

REACTION: K+ weak yellow-brown; C-; Pd+ yellow becoming red. Fumarprotocetraric and stictic acids were shown to be present in an acetone extract by thin-layer chromatography and the presence of stictic acid was confirmed by mass spectrometry (Archer 1979).

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Fig. 1. *Cladonia kuringaiensis*. Typical specimens showing squamulose scyphi. Scale in millimetres.

TYPE COLLECTION: Australia, New South Wales, Ku-ring-gai Chase National Park, on soil on sandstone rock, near Spring Gully Creek, 4 km SSW of Bobbin Head, 20.i.1979, *Archer* 620 (Holotype: MEL 1023704; Isotype: NSW).

ALSO EXAMINED:

New South Wales — Murphy's Glen, Blue Mountains N.P., near Woodford, 20.xi.1976, *Archer* 161; Side of creek below Woody Pear Dam; Blue Mountains N.P., near Glenbrook, 16.vii.1977, *Archer* 210; Side of Biamea Creek, Dahrug N.P., near Wiseman's Ferry, 24.xii.1977, *Archer* 352 (MEL 1023705); Mt. Gibraltar, Bowral, 23.iii.1978, *Archer* 429 (NSW); Buffalo Creek, Field of Mars Reserve, North Ryde, 25.iv.1978, *Archer* 451 (NSW); Near Spring Gully Creek, 1.5 km SSW of Bobbin Head, Ku-ring-gai Chase N.P., 8.viii.1978 (topotype), *Archer* 520 (NSW); Near Spring Gully Creek, 2.5 km SSW of Bobbin Head, Ku-ring-gai Chase N.P., 8.viii.1978, (topotype), *Archer* 523 (NSW); Side of track from Murphy's Glen to Bedford Creek, Blue Mountains N.P., 10.ix.1978, *Archer* 698; Side of Waratah Creek, Ku-ring-gai Chase N.P., near Berowra, 3.ii.1979, *Archer* 629; Mount Wilson, 11.viii.1979, *Archer* 715.

DISCUSSION

The specific epithet *kuringaiensis* refers to the Ku-ring-gai Chase National Park from where the holotype was collected. Typical specimens are illustrated in figure 1.

Cladonia verticillata (Hoffm.) Schaer. is also known in a squamulose form, *Cladonia verticillata* f. *phyllocephala* (Flot.) Oliv. (Thomson 1967; plate 10, fig. 49b), while *Cladonia calycantha* f. *foliolosa* Vain., recorded from Venezuela and Peru (Vainio 1894),

was described as "a somewhat inconstant variety, with the margins of the scyphi squamulose". *Cladonia kuringaiensis* is distinguished from these morphologically similar forms by the presence of stictic acid.

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