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Caloplaca johnwhinrayi S.Y.Kondr. & Kärnefelt (Teloschistaceae) on the Chatham Islands – a new record for Aotearoa / New Zealand

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Abstract

Notice of the presence of *Caloplaca johnwhinrayi* S.Y.Kondr. & Kärnefelt (Teloschistaceae), previously considered an Australian endemic, is given. The species is known from a single collection from limestone rocks on Motuhinahina Island within Te Whanga Lagoon, Rēkohu / Wharekauri / Chatham Island (the largest of the Chatham Islands group), Aotearoa / New Zealand. Brief notes on the species recognition, ecology and conservation are given, with the recommendation that it should be looked for in similar habitats elsewhere in Aotearoa / New Zealand.

Keywords

Caloplaca, limestone, Chatham Islands, Motuhinahina, Aotearoa / New Zealand lichenised mycobiota

Introduction

The Aotearoa / New Zealand (hereafter Aotearoa) *Caloplaca* sensu lato last received a full treatment in Galloway (2007), since which time, beyond improvements in our knowledge of some uncommon or poorly known species (Sparkes et al. 2014, Søchting & de Lange 2024), the admission of additional species to the lichenised mycobiota of Aotearoa (de Lange et al. 2012; de Lange et al. 2018), and changes in genus prompted by the segregation of *Caloplaca* in myriad smaller genera (Kondratyuk et al. 2007, Arup et al. 2013, Kondratyuk et al. 2014), there has been no new full treatment of the species of Aotearoa. While generic changes affecting *Caloplaca* sensu lato are still in process, a stable, universally accepted treatment of the genera segregated from *Caloplaca* remains uncertain. So, at least for now, on the advice of Ulrik Søchting (Dan Blanchon, personal communication, July 2024), who stressed that DNA sequence data is necessary to place many of the *Caloplaca* recognised by other lichenologists in the various segregate genera, we have retained the circumscription of *Caloplaca* as it was used by Galloway (2007), while awaiting a new consensus of the Aotearoa lichenised mycobiota that is in preparation (Dan Blanchon, unpublished data).

The subject of this paper, *Caloplaca johnwhinrayi* S.Y.Kondr. & Kärnefelt (Figure 1), was discovered as accidental 'bycatch' in a larger sampling of *Lithothelium australe* Aptroot et H.Mayrhofer taken from limestone rocks on Motuhinahina (Figures 2, 3), a 0.43-hectare karst island located at 43° 53' 47.50" S, 176° 29' 19.32" W, 0.56 km west of Plum Tree, Te Whanga, Rēkohu / Wharekauri / Chatham Island (hereafter Rēkohu) (see Marshall et al. 2024).

This collection matches the description of that species as defined by Kondratyuk et al. (2009), except that the disc colour of the apothecia is pale orange rather than pinkish orange. With such a slight difference, pending the collection of further specimens and without critical DNA sequence data, we feel that, for now, placement in *C. johnwhinrayi* is preferrable to erecting a tag name to accommodate a single collection.

Figure 1. *Caloplaca johnwhinrayi*, habitus of dry specimen (*P.J. de Lange CH4463 & H. Tuanui-Chisholm*, UNITEC 14227), Motuhinahina, Te Whanga, Rēkohu / Chatham Island.

Taxonomy

Caloplaca johnwhinrayi S.Y.Kondr. & Kärnefelt, *Bibliotheca Lichenologica*, *100* (389): 253 (2009)

Mycobank registration: MB#540356

Description (based on UNITEC 14227): Saxicolous on limestone. Crustose. Thallus inconspicuous, scurfy-verruculose, greyish white. Apothecia initially biatorine, usually zeorine, 0.4–1 mm wide, markedly basally constricted, crowded and dominating the thallus; thalline margin whitish, scabrid or coarsely pruinose; proper margin pale orange; disc pale orange, sometimes with a thin, whitish pruina; hymenium not inspersed; subhymenium inspersed with sparse oil droplets; paraphyses with scattered oil vacuoles (these 6–7 µm wide), mostly occurring in pairs or short chains, and with apices mostly not expanded; ascospores ellipsoid, swollen at the septa 13–15 × 5–7 µm; septum 3–6 µm. *Chemistry*: Epithecium K+ pink, purple; parietin (major) and erythroglaucin (minor).

Distribution: *Caloplaca johnwhinrayi* was described from South Australia, where it is a coastal species of

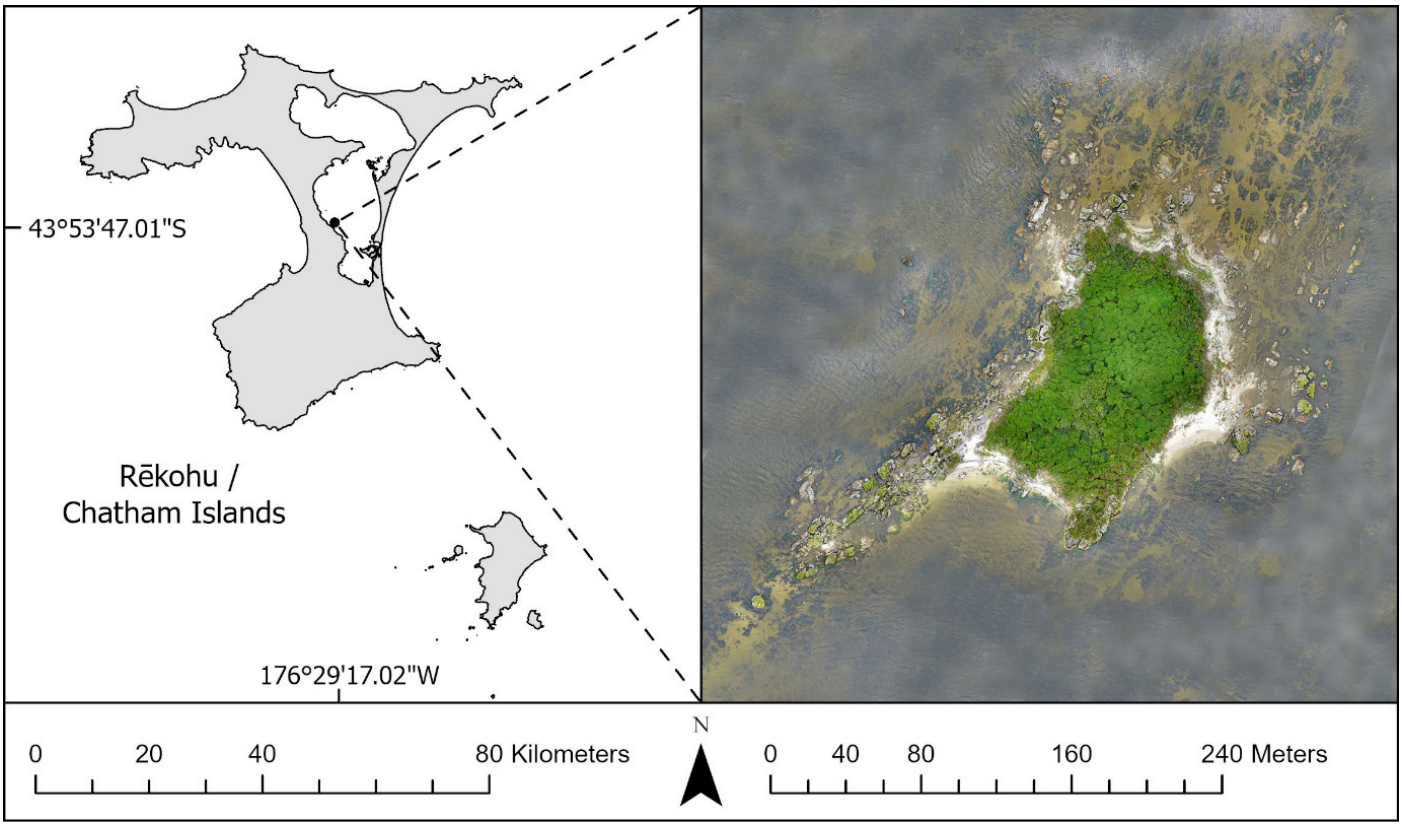

Figure 2. Showing the location of Motuhinahina within Te Whanga, Rēkohu / Chatham Island.

Figure 3. The western shoreline of Motuhinahina is comprised of myriad limestone tors and rubble slopes, the surfaces of which are densely vegetated by *Disphyma papillatum* Chinnock. It is on the bare rock faces, especially on the outward facing exposed limestone flags, that *Caloplaca johnwhinrayi* has been found.

base-rich rocks such as limestone and basalt (Kondratyuk et al. 2009, Kantvilas 2016). Within Aotearoa, the species is so far known from just the single Chatham Islands collection. With a mainly Australian distribution it is hardly likely to be disjunct to the Chathams Islands (though this is the case with *Leucopogon parviflorus* (Andrews) Lindl. (Ericaceae)), so we recommend that this species be looked for on maritime base-rich rocks elsewhere in Aotearoa.

Specimen seen: CHATHAM ISLANDS, Rēkohu / Wharekauri / Chatham Island, Te Whanga, Motuhinahina, *P. J. de Lange CH4463 & H. Tuanui-Chisholm*, 18 Apr 2023, UNITEC 14227.

Ecology: *Caloplaca johnwhinrayi* is thus far only known from Motuhinahina, a karst island located on the western side of Te Whanga Lagoon, c.0.56 km from the adjacent shoreline of Rēkohu. On that island, specimens have been found on exposures of Te Whanga limestone (Figure 3), specifically the 'undifferentiated Te Whanga limestone' of Campbell et al. (1988). Te Whanga limestone is considered to be of early Eocene–Oligocene age (Hay et al. 1970). Because the *Caloplaca* was collected as accidental 'bycatch' in samples of limestone supporting *Lithothelium australe* (Marshall et al. 2024), detailed notes of its co-associates, specific niche and abundance were not made. A subsequent visit in early February 2024 noted it in a few locations, though it did not appear common, and it was not present in samples collected from the same limestone on nearby Shag Rock (0.11 ha, 3 m a.s.l., -43.90016°S, -176.48685°W). From the limited information available, *Caloplaca johnwhinrayi* was noted in sites subjected to salt spray, often on the flat inner surfaces of limestone flags, and especially close to the vegetated upper surfaces of the limestone tors and stacks forming the island (Figure 3). Here, it grew in a narrow band on hard limestone abutting regolith and portions of eroding typic rendzic melanic soil, sensu Hewitt (2010) and Hewitt et al. (2021). The most commonly associated mycobiota and flora in these sites are *Disphyma papillatum* Chinnock, the mosses *Tortella flavovirens* (Bruch) Broth. and *Zygodon menziesii* (Schwägr.) Arn., and lichens *Buellia albula* (Nyl.) Müll.Arg., *Diploicia canescens* subsp. *australasica* Elix & Lumbsch, *Diplotomma alboatrum* (Hoffm.) Flot., *Dufourea ligulata* (Körb.) Frödén, Arup & Søchting, *Hydropunctaria maura* (Wahlenb.) C.Keller, Gueidan & Thüs, *Lithothelium australe* Aptroot & H.Mayrhofer, *Opegrapha rupestris* Pers. and *Xanthoria parietina* (L.) Th.Fr.

Conservation status: *Caloplaca johnwhinrayi*, known in Aotearoa from only a single collection, is best assessed as 'Data Deficient', qualified SO? [Presumed Secure Overseas] using the New Zealand Threat Classification System (Rolfe et al. 2023).

Note added in proof: On 2 February 2025 the senior author and Campbell James visited Motuhinahina and nearby Rangimata / Shag Rock, Te Whanga, Rēkohu / Wharekauri / Chatham Island, and further specimens of *Caloplaca johnwhinrayi* were discovered at both localities. The species is locally common on Motuhinahina (https://inaturalist.nz/observations/262463597, https://inaturalist.nz/observations/262785211, https://inaturalist.nz/observations/263357237), but scarce on Rangimata / Shag Rock (https://inaturalist.nz/observations/263344545).

Author Contributions

Peter J. de Lange: Conceptualisation (lead); data curation (lead); validation (lead); visualisation (lead); writing – original draft (lead); writing – review and editing (lead).

Dan J. Blanchon: Writing – review and editing.

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