NEW ZEALAND PLANT CONSERVATION NETWORK

TRILEPIDEA

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SUBMIT AN ARTICLE TO THE NEWSLETTER

Contributions are welcome to the newsletter at any time. The closing date for articles for each issue is approximately the 15th of each month.

Articles may be edited and used in the newsletter and/or on the website news page.

The Network will publish almost any article about plants and plant conservation with a particular focus on the plant life of New Zealand and Oceania.

Please send news items or event information to info@nzpcn.org.nz

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PLANT OF THE MONTH, p. 2

Syzygium maire.
Photo: Simon Walls.

The return of the NZPCN's favourite native plant vote

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After a year's hiatus, Aotearoa's most beloved podium of plant love will return in October this year, settling into its new permanent calendar position, which will see it run from October 1–31 annually. As always, the purpose of the vote is to find out why New Zealanders love their native plants and help raise a greater awareness and appreciation of native plants.

In the build up to this year's vote NZPCN committee members will take turns championing a candidate. These profiles of floristic luminaries will be thematic, targeting issues like conservation concern, ecological function and down-right loveliness. These profiles will appear in our newsletter *Trilepidea* and on our website. It is the latter, our new website, that has made add-ons like our favourite plant vote far easier to engineer and we're delighted to announce that voting will now be possible on your phone, something we know has hindered participation in the past.

As in previous years, everyone will be able to cast a vote for whichever native plant they wish. However, your comments will no longer be automatically uploaded to the leaderboard—to avoid vegetative trolling. We will make use of your comments, however, and the most insightful and interesting will be uploaded to our website. To ease off on what have been some rather hostile north-south plant rivalries in past years, while we will have a leaderboard, it will not display a public tally.

The NZPCN favourite plant vote first ran on our website in 2002, we're very excited to see which of our native plants you're most anxious about/in awe of/in love with, twenty years on.

(left) Pōhutukawa (*Metrosideros excelsa*) was voted Aotearoa's first favourite plant in 2002. (right) The 2019 favourite plant was taurepo (*Rhabdothamnus solandri*). Photos: Jeremy Rolfe.

If you are interested in being involved with media support for the 2021 vote, please get in touch with Alex fergusa@landcareresearch.co.nz or Jesse jesse.bythell@gmail.com.

The oldest planted vegetation on the hospital grounds probably date back to 1915 when the site was an infectious disease centre before becoming a sanitorium, general hospital, and its current use as a psychiatric hospital. There are some hints to the former pre-human vegetation though, with rare large relict matai (*Prumnopitys taxifolia*), rimu (*Dacrydium cupressinum*) and broadleaf (*Griselinia littoralis*), that are likely to be centuries old, scattered through the more recent vegetation.

It is not clear why *Tupeia antarctica* plants are so abundant at this site and appear in robust health. Lunniss (2020) noted that introduced herbivorous mammals such as the brushtail possum (*Trichosurus vulpecula*) and rats (*Rattus* spp.) significantly impacted *Tupeia antarctica* growth by browsing on plants at all her study sites in Otago. The Dunedin Town Belt population was greatly affected by these pests. While the status of these pests at the Wakari Hospital site is not known, a trapline around the perimeter of the hospital ground removed close to 80 possums (Southern Health undated). Hopefully this pest suppression will be sustained and widened with the current roll-out of Predator Free Dunedin measures across the city. This should benefit mistletoes through reduced browse pressure and improved populations of seed-dispersing native birds.

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An update on *Lecanora kohu* (Lecanoraceae)—new locations and a review of its conservation status

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Introduction

The type of *Lecanora kohu* Printzen, Fryday, Blanchon et de Lange (Lecanoraceae) was collected on the 28 July 2015 from Hokorereoro / Rangatira / South East Island (hereafter Hokorereoro), a 249 ha Nature Reserve, situated 2 km south-east of Rangihaute / Rangiauria / Pitt Island (hereafter Rangihaute), Chatham Islands (Printzen et al 2017). Specimens were collected from Hokorereoro from two phorophytes, hakina (*Melicytus chathamicus*) and *Muehlenbeckia* aff. *australis*. These collections were part of a deliberate sampling made as part of a survey of the island's botanical and mycological diversity by the author and colleague David Houston. During the research leading to the formal publication of *Lecanora kohu* as a new species, searches were made for specimens of it in Chatham Islands lichen collections held in New Zealand herbaria, and within unaccessioned collections from those islands. None were found. Nor were any collections recognised from the other larger islands of New Zealand. Therefore, *Lecanora kohu* was provisionally regarded as endemic to the Chatham Islands by Printzen et al. (2017) who suggested it was highly unlikely to be confined to the type locality, and that it should be searched for elsewhere on the islands, and indeed New Zealand. Because the species was then known from only two collections, *Lecanora kohu* was awarded a conservation status of 'Data Deficient' (de Lange et al. 2018).

At the onset of 2018, I visited the Chatham Islands, initially when working for the Television series 'Coast' (January 2018) and then later in my role as a member of the Chatham Islands Conservation Board. These visits allowed for opportunistic lichen collecting from a range of sites and *Lecanora kohu* (Fig. 1) was discovered in a number of locations on the islands, allowing for a reassessment of its ecology and proposed adjustment of its conservation status.

Fig. 1. *Lecanora kohu*—close up of thallus. This specimen was noted on the trunk of hikoa karamu (*Coprosma chathamica*) at Chudleigh Conservation Area, Rekohu.

***Lecanora kohu* locations, phorophytes and lichen associates**
Rekohu / Wharekauri / Chatham Island

Lecanora kohu has been discovered at 12 locations on Rekohu / Wharekauri / Chatham Island (hereafter Rekohu), all outside the southern tablelands, where, at least for now it seems to be absent. Specimens have been collected from six phorophytes: hakapiri (*Olearia traversiorum*) (Fig. 2), hikoa karamu (*Coprosma chathamica*) (Fig. 3), hakina (*Melicytus chathamicus*), matipo (*Myrsine chathamica*) (Fig. 4), tarahinau (*Dracophyllum arboreum*) and ti kouka (*Cordyline australis*) of which hakapiri and hikoa karamu are thus far the most commonly utilised. Whilst determining lichen abundance can be problematic in terms of defining individuals, area of occupancy and so forth, the overall impression is that *Lecanora kohu* can be locally abundant, often colonising the exposed trunk and branches of phorophytes growing on the margin of forest remnants, in stands or as isolated trees within dune systems, paddocks, or around settlements. In some locations, such as Te One, and Blind Jim's, on the shoreline of Te Whanga, *Lecanora kohu* can form conspicuous patches on the trunks of phorophytes. Associated lichen species on Rekohu may include *Arthonia atra*, *Bacidia* sp., *Brigantiaea chrysosticta*, *Dirinaria applanata*, *Flavoparmelia haysomii*, *Hyperphyscia adglutinata*, *Lecidiella elaeochroma*, *Megalaria grossa*, *M. maculosa*, *M. orokonuiana*, *Menegazzia neozelandica*, *Opegrapha agelaeoides*, *O. intertexta*, *Pertusaria thiospoda*, *Physcia adscendens*, *P. poncinsii*, *Podostictina pickeringii*, *Punctelia subrudecta*, *Pyrenula* c.f. *moniliformis*, *Ramalina canariensis*, *R. celastri*, *R. ovalis*, and *R. peruviana*.

Fig. 2 (left). *Lecanora kohu*—morphology exhibited when growing on the exposed bark of hakapiri (*Olearia traversiorum*), in this case at Harold Peirce Scenic Reserve, Rekohu.
Fig. 3 (centre). *Lecanora kohu*—growing with *Pyrenula* aff. *nitidula* and *P.* c.f. *moniliformis* on the exposed bark of (*Coprosma chathamica*) at Chudleigh Conservation Area, Rekohu.
Fig. 4 (right). *Lecanora kohu* – morphology exhibited when growing on matipo (*Myrsine chathamica*), in this case on private land, Admiral Gardens, near Lake Marakapia, Rekohu.

Rangihaute

During a brief visit to Rangihaute, the second largest island in the Chatham Islands group, *Lecanora kohu* was searched for around Onoua (Honeypot) and at Ellen Elizabeth Preece Conservation Covenant (Caravan Bush). It was only found twice, on the trunk of manatu (*Plagianthus regius* subsp. *chathamicus*) (Fig. 5) growing in the small lawn outside the Department of Conservation hut within the covenant, and on the forest margin on hikoa karamu. The scarcity of the lichen on Rangihaute is probably anomalous. Despite its size and proximity to Rekohu, this island is less frequently visited, and most of the indigenous vegetation is located in the southern and western two-thirds of the island. I am confident that diligent searching will locate further *Lecanora kohu* populations on this island. Associated lichens included *Brigantiaea chrysosticta*, *Flavoparmelia soredians*, *Megalaria grossa*, *Phyllopsora corallina*, *Physcia poncinsii*, *Podostictina pickeringii*, and *Pyrenula nitidula*.

Fig. 5. *Lecanora kohu* – morphology exhibited when growing on manatu (*Plagianthus regius* subsp. *chathamicus*), Ellen Elizabeth Preece Covenant (Caravan Bush), Rangihaute.

Wharekaikite (Rabbit Island)

Lecanora kohu was collected during a visit to Wharekaikite on 11 February 2021, from the trunk of hakina within a small hakapiri forest. During the visit, the extremely wet conditions were not conducive to lichen collecting, with the branches and trunks of trees and shrubs saturated. Under such conditions lichens are less conspicuous. Further survey on this island will be needed to determine the abundance of *Lecanora kohu* there. The only associated lichen was a species of *Bacidia*, probably *B. laurocerasi* – the specimens collected were inadequate for an accurate determination.

Hokorereoro

There have been no further collections of *Lecanora kohu* from Hokorereoro since the two collections (from two locations) made from there in July 2015 (Printzen et al. 2017). This situation reflects the fact that very few lichen collections have been made from that island since 2015 and, as yet, the island has not been visited by a lichenologist. Printzen et al. (2015) also noted *Bacidia laurocerasi*, *Phlyctis sordida* and *P. uncinata* as lichen associates.

Ecology

Printzen et al. (2017) understandably offered little about the ecology of *Lecanora kohu*; noting only that it 'gr[ew] on the exposed, mature branches of a widespread, common unnamed species of *Muehlenbeckia* (*M.* aff. *australis*) and [had been collected] from the exposed trunks of Chatham Island mahoe [hakina] (*Melicytus chathamicus*). The discovery of a further 14 *L. kohu* locations provides additional data.

It seems that *Lecanora kohu* is a photophilous species, seen both by its preference for exposed situations, often on isolated trees or tree stands, or on colonising those trees and shrubs on the margin of forest remnants. The photophilous nature of the species is also confirmed by the lichens associated with it, none of which tolerate shaded situations for long. Notably, there have so far been no records of *Lecanora kohu* from forested interiors or shaded sites.

Lecanora kohu also seems to be tolerant of wind blast, probably also salt laden wind as it is often found on trees growing on the margin of the coast, Te Whanga lagoon, or in open dune field. In these situations, it is either the dominant or only crustose lichen present.

It would also seem that *Lecanora kohu* is strictly corticolous. Even in situations where the exposed root plate and basal trunk of phorophytes supporting the species straddle rocks, *L. kohu* has not been found growing off bark. *Lecanora kohu* has thus far not been collected from lignum, avoiding those portions of dead phorophyte left in situ on an otherwise living host.

Conservation Status

Lecanora kohu was assessed 'Data Deficient' qualified 'IE' [Island Endemic], 'OL' [One Location] by de Lange et al. (2018). This follows the recommendation of Printzen et al. (2017), who further stated that '….we suspect that it is more likely that *L. kohu* is overlooked than genuinely threatened, and that its absence from other islands in the Chatham Islands group reflects that they have yet to be collected by expert lichenologists'. The qualifers used by de Lange et al. (2018) reflected the belief that *L. kohu* is endemic to the Chatham Islands, and that, at the time the assessment was made, it was only confidently known from one location – Hokorereoro.

Data Deficient taxa are an urgent priority for investigation because beyond their identity, nothing is known of their population size, number and trend, area of occupancy and basic biology. Without such data, a confident conservation status assessment is impossible, and 'Data Deficient' taxa may be at serious risk of going extinct because nothing is known of them to enable effective management (Townsend et al. 2008; de Lange et al. 2018).

Of the 16 *Lecanora kohu* locations now known, ten are located in Conservation Areas, National Historic, Scenic and Nature Reserves administered as part of the public conservation estate by the Department of Conservation. One is located in a privately owned and managed forest remnant near Lake Marakapia, and another is located on hakapiri trees growing around the Department of Conservation Te One office buildings. The others occur on private land. However, with the exception of Hokorereoro and Harold Peirce none of the new populations occur in secure situations where the longevity of their phorophytes is assured. One population occurs in a forest remnant on the verge of collapse (J.M. Barker (Hapupu) National Historic Reserve) and all of the others on protected land are on exposed, usually senescent, trees.

Determining population size is also problematic. After all, what exactly constitutes a population in a lichen? Assuming then, that a discrete lichen patch is truly one individual, one is left with the problem of counting 'individuals'. While possible, in practice this is rarely done for conservation assessments of cryptogamic plants in New Zealand, rather the area of occupancy is used (de Lange et al. 2018; de Lange et al. 2020; Nelson et al. 2019; Rolfe et al. 2016).

Using area as an estimate of population, suggests that *Lecanora kohu* has a total area of occupancy of c. 3.76 ha with the largest subpopulation so far known, that on Hokorereoro occupying c.0.8 ha.

A rate of decline is still unavailable however. In many situations the phorophytes are in ill thrift and some, such as those colonised by *Lecanora kohu* along the shoreline of Te Whanga at Blind Jim's, Te Matarae and Taia or at the J.M Barker (Hapupu) National Historic Reserve and Nikau Bush Conservation Area are mostly senescent. The only seemingly healthy populations with thriving phorophytes seen are at Chudleigh Conservation Area, Harold Peirce Scenic Reserve and on Hokorereoro. The situation on Rangihaute and Wharekaikite is unknown. Exposed trees in ill thrift, especially those on the Chatham Islands, are prone to sudden collapse, and once decline has set in, few trees that I have seen there persist for more than a decade.

Collectively then, this data indicates a total area of occupancy of c. 3.76 ha, spread over 16 subpopulations, with an overall decline rate estimated at 10–30% over the next 10 years. This would assess *Lecanora kohu* as 'Threatened / Nationally Endangered' on the basis of area of occupancy and trend data (Townsend et al. 2008; Table 3B, p. 15) or on the basis of criteria for 'Nationally Endangered' A3, T1 (i.e., area of occupancy < 10 ha, decline rate of 10–50% over next 10 years; Townsend et al. 2008).

To this proposed assessment the following qualifiers apply 'DPS' [Data Poor – population Size], DPT [Data Poor – Population Trend], 'IE' [Island Endemic], 'RR' [Range Restricted] and 'Sp' [Sparse]. This is because accurate data on population size and the rate of decline is still needed. *Lecanora kohu* is now known to occur at several locations, but is still apparently a Chatham Islands endemic where it occupies a specific habitat, colonising trees in open, exposed sites, in which situation it does seem to be sparsely distributed.

This assessment is an improvement on that offered by Printzen et al. (2017) and ratified by de Lange et al. (2018). However, more information on decline rates and trends is needed. Furthermore, the situation may change if populations are discovered within the more densely vegetated southern tablelands of Rekohu, and the Waipaua portion of Rangihaute. *Lecanora kohu* has yet to be recorded from Mang're / Mangere Island, Tapuaenuku / Little Mangere, and Motchu Hop' / Star Keys Island which have indigenous forest and scrub, and which, considering the lichen's discovery on the much smaller Wharekaikite (c.1.20 ha) probably also support the species. Notably, at the time of writing (July 2021) a large consignment of lichens collected from Mang're have been gifted to the Unitec Institute of Technology Herbarium (UNITEC) for study. It will be interesting to see if *Lecanora kohu* specimens are present in those collections.

In the interim, the proposed change in status from 'Data Deficient' to 'Threatened / Nationally Endangered' remains to be sanctioned by the New Zealand Lichen Threat Listing panel. Irrespective of any future decision though, we now have a better idea of the distribution and ecology of *Lecanora kohu*. Now it remains to be seen if the species is truly endemic to the Chatham Islands; consider *Caloplaca maculata* as a case in point (Galloway 2004; de Lange 2012, 2019; de Lange et al. 2021).

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