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(Fig. 6); Tauranga Harbour, Bowentown, *P.J. de Lange*, 28 Feb 2010, AK 310772.

10. British Museum (BM)
Hymenena variolosa, Tauranga Harbour, *S.Berggren*, 1874, BM 001039333.

Acknowledgements
Thanks to Peter Maddison, Andrew Jenks, Sarah Beadel and Sue Morris for help with the visits to various sites, and to Rosalie Smith for arranging access to Tutaetaka Island, and to the herbaria cited for providing their relevant records of the specimens that they hold.

Lichens of a Significant Ecological Area (SEA) in Kohimarama

Dan Blanchon and Nadine Leddy

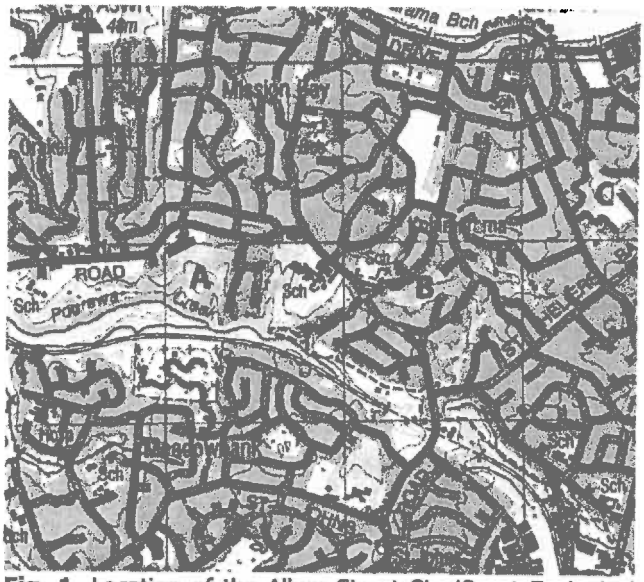

Fig. 1. Location of the Allum Street Significant Ecological Area, Kohimarama, Auckland. A) Kepa Bush, B) Allum Street SEA, C) Dingle Dell. Map produced from NZMS 260 map series, sheet R11, modified by D. Blanchon.

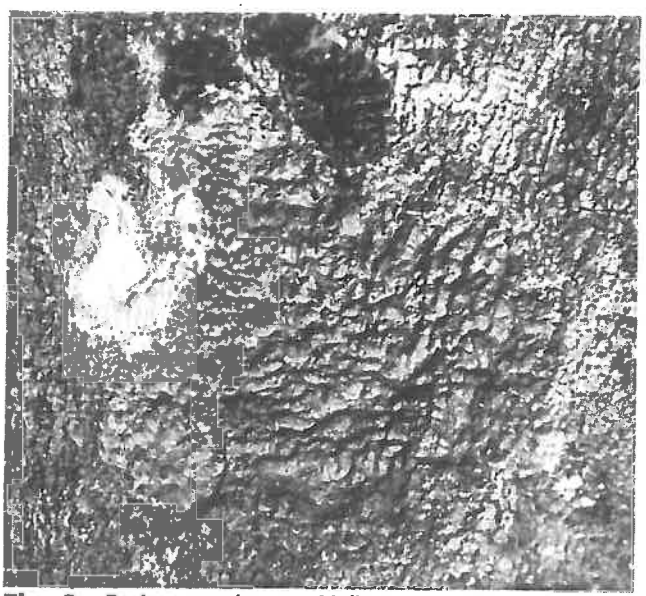

Fig. 2. *Porina exocha* on *Melicytus ramiflorus* trunk in Allum Street SEA. Photo: D. Blanchon, 13 Apr 2015.

Introduction

On Monday 13th of April 2015, a brief survey (c. 3 hours) was carried out in the Significant Ecological Area bounded by Allum Street, Kohimarama Road, William Fraser Crescent and Pamela Place (Fig. 1), with the permission of the landowners. The site is a forest remnant largely made up of impressive old, large mahoe (*Melicytus ramiflorus*), kanuka (*Kunzea robusta*), ngaio (*Myoporum laetum*), totara (*Podocarpus totara*), large ponga (*Cyathea dealbata*), hangehange (*Geniostoma ligustrifolium*), kawakawa (*Piper excelsum*) and cabbage trees (*Cordyline australis*), as well as a range of invasive species, with tree privet (*Ligustrum lucidum*), jasmine (*Jasminum polyanthum*) and ginger (*Hedychium gardnerianum*) the most prominent. Lichens, mosses, liverworts (e.g. *Frullania fugax* and *Porella* aff. *elegantula*), fungi, ferns and fern allies such as *Tmesipteris* sp. are common in the forest remnant. Some of the mahoe, cabbage trees, ponga and one large totara at 96 and 98 Allum Street are not technically within the current boundaries of the SEA, but as they are part of the same forest remnant, these were also investigated. The objective of the survey was to opportunistically collect lichen species from all available substrates to gain an understanding of the lichen species richness of the site to determine if it would be a useful reference ecosystem for a nearby lichen restoration project with Ngati Whatua at the Whenua Rangatira.

Species collected

The lichen flora of the area totalled 32 distinct taxa, with 28 able to be identified to species level and a further four were not able to be given species names, indicating possible new records for the New Zealand lichen flora, and bringing the total to 32 taxa (see Appendix). Twenty-eight of these taxa (including three unnamed species) were collected from the Significant Ecological Area. Seventeen species and three unnamed taxa were collected from the adjacent area of the same vegetation type within

the boundaries of 96 and 98 Allum Street, but just outside the SEA boundary. The lichen assemblages of both areas were largely the same. The lichens collected were all native species, and most are characteristic of native forest. Some of the species such as *Bacidia laurocerasi*, *Coenogonium implexum*, *Lepraria lobificans*, *Phlyctis sordida*, *Porina exocha* (Fig. 2) and *Pseudocyphellaria carpoloma* (Fig. 3) are characteristic of relatively undisturbed native forest – i.e. they don't tend to colonise planted native trees or exotic vegetation.

The most important substrate tree species were old, large mahoe, kanuka, ngaio, totara, large ponga, kawakawa and cabbage trees (Fig. 3). Gardner (1988) noted that cabbage trees were historically conspicuous on the heavy clay soils of the Kohimarama area and persist at Dingle Dell and above "Purewa Creek", and the remnant trees at both Dingle Dell (Wilcox et al. 2013) and the Allum Street SEA support significant lichen communities which may have persisted from earlier times.

Threatened species or uncommon species

There was an unusual concentration (five) of 'Data Deficient' species at the site (see Appendix). 'Data Deficient' species are those that were unable to be classified using the New Zealand Threat Classification Manual (Townsend et al. 2008) because they are so poorly known. They may be rare and/or endangered, or may just be under-collected. These five species were designated as 'Data Deficient' in 2012 by de Lange et al. (2012). One species at the site, *Pseudocyphellaria haywardiorum*, is listed 'At Risk: Naturally Uncommon', and was extremely rare at the site (we found it on cabbage tree trunks and on fallen dead branches (probably mahoe). This species has also been recorded at Dingle Dell (AK 213436) and Kepa Bush (UNITEC 7193), but seems to be rare in the area.

Discussion

The total of 31 distinct lichens represents only 3 hours of investigation, and is likely to be an underestimate. We were not able to examine the entire SEA as we did not have the permission of all of the landowners, particularly on the William Fraser Crescent side of the forest and a more thorough survey would be useful. Despite this, the number of species compares well with the count of 55 for Dingle Dell (Wilcox et al. 2013), a much larger area of habitat. Old aerial photographs from the 1940s and 1950s held by the Alexander Turnbull Library clearly show forest cover at this site (Fig. 4), and the presence of characteristic old growth forest lichens, particularly the assemblages associated with mahoe and cabbage trees, means that this site is a useful reference ecosystem for lichen restoration in the surrounding areas. Further work is ongoing to determine the identity of the indeterminate lichen taxa.

Acknowledgements

We would like to thank Frances Battersby and other landowners for permission to access and collect specimens from their properties. We would also like to thank Drs Robert Lucking and Bibiana Moncada from the Field Museum of Natural History (Chicago) and Dr Peter de Lange, Department of Conservation for advice on species identification. We thank Sarah Killick for herbarium technical support. We acknowledge the permission of the Alexander Turnbull Library for use of Figure 4.

Fig. 3. *Pseudocyphellaria carpoloma* on trunk of *Cordyline australis* in Allum Street SEA. Photo: D. Blanchon, 13 Apr 2015.

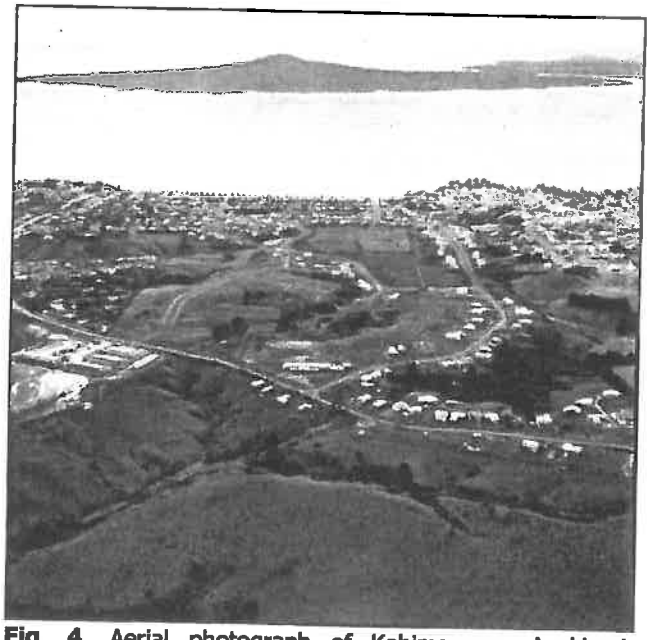

Fig. 4. Aerial photograph of Kohimarama, Auckland, showing vegetation on the site of the current Allum Street SEA, 8 August 1955 (middle of right hand side of image). Whites Aviation Ltd : Photographs. Used with permission of the Alexander Turnbull Library, Wellington, New Zealand. Their permission must be obtained before any reuse of this image.

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Appendix. Lichen species and indeterminate taxa at the site.

Key: † Threat status abbreviations are as follows: DD = 'Data Deficient'; NT = 'Not Threatened'; NU = 'At Risk: Naturally Uncommon'

* samples of these species have been sent for DNA analysis to determine their identity.

** an undescribed species of *Coenogonium*

Lichen species	SEA area	96 and 98 Allum St. native vegetation adjacent to current SEA boundary	Threat Status†	Voucher (UNITEC)
Arthonia polymorpha	on mahoe		DD	7165
Bacidia laurocerasi	on mahoe	on mahoe	NT	7142
Chrysothrix candelaris	on ponga	on totara	NT	7129
Coenogonium implexum		on mahoe	NT	7141
Crocodia aurata	on mahoe & ngaio		NT	7156
Dirinaria applanata	on kanuka	on dead pittosporum, mahoe & totara	NT	7126
Fissurina inquinata		on dead pittosporum	DD	7173
Graphis elegans	on mahoe	on dead pittosporum	DD	7170
Lecanora dispersa		on totara	NT	7126
Lepraria lobificans	on ponga	on totara & mahoe	NT	7131
Leptogium aucklandicum	on mahoe	on cabbage tree	NT	7140
Leptogium cyanescens	on cabbage tree & mahoe	on flame tree	NT	7127
Opegrapha agelaeoides	on mahoe		NT	7174
Parmotrema perlatum	on mahoe	on mahoe	NT	7145
Parmotrema reticulatum	on kanuka & ngaio	on totara & dead pittosporum	NT	7133
Pertusaria thiospoda	on privet		DD	7200
Phlyctis sordida	on mahoe	on mahoe	NT	7143
Physcia poncinsii	on ngaio	on flame tree	NT	7134
Porina exocha	on mahoe		NT	7146
Pseudocyphellaria carpoloma	on cabbage tree		NT	7197
Pseudocyphellaria chloroleuca	on cabbage tree & ngaio		NT	7155
Pseudocyphellaria haywardiorum	on cabbage tree & fallen dead branches		NU	7169
Pseudocyphellaria multifida	on cabbage tree		NT	7196
Ramalina celastri	on ngaio	on dead pittosporum	NT	7135
Ramalina peruviana	on ngaio	on dead pittosporum	NT	7137
Sticta fuliginosa	on cabbage tree		NT	7153
Strigula phaea	on kawakawa		DD	7198
Usnea rubicunda	on kanuka	on dead pittosporum	NT	7138
Taxonomically indeterminate lichens				
Bacidina sp. *	on mahoe & ponga	on mahoe & ponga	NA	7176
Coenogonium aff. *luteum* **	on ponga	on totara	NA	7130
?*Micarea* *	on mahoe & ponga	on mahoe & ponga	NA	7178
Silver crust		on totara	NA	7177