

## Lichens of Tapu Bush, Kaipara North Head

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During the Botanical Society trip of 21-25 May 1991 to Pouto, on the North Head of the Kaipara Harbour, lichens were surveyed in Tapu Bush, a forest remnant of approximately 33 ha located at 36 19'S 174 04'E. This is one of very few surviving patches of mature forest on fixed Holocene sand dunes in northern New Zealand. The forest is mature, mixed broadleaf forest with a broad marginal band of modified forest dominated by kanuka. The ground surface still retains the Holocene dune landforms. The soil is thinly developed over the underlying sand, which is still free draining as indicated by the lack of streams, water courses or ponding areas. Despite this, the abundance of lichens and bryophytes indicate generally high humidity and excellent growing conditions.

The most abundant and diverse lichen flora occurs on the trunks and branches of mature kanuka beneath the semi-open canopy of mixed kanuka - broadleaf forest that predominates in Tapu Bush. Within this forest type, the most abundant lichen growth occurs on the trees growing on the higher, former sand dune crests, where light levels greatly exceed those in the intervening hollows. Here the most conspicuous lichens are the foliose Lobariaceae (especially *Pseudocyphellaria carpoloma*, *P. coriacea*, *P. haywardiorum*, *P. pickeringii*, *Sticta latifrons*), Parmeliaceae (especially *Parmotrema cetratum*, *P. chinense*, *Parmelia sulcata*), *Psoroma* (especially *P. allorhizum*, *P. athroophyllum*) and *Heterodermia* (especially *H. japonica*), together with the pendulous "old man's beard lichens" of the genus *Usnea*.

In more shaded conditions in the former dune hollows, and also under the more closed canopy of the better developed mixed broadleaf forest, there is a general switch to a dominance by blue-green foliose lichens, especially *Pseudocyphellaria dissimilis*, *Parmeliella nigrocincta*, *Pannaria crenulata*, *P. fulvescens*, *Leptogium azureum*, *L. cyanescens* and *Collema* species. Also commonly found in these dimmer conditions are the tightly appressed thalli of *Clathroporina exocha* and the black-fruited crustose *Megalania grossa*, *Buellia punctata* and *Pyrenula deliquescens*.

No rocks are present in Tapu Bush and lichens growing on the sandy ground are mainly restricted to high light conditions in canopy gaps in the kanuka forest. Here the dominant lichens are species of *Cladonia* (especially *C. ochrochlora*) and *Peltigera dolichorhiza*. Two lichens (*Xanthoria parietina* and *Candelaria concolor*) additional to the natural forest flora of Tapu Bush, occur on concrete posts in the fence that surrounds it.

In total 80 species of lichens are here recorded from Tapu Bush, or about 15% of the total lichen flora currently known from northern New Zealand. This is a relatively high diversity for a patch of mixed kanuka-broadleaf forest.

The Tapu Bush lichen flora has many of the expected northern elements as well as several rarely recorded species. This is the fifth record of the rare northern endemic *Pseudocyphellaria sericeofulva* in the well studied foliose family Lobariaceae (Galloway 1988). Tapu Bush also yielded only the second known records of *Bacidia albicerata* and *Bacidia albidoprasina*, which belong to a group of crustose lichens that have received very little attention in New Zealand, so they could be considerably more common than these statistics indicate.

### LICHENS RECORDED FROM TAPU BUSH

Voucher numbers refer to Auckland Museum Herbarium accession numbers.

Substrate: b = bark  
c = concrete posts  
s = sandy soil

Abundance: A = abundant  
C = common  
O = occasional  
R = rare

Voucher

<i>Bacidia albicerata</i> (Krempelh.) Zahlbr.	b R	202552
<i>B. albidoplumbea</i> (Hook. & Taylor) Hellbom	b R	202584

<i>B. albidoprasina</i> Knight	b O	202392
<i>B. buchananii</i> (Stirton)Hellbom	b O	202368
<i>Buellia punctata</i> (Hoffm.)Massal.	b O	202590
<i>Candelaria concolor</i> (Dickson)Stein	c O	202355
<i>Cladonia chlorophaea</i> (Florke)Sprengel	s R	202575
<i>C. enantia</i> Nyl.	s O	202581
<i>C. furcata</i> (Huds.)Schrader	s R	202578
<i>C. ochrochlora</i> Florke	s C	202582
<i>C. ramulosa</i> (With.)Laudon	s O	202583
<i>C. scabriuscula</i> (Delise)Leighton	s O	202553
<i>C. squamosa</i> (Scop.)Hoffm.	s R	202437
<i>Clathroporina exocha</i> (Nyl.)Mull.Arg.	b C	202393
<i>Coccocarpia palmicola</i> (Spreng.)Swinsc. & Krog	b R	202566
<i>C. peltata</i> (Ach.)Mull.Arg.	b O	202525
<i>Coenogonium implexum</i> Nyl.	b R	202445
<i>Collema laeve</i> Hook. & Taylor	b R	202568
<i>C. subflaccidum</i> Degelius	b R	202381
<i>Erioderma leylandii</i> (Taylor)Mull.Arg.	b R	202362
<i>E. soreliatum</i> Galloway & Jorg.	b R	202444
<i>Graphis inquinata</i> (Knight & Mitten)Hook.	b R	202442
<i>Heterodermia appendiculata</i> (Kurok.)Swinsc. & Krog	b R	202532
<i>H. japonica</i> (Sato)Swinsc. & Krog	b C	202572
<i>Leptogium azureum</i> (Sw.)Mont.	b A	202513
<i>L. brebissonii</i> Mont.	b R	202436
<i>L. crispatellum</i> Nyl.	b O	202567
<i>L. cyanescens</i> (Rabenh.)Korber	b C	202569
<i>Megalaria grossa</i> (Pers. ex Nyl.)Hafellner	b C	202585
<i>Megalospora gompholoma gompholoma</i> (Mull.Arg.)Sipman	b O	202554
<i>M. knightii</i> Sipman	b R	202447
<i>Menegazzia circumsorediata</i> R.Sant.	b O	202545
<i>Opegrapha agelaeoides</i> Nyl.	b R	202440
<i>Pannaria crenulata</i> P.M.Jorg.	b C	202592
<i>P. elatior</i> Stirton	b O	202565
<i>P. fulvescens</i> (Mont.)Nyl.	b C	202518
<i>Parmelia sulcata</i> Taylor	b O	202530
<i>Parmeliella nigrocincta</i> (Mont.)Mull.Arg.	b C	202588
<i>Parmelinopsis spumosa</i> (Asahina)Elix & Hale	b R	202589
<i>Parmotrema arnoldii</i> (Du Rietz)Hale	b R	202564
<i>P. cetratum</i> (Ach.)Hale	b C	202522
<i>P. chinense</i> (Osbeck)Hale & Ahti	b O	202563
<i>P. crinitum</i> (Ach.)M.Choisy	b R	202505
<i>P. mellissii</i> (Dodge)Hale	b R	202511
<i>Peltigera dolichorhiza</i> (Nyl.)Nyl.	s C	202558
<i>Pertusaria</i> cf. <i>laevis</i> Knight	b R	202378
<i>P. truncata</i> Krempelh.	b O	202591
<i>Phaeographis australiensis</i> Mull.Arg.	b O	202594
<i>Pseudocyphellaria allani</i> Galloway	b R	202546
<i>P. argyracea</i> (Delise)Vainio	b R	202570
<i>P. aurata</i> (Ach.)Vainio	b R	202448
<i>P. carpoloma</i> (Delise)Vainio	b A	202517
<i>P. coriacea</i> (Hook. & Tayl.)Gall. & James	b C	202561
<i>P. coronata</i> (Muell.Arg.)Malme	b R	202432
<i>P. crocata</i> (L.)Vainio	b R	202433
<i>P. dissimilis</i> (Nyl.)Gall. & James	b C	202593
<i>P. episticta</i> (Nyl.)Vainio	b R	202562
<i>P. haywardiorum</i> Galloway	b C	202547

<i>P. intricata</i> (Delise)Vainio	b O	202533
<i>P. lividofusca</i> (Krempelh.)Gall. & James	b R	202573
<i>P. montagnei</i> (Church.Bab.)Gall. & James	b C	202560
<i>P. multifida</i> (Nyl.)Gall. & James	b R	202559
<i>P. neglecta</i> (Mull.Arg.)Magnusson	b R	202374
<i>P. pickeringii</i> (Tuck.)Galloway	b C	202443
<i>P. sericeofulva</i> Galloway	b R	202398
<i>Psoroma allorhizum</i> (Nyl.)Hue	b C	202527
<i>P. araneosum</i> (Church.Bab)Nyl.	b R	202521
<i>P. athrophyllum</i> Stirton	b O	202576
<i>P. leprololum</i> (Nyl.)Rasanen	b R	202571
<i>P. patagonicum</i> Malme	b R	202431
<i>Pyrenula deliquescens</i> (Knight)Mull.Arg.	b C	202523
<i>Ramalina celastri</i> (Sprengel)Krog & Swinsc.	b R	202446
<i>Sticta fuliginosa</i> (Hoffm.)Ach.	b O	202441
<i>S. latifrons</i> Rich	b C	202544
<i>S. squamata</i> Galloway	b O	202526
<i>Tephromela atra</i> (Huds.)Hefellner	b R	202504
<i>Thelotrema lepadinum</i> (Ach.)Ach.	b O	202503
<i>Usnea</i> spp.	b C	202549, 202550, 202551, 202577
<i>Xanthoria parietina</i> (L.)Th.Fr.	c R	202354
Number of genera	33	
Number of species	80	

#### REFERENCE

Galloway, D.J. 1988: Studies in *Pseudocyphellaria* (lichens) I. The New Zealand species. *Bulletin of the British Museum Botany* 17.

#### Vascular plants of Tapu Bush, North Kaipara Barrier

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The primary reason for the Bot Soc trip to Pouto on the North Head of the Kaipara Harbour (21-25 May 1991) was to explore and document a significant forest remnant known as Tapu Bush (NZMS 260 grid reference 07-42- on Sheet P09, latitude 36 19, longitude 174 04). From a base at the Northern Wairoa Outdoor Education Trust's field centre in the former schoolhouse at Pouto, parts of three days were spent by 19 people in Tapu Bush. Contributions to the vascular plant species list which follows were made by many of these people.

Tapu Bush is Maori owned, and apart from a small area of active dune on part of its south-western boundary, its 33 hectares are enclosed by plantation forestry (*Pinus radiata*). For such an extraordinary piece of forest it had received scant attention from botanists. In fact, it is to geographers that we look for the chief written accounts. John Reid, a Masters' student in the Department of Geography at the University of Auckland published "A survey of Tapu Bush, a remnant of pre-European vegetation" in *Auckland Student Geographer* 8 (pp. 35-46, 1977). Ingeborg P.C.H.M. Kampman of the same department presented a MA thesis entitled "Vegetation of the North Kaipara Barrier" in November 1981. This thesis, which can be consulted in the University Library, deals with several forest remnants on the North Kaipara including Tapu Bush. The only other written account we have found is the unpublished "Observations on Tapu Bush, North Kaipara Barrier" by Philip Simpson (Commission for the Environment, December 1982).