

# Mosses and lichens of Paengaroa Scenic Reserve

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# 1. Introduction

The Paengaroa Scenic Reserve, 7 km northwest of Taihape, is a notable natural area in New Zealand for vascular plants. It contains a large number of vascular plants for the Taihape region and is particularly rich in divaricating shrubs. Nationally threatened and biogeographically special plants are also found there (Ogle & Barkla 1995). An obvious question therefore arises. To what extent do the mosses and lichens in the reserve reflect this pattern? The Wanganui Conservancy of the Department of Conservation requested this survey to answer that question and to discover if any special management is required for mosses and lichens in Paengaroa.

The state of bryology and lichenology makes answering this question less straightforward than might appear. For example, there is no list of threatened mosses and lichens. Lichenology is in a state of flux and for many parts of New Zealand there are no plant lists. Nevertheless, unique features have been discovered by this survey and Paengaroa was found to be an area rich in moss and lichen diversity.

# 2. Methods

Two and a half days were spent collecting specimens in the reserve (March 1997). Many parts were visited from the river flats to the ridge on the northern border. Seventy-two species of mosses and seventy-eight species of lichens were collected and subsequently identified. All specimens are lodged in WELT. (See Appendix for complete list.) Both published and unpublished plant lists from areas of similar size were checked so a comparison of biodiversity could be made.

# 3. Features of moss and lichen flora in Paengaroa worthy of note

- (1) Unattached moss cushions on forest floor  
*Camptochaete ramulosa* is growing loose in large patches on the ground under trees in three places in Paengaroa. This phenomenon has been observed on both North and South Islands but is not a common occurrence. The mosses lie on flat soil mixed with decaying forest litter and are not attached to any substrate. The only study made to date on this moss habit was by William Martin in 1952. He did not compare the areas where mosses grow in this manner, so study is still needed. The

current efforts to control ivy in Paengaroa are important in allowing this feature to continue.

- (2) Mosses and lichens on *Cordyline australis*  
The large number of mosses and lichens found epiphytic on cabbage trees in Paengaroa is unusual according to Philip Simpson, who has been studying cabbage trees and collecting from them around the country (Simpson, P. pers. comm.). Colin Ogle and Philip Simpson collected from cabbage trees in Paengaroa in October of 1996. This survey added to the list, the total now being twenty-eight moss species from twenty-four genera and thirteen lichen species from ten genera. (The plant lists in the appendix are annotated to show the species found on *Cordyline australis*.)
- (3) Overall biodiversity of mosses and lichens in Paengaroa  
Paengaroa is not a large area and does not have a wide variety of habitats for mosses and lichens. It covers only 117 ha with little topographic variety ranging from 520 m to only 706 m. Nevertheless the variety of species compares very favourably to areas of similar size, some of which have a greater altitude range and habitat diversity. The survey results also add to the known range of several species and show particular richness in others.

*Lepyrodon australis* is not a rare moss but has previously been found at much higher elevations. It was found in Paengaroa on the ridge at the edge of the bush.

*Gyalidea lecanorina*, a corticolous lichen species has only been collected a few times and not north of Wellington, so this is an important extension of its known range.

*Fissidens*, a widespread genus, is represented in Paengaroa by 8 species, including *F. blechnoides*, a newly recognised species (Beever 1996). This is a rich representation of that genus.

*Badimiella serusiauxii* is a foliicolous lichen which has only recently been recognised and was first reported from the South Island in 1994. (Malcolm, Vezda 1994). It has now been found in the North Island near Wellington and in the far north, but finding it in the Taihape area adds to our knowledge of its range.

*Cryphea tenellus* is growing in great abundance in Paengaroa on many different trees and shrubs. This is a common moss found in many bush areas but it has rarely, if ever, been found in such healthy large amounts.

## 4. Conclusions

This survey demonstrates that the mosses and lichens in Paengaroa do reflect the pattern of richness of the vascular flora in the reserve. The areas of par-

ticular importance are: the banks and small flat areas between the tracks and the Hautapu River where many moss species are found, the small groves of *Cordyline australis*, and the bush surrounding the open grassy areas where many corticolous and foliicolous lichens are found.

## 5. Acknowledgements

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## APPENDIX I

### (A) Mosses of Paengaroa

- Found on *Cordyline australis*
- *Achrophyllum dentatum*  
*Achrophyllum quadrifarium*  
*Acrocladium chlamydophyllum*
- *Acrocladium cuspidatum*  
*Brachythecium plumosum*
- *Bryum billardierei*  
*Bryum dichotomum*  
*Calyptopogon mnioides*
- *Calyptrochaeta cristata*  
*Camptochaete angustata*
- *Camptochaete arbuscula*  
*Camptochaete deflexa*
- *Cryphaea tenella*  
*Ctenidium pubescens*
- *Cyathophorum bulbosum*  
*Daltonia splachnoides*
- *Dicranum menziesii*  
*Didymodon torquata*
- *Distichophyllum microcarpum*  
*Eriodon cylindritheca*
- *Eurhynchium muriculatum*  
*Fissidens asplenioides*  
*Fissidens blechnoides*  
*Fissidens curvatus* var. *curvatus*
- *Fissidens hylogenes*  
*Fissidens leptocladus*  
*Fissidens linearis* var. *linearis*  
*Fissidens rigidulus*
- *Glyphothecium sciuroides*  
*Henediella serrulata*
- *Homalia falcifolia*  
*Hymenodon pilifer*  
*Hypnodendron arcuatum*  
*Hypnodendron kerrii*
- \* *Hypnum cupressiforme* var. *cupressiforme*  
*Hypopterygium commutatum*
- *Hypopterygium rotulatum*
- *Lembophyllum divulgum*
- *Leptostomum inclinans*
- *Leptostomum macrocarpon*  
*Lepyrodon australis*  
*Lopidium concinnum*  
*Macrocoma tenue*  
*Macromitrium ligulare*  
*Macromitrium retusum*  
*Neckera laevigata*  
*Neckera pennata*  
*Papillaria crocea*

- Papillaria flexicaulis*  
*Pendulothecium punctatum*  
*Philonotis tenuis*
- *Plagiomnion novae-zealandiae*  
*Ptychomnion aciculare*
  - *Pyrrhobryum bifarium*  
*Pyrrhobryum mnioides*
  - *Racopilum convolutaceum*
  - *Rhaphidorrhynchium amoenum*  
*Rhizogonium distichum*
  - *Rhizogonium novae-hollandiae*  
*Rhynchostegium laxatum*  
*Rhynchostegium tenuifolium*
  - *Syntrichia papillosa*  
*Tetraphidopsis pusilla*  
*Thamnobryum pandum*
  - *Thuidium laeviusculum*  
*Tortella knightii*  
*Tridontium tasmanicum*  
*Ulota lutea*
  - *Weymouthia cochlearifolia*  
*Weymouthia mollis*
  - *Zygodon intermedius*
  - *Zygodon refescens*

(B) Lichens of Paengaroa

- Found on *Cordyline australis*
  - Arthonia cinnabarina*
- *Bacidia buchananii*
  - Bacidia glomerulosa*
  - Bacidia laurocerasi*
  - Badimiella serusiauxii*
  - Brigantiaea chrysosticta*
  - Brigantiaea lobulata*
- *Bunodophoron ramuliferum*
  - Byssoloma subundulatum*
  - Calopadia subcoerulescens*
  - Caloplaca homologa*
  - Caloplaca mooreae*
- *Cladonia cervicornis*
  - Cladonia chlorophaea*
  - Coccocarpia erythroxyli*
  - Coenogonium implexum*
  - Collema subconveniens*
  - Collema subflaccidum*
- *Degelia duplomarginata*
  - Dimerella lutea*
  - Enterographa gelantinosa*
  - Fellhanera bouteillei*
  - Graphina monospora*
  - Graphina subvelata*
  - Graphis tenella*
  - Gyalidea lecanorina*
  - Haematomma babingtonii*
- *Heterodermia appendiculata*
  - Hypogymnia subphysodes* var. *austerioides*
  - Lecania cyrtella*
  - Lecanora flavidomarginata*
  - Leioderma pycnophorum*
  - Megalospora gompholonta*
  - Menegazzia nothofagi*
  - Nephroma australe*
  - Normandina pulchella*
  - Ochrolechia pallescens*
  - Parmelinopsis afrorevoluta*
- *Parmotrema grayanum*
- *Peltigera dolichorhiza*
  - Pertusaria flavovelata*
  - Pertusaria novaezelandiae*
  - Phaeographis australiensis*
  - Physcia stellaris*
- *Porina atrocoerulea*
  - Porina tetramera*
- *Pseudocyphellaria dissimilis*
  - Pseudocyphellaria episticta*
  - Pseudocyphellaria homoeophylla*
  - Pseudocyphellaria lindsayi*



- Pseudocyphellaria montagnei*
- *Pseudocyphellaria multifida*
- Pseudocyphellaria pickeringii*
- *Pseudocyphellaria rufovirescens*
- Psoroma asperellum*
- Psoroma athroophyllum*
- *Psoroma caliginosum*
- *Psoroma contextum*
- Punctelia borneri*
- Ramalina celastri* ssp. *celastri*
- Rimelia cetrata*
- Rinodina asperata*
- Sagenidium molle*
- Sarrameana albidoplumbea*
- Sticta caliginosa*
- Sticta filix*
- Sticta latifrons*
- Trichothelium javanicum*
- Usnea rubicunda*
- Usnea xanthopoga*