Kirk to the summit. The Maori were familiar with Meiklejohn, but became very excited on seeing Kirk, as they thought he might be an army man. The two men had to mount a tree stump to escape an attack with tomahawks, and things looked grim until the wife of a local chief intervened and calmed matters.

In his paper "On the botany and conchology of Great Omaha", Kirk (1872) wrote "…..on the summit of Mt Hamilton *Pittosporum kirkii* is epiphytic on the rata and other trees". This record excited my curiosity, as I had been searching for this plant in Lower Northland for many years, and had presumed that either there was no territory of sufficient altitude, or that pests had eliminated it. In June 2010, on being invited to accompany a small party who were visiting Tamahunga to build a stile and monitor predator traps, I carefully checked each of the large rata trees that we passed as we climbed up one ridge and down another. On the largest of these trees was a thick collar composed of *Collospermum hastatum* and *Astelia solandri*, and growing out of this was a double-trunked shrub of *Pittosporum kirkii.* It grew too high up the tree to get a specimen, but on searching the ground beneath, a small twig with four fresh leaves was found, and also a large, oval capsule. These have been lodged in the herbarium of the Auckland Museum as a voucher of this exciting find, unrecorded in the intervening 140+ years since Kirk's visit.

Fig. 2. *Pittosporum kirkii* growing on the Thumb (Mt Herekohu) Little Barrier Island, Oct. 2009. Photo: Alison Wesley.

References

Allan, H.H. 1961: Flora of New Zealand Volume 1. NZ Government Printer.

Forester, L.; Townsend, A. 2004: Threatened plants of Northland Conservancy. Department of Conservation. p. 50

Kirk, T. 1868: On the botany of Great Barrier Island. *Transactions and proceedings of the Royal Society of New Zealand* 1: 144 – 157.

Kirk, T. 1872: On the botany and conchology of Great Omaha. *Transactions and proceedings of the Royal Society of New Zealand* 5: 363 – 369.

Meiklejohn, Leslie D. 1960: *The last landfall. Early Big Omaha history.* Typescript held in the archives of the Warkworth & Districts Museum.

Moore, Sylvia 1948: *A short history of a pioneer family.* Typescript held in the archives of the Warkworth & Districts Museum.

Stanley, R.; de Lange, P.J.; Cameron, E.K. 2005. Auckland Regional Threatened & Uncommon Vascular Plant List. *Auckland Botanical Society Journal* 60: 152 – 157.

The lichens of Smith's Bush

Dan Blanchon, Carol Elliott and Rick Kooperberg

Smith's Bush is an important bush reserve on Auckland's North Shore. For an urban reserve, the bush has a great deal of value as it is a remnant of kahikatea (*Dacrycarpus dacrydioides*) and matai (*Prumnopitys taxifolia*) forest with large puriri (*Vitex lucens*) and taraire (*Beilschmiedia tarairi*), and regenerating kohekohe (*Dysoxylum spectabile*), mahoe (*Melicytus ramiflorus*) and kowhai (*Sophora* sp.) (Fig. 1).

The Auckland Botanical Society (ABS) has a long and somewhat bittersweet association with the reserve. In 1942/1943, the ABS, the museum council and Lucy Cranwell campaigned and raised money to purchase Smith's Bush as a reserve (Anon. 1952). Unfortunately, despite vigorous protests, the Northern Motorway was subsequently built through the middle of Smith's Bush, reducing the reserve to two blocks of 6 and 1.25 ha in 1959 (Cameron 1988).

ABS has visited and recorded the plants twice, in 1952 (Anon 1952) and 1977 (MacArthur 1977), but it

Fig. 1. Smith's Bush, Northcote. All photos: D. Blanchon, 29 Sep 2010.

wasn't until the 24 hour BioBlitz on 4-5 April 2008 that the lichens of the area were investigated. This article summarises what was found in 2008 with some additions and photographs from a visit by CE and DB in September 2010, and five previous collections by JK Bartlett, probably all collected on 20 June 1981 – the only lichen collections in the Museum herbarium (AK) from Smith's Bush.

Fig. 2. Lichens on kahikatea trunk in full sun at edge of reserve.

The lichens of Smith's Bush are a mix of typically urban lichens on the edge (Fig. 2), which give way to more typical shade-loving native forest lichens in the interior. Perhaps due to the relative dryness of Smith's Bush, the relative lack of understory shrubs (Fig. 3), or the proximity to the Northern Motorway, the forest lichens are not diverse. A total of 44 lichens were recorded at the BioBlitz, and when some unknown collections were identified and 2010 collections are added, the number increases to 49 (see list below).

Fig. 3. Sparse understory shrubs of mahoe and kohekohe under kahikatea canopy.

At the entrance of the bush near the cricket nets, the kahikatea trees are covered in light-loving lichens more commonly found on urban street trees, such as *Parmotrema* and *Usnea* species, *Ramalina celastri*, *Dirinaria applanata* and *Heterodermia speciosa*. As the shade of the kahikatea canopy closes in, more trunks have large patches of the dark-green *Porina exocha* and the green-white *Pertusaria psoromica* (Fig. 4), both commonly seen in northern coastal forests.

Fig. 4. *Pertusaria psoromica* (left) and *Porina exocha* (right) on trunk of kahikatea.

Fallen twigs and branches, covered in *Usnea rubicunda*, *Ramalina celastri* and species of *Parmotrema* are easy to find.

Taraire leaves are common on the forest floor – and if one looks closely it is possible to see two species of the leaf-loving "foliicolous" lichens in the genus *Strigula*, one species preferring the upper surface and the other dominating the lower.

Fig. 5. *Pseudocyphellaria dissimilis* on puriri root.

The large foliose lichens usually seen in kahikatea forests are generally absent. The coastal *Pseudocyphellaria poculifera* was seen once at the BioBlitz, as was *Sticta squamata*. The shade-loving, black *Pseudocyphellaria dissimilis* is occasionally present on puriri roots in the shadiest parts of the reserve (Fig. 5).

The exposed south-eastern edge of the bush has replanted areas of kanuka (*Kunzea ericoides*), which support species of the bright orange *Teloschistes* and *Xanthoria*, along with *Parmotrema* species and *Ramalina celastri*.

The find of the 2010 excursion was a single windfall specimen of *Heterodermia leucomela*, relatively uncommon in Auckland.

Smith's Bush Lichen species list

Compiled from BioBlitz April 2008 and trip in September 2010. Names as in Galloway 2007.
*added in 2010
**Collected in 2008, but misidentified as *H. speciosa*.

Species	Herbarium voucher number
Amandinea punctata	-
*Bacidia laurocerasi**	Unitec 3995
Candelariella vitellina	-
Canoparmelia pustescens	AK 192735
Chrysothrix candelaris	Unitec 4034
*Cladonia pyxidata**	Unitec 4001
Cladonia rigida	Unitec 3986
Coenogonium luteum	AK 203594, Unitec 3970
Collema kauaiense	-
Dirinaria applanata	Unitec 3983
Fissurina isidiosa	Unitec 3982
Flavoparmelia haysomii	Unitec 4036
*Heterodermia leucomela**	Unitec 3988
*Heterodermia obscurata***	Unitec 3984
Heterodermia speciosa	Unitec 3985
Hyperphyscia adglutinata	Unitec 3980
Lecanora dispersa	Unitec 3994
Lepraria lobificans	Unitec 3996
Leptogium cyanescens	Unitec 3979
Leptogium denticulatum	Unitec 3978
Opegrapha intertexta	AK 203595, Unitec 3972
Parmelia erumpens	AK 203593, AK 196052, Unitec 3987
Pannaria immixta	Unitec 3977
Parmelina labrosa	-
Parmotrema perlatum	Unitec 3976
Parmotrema reticulatum	Unitec 3981
Parmotrema tinctorum	Unitec 3975
Pertusaria psoromica	Unitec 3997, 3999
Pertusaria thiospoda	Unitec 3969
Phaeographis mucronata	Unitec 3974
Physcia adscendens	Unitec 3971, 3989
Physcia jackii	Unitec 4033
Physcia poncinsii	-
Porina exocha	Unitec 4031
Pseudocyphellaria poculifera	-
Pseudocyphellaria dissimilis	Unitec 3967
*Punctelia borreri**	Unitec 3992
Pyxine subcinerea	Unitec 3968
Ramalina celastri	Unitec 3990
Ramalina peruviana	Unitec 3993
Sticta squamata	Unitec 4032
Strigula prasina	Unitec 4000
Strigula schizospora	Unitec 3998
Teloschistes chrysophthalmus	Unitec 3991
Teloschistes sieberianus	Unitec 4039
Usnea cornuta	Unitec 3973, 4037

Usnea rubicunda	Unitec 4038
Xanthoria ligulata	-
Xanthoria parietina	Unitec 4040

Acknowledgements
David Galloway, Bruce Hayward & Glenys Hayward, Indra Kularatne for identification of some lichens and assistance on the day.

References
Anon. 1952: Smith's Bush. *Auckland Botanical Society Newsletter 9*: 2-3.
Cameron, E. K. 1988: Conservation in the Auckland Region. *Auckland Botanical Society Journal 43*: 28-33.
Galloway, D. J. 2007: Flora of New Zealand Lichens, revised second edition. Manaaki Whenua Press, Lincoln, New Zealand.
MacArthur, A. D. 1977: Smith's Bush and Kauri Park. *Auckland Botanical Society Newsletter 34*: 8-10.

The Grassland on Mount Eden – Pasture Dynamics

Alan Esler and Wilson Esler

The turf on the volcanic cones has been under our observation for 40 years (Esler 1974, 2004). The object of this Mt Eden study has been to examine the botanical composition and evaluate the roles of the major species (the die-hards) in relation to management.

Out of 100 sample plots on a traverse in August 2009 perennial ryegrass (*Lolium perenne*) and white clover (*Trifolium repens*) were in two-thirds; kikuyu grass (*Pennisetum clandestinum*) and Yorkshire fog (*Holcus lanatus*) in half; cocksfoot (*Dactylis glomerata*) and microlaena (*Microlaena stipoides*) in a quarter. The minor 140 or so other species, by their presence, indicated something of the ecological relations in the turf.

The early vegetation is unrecorded but likely contained woody plants that later succumbed to wild and domestic fires. Bracken fern (*Pteridium esculentum*) followed but some volcanic cones had a manuka (*Leptospermum scoparium*) stage. Microlaena would have been among the few native grasses, and supplemented later by exotic species for grazing.

Lands and Survey Department files reveal gross animal damage on the cones at times indicated by abundance of weed species typical of overgrazed pasture – thistles (*Silybum marianum, Carduus & Cirsium* spp.), hedge mustard (*Sisymbrium officinale*), Cape daisy (*Arctotheca calendula*), and storksbill (*Erodium moschatum*) among them. Grazing yielded returns for the graziers and income for the guardians of this Crown Land (Roads Boards, Domain Boards and local bodies after them). Conservation was not part of the regular vocabulary. The misuse was evident into the 1970s when cattle were really making an impact on steep parts.

Our approach has been to present the growth form and agronomic features that explain the presence and success of the principal species since 1970. At that time microlaena exceeded kikuyu in area forming nearly a pure sward, even on the narrow terraces. Kikuyu was spreading on the upper levels of the cone mainly. Yorkshire fog and cocksfoot were mostly on shady aspects with microlaena. Ryegrass occupied the flat trampled parts (Esler 1974).

Note on grass structure

There is nothing unusual about the body of a grass plant, but the terms culm and tiller may need explaining. The culm is an extension of the main axis to form a flower stalk. A tiller is the grass plant's way of having branches, each a replica of a young plant – and capable of developing its own roots and becoming a separate plantlet. Grasses are adapted to resist grazing damage by the seed head developing within the protection of the enclosing upper leaves, also by the leaf extension from multiplying cells at the base of the blade.

Agronomic Features

Cocksfoot was occasional in the 1970s and has not changed its status. If ungrazed it is not self-eliminating by its own dead leaves as some tufted species are (Esler 1978). It is more shade tolerant than Yorkshire fog but not microlaena. Cattle relish the developing heads but not the foliage once it starts to die back. Sheep tend to eliminate cocksfoot by close grazing.

Yorkshire fog had a role in the development of wetland pasture but is now regarded as a weed grass indicating time to renew the pasture. It is quite tolerant of drier soils as well. On Mt Eden the fluffy seed heads deter grazing cattle from seeking the low-rated palatable foliage beneath. With age it tends to form pads which interfere with other plants around it.

Kikuyu grass seemingly knows no barriers as it overrides low vegetation around it and its own older runners accumulating to a depth of about a metre. Thus it is not self-eliminating. It has some susceptibility to damage by trampling. Within the