

New records for St John's College bush, Meadowbank, Auckland

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St John's College bush (Fig. 1) is a 3.0 ha forest remnant in Meadowbank comprised of two intersecting gullies, where two streams meet, one from each gully, before flowing into the stormwater drain on Gowing Drive (Cameron 2000). Auckland Council reserves are split into five clusters: Tahiri, Rua, Toru, Wha and Rima. St John's Bush is part of the Wha cluster, managed by Wildlands since June 2017, who undertake weed and pest control. Banded kokopu (*Galaxias fasciatus*) reported by Cameron (2000) are still seen in the shaded stream. Adding to the list made by Cameron in 2000, another 50 vascular plants have been recorded over many site visits from 17 April 2018 to 31 March 2020, (see Appendix 1). Lichens, not recorded by Cameron (2000), were also noted during these site visits; a list of 36 lichens is included in Appendix 2.

Observations

Cameron (2000) recorded 164 vascular plant species at St John's College bush in 2000. An additional 50 species are here added to St John's vascular flora. Of these, 20 were native and 30 introduced (Table 1).

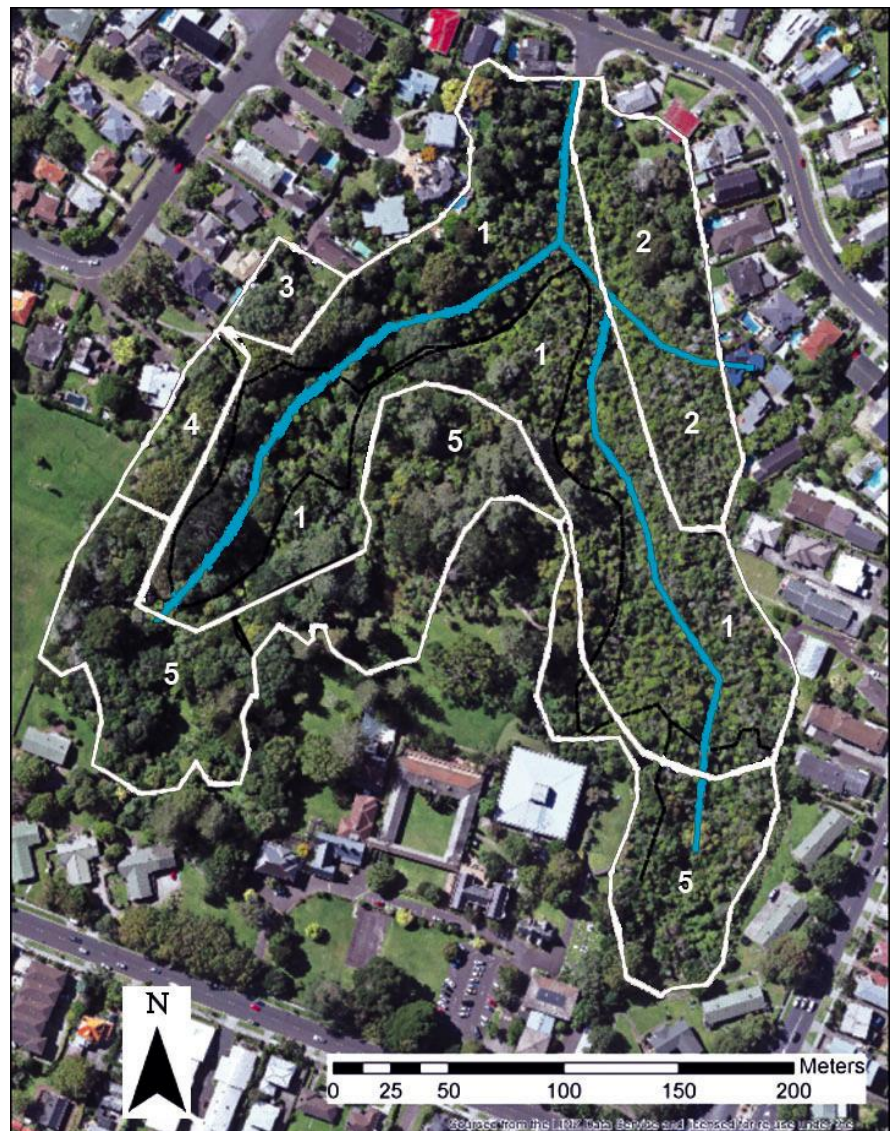


Fig. 1. Map of St John's College Bush, with vegetation boundaries from figure 1 of Cameron 2000 laid over current vegetation cover. Map created by T. Hooker, Apr 2020.

Table 1. Statistics of vascular plant groups at St John's Bush.

Numbers in square brackets are from Cameron's (2000) species list, plus additional species observed between April 2018 and March 2020.

Plant group	Native	Exotic	Totals
Ferns and fern allies	[30] + 5 = 35	[4] + 1 = 5	[34] + 6 = 40
Conifers	[4]	[6]	[10]
Dicots	[37] + 10 = 47	[46] + 23 = 69	[83] + 33 = 116
Monocots	[17] + 5 = 22	[20] + 6 = 26	[37] + 11 = 48
Subtotals	[88] + 20 = 108	[76] + 30 = 106	[164] + 50 = 214



Fig. 2. Two plants of *Drymoanthus adversus*. Photo: M. Ford, Sep 2019.



Fig. 2. *Asplenium hookerianum* var. *hookerianum* growing with liverworts on the trunk of a trackside silver fern (*Cyathea dealbata*). Photo: M. Ford, Sep 2019.



Fig. 4. A common foliose macro-lichen in the forest, *Pseudocyphellaria chloroleuca*. Photo: M. Ford, Sep 2019.

It is suggested that three species recorded by Cameron (2000) have been misidentified or known at that time under different names: 1. The native *Cardamine debilis*, now *Cardamine forsteri* (Heenan 2017), was recorded by Cameron (2000; unvouchered) as local at the confluence of the two streams. In recent visits, the only *Cardamine* seen was *C. flexuosa* which is common throughout the reserve. Possibly the introduced species was mistaken for the native in the past species list. 2. *Parablechnum minus* (formerly *Blechnum minus*) was locally common in the wetland amongst *Carex* species. E.K.Cameron (pers. comm., 21 Oct 2019) said that *Parablechnum minus* was not widely recognised as separate from *P. novae-zealandiae* at the time of the previous survey. 3. *Verbena bonariensis* (AK 246041) was previously recorded by Cameron (2000), but it is now known that there has long been confusion over which *Verbena* species is present in New Zealand. It is suggested that the species identified as *V. bonariensis* by Cameron is instead *Verbena incompta*. The paper '*Verbena incompta* (Verbenaceae), an overlooked xenophyte in Europe' by Verloove (2011) alludes to how this species was overlooked in Europe. Both are present in New Zealand but *V. incompta* seems to be the more widespread species (at least in the North Island), while *V. bonariensis* seems to be a garden escape. *Verbena incompta* lacks the 'showy' corollas, well exerted from the calyx tube, that are characteristic of *V. bonariensis* (Verloove 2011). The latter has inflorescence spikes that are short and thick, rarely more than 1.5 cm long; while inflorescence spikes of *V. incompta* are slender and subcylindrical, usually up to 5(–7) cm long (Verloove, 2011). The few plants seen from recent visits to St John's Bush fit the concept of *V. incompta*.

The endemic orchid *Drymoanthus adversus* (Fig. 2) was seen on mapou (*Myrsine australis*). A small population of *Asplenium hookerianum* var. *hookerianum* was seen as an epiphyte on the tree fern *Cyathea dealbata* (Fig. 3). This fern has been recorded as sparse in the Auckland region (Stanley et al. 2005). The native *Juncus usitatus* has been re-found. There are herbarium records from St Johns (TF Cheeseman, AK 2935 undated, 19th century) but this plant was not seen in the last vegetation assessment (Cameron 2000).

Tree privet (*Ligustrum lucidum*) is seen throughout the reserve as seedlings. Large privet trees have recently been felled throughout the reserve, but the neighbouring properties do still house large canopy trees so potential for reinvasion remains high. Bangalow palms (*Archontophoenix cunninghamiana*) have been reported as naturalising widely in the upper western gully (Cameron,

2000). However, control by Te Ngahere was undertaken not long after the previous article was published (E.K.Cameron, pers. comm., 21 Oct 2019), and only a few plants were seen in the reserve in recent visits.

There seems to be a large invasion of weedy herbs since Cameron's survey (2000). A large percentage (60%) of the additional vascular flora recorded for St John's Bush was exotic, most of these being small herbs found along the path. Potential explanations include people walking the track bringing in seeds or from path maintenance. Since 2000 there has been little change in the vegetation boundaries illustrated by the outline of Cameron's map laid over current google maps imagery, as illustrated in Fig. 1.

St Johns Bush remains a significant forested area within the Auckland isthmus, and ongoing weed control of invading species will help maintain the biodiversity of this remnant for the foreseeable future.

Lichens

In addition to the 214 vascular plant records, a species list of 36 lichens has been made. St John's College bush has a mix of urban and forest lichens. Macro-lichen species such as: *Leptogium cyanescens*, *Parmotrema perlatum*, *Sticta fuliginosa*, *Pseudocyphellaria chloroleuca* (Fig. 4) and *Leioderma sorediatum* (Fig. 5) are commonly seen growing as corticolous (on tree bark) lichens in the forest. The forest lichens grow with the abundant corticolous moss *Trachyloma diversinerve* (<https://inaturalist.nz/observations/35077447>) and other moss and liverwort species. On the forest margins and in the canopy, common species communities include: *Flavoparmelia soredians*, *Parmotrema reticulatum*, *Physcia poncinsii* and *Usnea cornuta* (Fig. 6). No large effort was made to identify crustose lichens during site visits, so the species list has a bias towards foliose lichens. One specimen of the 'Naturally Uncommon' species *Leptogium coralloideum* was seen corticolous with mosses at St Johns Bush (de Lange et al. 2018).



Fig. 5. An occasional corticolous lichen, *Leioderma sorediatum*. Photo: M. Ford, Sep 2019.



Fig. 6. Common species associations of lichen on forest margins. Species shown include: *Flavoparmelia soredianum*, *Parmotrema reticulatum*, *Physcia poncinsii* and *Usnea cornuta*. Photo: M. Ford, Sep 2019.

Acknowledgements

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References

- Cameron, E. K. 2000: St John's College bush, Meadowbank, Auckland. *Auckland Botanical Society Journal* 55: 29–34.
- Heenan, P. B. 2017: A taxonomic revision of *Cardamine* L. (Brassicaceae) in New Zealand. *Phytotaxa* 330(1): 1–154.
- de Lange, P.; Blanchon, D.; Knight, A.; Elix, J.; Lucking, R.; Frogley, K.; Harris, A.; Cooper, J.; Rolfe, J. 2018: Conservation status of New Zealand indigenous lichens and lichenicolous fungi. *New Zealand Threat Classification Series* 27. Department of Conservation, Wellington.
- Stanley, R., de Lange P., Cameron, E. K. 2005: Auckland Regional threatened & uncommon vascular plants list. *Auckland Botanical Society* 60: 152 – 157.
- Verloove, F. 2011: *Verbena incompta* (Verbenaceae), an overlooked xenophyte in Europe. *Willdenowia* 41(1): 43–49.

Appendix 1. Vascular plant species for St John's Bush, additional to the earlier list by Cameron (2000), recorded between April 2018 and March 2020

*=introduced species

Ferns 6 (5 + 1) (native + exotic)

<i>Adiantum cunninghamii</i>	Locally common on dry ridges under mapou and mahoe scrub.
<i>Asplenium hookerianum</i> var. <i>hookerianum</i>	Approx. 10 plants seen as epiphytes on tree ferns showing considerable variation between plants. https://inaturalist.nz/observations/29097609
<i>Asplenium × lucrosum</i> *	One plant was seen under exotic canopy - most likely planted.
<i>Hymenophyllum nephrophyllum</i>	One plant seen on a cabbage tree streamside. https://inaturalist.nz/observations/41088468
<i>Hymenophyllum revolutum</i>	Uncommon epiphyte on tree ferns.
<i>Hymenophyllum sanguinolentum</i>	One plant growing on tree trunk.

Dicots 33 (10 + 23)

<i>Alternanthera nahui</i>	Amongst <i>Carex</i> sp. in swamp. https://inaturalist.nz/observations/34620469
<i>Centaurea erythraea</i> *	Pathside weed.
<i>Cerastium glomeratum</i> *	Pathside weed.
<i>Cirsium vulgare</i> *	Pathside weed.
<i>Clematis paniculata</i>	Large vine seen on swamp margin; occasional seedlings were also seen in scrub understorey
<i>Cymbalaria muralis</i> *	Pathside weed.
<i>Epilobium ciliatum</i> *	Common pathside weed.
<i>Epilobium cinereum</i>	Pathside weed.
<i>Ficus pumila</i> *	On reserve margin spreading into scrub. Planted.
<i>Gamochaeta simplicicaulis</i> *	Pathside weed.
<i>Galium aparine</i> *	Pathside weed.
<i>Geranium homeanum</i>	Pathside weed.
<i>Geranium yeoi</i> *	Pathside weed.
<i>Hydrocotyle moschata</i> var. <i>parvifolia</i>	Pathside weed.
<i>Lamium purpureum</i> *	Pathside weed.
<i>Lapsana communis</i> *	Pathside weed.
<i>Litsea calicaris</i>	Small seedlings.
<i>Leucopogon fasciculatus</i>	Tree fern epiphyte and in light wells.
<i>Lobelia anceps</i>	Wet seepages pathside.
<i>Ludwigia palustris</i> *	Common in swamp under <i>Carex</i> sp. in the wetland.
<i>Berberis oiwakensis</i> *	Small seedling naturalised. https://inaturalist.nz/observations/34620468
<i>Oenanthe pimpinelloides</i> *	Pathside weed.
<i>Oxalis incarnata</i> *	Pathside weed.
<i>Persicaria decipiens</i>	Common in wetland https://inaturalist.nz/observations/38289699
<i>Pseudognaphalium luteoalbum</i>	Weedy race seen along path.
<i>Psidium cattleianum</i> *	Seedling.
<i>Rhaphiolepis umbellata</i> *	Seedling.
<i>Rumex obtusifolium</i> *	Occasional in wetland
<i>Stachys sylvatica</i> *	One plant seen in wetland.
<i>Symphyotrochum subulatum</i> *	Pathside weed.
<i>Veronica arvensis</i> *	Common pathside weed.
<i>Veronica filiformis</i> *	One patch at Gowing Drive entrance
<i>Vernonia mespilifolia</i> *	One large plant seen by stream, potentially planted (Identified by Rhys Gardner). https://inaturalist.nz/observations/46455125

Monocots 11 (5 + 6)

<i>Agrostis capillaris</i> *	Small plant pathside.
<i>Carex breviculmis</i>	On dry bank pathside.
<i>Carex secta</i>	Common in wetland.
<i>Carex solandri</i>	Locally common streamside.
<i>Cyperus congestus</i> *	Rare in wetland.
<i>Drymoanthus adversus</i>	On <i>Myrsine australis</i> trunk.
<i>Echinochloa crus-galli</i> *	One plant seen pathside.
<i>Ehrharta erecta</i> *	Common weed along path.
<i>Juncus edgariae</i>	Two plants seen in wetland.
<i>Juncus usitatus</i>	Two plants trackside.
<i>Setaria pumila</i> *	A few plants pathside.

Appendix 2. Lichen species observed in St John's Bush between April 2018 and March 2020

Lichens 36

<i>Bacidia</i> sp.	Common corticolous lichen.
<i>Byssoloma subdiscordans</i>	Seen on wooden steps https://inaturalist.nz/observations/41086936
<i>Byssoloma subundulatum</i>	Rare foliicolous (or epiphyllous) on <i>Icarus</i> (formerly <i>Blechnum</i>) <i>filiformis</i> . https://inaturalist.nz/observations/34678513
<i>Chrysothrix xanthina</i>	Common corticolous lichen.
<i>Cladonia chlorophaea</i>	Terricolous on clay bank. https://inaturalist.nz/observations/40039735 https://inaturalist.nz/observations/40039724
<i>Cladonia darwinii</i>	Locally common around tree fern trunks. https://inaturalist.nz/observations/40039733 https://inaturalist.nz/observations/40039725
<i>Cladonia furcata</i>	Terricolous on clay bank. https://inaturalist.nz/observations/40039730
<i>Coenogonium implexum</i>	Occasional corticolous lichen.
<i>Collema laeve</i>	Seen on felled tree privet. https://inaturalist.nz/observations/39831941
<i>Collema subconveniens</i>	Occasional corticolous lichen.
<i>Collema subflaccidum</i> .	Rare corticolous lichen
<i>Dirinaria applanata</i>	Occasional corticolous lichen.
<i>Flavoparmelia soredians</i>	Rare seen on windfall. (Fig. 6)
<i>Heterodermia japonica</i> ?	Occasional corticolous lichen.
<i>Heterodermia speciosa</i>	Occasional corticolous lichen.
<i>Leioderma sorediatum</i>	Occasional. (Fig. 5) https://inaturalist.nz/observations/40039726
<i>Lepraria finkii</i>	Common leprose lichen.
<i>Leptogium coralloideum</i> .	Rare corticolous.
<i>Leptogium cyanescens</i>	Frequent corticolous lichen. https://inaturalist.nz/observations/33738230
<i>Leucodermia leucomelos</i>	Uncommon seen on wind fall. https://inaturalist.nz/observations/29097611
<i>Parmeliella nigrocincta</i>	Seen on felled tree privet. https://inaturalist.nz/observations/39831940
<i>Parmotrema perlatum</i>	Common corticolous lichen.
<i>Parmotrema reticulatum</i>	Common corticolous lichen. (Fig. 6)
<i>Parmotrema tinctorum</i>	Rare, seen on windfall. https://inaturalist.nz/observations/39639480
<i>Physcia jackii</i>	Uncommon seen on wind fall. https://inaturalist.nz/observations/34567051
<i>Physcia poncinsii</i>	Uncommon seen on wind fall. (Fig. 6)
<i>Porina exocha</i>	Locally common corticolous lichen. https://inaturalist.nz/observations/34678516
<i>Pseudocyphellaria chloroleuca</i>	Common corticolous lichen. (Fig. 4)
<i>Punctelia borrieri</i>	Rare corticolous lichen.
<i>Pyrenula dermatodes</i>	Corticolous on fallen tree privet. Identified by Andrew Marshall. https://inaturalist.nz/observations/41086938

<i>Ramalina celastri</i>	Common.
<i>Sticta fuliginosa</i>	Occasional corticolous lichen.
<i>Sticta squamata</i>	Locally common corticolous lichen. https://inaturalist.nz/observations/39639478
<i>Strigula orbicularis</i>	Locally common foliicolous (or epiphyllous) lichen.
<i>Usnea cornuta</i>	Common. (Fig. 6)
<i>Usnea rubicunda</i>	Common corticolous lichen.

The uncommon grasses of northern New Zealand

Rhys Gardner

Introduction

Most of the following species are listed because of their relatively low representation in AK (herbarium, Auckland War Memorial Museum), but northern endemics, some of them not particularly rare, have been included too. The specimens and locations that are cited derive mostly from AK but checking of the Te Papa (WELT) and Landcare (CHR) online databases has also been done.

The focus is on updating the records of Edgar & Connor's *Flora of New Zealand*, vol. 5 Gramineae. There are two editions of this work. Mostly I refer to the initial publication (hereafter "FNZ 5"), which appeared in the year 2000. A second edition, containing a small number of additions and corrections, appeared ten years later ("FNZ 5, 2010").

If the accepted name of a grass has changed since 2000 the FNZ 5 synonym is noted. A fair number of illustrations ("Illn") are mentioned and notes and descriptive details additional to those of FNZ 5 are given where needed. Hints towards identification, though, have generally been omitted. I have already (Gardner 2018) discussed the earliest New Zealand records for some of these species.

The study area ("the north", "Northland", "northern New Zealand") covers the mainland south to the Manukau and Waitemata Harbours at c. lat. 37° S. The Three Kings Is. and the offshore islands are included too, but not the Kermadec Is. or the Coromandel Peninsula.

Statements about rarity and abundance just apply to the species as they are seen, or have been seen, in the study area. Native species are noted as such, sometimes as "endemic", i.e., endemic to New Zealand rather than just to Northland. For adventive and cultivated species the likely region of origin is provided.

With respect to the illustrations cited: "Buchanan" refers to Buchanan (1880) — see Connor & Edgar (2002) for a commentary. The references to illustrations in the Auckland Botanical Society Journal are cited in abbreviated form, as in the first entry below.

The species

1. *Amphibromus fluitans* Kirk

This sub-aquatic grass has always been very rare in northern New Zealand — there are no old specimens in AK. John Bartlett is said to have seen it at Ninety Mile Beach, and it was sighted by Peter de Lange at Lake Waiporohita on the Karikari Peninsula in 1998 (Gardner 2000; P. J. de Lange pers. comm.).

The species also occurs in south-eastern Australia. It was not found in New Zealand until c. 1880 and this seems to have led Jacobs & Lapinuro (1986: 716) to say that it might not be native here. But none of the Australian specimens they cite are very much older, and also, an increasing number of finds are being made from remote unmodified sites in the South Island (P. J. de Lange, pers. comm.). Illn: Kirk, TNZI 16 (1884) t. 28; ABS Jnl 55: 55(2000).

2. *Andropogon virginicus* L. broomsedge
Local, on dry roadsides at Te Paki, Karikari Peninsula, Kaimaumu Road and Taheke; seen recently among old sand dunes at Mangawhai (obs. ROG, August 2019). Adventive (North America). Illn: ABS Jnl 51: 32 (1996).

3. *Anemanthele lessoniana* (Steud.) Veldkamp pheasant's tail
An endemic grass of dry forest inland, e.g., on silty soils of river terraces. Probably found in the north only in restoration- and amenity-plantings. Its distribution is said to include North Auckland (FNZ 5: 68) but I have not seen a supporting specimen. A collection made in 2003 by Peter de Lange (Laingholm, West Auckland, spreading in a garden, AK 281162, 283785,) is the only indication I have that this grass can naturalize in the northern part of