be personally doing research in it.

In the years to come, I was often to remember Laurie: as when I walked in Cambridge Botanic Gardens with a kindred enthusiast, John Corner, or when I found *Ephedra* growing in Florence, or (both in one day) *Gnetum* and *Degeneria* in Fiji.

But the enduring Millener memorial is close to home. We need only to go out into the Princes Street University Gardens . . . and look around.

St John's College bush, Meadowbank, Auckland

E. K. Cameron

Directly below (north) of the Anglican Theological Training College of St John The Evangelist is a forested area comprising two intersecting gullies and surrounding land, covering c.5 ha (see Fig. 1). These steep-sided gullies drain to the north. The upper slopes (also forested) are more gradual. After intersecting the stream continues for c.25 m before flowing under a low point of Gowing Drive (in a 90 cm diameter pipe) and then down through a bushy area to Purewa Creek. The presence of young native fish, banded kokopu (*Galaxias fasciatus*), in the bigger summer pools in the St John's gullies indicate that this stream connection to the sea, at times, is virtually unbroken. Both streams show signs of recent down-cutting and there is a swampy area (c.40 m long) of recent sediment deposition at the confluence of the two streams.

History of the College area

The Theological Training College was transferred from Waimate North (Bay of Islands) to the present site in 1844. It was planned by Bishop Selwyn and developed by his Domestic Chaplain Rev. William Cotton. The College retains a nationally significant group of buildings that date from the 1840s (Cameron et al. 1997: 215). Elizabeth Jackson (1976: 49) documented the College's early history, including quotes about the grounds: when the new buildings were first occupied in 1846 ".. not a single tree grew in the vicinity and all the surrounding land was covered with fern and bracken". Although a sketch of the College settlement in 1846 (Jackson 1976: 38) shows young bush existing below the cleared building site. Other Jackson (1976) statements include: regular working parties made up from all 130 residents, both Maori and English, "changed the face of the landscape." One ex pupil, William Williams, noted that he and his companions planted hundreds of ngaios to improve the look of the place. These were purchased for 1 penny each from local Maori. Mrs Selwyn commented in 1846 on the innumerable planted trees "chiefly ngaios as nurses for the choiser sorts .. in time to come it will be as beautiful a place as the heart can wish" (Jackson 1976: 49). Today not one ngaio (*Myoporum laetum*) appears to have survived but many of the plantings by the early College residents have matured over the last 150 years and nursed a new cover of mainly native vegetation. Many of the native species would have dispersed naturally into the area from adjacent bush (by wind & birds) and, as mentioned above, it appears from a 1846 sketch that some native cover was always present below the buildings. Indeed, John King-Davis recorded in 1872 (Jackson 1976: 149) that "Under the loving care of the new master [John Kinder], garden and glen became a place of delight; ... the maze of pathways now running round the head of the gully, with pretty glimpses opening out of Rangitoto and the sea, now diving into recesses of the glen and bordered by the native trees and ferns, ... here to follow the banks of a tiny stream, while it penetrated further and further into the small bush, always beautiful, .."

Planted canopy species

Today native species dominate most of the canopy and understorey. But in the upper western gully and some outer margins there are many large exotic and native trees that would have been planted. Some of the larger exotics are spectacular and measure 1.0-1.5 m diameter and 15-25 m tall, they include oak (*Quercus robur*), pines (*Pinus pinaster, P. radiata*), bunya bunya (*Araucaria bidwillii*), macrocarpa (*Cupressus macrocarpa*), Norfolk pine (*Araucaria heterophylla*) and a *Magnolia grandiflora*.

Others exist as specimen trees on the College lawn above the bush. The tallest bangalow palms (*Archontophoenix cunninghamiana*) would have been planted. This species is now naturalising widely in the upper western gully. In the same area are tall pohutukawa (*Metrosideros excelsa*) and puriri (*Vitex lucens*), which also would have been planted. In the western gully there are many deciduous sycamore (*Acer pseudoplantanus*) and in both gullies large tree privet (*Ligustrum lucidum*) is present. The tall canopy specimens of both these species were presumably planted.

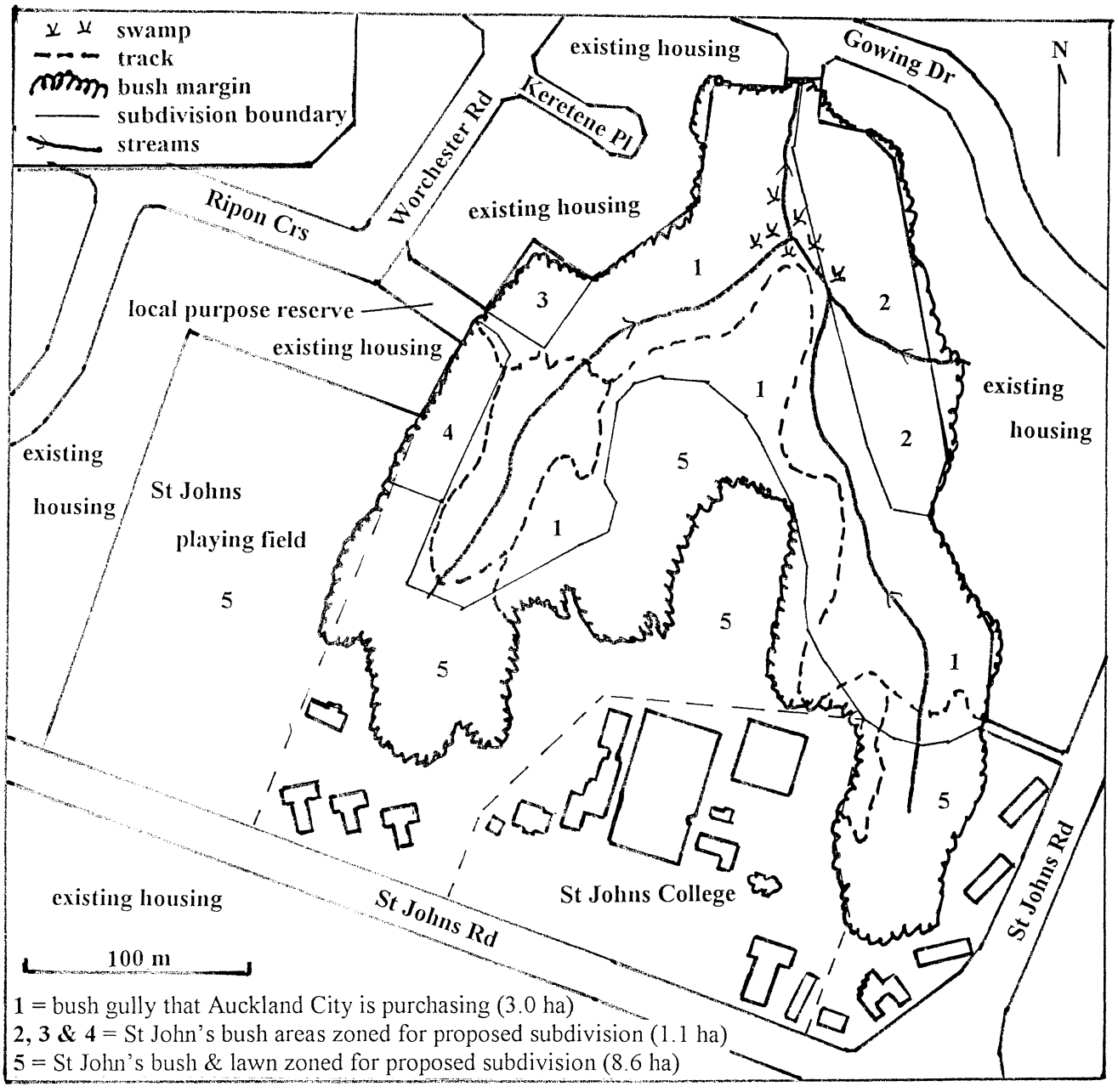

Fig.1. Map of St John's Bush with the four different proposed subdivision areas marked.

Gully forest

Native species dominate the canopy and understorey. The commonest canopy species include mahoe (*Melicytus ramiflorus*), kanuka (*Kunzea ericoides*), karaka (*Corynocarpus laevigatus*), lacebark (*Hoheria populnea*), kohekohe (*Dysoxylum spectabile*), pigeonwood (*Hedycarya arborea*), tree privet and on the margins pohutukawa and puriri. Ponga (*Cyathea dealbata*) is abundant throughout and two other tree fern species (*Cyathea medullaris* & *Dicksonia squarrosa*) are also present. Mapou (*Myrsine australis*) and hangehange (*Geniostoma rupestre*) are common in the understorey. Ferns dominate the ground cover, especially near the streams. Bamboo sedge (*Gahnia lacera*) and a variety of smaller sedge species (*Carex* spp. & *Uncinia uncinata*) are also common. Regeneration of many native species is locally prolific, karaka, kohekohe and pigeonwood seedlings are especially common. To see such abundance of kohekohe regeneration is now unusual on the mainland because this is an "ice-cream" species to the Australian possum. Abundant seedlings and the healthy canopies of kohekohe indicate that possum numbers are low. Two weed species locally form extensive patches: plectranthus (*Plectranthus ciliatus*) and wandering Jew (*Tradescantia fluminensis*).

Vascular flora of the bush

This present survey records a total of 164 vascular plant species (Table 1) for the St John's bush, some of these will have been planted (see Appendix). Fifty-four percent are native species and native ferns are a high component of the total. Native trees and shrubs (32 spp.) are also well represented. There

are two splendid specimens of pukatea (*Laurelia novae-zelandiae*) in the western gully, the largest is 78.2 cm in diameter (the other 61.0 cm) and about 16 m tall. The eastern Australian bangalow palm is well established in the western gully and this naturalised population appears to be one of the largest known in New Zealand (see Cameron 2000). The presence of three clumps of the South African *Elegia capense* (Restionaceae) in August 1999 by the small wetland is puzzling. It must have been planted because there are no *Elegia* plants upstream, it is dioecious and appears to require to be burnt before it will set seed (Terry Hatch pers. comm.). It either died or was removed, because it was absent in March 2000.

Table 1: Numerical breakdown of the extant St John's bush vascular flora

Plant group	Native	exotic	totals
Ferns and fern allies	30	4	34
Conifers	4	6	10
Dicots	37	46	83
Monocots	17	20	37
Totals	**88**	**76**	**164**

Birds

Birds seen during my visits: greywarbler, fantail, tui, silvereye and blackbird are always common; eastern rosella and Australian magpie are occasionally present. The NZ pigeon is an occasional visitor (J. Gardner *pers. comm.*).

Protection for the bush

In 1995 Auckland City initiated a variation to the proposed Isthmus District Plan to rezone a considerable part of St John's land (including the bush area), with the effect of the new zoning increasing the minimum lot density size. At that stage the local branch of Forest and Bird first became involved in trying to protect the native bush (David Relph pers. comm.). Discussions between St John's College Trust Board and Auckland City have continued resulting in a conditional agreement for Auckland City to purchase about 3.0 ha of bush (mainly the gullies). A partial victory! But the forest margins are an integral part of this small stand of suburban bush, and they also act as a good buffer against "edge effects". Evidently St John's College has no immediate plans to subdivide these peripheral areas, they just want to retain the "market value for the land." Hopefully Auckland City, St John's Trust Board and the local community will find a way to also protect the bush margins (see Fig. 1) and not allow them to be subdivided. Any subdivision of these peripheral bush areas will have a negative impact on the rest of the bush.

The future

Peter Madderson has recently surveyed the St John's bush insects and spiders, and John Gardner is keen for other biological groups to be documented. There is large community support, assisted by Forest and Bird, for all of the bush to be protected. The local community, coordinated by John Gardner, has already mounted a successful legal challenge to reduce the housing density allowed in the peripheral bush zones. A "Friends" group is being set up to work with Auckland City to, amongst other things, reduce the weed impact. It is also important for neighbours adjoining the bush to keep potential weeds out of their own gardens, so as to prevent further spread into the bush area. We are fortunate to have a bush area of this size (and virtually, until recently, unknown), left on the Auckland isthmus. However more work is required to save it before we can say the rim of this bush is safe from subdivision. In time the green link down to Purewa Creek (by the railway line) and east to the larger forested Kepa Bush Reserve should be strengthened.

Acknowledgements

To local resident John Gardner for encouraging me to survey the area, for general information and commenting on a draft of this article, John Ogden for his comments during our initial trip to the area, Rhys Gardner for discussions over the identity of some of the exotic species, and to the people who accompanied me during my main visits to the area: John Gardner, John Ogden and David Relph on the 21 Aug 1999, Doug Rogan 24 Mar 2000, and Robert Cameron 1 Apr 2000 & 27 May 2000.

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APPENDIX: Annotated vascular plant list of St John's Bush

a = abundant
c = common
o = occasional
l = local
s = scarce (5 plants seen)
x1 = only one seen

dbh = diameter at breast height for the largest of that species seen
[1] = measured 1 April 2000
[2] = measured 27 May 2000
E = eastern gully
W = western gully
Heights are all estimated.

Native "trees", shrubs & climbers (44)

Tree ferns (3)

Cyathea delabata (ponga) .....a, throughout
Cyathea medullaris (mamaku) ..... o
Dicksonia squarrosa (wheki) ..... o, especially by streams

Conifers (4)

Agathis australis (kauri).....x1, planted, 77.3[1] cm dbh, c.26 m tall, tallest on the Auckland isthmus?
Dacrydium cupressinum (rimu) .....x 2, planted, up to 6 m tall, top of W gully
Phyllocladus trichomanoides (tanekaha) x1, seedling
Podocarpus totara (totara) ..... o, adults (planted?) and seedlings, 119.1[2] cm dbh (branches 3.5 m up), 16 m tall

Dicots (28)

Alectryon excelsus (titoki) .....50.4[2] cm dbh, 16 m tall
Brachyglottis repanda (rangiora).....s
Coprosma grandifolia (kanono) c
Coprosma lucida (shiny karamu).....l
Coprosma aff. *macrocarpa* (karamu) ....o
Coprosma robusta (karamu).....l
Corynocarpus laevigatus (karaka) .....c, 41.6[2] cm dbh, 16 m, seedlings lc
Dysoxylum spectabile (kohekohe) .....o, 80.1[1] cm diam at 50 cm, 12 m, seedlings lc, healthy.
Geniostoma rupestre (hangehange) .....o-lc
Hedycarya arborea (pigeonwood, porokaiwhiri) o-lc, 42.5[1] cm dbh, 8 m tall
Hoheria populnea (lacebark) .....o-lc
Kunzea ericoides (kanuka) .....o, 6-12[1] m, 58.9 cm dbh
Laurelia novae-zelandiae (pukatea) .....l, 78.2[2] cm dbh, 16 m tall
Leptospermum scoparium (manuka) ....s
Macropiper excelsum (kawakawa) c
Melicytus ramiflorus (mahoe) c
Metrosideros excelsa (pohutukawa) .....s, most planted?
Myrsine australis (mapou) .....o-lc
Pisonia brunoniana (parapara) .....x1, 5 m tall, SW corner in forest, planted? AK 247308
Pittosporum crassifolium (karo) .....o
Pittosporum eugenioides (tarata).....o
Pittosporum tenuifolium (kohuhu) .....s
Pseudopanax arboreus (whauwhaupaku) o, many as epiphytes on tree ferns
Pseudopanax crassifolium x *P. lessonii* .s
Pseudopanax lessonii (houpara) .....o
Schefflera digitata (pate) .....o-lc, especially by streams
Sophora microphylla (kowhai) .....s
Vitex lucens (puriri) .....o, some mature trees were probably planted

Monocots (3)

Cordyline australis (ti, cabbage tree).....lc, some large specimens, 46.4[2] cm dbh, 16 m tall)
Cordyline australis x *C. pumilio* .....s
Rhopalostylis sapida (nikau).....lc, adults planted?

Climbers (6)

Calystegia sepium l
Metrosideros perforata x1
Muehlenbeckia australis (pohuehue) c
Parsonsia heterophylla .....o, seedlings c, AK 246038
Ripogonum scandens (supplejack).....l, E gully
Rubus cissoides (bush lawyer).....s

Native herb or fern (44)

Ferns & fern allies (27)

Adiantum hispidulum .....o-lc
Anarthropteris lanceolata l
Asplenium bulbiferum subsp. *gracillimum* .....o, AK 246056
Asplenium flaccidum .....o
Asplenium oblongifolium .....c, mainly as epiphytes
Asplenium polyodon .....o, mainly as epiphytes
Blechnum chambersii .....l, stream banks
Blechnum filiforme .....c, especially the ground form
Blechnum membranaceum .....l, stream banks & damp banks
Blechnum novae-zelandiae (kiokio) .....l, by stream
Doodia australis .....c, upper slopes
Hymenophyllum flabellatum (filmy fern) o-lc, epiphyte on tree fern trunk
Hymenophyllum rarum (filmy fern) .....l, epiphyte on tree fern trunk
Lastreopsis glabella c
Lastreopsis hispida .....s
Lastreopsis mirosora .....la, especially E gully, AK 171946, 233120
Microsorum pustulatum (hounds tongue) o
Microsorum scandens .....o
Pellaea rotundifolia .....s
Pneumatopteris penniger .....o, especially stream banks
Pteridium esculentum (bracken) l
Pteris macilenta .....o
Pteris tremula .....s
Pyrrosia eleagnifolia .....o, epiphyte

Tmesipteris elongata .....o, on tree fern trunks & bases

T. lanceolata .....o-lc, on tree fern bases especially in gully bottoms, AK 246045

Trichomanes venosum (filmy fern) .....lc, on tree fern bases

Dicots (4)

Cardamine debilis .....l, confluence of 2 streams

Dichondra repens .....l, upper boundary with St Johns

Haloragis erecta .....lc, confluence of 2 streams

Solanum americanum .....o

Monocots (13)

Carex dissita .....o

Carex lambertiana .....o-lc

Carex lessoniana .....lc, swamp at confluence of 2 streams

Carex ochrosaccus .....l, AK 246046

Cordyline pumilio (dwarf cabbage tree).s

Earina mucronata (grass orchid) x1

Gahnia lacera (bamboo sedge) .....o-lc

Gahnia setifolia .....l,E gully in open

Isolepis reticularis .....l, swamp at confluence of 2 streams

Juncus prismatocarpus .....l, swamp at confluence of 2 streams

Microlaena stipoides (meadow rice grass) l

Oplismenus hirtellus (panic grass) .....c, locally mat forming

Uncinia uncinata (hook grass) .....o-lc

Exotic "trees", shrubs & climbers (43)

Conifers (6)

Araucaria bidwillii (bunya bunya) .....x2, planted, 130.6[2] & 106.1[2] cm dbh

Araucaria heterophylla (Norfolk pine) ...x1, planted, c.1.1 m dbh; several other lawn specimens

Cupressus macrocarpa (macrocarpa) ....1, c. 1.5m dbh, planted

Pinus pinaster (maritime pine) .....s, 128.0[2] cm dbh, 20 m tall, planted, not regenerating

Pinus radiata (radiata pine) .....s, c. 1.5 m dbh, planted, not regenerating

Sequoia sempervirens (coast redwood).x1 in bush, 128.5[1] cm dbh, 24 m tall; 2 other large lawn specimens

Dicots (24)

Acer pseudoplantanus (sycamore) .....o, (seedlings), lc, adults (planted), AK 246036

Acmena smithii (monkey apple) .....o-lc, few adults (planted?), mainly seedlings,

Cestrum nocturnum (queen of the night) .....o

Cotoneaster ?glaucophyllus .....s

Crataegus monogyna (hawthorn).....x1, planted adult not naturalising upper W margin of W gully

Euomymus japonicus (Japanese spindle tree) ...o

Fatsia japonica (fatsia).....o, AK 240204

Ficus carica (edible fig) .....o, AK 246042

Fuchsia boliviana .....s, swamp by confluence of 2 streams, AK 246043

Hakea salicifolia (willow-leaved hakea).. s

Homalanthus populifolius (Queensland poplar) .o, forest gaps

Laurus nobilis (sweet bay) seedlings l, upper E gully, planted adults .....s, AK 233114

Ligustrum lucidum (tree privet) .....at 40 cm,c, 79.3[1] 15 m tall, major canopy tree (planted?), occasionally naturalising

Ligustrum sinense (privet) .....o

Magnolia grandiflora .....x1, planted old tree, 84.5[2] cm dbh (main trunk only)

Paraserianthus lophantha (brush wattle) l

Populus nigra cv. 'Italica' (lombardy poplar) .....x1, planted upper W margin of W gully

Prunus laurocerasus (cherry laurel) .....s, planted

Prunus serrulata (Japanese hill cherry) o

Quercus robur (common oak)..... c, large, planted, seedlings .....s

Robina pseudoacacia (false acacia) .....lc, several planted adults towards playing field, many seedlings, AK 246033

Salix ? alba (willow).....l, E gully to streams confluence, stream-side; quite large trees

Senna septemtrionalis (buttercup bush) s, also seedlings in College gardens, AK 246040

Solanum mauritianum (woolly nightshade) o

Monocots (5)

Archontophoenix cunninghamiana (bangalow palm) .....lc, 10 adults in bush (tallest planted), seedlings & saplings lc, AK 233108-09; also several lawn specimens

Cordyline rubra (Australian cabbage tree) .....xl clump, suckering, planted?

Phyllostachys aurea (fishpole bamboo) l, originally planted

Pseudosasa japonica (arrow bamboo) ..x1, thicket c.6 m x 14 m by out-flow stream

Trachycarpus fortunei (horse-hair palm) .....x1, planted?

Climbers (8)

Cobaea scandens (cathedral bells).....l, top E gully, AK 233113

Elaeagnus x *reflexa* (elaeagnus) .....o-lc, especially W gully

Hedera helix (ivy) .....x1, by confluence of streams

Jasminum polyanthum (jasmine).....l, E gully, AK 240208

Passiflora ? mollisima (banana passionfruit) .....l, E gully

Senecio mikanioides (German ivy) .....l, swamp by confluence of 2 streams

Tecomaria capensis (tecoma).....l

Vitis vinifera (grape) .....x1, by confluence of streams

Exotic herbs (33)

Exotic ferns & fern allies (4)

Lastreopsis sp. single collection, Jan 1997 unable to relocate wild plant, AK 233644
Nephrolepis cordifolia (tuber ladder fern) l, outer bush margin
Pteris cretica ..... s, W gully
Selaginella kraussiana (selaginella) ..... c, especially gully bottom

Exotic dicot herbs (14)

Ageratum houstonianum (argeratum) ..s, E gully, AK 246039
Araujia sericifera (moth plant) l
Callitriche stagnalis (starwort) l
Conyza albida (fleabane) .....o
Crassula multicava (fairy crassula).....l, established from garden dumping, W gully
Helminthotheca echioides (oxtongue) ...l
Impatiens walleriana (impatiens).....l, spread from garden dumping, W gully, AK 247309
Nasturtium officinale (watercress) .....l, confluence of 2 streams
Physalis peruviana (cape gooseberry) ..o
Plectranthus ciliatus (plectranthus) .....la, forming patches in the bush, AK 246037
Senecio bipinnatisectus (Australian fireweed) ...o
Sonchus oleraceus (sow thistle) .....o
Verbena bonariensis (purple-top) .....l, confluence of 2 streams & outer bush margin, AK 246041
Vinca major (periwinkle) .....l, upper boundary, W gully

Exotic monocot herbs (15)

Agapanthus praecox (agapanthus) .....outer bush margins
Alocasia brisbanensis (elephant ear) ....l, outer bush margin W gully
Asparagus asparagoides (smilax) .....s, outer bush margin W gully
Asparagus scandens (climbing asparagus) .....x1, by confluence of 2 streams
Carex divulsa .....l, AK 246044
Carex longebrachiata .....l, AK 97417-21
Cyperus albostriatus .....la, upper W gully, AK 240205
Cyperus eragrostis .....o
Elegia capense .....x3, clumps, confluence of 2 streams, present 1999, absent 2000, planted? AK 240206-07
Hedychium gardnerianum (Kahali ginger) .....o-la, especially by streams
Iris foetodissima (stinking iris) .....l, outer bush margin
Juncus acuminatus .....l, swamp by confluence of 2 streams, AK 246202
Tradescantia fluminensis (wandering Jew) lc
Zantedeschia aethiopica (arum lily)..... lc, top of W gully
Z. aethiopica cv. 'Green Goddess' (arum lily).....l, by confluence of 2 streams, AK 246203-05

Historical herbarium collections from St John's College by T.F. Cheeseman

These specimens were collected late 19th century and would have been growing in the open (not in the bush).
Monocots (* = exotic species)
Juncus pauciflorus AK 2934 (1873)
*Juncus procerus** AK 2922-24 (1897)
Juncus usitatus AK 2935 (undated)
X *Schedololium holmbergii** (grass hybrid) AK 98934 (undated)
Schoenus apogon AK 2198 (1883)

Field trip to southern Ponui Island, Hauraki Gulf, Auckland

E. K. Cameron

The Auckland Botanical Society visited Ponui Island on 20 November 1999. It was a most memorable trip for several reasons. At 8.30 am we left the wharf at downtown Auckland on the *Reo Moana*, then over to Devonport to collect 10 more Bot Socers, onto Rangi wharf to pick up Sandra Wotherspoon and off to Ponui Island with 51 adults and 5 children on a rather changeable day. The sun then came out and all was going well until in the Tamaki Strait off Maraetai the alarm bell rang and the engine switched off because of over-heating. Thirty minutes later it had cooled enough to fill the radiator (leaking cap was the identified culprit) and we were off again on reduced revs (just to be careful). Forty minutes later we anchored in the middle of Motunau Bay, southern Ponui Island just after midday. The boat's tender was very small and it was a relief when David Chamberlin came out in a sturdy craft and ferried us all ashore in four trips. The falling tide had now left the *Reo Moana* leaning, stuck in the mud. At 1 pm we were all assembled by the woolshed and set off with Pat Chamberlin (David's mother) in the lead.

The rather wet morning had cleared into a fine afternoon. We crossed some paddocks on the river flat (the sheep were being shorn in the adjacent woolshed) with swampy open drains, headed north and then turned west up a forested gully, dominated by tall kanuka (*Kunzea ericoides*). I was torn between trying to record everything and fall behind or to keep up. Mixed with the kanuka in the valley