Rock-forest at the mouth of Oakley Creek, Auckland

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Introduction

It isn't because of any systematic approach that I (ROG) am again writing again about rock-forest (Gardner 2007). The area being described here I found by chance last year while surveying a proposed widening of the North-western Motorway. The second author's contribution is the documenting of a remarkable diversity of bryophytes, hidden away in what appears to be just another piece of lack lustre shining privet (*Ligustrum lucidum*) forest.

Basalt from the Mt Albert (Owairaka) effusion appears on both sides of the motorway where this takes off west from the Pt Chevalier interchange. The rock-forest is on the motorway's southern side, where Oakley Creek crosses under the Great North Road and passes into the intertidal zone. (Figs. 1, 2). The forest described here begins at the new cycleway bridge over Great North Road and tapers out into low scrub c.300 m to the west, where the basalt of the motorway side of the creek is replaced by fill, old shopping carts and tidal deposits.

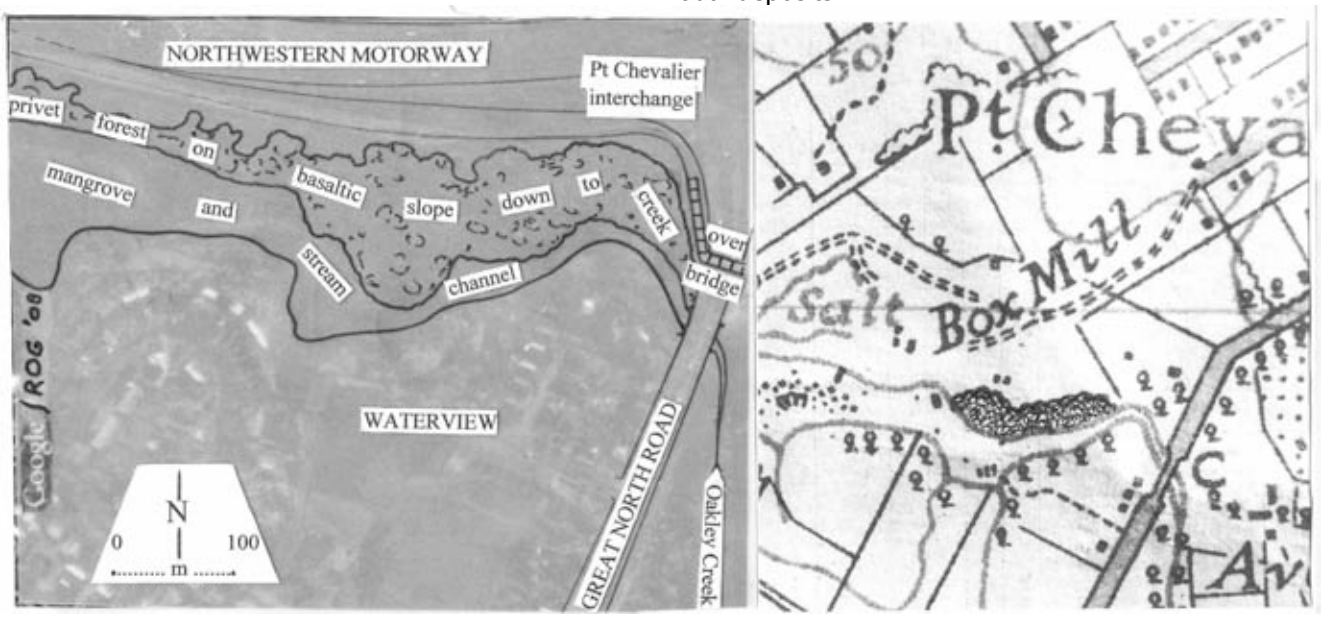

Fig. 1 (left). The study area. Base photo from Google Earth.
Fig. 2 (right). Enlargement of part of map NZMS 2A "Auckland", 1942. The study area has been emphasised by ROG.

Close to the motorway the ground is level and is part mown grass and low scrub come rank grass. But a short way inside this scrubby margin the slope down to the creek begins, and it's the lowermost 5-10 m that are mostly natural basaltic-boulder terrain. There has been some modern tipping of spoil and fill here, but more interesting kinds of disturbances are also apparent. Stone facings to the creek bank and cuts into the bank perhaps have some connection with boat-traffic or the illicit workings of botanists trying to smuggle plants in past MAF border guards. A cliffed depression some 50 m or more across would seem to be a quarry, and scatterings of basalt fragments at one place at the shore might be quarry tailings. We saw nothing in the vegetation though to suggest that any quarrying might be older than the 1950s formation of the motorway, and the 1942 map (Fig. 2) shows only a continuous bush cover here.

Vegetation and Flora

The canopy trees are principally *Ligustrum lucidum*, and reach c.15 m tall and 40 cm dbh. Their trunks are well-clothed with foliose liverworts: rich yellow patches of *Lejeunea flava*, *Archilejeunea olivacea*, *Siphonolejeunea nudipes,* dull green and red patches of *Frullania* spp., and occasional patches of the almost snake-like *Porella elegantula*. The privet canopy is broken near Great North Road by a number of white poplar (*Populus alba*) trees, which are slightly taller than the privets but perhaps not any older than them. There are also a few large old hawthorn (*Crataegus monogyna*), mostly rather shaded-out and decrepit, and some smaller hawthorns, especially close to the shore, where the privet is less dense. One oldish prickly mingimingi (*Leptecophylla juniperina*) protrudes from an undisturbed place on the creek bank. Strangely, mahoe (*Melicytus ramiflorus*) seems to be absent, while hangehange (*Geniostoma ligustrifolium*) is represented only by a few small to medium-sized bushes.

The only native species of any abundance in the canopy and subcanopy are karaka (*Corynocarpus laevigatus*) and lemonwood (*Pittosporum eugenioides*). The biggest karaka trees, on steep banks at the shore, are several-trunked individuals of c.10 m tall and c.40

cm basal diameter. Somewhat higher on the slope at one place there is what must be one of the larger lemonwoods on the Auckland isthmus. It is c.12 m tall and 35 cm dbh – it just might have been planted several decades ago, but certainly potting mix is not obvious around its roots now. Its trunk, to c. 3 m above the ground and on all sides, is covered by liverworts, especially *Siphonolejeunea nudipes*, *Lejeunea flava*, *Metzgeria furcata*, *Frullania pentapleura* and *Archilejeunea olivacea*. A number of lesser-sized canopy lemonwoods are close by, and seedlings and saplings are quite common too. There are a few medium-sized karo (*Pittosporum crassifolium*) and matipo (*Myrsine australis*) near the shore, and at the shore around a boulder-strewn promontory *Plagianthus divaricatus* is locally common. Chinese privet (*Ligustrum sinense*), spindle (*Euonymus japonicus)* and elaeagnus (*Elaeagnus* ×*reflexus*) are common throughout in the understorey and in canopy gaps. Karaka seedlings are generally abundant, but taller individuals are not very well represented.

A fair amount of the ground has been overtaken by weeds like wandering jew (*Tradescantia fluminensis*), periwinkle (*Vinca minor*) and ivy (*Hedera helix*). Other places are quite well covered with ferns, particularly *Doodia australis* and *Adiantum hispidulum* which seem to be a feature of the Mt Albert basalt lava flow indigenous vegetation remnants. *Carex flagellifera* occurs only at the very shore, and *C. lambertiana,* though present upslope, is quite local. The sedge that is relatively common, even under the shining privets, is hook-grass *Uncinia uncinata* -- perhaps it is being spread by rats, an unlooked-for ecological service from them. Infrequent plants of the understorey include *Asplenium oblongifolium*, *Pellaea rotundifolia*, *Pteridium esculentum*, *Pteris tremula*, *Cordyline pumilio*, *Schoenus tendo*, *Gahnia lacera*, *Microlaena stipoides*, and *Poa anceps*.

This northern bank of Oakley Creek contains no trees of historic value, but on the opposite bank there are a number of large old oaks (*Quercus robur*). These perhaps date back to c.1860, when there was a flour-mill here (Truttman 2006).

The forest floor, especially on the basalt boulders and areas of fill and rubble, is carpeted with mosses and liverworts. The most common moss is the introduced *Fissidens taxifolius*, but it shares much of its sites with *F. asplenioides* and *F. leptocladus.* On small sandstone blocks, bricks, and lumps of exposed clay, *F. bryoides* and *F. curvatus* var. *curvatus* are, despite their minute size, quite conspicuous. Aside from *Fissidens taxifolius*, the most common mosses are *Racopilum* ? *convolutaceum*, *Echinodium hispidum*, and *Hypopterygium rotulatum* both especially abundant on basalt blocks and scoria. Near the creek on a few damp clay banks there are sparse growths of *Achrophyllum dentatum* and *Cyathophorum bulbosum* while in one moderately deep defile *Camptochaete arbuscula* and *C. deflexa* are quite plentiful. Less common but still conspicuous locally are *Bryum capillare* on the drier basalt rock walls of the assumed former quarry, while *Syntrichia antarctica* and *Ceratodon purpureus* are common on exposed basalt rubble at one place near the creek. *Bryum laevigatum* was seen in a few muddy places, as was *B. billardierei* on rotting logs at one site above the creek. In addition to these mosses, several liverworts, especially *Archilejeunea olivacea* and *Lepidolaena taylorii* (mostly on basalt blocks) and *Balantiopsis diplophylla* var. *hockenii* (damp clay banks near the creek) are surprisingly common.

We are certainly not experts in bryophytes and doubt that we have recorded the full bryophyte diversity of this forest remnant. Nevertheless it is clear that despite its being a near-monospecific growth of a notorious weed-tree it does host an interesting assemblage of these plants. One can conclude that in inner Auckland, from the bryophyte plant perspective at least, privet is not necessarily such a bad thing. (Voucher specimens for most of the bryophytes noted here have been placed in the Auckland War Memorial Museum Herbarium (AK). We are grateful to Jessica Beever and John Braggins for their identifications of most of this material).

References

Gardner, R. 2007: Two rock-forest remnants at Meola Creek, Auckland City. *Auckland Botanical Society Journal 62*: 75-76.
Truttman, L. J. 2006: [John Thomas and brickmaking]. *Avondale Historical Society Journal 6(31)*: 1-4.