By this stage, with great relief, we had involved Rhys, who, as everyone knows, is personally known to every plant in Auckland. He talks of writing an excursion flora for the region, but could just as easily produce a street directory. Being on speaking terms with, (I should say, related by family to) every possible tree, he was the most witty, entertaining and intelligent botanical guide (I should say anthropologically, informant) we could possibly have had. He soon revealed to us that the tree at the top of the hill at Mt. Roskill, was actually the mystery tree. Really? *Araucaria cunninghamii* was also *A. nemorosa* and *columnaris* besides!

But we were not long to be astonished. We had already established an enviable technique. Every reputable amateur or professional botanist trudges Auckland's streets, with supermarket plastic bags stuffed full of assorted plant bits and pieces, each individually marked on the outside in felt pen, "col-whan" (short for *columnaris*-Whangaparaoa) or "het-dom" (*heterophylla*-Domain). Hence we immediately and eagerly shopped at Cunningham's also, but uncertain now whether this store was really a branch of the established chain, we put in a mail order to head office. *A. cunninghamii* was widely reputed to grow at a site in Tauranga, and Rhys kindly sent some samples by post. This was not the result which by now we were expecting, but the female cone-scale characters from both stores were identical. Whatever the Tauranga tree was, so too was the Mt. Roskill specimen. (One character which Rhys's excellent drawings obviously cannot show, is the beautiful chestnut brown colour, and delicate papery texture of the bract scale wings).

This established the basic framework, and the rest as they say, was detail, or in Rhys's case, an exquisite atavistic botany, as he recovered Latin spells and formulae from the patriarchs, and speculated poetically on the significance of "columbea" (the Latin means dove, as in St Columba); a dove is present, for the section of flat-leaved Araucarias, in the shape of the female cone scale. Rhys's interest was not merely tactile (as with a x20 lens, he rubbed leaf margins), but incisive as well, cutting seeds in half. The latter gave, to my mind, his most charged discovery, because it seemingly relates the thickness of the seed coat (technically, the ovuliferous scale), to the size of the beaks of predating parrots in each location. New Caledonia has small parrots, Australia moderate, but Norfolk Island is famed for its extinct massive-beaked parrot (*Nestor productus*), a close relative of the kaka. Henceforth, we may need to think of the Norfolk Island pine and kaka inseparably, entwined rather as the eagle and prickly pear for Tenochtitlan, now the escutcheon of modern Mexico.

Another much misidentified tree, at Western Park, Ponsonby, now quickly revealed its true identity as *A. cunninghamii.* Even long distance botany profited, as our glance across the same valley pursued, and metamorphosed a supposed *A. columnaris* into an exceedingly ill *A. heterophylla.* Typically, senescent Norfolk Is. Pines, in contrast to Cook's, have a few uppermost branches which significantly overtop the remaining tree underneath.

Thus we return symbolically, to the three tall trees which Justin at the very outset sighted at Port Albert. Like all objects of great age and ancient origin, Araucarias inspire much speculation and phantasy, but despite the many conjectures and rumours, only three "eutactas" it seems, still stand to welcome the clear light of Auckland's day.

Threatened Native Plant Garden opens at the Auckland Regional Botanic Gardens, New Zealand

Steve Benham, Brent Torrens

One of the most significant events in the twenty-five year history of the Auckland Regional Botanic Gardens (ARBG) was the opening of a major new collection – the Threatened Native Plant Garden (TNPG) on 29 September 2001. One hundred and ten invited guests attended on a glorious spring day.

Administered by the Auckland Regional Council / Te Rauhitanga Taiao, ARBG is New Zealand's most northerly botanic garden and located just south of Auckland City. Development of the Gardens began in the mid 1970s and they were officially opened in 1982. The Gardens cover 67 hectares, including 12 hectares of native forest and a diverse range of plant collections. From the beginning there has been a strong focus on native plants of northern New Zealand, with plant conservation taking on a significant role in 1994. This work has steadily increased over the last seven years to include ex-situ collections of threatened plants, education and public awareness of these plants and the provision of plant material for re-introductions, translocations and scientific research.

In 1995 ARBG formed a working partnership with the Department of Conservation (DoC), local nurseries, Technical Institutes, Auckland University and the Auckland War Memorial Museum herbarium. Together these agencies formed the Auckland Plant Conservation Working Group. In 1997 a special Development Plan working group of educators and scientists gave a strong mandate for the Gardens to become a resource centre for regionally threatened

plants, with the establishment of an endangered species collection and seed storage facility.

It is estimated that a significant proportion (20%) of New Zealand's vascular plant flora is under some degree of threat. Approximately 80% of these are endemic. In 2001 the DoC listed more than 119 taxa at risk of extinction in the wild and a further 105 as "in decline". On a more local level the Auckland Threatened Plant Strategy (DoC, 1998) lists 170 regionally/nationally threatened plants as occurring naturally in the Auckland conservancy of DoC. Successive New Zealand Governments have pledged their commitment to conservation of our biodiversity. This is shown firstly by the signing of the 1992 'Convention on Biodiversity', and secondly by the February 2000 publication of

The New Zealand Biodiversity Strategy –
Our Chance to turn the Tide – Whakakohukihukitia Te Tai Roroku Ki Te Tai Oranga.

At a most opportune time the Auckland Mayoral Forum was approached in November 1999 by the new Zealand Government, and was invited to submit a conservation project proposal with the aim of securing a $100,000 donation from the Government. This was in recognition of Auckland hosting the Asian Pacific Economic Co-operation (APEC) conference earlier in the year. The Auckland Regional Council / Te Rauhitanga Taiao which is part of that forum put forward on behalf of ARBG, a proposal for a threatened native plant garden and a seed-based gene-bank for conservation. The bid was successful.

The 4,010 m^2 site for the garden was chosen in December 1999 and a meeting with the Auckland Plant Conservation Working Group was held the same month to share ideas for this new collection. The landscape plan was completed and ratified in April 2000. On-site development commenced in June 2000 and the first plantings made in May 2001. The official opening was planned for September 2001. The overall design is responsive to New Zealand and South Pacific styles, has a sense of enclosure and provides a variety of stimuli to inspire the imagination of both children and adults. Seven thousand school children per annum visit ARBG and a special schools programme for the TNPG is planned.

The TNPG was designed to meet the following objectives:

- create an awareness of Auckland's threatened plants, the reasons they are in decline and what can be done to reverse the decline
- assist in threatened plant identification
- increase and disseminate knowledge of threatened plant propagation and cultivation
- provide a backstop against extinction of threatened plants in the wild
- provide plant material for research, displays and cultivation thereby reducing pressure on wild populations
- provide an aesthetically, well-designed thematic display to entice visitors into the garden and advise them how to take responsibility/action for their environment
- promote the wider use of threatened plants in amenity horticulture where appropriate
- provide plant material for species recovery and translocation programmes
- provide a resource for research of systematics, pathogen control and conservation biology
- increase public awareness of the ARBG role as a scientific and educational resource
- provide voucher specimens to the Auckland War Memorial Museum herbarium

It was decided that this collection would have an emphasis on regionally and nationally threatened plants occurring naturally in the Auckland and Northland regions, and on northern off-shore islands. This reflects the garden's geographic location and ARBG Plant Conservation Policy.

Threatened plants have been arranged ecologically, together with associated non-threatened taxa. The presentation of replicated habitats has considerably more value, meaning and interest and provides further interpretative opportunities as opposed to just a collection of labelled threatened plants. Inland and coastal habitats developed include lava field, gumland, sand dune, salt marsh, freshwater swamp, rocky bluff and off-shore island. Island plants are particularly vulnerable with small populations adapted to specialised ecological conditions e.g. Kermadec Is., outer Hauraki Gulf Is. and Three Kings group. An area for 'weedy' looking threatened plants was also set aside as these being similar in appearance to exotic weeds tend to be overlooked.

It is envisaged breeding populations be established wherever possible, but this will be limited by the close proximity of taxonomically related plants.

A list of threatened and non-threatened taxa arranged into ecological habitats was prepared and each one assessed as to its suitability for cultivation. Plant material was collected from cultivated sources where the purity of such germplasm could be assured, so as not to further deplete wild populations. Accessions of known wild origin accompanied by ecological information are of the most value. If plant material could not be sourced in cultivation then collecting from the wild in consultation with DoC and other landowners was the second option. ARBG staff recorded habitat

kowhai ngutu-kaka

kakabeak

Clianthus puniceus

Double tragedy

The beak of the kaka – our mischievous parrot – looks remarkably like this plant's flower. Both bird and plant are threatened.

The ultimate adornment

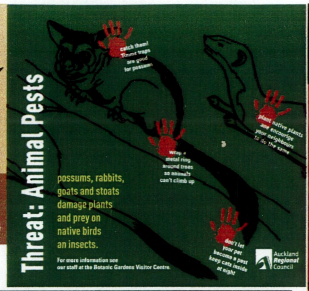
The kowhai ngutu-kaka were cultivated and treasured by Maori. The flowers were worn in the hair of prestigious Maori, and being symbolic of chiefly status.

Do it yourself

Kakabeak grow to 1.5m x 2m spread. Buy them from your local native plant nursery and grow them in your garden. Watch out for snails and bellbirds!

Auckland Regional Council

Threat: Animal Pests



matua kumara

native geranium

Geranium solanderi large petals

Living on lava

isn't easy – it's dry, barren with little soil.

Resembling kumara, the swollen roots of this geranium store water and the plant dies down in the heat of summer.

... and in Penrose

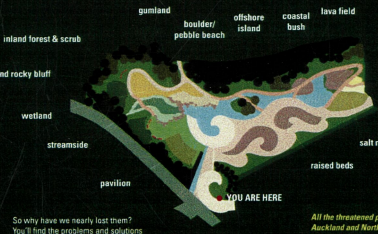
Native geranium still survives in industrial Penrose – its original home.

Auckland Regional Council

Threatened = nearly gone forever

Up to 25% of the Earth's species may be lost within 25 years. That's in our lifetime.
81% of our native plants exist nowhere else in the world
Almost 25% of our native plants are considered threatened or uncommon

Look out for this label - all threatened plants in this garden have one.



So why have we nearly lost them? You'll find the problems and solutions in this garden.
With your help we may still save them.

For more information talk to our staff in the Auckland Regional Botanic Gardens Visitor Centre

All the threatened plants in this garden are from the Auckland and Northland regions. We have reproduced in miniature their habitats.

Discover wetlands, off shore islands, lowland forests and lava fields when you explore this garden.

Auckland Regional Council

waiuatua

shore spurge

Euphorbia glauca

Presumed extinct

on Auckland region's mainland, the Botanic Gardens staff are growing plants from seeds and cuttings from 3 cuttings taken from the last remaining plant on Motukorea – Browns Island.

Look at the colour of the leaves that reflect the heat – vital for living in hot dry places.

Soothing the skin

The Maori name means *milk of atua* (atua is a supernatural being).
The plant was used to relieve skin diseases.

Auckland Regional Council

Waitakere rock koromiko

Hebe bishopiana

Nowhere else in the world

Out west, high on rocky hillsides overlooking the Manukau Heads is a treasure – the Waitakere rock koromiko.

Watch your step

This small koromiko (less than 1m high) grows on the edges of scrub and forest. Tramper's boots, the smothering growth of introduced mistflower, pampas grass and road side spraying threatens its survival.

For real

To see this koromiko in the wild hike with care to Mount Donald Mclean, near Huia.

Get rid of mist flower and pampas grass from your property, and encourage your neighbours do the same. For more information about what's being done and how to help talk to the Botanic Gardens Visitor Centre staff.

Auckland Regional Council

Three Kings trumpet vine

Tecomanthe speciosa

Last one left !

There is only one plant left in the wild – on one of the Three Kings islands.

Discovered in 1945, it escaped extinction by growing on a cliff so steep that even wild goats couldn't reach it.

Success story

Cuttings were taken and today plants related to this last tenacious vine are easy to buy from native plant nurseries.

Look at the beautiful twining vine and lush shiny leaves. Creamy-lime trumpet shaped flowers bloom in early winter.

Auckland Regional Council

nau

Lepidium oleraceum agg

Cook's scurvy grass

Heading for extinction

This plant has been missing from Auckland's rocky foreshores for many years.

We believe this was partly caused by the loss of

The captain says:

kumarahou

pale-flowered kumarahou

Pomaderris hamiltonii

data for all wild collections made. Numerous threatened taxa were sourced from outside the region as they are recorded as being locally extinct.

Interpretation

A budget of NZ $15,000 to design and construct the TNPG signs was earmarked. The new interpretative signage recently developed at ARBG are of folded steel construction, screen-printed with vinyl text and images. The first collection to display and trial these is the TNPG. Generic themes appeared as we worked through the various collections: biodiversity is vital to people, everything is interconnected, conservation, sustainability, ethno-botany and threats to biodiversity.

Specific threatened taxa, which could provide interesting stories using these themes were identified. *Euphorbia glauca* (waiuatua) is a plant with such a story. Presumed extinct on Auckland region's mainland, the Botanic Gardens staff are growing plants from seeds and cuttings from 3 cuttings taken from the last remaining plant on Motukorea / Browns Island. The glaucous leaf colour reflects the heat, vital for survival in hot dry places. The Maori name means milk of atua (atua is a supernatural being) used for soothing the skin. The milky sap of this plant was used to relieve skin diseases.

For the purposes of interpretation and visitor experience the signs are arranged evenly through the collection. The seven highlighted taxa include *Hebe bishopiana* (Waitakere rock koromiko), *Clianthus puniceus* (kowhai ngutu-kaka), *Lepidium oleraceum* (Cook's scurvy grass), *Tecomanthe speciosa* (Three Kings trumpet vine), *Geranium solanderi* "large petals" (matua kumara), *Pomaderris hamiltonii* (pale –flowered kumarahou), and *Euphorbia glauca* (waiuatua).

An open-sided triangular sign at the main entrance takes the form of a nikau (*Rhopalostylis sapida*) frond – with a sceen-printed pattern, the collection title, a teaser enticing visitors into the next plant collection and orientation map of plant collections. Another sign shows various habitat positions within the garden.

It was decided to focus on how everyone can make a difference to the environment by practising sustainability, while also creating an awareness of the threats to our biodiversity. Three revolving cylinders were designed to illustrate particular threats and solutions, namely animal pests, loss of habitat and exotic weed species. The weed threat cylinder is positioned adjacent to the wetland where visitors learn that there are 650 exotic plants naturalised and pose serious threats to native biodiversity in the Auckland region. Auckland's weed record is second only to Hawai'i. Animal pests include deer, stoat, ferret, possum, rabbit and feral cat.

A brochure was designed to coincide with the official opening. An introduction by the Department of Conservation is followed by the headings: Looking at the big picture – Global Conservation, New Zealand – a very special place, Auckland's Angle, The long journey for the choice of plants, Exploring the habitats together with a layout sketch, Why has this garden been created?

A Botanic Gardens advisory leaflet 'Growing Auckland's Threatened Plants' has been produced by the ARBG Native Plant Evaluation Panel. This provides the home gardener with information on threatened plants and how to grow them.

Curation

Curation of this collection is expected to be challenging as it will require a high level of monitoring and maintenance. With limited resources available, an approach using an enthusiastic volunteer group may be established. Several members of the Auckland Botanical Society have shown an interest in forming such a working relationship with the Curator.

Official opening

Invited guests included central and local government politicians, staff from Auckland Regional Council, Department of Conservation and Auckland War Memorial Museum herbarium, Friends of the Gardens committee, members of the Auckland Plant Conservation Working Group and contractors involved with the project. The Rt. Hon. Helen Clark – Prime Minister of New Zealand/Aotearoa unveiled the plaque and spoke on the importance of biodiversity conservation in New Zealand. The day was a huge success for plant conservation and highlighted botanic gardens role in conservation. The public opening on the following day included guided walks. A fact sheet was prepared for the Garden guides as a reference source and for the commentary on the Wiri Rambler – the Gardens weekend internal transporter.

Future

Several structural components of the TNPG require further funding for completion. These are:

1. The main entrance Archway will be inspirational and symbolic of New Zealand / Aotearoa's natural heritage.

2. A small pavilion roofed in sailcloth will be a place for gathering, sheltering, presentations and cultural activities.

3. Two large raised garden beds will showcase threatened plants and inspire our visitors to use these in the home garden.

The Friends of the Gardens have undertaken to sponsor the Archway entrance and will work towards raising funds for the other components.

The collection will be used to facilitate the identification of threatened plants, provide plant material for conservation education and display, conservation biology research, to grow those species with

recalcitrant seeds that cannot be maintained in a seed store and to produce material for re-introduction, reinforcement, habitat restoration and management.
A conservation-specific seed storage facility will be a separate and probably shared facility. We are looking to create partnerships with Department of Conservation and Territorial Local Authorities for this project. This will be our 'back room store' for plant conservation whilst the TNPG is the 'shop window'.

This collection is proving to be a popular destination with our visitors and is creating a greater awareness that our native plants are at risk whilst helping visitors understand one of our fundamental roles, namely biodiversity conservation.

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Field Trip Report: Uhuru Farm, Pukapuka Peninsula, Mahurangi
20 April 2002

Maureen Young

The meeting point for this field trip was a pull-off area on SH 1 opposite the turn off to the Mahurangi West Road. While waiting, we were able to check on the mistletoe plants (*Ileostylus micranthus*) which grow there, and which, sadly, are in the path of a planned new road deviation. A few yellow fruits still remained on some plants.

From this point we drove in convoy to the end of the Pukapuka Road, to Uhuru Farm, owned by Bob and Sue Stevenson. In less than four years of ownership the Stevensons have fenced the entire coastline of the property, and all the areas of bush and wetlands. Many scattered pines and macrocarpa trees have been felled or ring barked, and all animal pests are being targeted. It is pleasing to see that enclosed grassy areas are being left to regenerate naturally rather than being planted. Kanuka, *Coprosma macrocarpa* and taraire are the pioneer species.

First our party explored one of the coastal strips, by climbing one of the stiles which are placed at regular intervals along the fence line. Several plants of the velvet fern *Lastreopsis velutina*, were admired, and then a slender tree of the hybrid *Pseudopanax crassifolius* x *P. lessonii*, which had fallen and had vertical shoots all along the stem. The shoots ranged from the juvenile form near the base through to fruiting adult ones near the apex. Pohutukawa and puriri trees leaned out over the rocks, bearing the most luscious (we tasted them) red fruit on the perching *collospermum* that any of us had seen – a testament to the efficacy of the possum kill. *Drymoanthus adversus*, with fruit, was also growing on one of these trees. Anne Grace searched the sandstone rocks and found trace fossils, left there millions of years ago by some small creature.

A short drive on a farm road led us to the area that was to be our main focus for the day. Some explored the swamp, making a surprise discovery of the fern *Hypolepis distans*, while others preferred to explore their lunch boxes. After lunch we back-tracked a few metres to inspect the one tree of hard beech which has been seen on the property, then advanced along the track. Sandra became so immersed in the botany, that it was a couple of hours later when she discovered that she had forgotten to pick up her pack in passing.

As the bush is in the early stages of recovery, the under-storey consists mainly of species that are unpalatable to animals. Among them were prickly mingimingi (*Leptecophylla juniperina*) which was fruiting heavily, with a couple of pink fruited bushes among the white, *Coprosma spathulata*, and *C. rhamnoides*. *Mida salicifolia* was common. Near the kauri trees the dainty orchid *Pterostylis brumalis* was in early flower, and the comb fern *Schizaea fistulosa* was quite plentiful. A slender tree growing on the edge of a wet area had opinion divided between swamp maire or mida. Neither the tell-tale pneumatophores nor other trees of swamp maire could be found, but in the end that is what we decided it must be.

At a river flat there were many seedlings of kowhai getting away to a good start, and now we are starting to recognise that *Sophora chathamica* is the coastal species in this locality. Near here was a large matai, and also a couple of small saplings in the "tangled wire" stage. On coming to the end of the track a rest and a quick snack was the order of the day, and then we set off again to walk through another small patch of riverside bush. The leader had been lax with her counting of participants, and it wasn't until we were returning to the cars that Bob drove past and sang out that he had seen half a dozen people wandering aimlessly, and had directed them to where he thought we had gone. A small group went with Bob to where Mike Wilcox had previously found *Baumea arthrophylla* growing. This is an unusual plant in the Auckland region, though it was hard for Bob to see what the fuss was about. He joked that he had nearly mown it. Eventually the stragglers were all mustered and returned to the cars in which they had arrived.