



The NEW ZEALAND
Rhododendron

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 New Zealand Rhododendron Association



Rhododendron 'Humbolt Sunrise'
Pukeiti, Taranaki

FOREWORDS

Working together

This is the fifth joint Journal published by the New Zealand Rhododendron Association (NZRA), and The Pukeiti Rhododendron Trust. Each year members have commented on what a great publication it is and how much they look forward to receiving it. We owe our thanks to our Editor Lynn Bublitz, Robin Bublitz his proof reader and those who contribute articles.

‘The New Zealand Rhododendron’ is not the only project NZRA and The Pukeiti Rhododendron Trust are working on together. Both organisations, in consultation with one another, are putting considerable time and effort into the conservation of rhododendron species and New Zealand [NZ] hybrids.

For some years now NZRA have evaluated NZ rhododendron hybrids in trial beds situated in different locations around the country. This will be discontinued and replaced with a

more localised system. Propagators in both islands will propagate NZ hybrids they consider worthy of multiplying, as well as rescuing any that could be endangered. They will also propagate any less common species that are available in their area. Cutting material will be exchanged between North Island and South Island propagators. It is envisaged that the resulting plants will be distributed to public and private gardens and over time this system should ensure the survival of all good quality NZ hybrids and endangered rhododendron species.

Since the Bio-security Amendment Act of 2003 the importing of plants has changed dramatically. Very few new species have been imported since so we need to put emphasis on protecting what plant varieties we already have.

After travelling with the American Rhododendron Society visiting gardens in The Netherlands during May of this year, I was left thinking that our

organisation could gain much from greater communication with more overseas rhododendron groups. Since returning home I have maintained contact with members from the South Australian group and the Dutch group. These folk are keen to learn more about what we in New Zealand can grow and how we run our national and local groups. They also have a lot to offer us. Social media such as Facebook can play a role in the sharing of advice, photos and experiences relating to rhododendrons. Dr Susan Davies manages the NZRA Facebook page and has very positive feedback.

This is my first year as President of NZRA. I would like to think that at the end of my three year tenure, our rhododendron organisations will have greater connectivity with like-minded people/groups around the world.

Joy O’Keefe - President - New Zealand Rhododendron Association Inc.

An Important Year

The important issues I want to highlight concerning this last year at Pukeiti include:

- The adoption of the formal submission on the Taranaki Regional Council (TRC) Long Term Plan supporting the Council’s funding proposal for Pukeiti for the next ten years.
- A submission on the TRC Asset Management Plan 2018 – 2028 supporting the TRC statement that “Any future facility developments in the garden are designed to ensure that the integrity of the garden and rainforest is not compromised and they add value to the visitor experience.”
- Fantastic progress being made by Board members, Dr Marion Mackay and Doug Thomson, with additional assistance from Graham Smith on the *Ex situ* Rhododendron Conservation Strategy. This is now nearly at completion stage for the data gathering phase, and sets us up to start investigating the best way forward to consolidate and expand the New Zealand, but especially the

Pukeiti, rhododendron species collection, focusing on those species that would benefit from *ex situ* conservation.

- Board support for Doug Thomson to attend the International Rhododendron Congress in Bremen, Germany this year, while at the same time Marion being a key member of the Rhododendron Conservation Workshop held in Virginia, where they agreed to develop protocols for *ex situ* conservation of rhododendrons internationally.
- A fantastic plant sale coordinated by our hard-working Members’ Committee. Being able to source plants not regularly in the trade is a real bonus of Pukeiti membership.
- That following on from our submission to the TRC, the Gardens’ Forum group has been re-invigorated utilising the skills and experience of Graham Smith, Alan Jellyman and Lynn Bublitz.

Especially exciting was the recent opening of the Pukeiti Members’ Lodge at Labour Weekend. Members again have their own space, available at any time while visiting the garden.

Overnight accommodation is also available, by booking, in the new accommodation wing.

The fit out and furnishings were funded by the Trust. I do hope members will use the new Lodge as often as possible, and once the landscaping is completed the building will sit even more comfortably within the garden.

The construction of the Lodge is the last of the major infrastructure developments undertaken by the TRC within the garden. However there are still a number of other initiatives planned to increase both the visitor experience and enhance the garden. These will be further detailed over the next few months.

Once again we have a joint bulletin that is a first class read for all those interested in rhododendrons and related garden activities. A huge vote of thanks to our Editor Lynn Bublitz, his willing helpers and of course the article contributors.

Gordon Bailey – Chairman Pukeiti Rhododendron Trust Inc. Board

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INTRODUCTION

THE POPULARITY OF RHODODENDRONS

Lynn Bublitz

Rhododendrons are as subject to fashion trends as other garden plants. The fifties, sixties and seventies was their heyday. While extensive country gardens always featured rhododendrons, most town sections then were the proverbial quarter acre, the flower gardens in the front showing off to the street with the vegetables at the back.

Mixed borders often featured old hybrids such as 'White Pearl' and 'Countess of Haddington'. They were the first planted in our home garden by my mother and initiated my life-long interest. 'White Pearl', especially, which grows into a small tree, still dominates many rhododendron plantings today but a wave of new introductions resulting from improved propagation techniques have replaced many of the old hybrids in many home gardens. Some of these old favorites like 'White Pearl' grew too large, while others succumbed to disease, and then the axe, and over the next decades rhododendrons lost their appeal as garden plants although their bounteous blooms attracted visitors to public gardens displaying them. A recent up-surge in reported sales is heartening.

In this age of increasingly smaller gardens the compact forms [I hesitate to use the word dwarf], are becoming more popular, among them, in the north of the country, the vireyas, and further south *R. yakushimanum* and its hybrids.

Size is not the only factor which is controlling choice. The hot summer last year led to a great bud initiation, and even though some need the colder winter temperatures for their

flowers to open, there was a great flowering this spring. In drier and hotter areas, and often in the dry shade under larger trees, the flowers masked the black patches on the leaf undersides caused by mildew infection in the humid spring, or the completely silvered leaves resulting from thrips infections over the summer and autumn. Even areas of the country where thrips were rare are now beginning to show the tell-tale silver on the rhododendron leaves, the sap sucked out of the cells by the insect. Climate change is beginning to have its effect.

With the growing tendency, particularly in public gardens, not to use sprays (neither fungicides nor insecticides) the death knell of rhododendrons as ornamental plants could be sounded.

This edition of the Journal illustrates part of the great range of species and hybrids available and also how the result of the *ex situ* project will increase the genetic range of species available. Among them all, species and hybrids, will be some which show more resistance than others to both pests and diseases. The resistant varieties through selection and breeding will form the basis of a new wave of popular garden plants in the future. Sadly, some which could have had some resistance have already been lost from cultivation. Conservation is a key role we can all play.

The Xinjiang tour showed a part of the world without rhododendrons. Let us ensure that New Zealand does not lose its rhododendrons and that their beauty and appeal will always have places in our gardens.

Choose your next one carefully.



The lawn garden at the Bublitz Garden



RHODODENDRONS AT LARNACH CASTLE

Margaret Barker

Larnach Castle

In my self-indulgent youth I acquired too many rhododendrons. I thought I had to have all the available species, the old classic hybrids and new hybrids too. They did so well here. Over time their increasingly voluminous shapes grew into each other and all over the garden. There was an excessive explosion of colour in spring followed by a sea of dark green blobs for all the rest of the year. I know that some rhododendrons have interesting foliage, but it is only some of them. These remarks are heresy in this esteemed publication. But there it is. The editor knows my predilections and still asked me to write this article.

My gardening interests expanded in many different botanical, design and ecological directions: still rather a lot for only one garden. As my passion for rhododendrons matured I became less acquisitive but more discerning, as I learnt one of life's great lessons: you can't have it all.

My desire was for a pictorial quality for the Garden at Larnach Castle. Additionally I aimed for a heightened visitor experience on the journey through the plantings. The inner garden incorporates historical features and buildings and is in sympathy with its memorable past. Ecological considerations are addressed in the outer garden as it reaches

into the landscape. All this and more but with an overriding ambience that could only be of this particular place.

I found a solution to the problem of too many rhododendrons, too many gardening interests: biff out three quarters of the rhododendrons. (Other plants were edited out too). Yes, I am still a collector and I have a lot of plants just because I like them. This article is about the rhododendrons that survived the holocaust, and why they were the chosen ones.

I now prefer species to hybrids for their purity of form and, often, distinguished foliage. But there are many wonderful hybrid rhododendrons that have become part of our folklore. I also now find jangles of colour jarring, preferring to keep to a restricted range of colour within each specific area. Rhododendrons are integrated with other plants so that there is an ever changing flow of interest throughout the seasons.

We recently established a new rhododendron garden called The Stumpery. This garden is entered through a grove of five *Cornus contraversa* 'Variegata', the wedding cake tree. The rhododendron collection planted here reflects the restraint acquired in middle age. Blue rhododendrons are a particular star; their colour is clearer and cleaner in the cool, southern climate. We have several forms of *Rhododendron augustinii* including *R. augustinii* var. *chasmanthum*, the locally termed 'Medlicott Form' with a distinctive green

blotch in the flower, and the more compact 'Wisley Seedling'. In mid spring all are smothered in flowers like clouds of blue butterflies. Sparkling magenta flowers of *R. concatenans* add a frisson of colour.

Purple is not to everyone's taste but an especial favourite is *Rhododendron niveum*. 'Niveum' refers to the white undersides of the leaves. The ball-like head of densely packed, purple flowers have a bloom like a grape. Included in this garden are two luminous yellow flowered rhododendrons: *R. wardii* and *R. chrysomanicum*. Numerous whites include the old favourite *R. 'Sir Charles Lemon'*, a clear white with the added attraction of brown, suede like indumentum on the undersides of the leaves. Perfumed whites include the species *R. nuttallii*, *R. formosum* and a number of *R. edgeworthii*. Some of these rhododendrons have been planted on upturned tree trunks where they thrive epiphytically as they do in nature. These elevated plants have flowers that are 'up there', some arching over the path. Hybrids of these species include the perfumed *R. 'Fragrantissimum'* and *R. 'Princess Alice'*, said to be an improvement on the somewhat lax, old fashioned *R. 'Fragrantissimum'*. But to my way of thinking the older plant has a particular grace.

Some decades ago, at the Stribing Aboretum in San Francisco, I saw a planting of tree ferns. There they had to be irrigated. I had been travelling for a month, looking at gardens in France. Having come from Europe I saw tree ferns anew with European eyes. Do we New Zealanders truly appreciate the individuality of these giant forms of primitive ferns? Over 70% of the visitors to Larnach Castle are from overseas and the most photographed plant in the Entrance Garden is the black tree fern, *Cyathea medularis*, despite there being many other plants, including rhododendrons. Let me share these plants and this garden with you.

Rhododendrons are planted well back from the drive so that they can reach their full potential without having to be cut back. This also allows for a foreground planting of seasonal interest.

Snowdrops emerge from midwinter creating drifts of glittering white just

like snow. Undeterred by real snow and the worst of winter weather they teach us to be brave and optimistic. A white form of *Magnolia campbellii* follows, then comes the spring flourish of billowing rhododendrons. Included are the aristocrats: *R. arboreum*. We were fortunate in Dunedin to have had the late Bruce Campbell growing rhododendron species from seed. Forty years ago I purchased from Bruce both a pink and a white *R. arboreum* which now make statements in this entrance garden.

Astilbes flower in mid-summer. This is a layered planting with the astilbes and hostas planted on top of the snowdrops. In autumn there are large drifts of *Anemone x hybrida* in both pink and white. These plantings are surrounded and interspersed by native rimu and numerous tree ferns which flourish in our mountain mists.

In the Rock Garden alpine rhododendrons from the high Himalayas are featured; in the Rain Forest garden are a few large-leafed species. In Dunedin's fortunate climate we can grow the smallest rhododendrons as well as the biggest.

In front of the Larnach Castle ballroom we have a planting of deciduous azaleas. They are rhododendrons too. This splendid collection came from Blue Mountain Nursery. Their colours were chosen to enhance the golden sandstone of the historic ballroom. The azaleas are carefully managed with annual pruning to maintain their height in relation to the buildings and outdoor café. This garden works extra hard with happenings over the season. In September crown imperials, *Fritillaria imperialis* flower among the azaleas' leafless branches. Come late summer, above the azaleas is an explosion of thunderous purple clouds of the flowers of *Thalictrum delaveyi* 'Hewitt's Double'. A bonus is the azaleas' burgundy autumn foliage. After leaf drop the azaleas are but a twiggy tracery, sometimes etched with snow. Their big fat buds are the promise of flamboyant tissue paper flowers in spring.

I will share with you a secret: now and again I am tempted to buy another little rhododendron. Where can I find it a home in the garden?



R. arboreum - pink form



R. niveum



Front Entrance, Larnach Castle



R. 'Sir Charles Lemon'



RHODODENDRONS IN PUKEKURA AND BROOKLANDS PARKS

Ian Hutchinson



The first planting in the Sanders Rhododendron Dell

The 19th century cultivar, *Rhododendron* ‘Sir Robert Peel’ is well represented in both Pukekura Park and Brooklands Park. At its 7 July 1893 meeting, the Recreation Grounds Board resolved ‘to make arrangements with a skilled gardener for the planting out of native shrubs’ (Taranaki Herald 11/7/1893, page 2). They employed Francis Hamer Arden to plan and oversee plantings in the park from mid-July 1893 to mid-July 1895. On 23 April 1895 an advertisement was placed in the Taranaki Herald by Mr F. H. Arden, requesting plants for the park. *Rhododendron* was amongst the plants requested.

Working bees took place on 9 and 16 May 1895 and it is likely that the rhododendrons had been received and planted on one or other of these dates. It is probable that Mitchinson’s Caledonian Nursery was the source of these plants as James Mitchinson, the nursery’s proprietor, had supplied plants to the board for the park on a number of occasions. There are 12 individuals of *R. ‘Sir Robert Peel’* planted around the lakes and dells of Pukekura Park.

The specimens of *Rhododendron* ‘Sir Robert Peel’ at Brooklands also have a tie-up with James Mitchinson. Newton King, the owner of Brooklands, employed Tom Boulton, a former apprentice of Mitchinson, to be his head gardener. When James died, Newton King and Tom were allowed by Mary Mitchinson to come and dig up

large rhododendrons from the nursery for the garden at Brooklands. They were transported back to Brooklands using a horse and cart. The other cultivar that likely came with the plants from Mitchinson’s nursery at the same time is another 19th century cultivar *Rhododendron* ‘Boddaertianum’, of which there is still a good specimen. It has lovely white flowers that are speckled with red spots.

Within the Primula Dell can be found one of the 1895 *Rhododendron* ‘Sir Robert Peel’ specimens plus *Rhododendron* ‘Nobleanum’, *Rhododendron* ‘Elegans’, and *Rhododendron arboreum*, which were probably planted in this location around 1929 – the year after Thomas Horton had been in the UK as part of the New Zealand bowls team in 1928. “A particular piece of good fortune for Mr Horton was that he was in England during the rhododendron flowering season and he was able to select about thirty varieties of new and rare rhododendrons that have never been exported to the southern hemisphere. These he expects to come to hand before Christmas, and they will make a valuable addition to the present collection of rhododendrons in the park. The finest sight he saw in the whole of his travels was a field of rhododendrons of four hundred acres in extent, and over two hundred years old. It was established by the old firm of Waterer & Sons, in Surrey.” (*Horton’s Trees Grow*, Ian J Horton, 2006).

The area of the park that is now the Rhododendron Dell was formerly home to an interesting development, a maze,

during part of the last decade of the 19th century. It was the idea and brainchild of New Plymouth local, Mr Archibald Hood, who approached the Recreation Grounds' Board and put forward his idea. (Taranaki Herald 5/9/1892, page 2): "Mr Hood waited on the Board and submitted a plan for a 'maze', which he and others proposed to set in the Grounds. The Board accepted the suggestion, and decided to offer Mr Hood and those interested every facility to carry the idea to execution."

By the following month, things had moved along and were obviously ready to go. The October 6 1892 Taranaki Herald printed the following: "It will be remembered that some time ago Mr A. Hood interested himself in making 'a maze', an intricate walk formed by planting a hedge in a coil shape, in the Recreation Grounds. Permission was obtained from the Recreation Grounds' Board to carry this out, and Mr Hood soon set to work to accomplish the project. Under Mr Hood's supervision 'a maze' of box thorn (between 3,000 and 4,000 roots being used) has been made towards the head of the gully above the lakelet. In a few years this work should prove an especial attraction to the grounds."

The mind boggles somewhat at the thought of a maze being formed using box thorn, *Lycium ferocissimum*, and in such numbers as 3,000 to 4,000 roots or plants. Just imagine how prickly that would have been and how difficult it would be to deal with. The Taranaki Herald 23 May 1893 suggests that the hedges must have established quickly: "The 'maze' that has been formed at the southern end of the reserve will, in the course of a couple of years, be one of the attractions of the place, as the box thorn hedges are growing vigorously." However in 1895 Mr Hood became unwell and had to step back from his project. Others stepped in to help find and fund labour to maintain the maze, as the Board had no available resources to put into it. It would appear that despite all the efforts to keep the maze going, it all became too difficult to pursue because as the Taranaki Herald 11 August 1900 indicates, the maze was obviously no more: "The custodian reported that a good deal of planting had been carried out during

the month, 200 native trees being put down around the site of the old maze."

When in the Rhododendron Dell you will notice there are two different canopy covers. To the northeast the overhead canopy is of native species – kowhai, rimu and totara – some of it obviously planted in 1900 following the removal of the maze. To the southwest the canopy is largely exotic trees – planes, oaks and an American elm. This difference in planting type is largely due to it having been planted while this part of the dell was in private ownership before becoming part of the park in 1934. The trees came from Thomas Horton's Premier Nurseries in Pahiatua and were planted by Newton King in 1898. It is an interesting coincidence that Thomas Horton became the curator of the park from 1924 to 1949 and ended up looking after these trees. The largest, *Platanus x acerifolia*, in the Rhododendron Dell

when measured in 2002 had a height of 34.4m and a spread of 32.2m.

In 1933 the Borough Council received a bequest of £350 from the estate of Charles Score Sanders, following his death on 1 June that year, for the development of a rhododendron dell in Pukekura Park. The council's Park Committee at the time had a notable member, Victor Davies, who wrote to the UK nursery W. C. Slocock Ltd, Surrey on 30 November 1933 to order plants for this project. Plants were also ordered from New Zealand growers Duncan & Davies, A. H. Goudie and Edgar Stead. In total, 589 plants were obtained for the dell, 216 of which were imported from W. C. Slocock Ltd.

On 8 March 1934, Walter Slocock advised that four cases of plants had been consigned through Messrs Watson and Scull of London. The order included varieties such as 'Armistice Day', 'Loderi Pink Diamond', 'Patience'



and 'White Diamond', 'Countess of Derby', 'Cornubia', 'Louis Pasteur' and 'Betty Wormald'. Among plants received free of charge were 'Beauty of Littleworth', 'Goldsworth Crimson', 'Goldsworth Pink', 'Goldsworth Yellow', 'Mount Everest', 'Vicountess of Elvedon', 'Faggetters Favourite' and 'Alice Martineau'. In addition to the hybrid varieties there was a range of species supplied also. The varieties ordered from local nurseryman A. H. Goudie, included 'Blue Peter', 'Earl of Athlone', 'Mars', 'Pink Delight', 'Unique' and 'Glory of Bagshot'. The plants from Duncan & Davies included 'Ivery's Scarlet', 'Loder's White', 'Mrs Charles Pearson', 'Unknown Warrior', *R. arboreum rubrum* and *R. griffithianum*, and the plants from Edgar Stead included *R. delavayi*, *R. decorum* x *arboreum* hybrids and *R. falconeri*.

To legitimise the expansion of the Rhododendron Dell into what

was formerly Brooklands, using bequest monies from Charles Score Sanders of £350, it was necessary that enabling legislation be passed. In September 1934, legislation was passed (New Plymouth Borough Land Exchange and Empowering Act 1934) to exchange some land with the racecourse to help simplify the boundary between the racecourse and the park in a couple of places, and to amalgamate Brooklands and the Highlands blocks into the overall title of Pukekura Park under the Taranaki Botanic Garden Act 1876 (this being a requirement of the Audit Office).

Of the 1934 plantings the following are still alive in the collection: *Rhododendron arboreum rubrum*, *Rhododendron arboreum* subsp. *cinnamomeum roseum*, *Rhododendron delavayi*, *Rhododendron griffithianum*, *Rhododendron* 'Beauty

of Tremough', *Rhododendron* 'Betty Wormald', *Rhododendron* 'Blue Peter', *Rhododendron* 'Countess of Derby', *Rhododendron* 'Cynthia', *Rhododendron* 'Glory of Leonardlee', *Rhododendron* 'Goldsworth Yellow' and *Rhododendron* 'Vicountess Elvedon'.

In a 1960 report to the Parks Committee by J Goodwin, he recommended: "Rhododendron Dell; as these plants mature it will be necessary to carry out further thinning and improvement of surface levels to be mown as grass walks. Approval has been given for the fence line along the lower portion of Brooklands Park Drive. Deciduous trees may need the removal of some lower limbs in order to furnish the intervening spaces with rhododendrons." This appears to be the first major review of the Rhododendron Dell plantings and landscape.

It took a couple years for Mr Goodwin's recommendations to be implemented, however it appears it was all go once started. One stand-out plant from that time has to be the *Cornus kousa* specimens which are planted on the slope below the fenceline mentioned above. They are spectacular in spring when in flower, with their creamy bracts which age to a pale pink. They also provide a good autumn foliage display as well. Of the rhododendrons planted in the mid-1960s, these are some which are still in the collection: *Rhododendron arboreum* 'Kermisium', *Rhododendron crassum*, *Rhododendron macabeum*, *Rhododendron monstroeanum*, *Rhododendron pulcherrimum*, *Rhododendron sinogrande*, *Rhododendron strigillosum*, *Rhododendron* 'Flamingo', *Rhododendron* 'Grenadine' and *Rhododendron* 'Mrs Henry Shilson'.

The last and most recent development in the Rhododendron Dell occurred in 1998 with extension of the dell onto the bank below the Brooklands traffic island and overlooking the Bowl of Brooklands' Lily Lake. The plantings consisted of both species and hybrids and the majority of the plants for this development came from Taranaki Rhododendrons (formerly Huthnance Nursery).



R. arboreum

Of these plantings, some of the stand-out performers are *Rhododendron arboreum* subsp. *cinnamomeum*, *Rhododendron arboreum* 'Kermisinum', *Rhododendron maddenii*, *Rhododendron* 'Coconut Ice', *Rhododendron* 'Frosted Ice', *Rhododendron* 'Hydon Hunter', *Rhododendron* 'Loderi Pink Diamond' and *Rhododendron* 'Triumph de Grande'.

At the Kaimata Street entrance to Brooklands Park there is a planting which features a number of deciduous rhododendrons. These include *Rhododendron canescens*, *Rhododendron occidentale* 'Delicatissima', *Rhododendron occidentale*, *Rhododendron prunifolium*, *Rhododendron viscosum*, and



R. 'Triumph de Grande'

Rhododendron vaseyi – all natives of the USA – plus *Rhododendron kaempferi*, which is native to Japan and *Rhododendron schlippenbachii*, which is native to Korea and south-eastern Russia. These were planted as part of the landscaping of this area in 1974, designed by Ian McDowell and Alan Jellyman. The design also includes a collection of *Ilex* species and cultivars and *Hibiscus syriacus* varieties.

The Palm Lawn, which is located to the north of the Fountain Lake, is an area where vireya rhododendrons have been integrated into the landscape. The vireya rhododendrons planted include varieties such as 'Golden Charm', 'Pop Corn', 'Tropic Glow', 'Will Silent', with 'Red Mountain', 'Scented Sun' and 'Tickety Boo' being added recently.

Like many other areas of the park, Palm Lawn also has an interesting history, having at one time been the site of a rose garden. In the 17 July 1911 edition of the Taranaki Daily News, page four, it was reported that, "A rose garden is to be made in the Recreation Grounds, Mr C. E. Bellringer having donated a fine collection of trees. The rose garden will be placed near the Gilbert Street entrance." The following year in the Daily News 11 September 1912, page eight, it was reported that the curator, W. W. Smith, had reported to the Pukekura Park Board: "The rose bed is now fully planted and the terrace around it has been sown in lawn grass, which is germinating perfectly." The roses for the garden came from the Morshead Nursery Company and two private donors. The collection of roses was bolstered further in 1915 with a donation from Duncan & Davies, who also donated other trees and shrubs at the same time, probably including the *Cercis siliquastrum* which is a standout feature specimen.

The next development occurred in 1917 and is what resulted in the current naming of this area 'Palm Lawn'. In the Taranaki Daily News 17 September 1917, page six, there is a report of a meeting of the Pukekura Park Board. At that meeting, "The Curator (Mr. W. W. Smith) was instructed by the board to select for purchase a number of palms from a list supplied by Mr. Clement Wragge, of Auckland." The 7 November 1917 issue of the Taranaki Daily News, page four, in a report of the most recent monthly



R. *rubicon* under a Kowhai



R. *macabeanum*

meeting of the Pukekura Park Board, shows that the curator in his Curator's Report stated: "During the month a large packet of seeds was received from an unknown donor. The plants ordered from Mr. Wragge, of Auckland, came to hand on October 27 and were planted out in the beds near the lower lake." The palm plants received included *Howea forsteriana*, *Livistona australis* and *Phoenix rupicola*.

Clement Lindley Wragge was the owner of a property named Waiata Tropical Gardens, and the garden he developed was on land he bought in 1910 on the edge of the harbour at Birkenhead, Auckland. Palms formed an integral part of the garden he created and once they were fully developed, he regularly opened the garden to visitors.

In 2001 the palm collection was expanded with the addition of a number of new genera and species, including *Archontophoenix purpurea*, *Caryota maxima* 'Himalaya', *Caryota ochlandra*, *Ceroxylon ventricosum*, *Parajubaea coccoides* and *Parajubaea torallyi*. One of the *Parajubaea coccoides* was planted by New Plymouth Mayor Claire Stewart to commemorate the 125th anniversary of the park.

Reference: A. D. Jellyman, (*RHS Journal* 'Rhododendrons with Camellias and Magnolias 1992') article for background information related to the plant orders and 1934 rhododendron dell plantings. 'Papers Past', National Library of New Zealand, for information from the Taranaki Herald and Taranaki Daily News. *Horton's Trees Grow*, Ian J Horton, 2006

Ian Hutchinson, Botanical Records Officer, Pukekura Park

A TREASURE TROVE OF SPECIAL PLANTS IN WALES

Joy O'Keefe



Eric and Isabel Butchart

Tucked away in the Vale of Glamorgan, a rural area a few kilometres from Cardiff, is a garden full of special plants, many associated with New Zealand [NZ].

Over a period of several years the owners, Eric and Isabel Butchart have, with full certification, imported plants from NZ, mainly rhododendrons, azaleas and a few native plants which are not available in the UK. The last consignment was dispatched from our nursery, Woodbury Rhododendrons, at Geraldine.

In May of this year Bernie and I had the pleasure of visiting Eric and Isabel's garden, our second visit over the last few years. It is always a real delight to see our rhododendrons and other NZ sourced plants, several from Blue Mountain Nurseries, growing in a private garden on the other side of the world.

On entering the garden we were immediately attracted to the bright yellow *Magnolia* 'Daphne', a lovely upright growing tree in full flower. It was particularly pleasing to see the Jury rhododendron hybrids *R.* 'Felicity Fair', *R.* 'Moon Orchid' and *R.* 'Barbara Jury' looking so healthy, the best specimens of these hybrids I have seen anywhere. Other Jury hybrids growing there include *R.* 'Bernice', 'Katie', 'Floral Sun', 'Floral Gift' and 'Floral Dance'. Azalea 'Cross Hills Frills' (obtained from Cross Hills) was also looking very happy in this extensive woodland garden. Other NZ rhododendrons of interest were *R.* 'Papaya Punch' x 'Blue Hawaii' from Blue Mountain Nurseries, and two of Bernie's hybrids (yet to be registered) *R.* 'Bernie's Joy' and *R.* 'The Beacon', both still young plants. Azalea 'Softlights' was doing well

as was *R.* 'Floral Sun', additional plants of which had been micro-propagated for Eric by Ros Smith at Duchy College in Cornwall.

An extensive collection of NZ natives can be seen growing around the garden including *Sophoras*, some grown from seed, others named varieties from Denis Hughes, and various *Metrosideros*, many also from Denis. There are also tussock grasses, ferns from NZ and *Aciphylla glaucescens* (which I admired) and *Aciphylla aurea*. NZ native trees include two young rimu, some *Podocarpus*, *Pittosporums* and a good sized *Phyllocladus alpinus*.

This garden has been developed in a well established wooded area. Realising that the large trees were providing too much shade, several trees have been removed and considerable limbing up done, much to the delight of the plants below. But what does one do with all the branches and trimmings?

The Butcharts have created what a local farmer calls a 'Hack and Buzzer' fence, not quite as bad as it sounds; it seems that 'bugger' may be a corruption of a Welsh word used in rural fencing. Branches are neatly

stacked against an existing wire fence and will gradually decompose.

Most winters are relatively benign with little or no snow and low temperatures reaching only -3degrees C. However winters can occasionally be severe, the last one being no exception when the 'Beast from the East' hit in March. Proof of this is a stack of plant tents which Eric places over cold tender specimens. Interestingly however several plants of unprotected *R. sinonuttallii* (usually regarded as tender) were completely untouched by the 'Beast'. These were grown from seed collected in North Vietnam (C & G 5631). It is believed that many rhododendron species, including *R. sinonuttallii*, which occur in both China and North Vietnam, are much hardier when sourced from North Vietnam. The theory is that in winter, cold air from China sinks southwards to Vietnam so the Vietnamese plants have developed much greater cold tolerance.

It seemed there were two rhododendron casualties from the 'Beast' despite being tested in the woods where they had protection; *R. veitchianum* from Thailand and a vireya, 'Saxon Blush'. Both lost all their leaves but much to the owner's delight are now showing signs of new growth.

The excellent shelter in this garden provides the ideal environment for maples which were at their very best in new leaf. Other small trees to take my eye were *Malus* 'Indian Magic' and *Enkianthus cernus rubens*, one of four varieties of *Enkianthus* growing in the garden.

As well as NZ rhododendron hybrids, you will find many rhododendron species and several unusual Californian *R. maddenii* hybrids; ('Heavenly Trumpets', 'Californian Gold', 'Parker Smith', 'Winter Sun', 'Charles Philip', 'Bill Massey', 'Roy Hudson', 'Virginia Stewart' and *burmanicum* x 'Mi Amor') together with 47 different varieties of magnolia, both species and hybrids. For ease of identification, all rhododendrons, camellias and magnolias are labelled.

Eric and Isabel are frequent visitors to NZ and are members of NZRA. Should you as NZRA or Pukeiti members be



R. 'Moon Orchid'



R. 'Barbara Jury'

travelling in their area they would be very happy for you to visit their garden. Contact Joy O'Keefe, NZRA President if you would like to visit and require the Butchart's contact details.

Because we were part of a tour group, three hours was all the time

Bernie and I could spend with Eric and Isabel; nowhere long enough to do them and their garden justice.

Acknowledgement: Thank you to Eric Butchart for his assistance in compiling this article.



R. 'Black Magic' in the garden of Eric and Isabel Butchart.



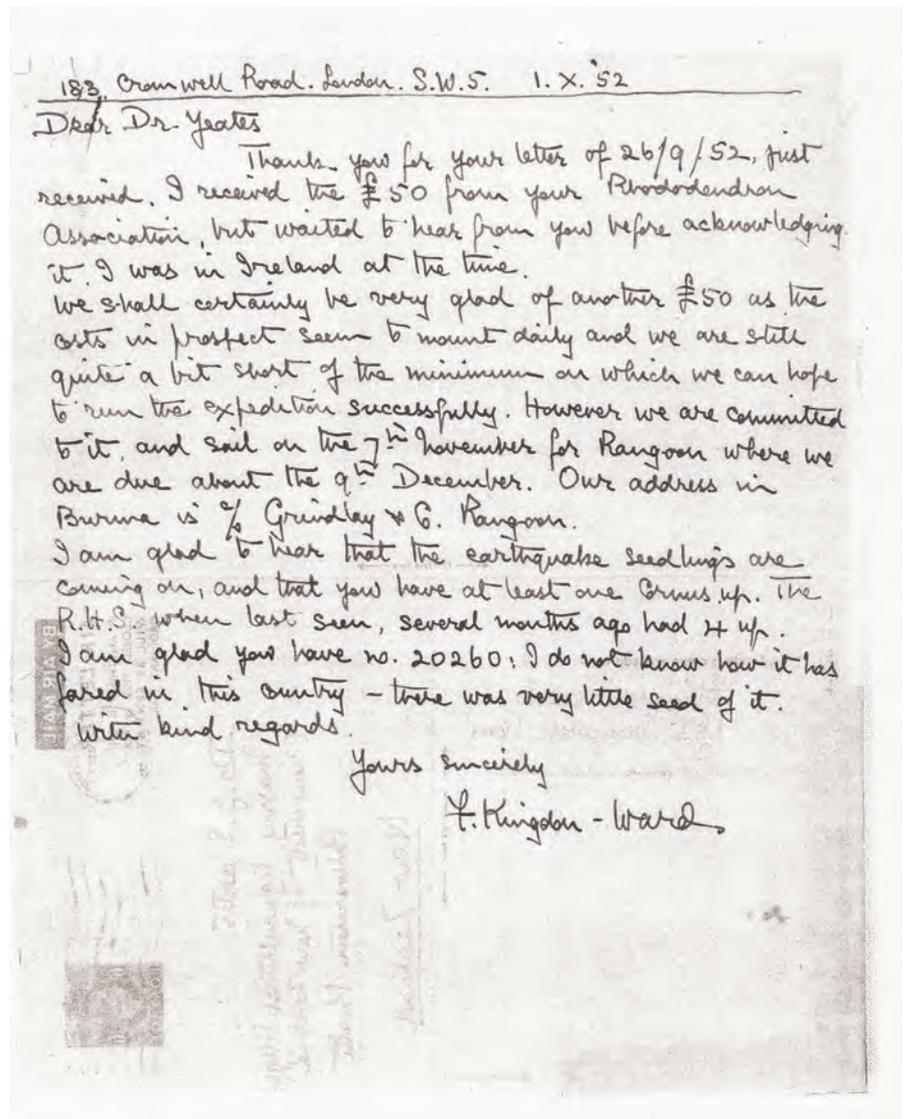
THE RHODODENDRON STORY OF NEW ZEALAND, WITH ASSOCIATED GENERA OF MAGNOLIAS AND CAMELLIAS.

William Stanger

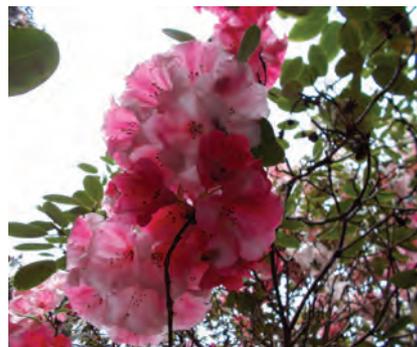
R. 'Kiwi Magic'

Rhododendrons are a primary example of how plants play a role in international relationships. It is well known that gardeners are keen to pass on their knowledge and share plants and this was seen when the first rhododendrons were brought to New Zealand. The resultant hybrids were shared and improved upon by each subsequent generation. Today New Zealand has a rich history of rhododendron hybrids and steps are now being taken to conserve them for future generations to enjoy.

The rhododendron story of New Zealand starts with William Martin, who came to New Zealand on the 'Philip Laing' in April 1848. He was trained as a nurseryman at Royal Botanic Garden Edinburgh, and wasted no time in starting a nursery in his new homeland. He is credited with introducing the first rhododendrons to the Otago region. Unfortunately, there appears to be no record of which species were imported or where they came from. Out of the hybrids raised by Mr Martin, *R. 'Marquis of Lothian'* (*R. thomsonii* x *R. griffithianum*) is considered the very best. *R. 'Cornish Cross'* (*R. griffithianum* x *R. thomsonii*) is similar, however *R. 'Marquis of Lothian'* is considered to be superior, at least in New Zealand. It has wonderful cinnamon-coloured peeling bark. The flowers are held in a lax truss and are reddish pink on the outside with a pronounced darker flushed edge, and paler pink within. The plant prefers a sheltered position away from draughts and needs protection from direct sunlight.



Edgar Stead (1947) notes how few rhododendrons were in New Zealand prior to 1915. There were some Himalayan species including *R. griffithianum*, *arboreum*, *grande*, *barbatum*, *falconeri* and *thomsonii*. In 1860 Sir Cracroft Wilson raised seed from a red form of *R. arboreum*. Two of the resultant plants were very good with deep blood red flowers held in large trusses of twenty-three. One of these



R. 'Marquis of Lothian'

Edgar believed to be a form of *R. kingianum*, now known as *R. 'Noyo Chief'* which he used in his hybridising work. A spark of interest for rhododendrons was caused by the publication of Millais' 'Rhododendrons'. This caused more frequent importations including seed of Chinese species. In 1925 Edgar travelled to England and obtained a collection of rhododendrons from various sources including Lionel de Rothschild and Lady Loder. Many more plants were imported and introduced to commerce. One of Edgar's more notable crosses, *R. fortunei* ssp. *fortunei* X *R. griffithianum* repeated the famous Loderi cross and resulted in *R. 'Irene Stead'* and *R. 'Ilam Cream'*. Both have the classic characteristics of a Loderi hybrid. 'Irene Stead' has a large truss of 12-14 soft lilac pink flowers with darker colouring on the edges. The colour does not fade. *R. 'Ilam Cream'* grows into a large tree-like shrub. The



R. 'Ilam Cream'

huge deep cream florets are edged a delicate band of rose pink. The sweet scent and sheer size of the flower make it a favorite. The plant prefers some over-head shade.

Edgar started hybridising in 1918. In his article (Stead 1947) he goes into some detail of the crosses he made, and the results. He also describes his work with azaleas. In 1917 he received seeds of various North American deciduous azaleas from Professor C.S. Sargent, including three varieties of *R. calendulaceum*. In 1925 he got plants from Anthony Waterer's breeding at Knap Hill Nurseries. Later in 1930 Lionel de Rothschild allowed Edgar to make crosses of Exbury azaleas and subsequently the seed was sent back to Edgar in NZ. The resultant plants were crossed with Waterer's plants, with some mollis as an out-cross, producing plants with new colours, increased truss size and in the lighter coloured hybrids, fragrance. The flowers on average showed increased durability in hot weather (Millar 2015).

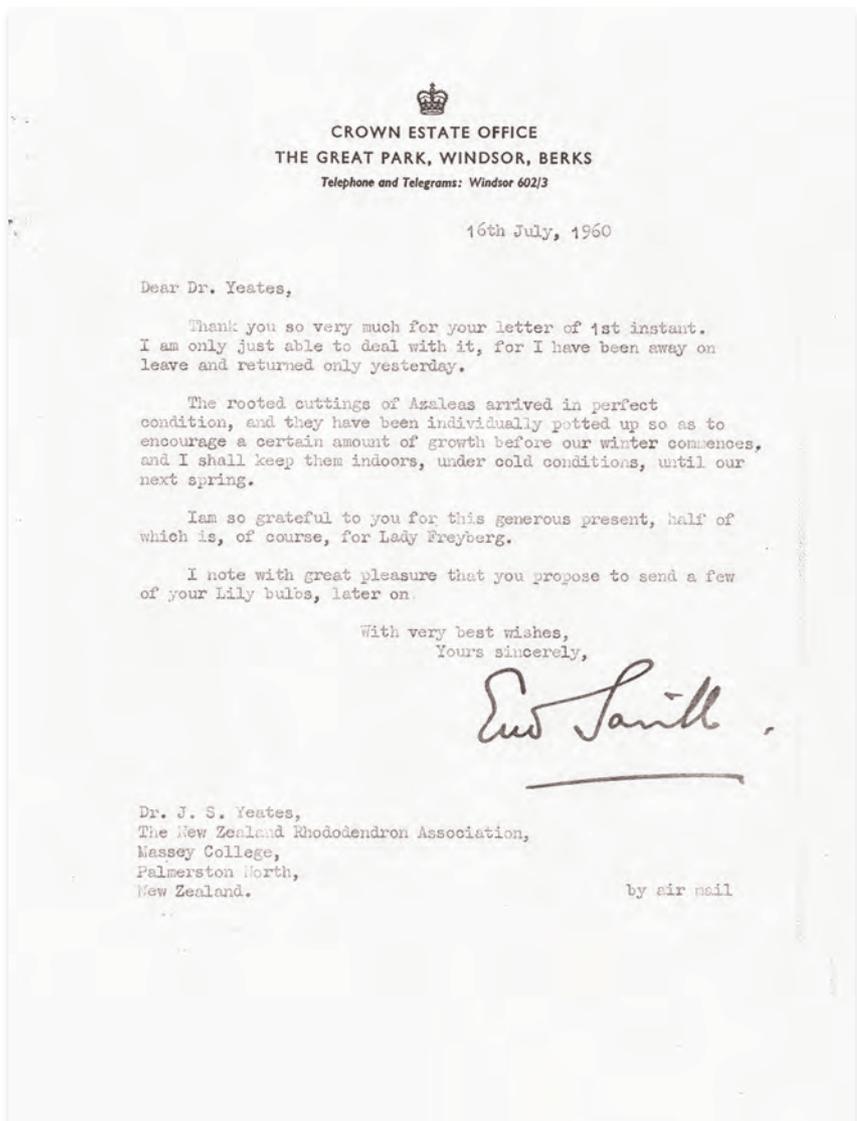
Dr John Yeates continued Edgar's breeding work on the Ilam azaleas. With what he learnt from Edgar he was able to select plants with yellow or orange flowers in full trusses and with frilled petals, many of which have been registered and are known as the Melford hybrids. Dr Salinger (1994) describes Dr Yeates' time at Massey Agricultural College and his involvement with the beginnings of the New Zealand Rhododendron Association (NZRA) from 1944. Dr Yeates was the initial secretary-treasurer of the association, held the position for 21 years, and was largely responsible for convincing Edgar to be the first president.

The idea of a demonstration ground was raised by Dr Yeates and

consequently, what is now known as Heritage Park at Kimbolton was bought by the association in 1970. Plants and propagation material were imported from Exbury, Royal Botanic Garden Edinburgh, R.H.S. Wisley, Bodnant, commercial nurserymen and the U.S.A. There are letters to Dr Yeates from Leonard F. Frisbie (American Rhododendron Society) around 1948 that discuss the merits of Edgar's azaleas and what rhododendrons should be sent to New Zealand from the USA. There is also a letter from Sir Eric Savill thanking Dr Yeates for lily bulbs and azaleas. The bulk of the letters that I have seen show correspondence between Dr Yeates and Frank Kingdon-Ward in relation to sponsoring plant hunting trips with collected seed being sent to

New Zealand. The letters, written over 20 years [1948-68] expose the difficulties of getting permission to undertake plant hunting trips at that time, and also the perils of plant hunting in general.

Mollie Coker was highly influenced by Edgar, and used many of Edgar's hybrids in her own breeding programme (Coker, 2017). Mollie and her first husband, Ivan D Wood had bought a property in the Christchurch suburb of Ilam, adjacent to the Stead property. The Loderi group cultivars that Edgar had, were of particular interest to Mollie. Her first registered hybrid was of this stable and was registered by the NZRA as R. 'Mollie Coker'. This tree like plant with large dark



Letter from Eric Savill to Dr Yeates. 1960

leaves, has big pink frilled, fragrant flowers with wine-red throats, in a large compact truss. Among the thirteen hybrids Mollie registered are additional Loderi-type hybrids such as 'The Dream' and 'Phantom'. The seed she obtained from the USA resulted in named hybrids such as 'Ivan D Wood', named after her first husband, and 'Coral Queen' and 'Pacific Princess'. 'Ivan D Wood' is an upright bush, strong growing and prefers a little shade. The large flowers have a cream/green edge with an orange buff centre fading to Naples yellow, carried in a well-proportioned truss. 'Coral Queen' also likes some shade. It grows to about 1.5m, and has large reddish buds which open to deep coral campanulate flowers in a loose truss.

Mollie was very generous about sharing her plant material. Consequently, many more of her hybrids were grown on and registered by others. Graham and Helen Holmes registered a number of Mollie's hybrids, 'Lalique' being considered one of the best and a Loderi type. It is a vigorous round plant that grows to 2m with long shiny leaves. The beautiful flowers start neon rose and fade to white, sweetly scented, in large trusses and preferring shade. Mollie also worked on the Ilam azaleas which in turn were worked on by Denis Hughes, who named a red one 'Mollie'.

Denis Hughes studied at Lincoln University. A friend there was based at Christchurch and had a traditional ¼ acre section with a glass house. Not far away was Mollie Coker's garden, where Denis and his friend worked at weekends, learning much about azaleas from her, and when Denis left college Mollie provided him with many of her best azalea cuttings.

At the Chelsea Flower Show Denis's in-laws purchased Ghent azaleas, and from the impressive stand put on by Waterer's Nursery, double Knap Hill azaleas. The transition from the northern hemisphere to the southern hemisphere however gave the double azaleas jet lag and their first NZ flowers were single. This meant though that Denis could use them more easily for hybridising with Ilam azaleas, and once the Knap Hill azaleas had recovered they flowered normally with double flowers.

R. pavlova came out of that first cross and is a strong growing upright plant with clean green mildew resistant foliage, good autumn colour, and double white scented flowers. The second generation (F2) resulted in a double flower that was still able to set seed and looked like a ballet tutu. *R. 'Ballet Girl'* is not registered but is a parent of many progeny such as *R. 'Nicholas de Rothschild'* which has small but distinctive flowers which are red in bud, opening golden yellow and changing to pink, and scented. My personal favourite is 'Soft Lights' the flowers of which are held in a full ball shaped truss, and are a combination of cream/peach/apricot blended pink. It is paler grown in shade, vibrant pink in the sun.

Denis continued to work with Stead's red azaleas but came up with nothing better. Later, by chance, he got a red azalea from Exbury. He crossed this with the best Ilam red azaleas to produce an F1 strain with bigger red flowers, but for some reason it is proving very difficult to produce a red double azalea. Denis has been running Blue Mountain Nursery in Otago for nearly 60 years, working also with plants other than azaleas, and in that time he has amassed an impressive collection of *Sophora* native to New Zealand, one of the most notable being *S. 'Dragons Gold'*.



R. 'Mollie Coker'



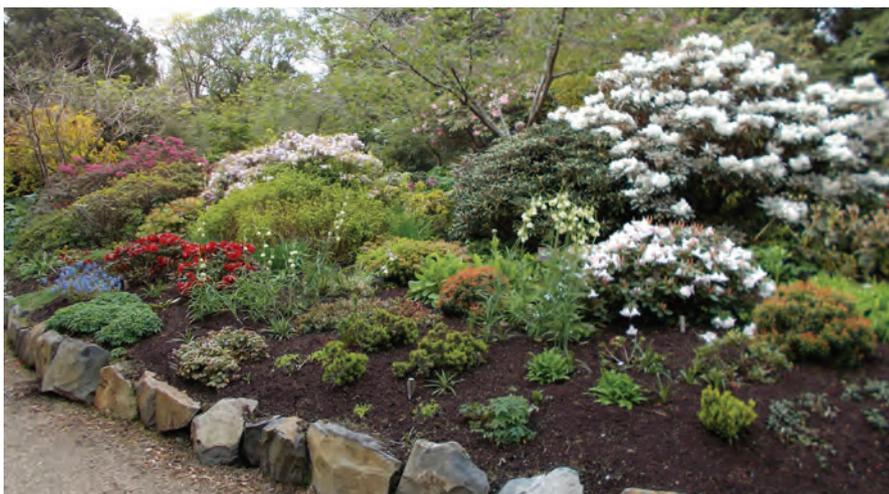
R. 'Lalique'



R. 'Soft Lights'

Jeff Elliott was also highly influenced by Mollie and Edgar. Professor E.G. Waterhouse was Jeff's mentor and established his nursery Camellia Grove in 1939. Jeff started Elliott's Wholesale Nursery in 1980, north of Christchurch and has been hybridising rhododendrons since his early 20s. *R. 'Kiwi Magic'* was one Jeff's first hybrids that started the Kiwi series. Apart from being prone to fertiliser damage and having a poor root system, 'Kiwi Magic' has been a good plant. It is best described as an orange *R. yakushmanum*. 'Kiwi Pearl' has full round trusses of rich cream flowers accompanied by thick dark green leaves. 'Kiwi Mum' has creamy peach flowers growing up to 1.2m, however, its foliage and root system are not the best.

A lot of breeding work has been carried out around Dunedin. McKenzie (1985) gives a detailed account of how the Rhododendron Dell at Dunedin Botanic Garden was developed by David Tannock. He was appointed Superintendent of Reserves in 1903 and continued to develop the gardens until 1940. Many rhododendron species were introduced during this time. Some were imported from the U.K. including from Royal Botanic Gardens Kew. Others were from plant hunting expeditions such as those of Joseph Rock in China and Tibet (Cameron 1986 cited in Coker and Millar, 1998). As a collection of rhododendrons, the Rock collection was unmatched in New Zealand during this period.



Dunedin Botanic Garden: Rhododendron Dell.

The climate and soil of Dunedin seems to enable rhododendrons to prosper, hence the achievements of Mr Tannock and his successors.



R. 'Robert Balch'

Mr Skipworth took over from Mr Tannock in 1940 and continued to improve the gardens until 1967. Part of this was by hybridising rhododendrons to produce new varieties. Balch (1975) describes the hybridisation work carried out at Dunedin Botanic Garden, which included using previously untried material. Hybrids from this era include 'Lovelock' 'Alpine Meadow' and 'Robert Balch'. 'Robert Balch' (*zeylanicum x elliotii* KW 19083) has rich red flowers with darker spotting in the throat and glossy green leaves. It prefers partial shade, but is wind tolerant. 'Alpine Meadow' is slightly tender and grows only to 45cm, being wider than it is high, and having white flowers on a tidy and compact plant with attractive scaly foliage.

My short stint at the Rhododendron Dell was spent helping the current curator Doug Thomson. The main

focus was fine tuning the garden ready for an assessment by the New Zealand Garden Trust. The pressure was on to maintain the Botanic Garden's 6-star international status. Whilst laying siege to the dreaded *Tropaeolum speciosum*, I was given my initial introduction to New Zealand rhododendrons. The collection of species rhododendrons is arranged into the subsections of the genus. However, over time Doug has found it increasingly difficult to maintain this due to lack of space. Doug also gave me an insight into his and New Zealand's involvement in *ex situ* conservation of rhododendron species. Both Doug Thompson (2017) and Dr Marion MacKay (2017) go into great detail about New Zealand's approach to *Rhododendron* conservation and how the initial data collection of existing New Zealand material, was undertaken.



R. 'Maurice Skipworth'

New Zealand is home to one of the most significant species rhododendron collections in the world. The story of Pukeiti at Taranaki is well documented by Pat Greenfield (1997) who describes how William Douglas Cook could not grow rhododendrons at his own property at Eastwoodhill, near Gisborne, and so along with Russell Matthews, after prompting by MP Ernie Aderman and Arthur Goudie, he checked out Pukeiti. One visit was enough and Douglas bought the site. The land was offered to the NZRA but they declined the offer which led to the formation of The Pukeiti Rhododendron Trust in 1951.

Pukeiti sits at an elevation of 520 m, is originally a site of regenerating rainforest, and has a high rainfall of 3-4m annually, which to a degree the rhododendrons enjoy, although the



Rhododendrons within the rainforest at Pukeiti.

drainage in places leaves much to be desired. The climatic conditions allow the big-leaf rhododendrons to grow unhindered and many are happily self-seeding. To find out what the resultant hybrids were, the then curator Graham Smith made deliberate crosses, which gave some indication of the parentage of the self-set hybrids.

At the same time a small number of these deliberate hybrids were named: 'Jack Anderson', 'Ina Hair', 'Gordon Collier', 'Geoff Broker' and 'Barbara Hayes'. These are covered in the wonderful volume 'Big-leaf Rhododendrons: Growing the giants of the genus' written by the authoritative kiwi horticulturists Glyn Church and Graham Smith (2015). 'Barbara Hayes' (*R. hodgsonii* x *R. grande*) is my favourite big-leaf hybrid and I was at Pukeiti when it put on its best performance ever known, according to Graham Smith. It was a good year in general to see the big-leaf rhododendrons in flower. 'Barbara Hayes' has marvellous pink flowers with a crenulated edge to the corolla, the pink fading to cream, and various stages of this colour transition are apparent on a plant in full bloom. The silver indumentum on the back of the leaves further enhances the overall display. The original was brought back as seed from a plant found by Des Hayes on a steep bank in Sikkim, NE India. It was originally thought to be *R. grande* but its appearance and original location fits perfectly between *R. grande* and *R. hodgsonii*.

My own contribution to Pukeiti largely consisted of creating vistas to show off the magnificent floral beasts of rhododendrons resplendent in the rainforest. Much bushwhacking was carried out to give the rhododendrons breathing space. I also helped plant drifts of azaleas at the beginning of the Giants' Walk. There are big plans ahead to further enhance what could be said to be the most dynamic garden in New Zealand. As well as the management of the garden and its plants, the Head Gardener Andrew Brooker told me about the strategy for the conservation of New Zealand hybrids. Andrew also elaborated on the assessment of the hybrids. It has been

suggested that a trial be undertaken with trial beds at various locations in the country, but Andrew would argue that more than sufficient knowledge is already held by the nursery people and gardeners who grow these plants, such as Woodbury Rhododendrons and Cross Hills Nursery. These highly informed individuals can tell you what will grow well in your area, which hybrids are the star performers, and how to get the best out of them.

Pukeiti is able to grow the early flowering big-leaf species that are a challenge in the U.K. Both *R. magnificentum* and particularly *R. protistum* are well represented. I was thrilled to see *R. protistum* 'Pukeiti' in full flower. Pukeiti is certainly one of the best gardens in the world to see these truly mesmerising plants. It is also home to an impressive collection of vireyas. They are mostly grown under a covered walkway with open sides, consequently they look a lot better than potted specimens grown in a glass house. Further north around the Auckland area, vireyas will happily grow outside.

It is not possible to talk about New Zealand hybrid rhododendrons without mentioning its most famous example *R. 'Rubicon'*. Graham Smith told a group of us at Pukeiti how Ron Gordon sowed seed of *R. 'Noyo*



R. 'Barbara Hayes'



Working bee at Pukeiti with Pukeiti, Tupare and Hollard gardeners. William Stanger front centre.

Chief' x *R. 'Kilimanjaro'*. 'Rubicon' was effectively the runt of the litter but Gordon thought it was worth persevering with. He potted it on, planted it in the garden and it became perhaps the best red-flowered hybrid known to man. The cardinal red flowers are spotted black inside the upper lobes, and together form a compact truss on a compact plant. The foliage is wonderful, being dark and glossy. 'Rubicon' will grow in colder and warmer climates.

A survey to determine which New Zealand hybrids are most favoured by Kiwis (the people not the bird) was conducted by Andrew Brooker, who found that favourites include: 'Floral Dance', 'Rubicon', 'Lemon Lodge', 'Vandec', 'Steads Best', 'Mary Tasker', 'Petticoat Lane', 'Spiced Honey', 'Beverley Tasker', 'Bonnie Doone', 'Carla Van Zon', 'Kotuku', 'Sir Edmund Hillary', 'Mollie Coker', 'Mrs George Huthnance', 'Alpine Meadow', and 'Kiwi Pearl'. I do not know how all of these perform elsewhere in the world. Andrew said that 'Lemon Lodge', although fine in New Zealand, can suffer from leaf spot in the U.K. when subjected to stressful conditions. 'Crossing The Rubicon: New Zealand Raised Rhododendrons, A Handbook' (Coker and Millar, 1998) provides information on all the New Zealand hybrids present prior to 1998.

There are many more Kiwis who have hybridised rhododendrons but I'll conclude with the Jury duo of Felix and Mark, father and son. Abbie Jury (2011) gives a thorough

account of 'The Jury Rhododendron Legacy'. Felix Jury had tried to address issues associated with growing rhododendrons in some of New Zealand's more challenging areas. In parts of the North Island there is a lack of winter chill which means that rhododendrons and many other plants survive but don't perform as well as we would like. This also means that the devastating thrips stay alive and turn rhododendron foliage silver. The intense light of New Zealand can also burn both foliage and flowers. To this end, both Felix and Mark used *R. polyandrum* which passed on its superb resistance to thrips and leaf burn to its offspring. Of these *R. 'Moon Orchid'* [*polyandrum* x 'Sirius'] is considered the most garden worthy. The scented flowers are held in a loose truss and are frilly edged, apricot and yellow. The other remarkable one is 'Felicity Fair' combining good foliage, with fragrant flowers in creamy yellow, suffused pink on the outside of the throat.

New Zealand, annoyingly for the rest of us, has no issue growing species of the *Maddenia* subsection. Consequently, Kiwis have come up with a number of hybrids. The Jury's 'Floral Dance' has glossy bullate foliage with white flushed camellia rose flowers, possessing a yellow blotch in the throat. The lobes are very frilled. It combines the best characteristics of its parents (*sinonuttallii* x *edgeworthii*). *R. 'Floral Gift'* ('Michael's Pride' x *polyandrum*) has a sturdy habit of growth, healthy foliage on a compact

plant. The highly fragrant and textured flowers are weather resistant. They are white, bearing a hint of pink on the petal backs and with yellow throats.

The Jury Garden however is known mostly for its magnolias. Abbie (Abbie Jury 2017) tells the story of the Jury magnolias and highlights the selections they have named. She has likewise done the same for their camellias (Jury 2014) and vireyas (2012). Felix Jury started hybridising with *Magnolia 'Mark Jury'*. It was meant to be *Magnolia campbellii* ssp. *mollicomat* 'Lanarth' but is probably a hybrid of 'Lanarth' x *sargentiana*. From 'Mark Jury' as a pollen donor, Felix bred five named cultivars, and also named three more unrelated hybrids, of which 'Iolanthe' is rated as one of the best. As the original plant has matured the flowers have stayed large. It also sets flower buds down the stem prolonging the bloom period for up to two months.

'Vulcan' in its day represented a colour breakthrough and set the standard for future red cultivars. It looks spectacular in New Zealand but in colder climates has yet to prove itself. Vaughan Gallavan (2016) gives an overview of red-flowered magnolias and the issues of 'Vulcan' in the U.K. Mark Jury has named and released four magnolias, with two or three more in the pipe line. His 'Felix Jury' is a star performer with its large deep pink flowers getting better every year. The good red colouration of the buds on opening persists at the base of the sepals. Good specimens can be seen at The Garden House (Devon) and RHS Wisley.

More recently Mark released 'Honey Tulip' and I saw the original plant in flower at the Jury Garden Tikorangi. It has a generous bud set, heavily textured weather resistant petals held in a solid cup form and has the advantage of flowering well in advance of the emerging foliage.

Ian Boldick, (2009), another New Zealand magnolia breeder outlines the history of *Magnolia campbellii* in New Zealand, its first known introduction being around 1850-60s via Thomas Mason. Mason contributed to Himalayan seed gathering expeditions and presumably received seed of



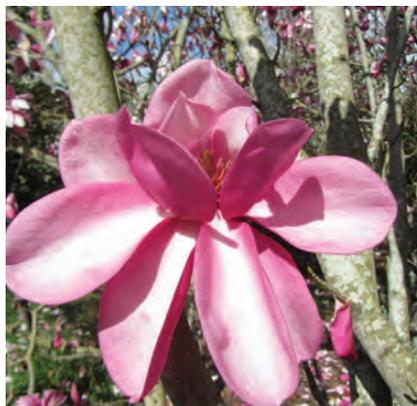
M. 'Felix Jury'



M. 'Purple Sensation'



M. 'Ice Queen'



M. 'Aurora'

M. campbellii collected in the wild. Progeny was later known as the 'Mason Form' and was the first *M. campbellii* to flower in New Zealand. In the 1950s Duncan and Davies was the largest propagation nursery in New Zealand and at this time they imported other forms of *M. campbellii* from British gardens, for example the Caerhays form of *M. campbellii* ssp. *mollicomata*, plus others from Hillier Nurseries. In the 1980s Peter Cave extended the range with more imported cultivars such as 'Darjeeling' and 'Kew's Surprise'. Lastly in the early 1990s Duncan and Davies brought in 'Betty Jessel' and 'Wakehurst' among others.

One of the other more notable magnolia breeders is Vance Hooper of Magnolia Grove. He describes his work and named selections in a couple of articles (Hooper, 2010 and 2018). The main focus of Vance's hybridising programme is to achieve more compact plants for the ever-shrinking domestic garden. He also highlights, like many other professional breeders, that only a small handful of plants actually get named, from hundreds if not thousands of plants raised. Knowing how particular such breeders are, in their selection of new releases, gives you more confidence that you are acquiring something distinctly unique and garden worthy.

Perhaps the most well known and deservedly popular of Vance's hybrids are 'Genie' and 'Margaret Helen'. 'Genie' is truly compact and also upright with rich red flowers. These flowers may not be the largest but are borne in profusion. 'Margaret Helen' is similar to 'Caerhay's Surprise' but possesses a brighter reddish-pink tone that shines out even on the dullest day. I have got my eye on 'Ice Queen', which has only just been released. Effectively it is a white *campbellii* but is easier to grow than the species, being free flowering with a hardy constitution. It combines the best of its parents 'Cameo' x *M. campbellii* 'Mount Pirongia'. And there are more exciting hybrids yet to be released!

Vance has created a useful reference collection of New Zealand selected magnolias. I was lucky to make a couple of visits while they

were in flower, and consequently I took numerous photographs. There are many to choose from but the following few caught my eye in particular. 'Strawberry Fields' ('Spectrum' x 'Vulcan') was bred by Ian Baldick. The flowers are bright strawberry red arising from a strong growing upright tree. 'Aurora' was raised by Os Blumhardt and is considered one of his best hybrids. It is a cross between 'Starwars' and *M. sargentiana* var. *robusta*. It forms a columnar tree with an upright habit and commences flowering in its second or third year from planting.

Vance has noticed at Magnolia Grove that 'Aurora' will flower like clockwork every year while other varieties are less consistent and seem affected by the weather. 'Purple Sensation', another Ian Baldick hybrid is reminiscent of one of its parents 'Lanarth'. It is thus a good substitute for 'Lanarth', having an upright habit and flowering within 3-4 years from planting with sumptuous purple blooms. There are also a few *Michelia* hybrids about the place. 'Snow Dove' (*maudiae* x *doltsopa*) has a wonderful sweet and spicy aroma, with ice white, perfectly formed flowers.



M. 'Genie'. William Stanger and Vance Hooper. Jenny Laird©

Vonnie Cave (1998) provides an overview of New Zealand raised camellias. However, I will focus on the smaller flowered plants that are being selected for resistance against the notorious camellia petal blight from which New Zealand camellias suffer greatly. This has resulted in attempts to breed resistant varieties and Auckland Botanic Garden is

using in its breeding programme *C. 'Transluscent'* (*transnokoensis* x *lutchuensis*), whose species parents are both petal blight resistant. It should be noted that some supposedly resistant selections are in fact not. They avoid petal blight by flowering early in the season. The small flowers show less of the symptoms and are quickly replaced by successive blooms. Extensive research has and is being carried out on the resistance of camellias to camellia petal blight, a prime example being Taylor (2004), and currently, in addition to the work in Auckland, an exciting project is underway at Massey University in Palmerston North.

Resistant species, however, can also be poor seed-setters, making it difficult to pass on the resistant genes to the next generation. Mark Jury told me that *C. lutchuensis* is particularly uncooperative at bearing seed so is consequently used as a pollen parent only. However, he was fortunate to find a seed-bearing specimen which gave rise to 'Fairy Blush', and a very fine thing it is too. It is an upright grower with buds that are deep pink on the outside opening to look like apple blossoms of about 5cm. It looked very impressive as a hedge at the Jury Garden. Other petal blight resistant selections are 'Transpink', 'Festival of Lights' 'Sweet Jane' 'Wirlinga Bride' and 'Spring Festival'. They generally have smaller flowers than the average camellia hybrid but are generally larger than the species parents. Their more natural appearance appeals to more contemporary tastes. As a bonus the *C.*

lutchuensis hybrids have inherited some of their forbear's fragrance. The next step is to back cross with *C. lutchuensis*, and hope that the resistant genes will be passed on.

Rhododendrons, camellias and magnolias are all well represented in New Zealand. Although a young country, it is building up a rich horticultural heritage. The breeding work has given the world many new wonderful plants to adorn its gardens. New Zealand is home to many knowledgeable plants people, whom I had the pleasure of meeting during my travels. I can assure you, it is worth the long journey from the other side of the world.

I would like to thank the Rhododendrons, Camellias and Magnolias Group, The RHS, The Merlin Trust, The Hardy Plant Society, and The Devon Group of Plant Heritage, for their sponsorship that has contributed to a year's study in New Zealand. My appreciation goes to all those who have supported me both before and during my travels in New Zealand.

References

- Balch, R. (1975) 'Hybridising Rhododendrons At The Dunedin Botanic Gardens', *Dunedin Rhododendron Group Bulletin*, 3.
- Baldick, I. (2009) 'A history of Magnolia campbellii in New Zealand', *Rhododendron, Camellias and Magnolias (RHS)*, 60.
- Cave, V. (1998) 'Raised in New Zealand', *Rhododendrons with Camellias and Magnolias (RHS)*, 49.
- Church, G. and Smith, G. (2015) *Big-leaf Rhododendrons: Growing the Giants of the genus*. Auckland: David Bateman Ltd.
- Coker, B. and Millar, K (1998) *Crossing The Rubicon: New Zealand Raised Rhododendrons, A Handbook*. Canterbury: Canterbury Rhododendron Society Inc.
- Coker, B. (2017) 'The Legacy of Mollie and Ron Coker of Ilam, Christchurch', *The New Zealand Rhododendron*, 5.
- Gallavan, V. (2016) 'Red-flowered magnolias', *The Plantsman*, March.
- Greenfield, P (1997) *Pukeiti: New Zealand's Finest Rhododendron Garden*. Auckland: David Bateman Ltd.
- Hooper, V. (2010) 'Harnessing the wheel of experience: intelligent magnolia hybridisation', *Rhododendrons Camellias and Magnolias (RHS)*, 61.
- Hooper, V. (2018) 'A Lifetime of Hybridising Magnolias', *Rhododendrons Camellias and Magnolias (RHS)*, 69.
- Jury, A. (2011) 'The Jury Rhododendron Legacy', *Rhododendron, Camellias and Magnolias (RHS)*, 62.
- Jury, A. (2012) 'The Jury Vireya Legacy', *Rhododendron, Camellias and Magnolias (RHS)*, 63.
- Jury, A. (2014) 'The Jury Camellia Legacy', *Rhododendrons Camellias and Magnolias (RHS)*, 65.
- Jury, A. (2017) 'The Jury Magnolia Legacy', *Rhododendron, Camellias and Magnolias (RHS)* 68.
- Dr MacKay, M. (2017) 'Development of a New Zealand *Ex situ* Conservation Strategy for Rhododendrons, Project Report to The End of June 2017', *The New Zealand Rhododendron*, 5.
- Dr MacKay, M. (2017) 'Uncommon Rhododendron Species in New Zealand: Are There Any At The Bottom Of Your Garden?', *The New Zealand Rhododendron*, 5.
- McKenzie, B. (1985) 'The Rhododendron Dell, Dunedin Botanic Garden; Some Early History', *Dunedin Rhododendron Group Bulletin*, 13.
- Millar, K. (2015) 'Ilam the creation of Edgar Fraser Stead', *New Zealand Rhododendron Association Bulletin*.
- Dr Salinger, J. (1994) 'In Memoriam: Dr John Yeates', *The New Zealand Rhododendron Association. 50th Jubilee 1944-1994*.
- Stead, E. (1947) 'Rhododendrons in New Zealand', *The Rhododendron Year Book (RHS)*.
- Taylor, C. (2004) *Studies of Camellia Flower Blight (Ciborinia Camelliae KOHN)* [www document] https://muir.massey.ac.nz/bitstream/handle/10179/1722/02_whole.pdf (accessed 13 September 2018).
- Thompson, D. (2017) 'Rhododendron Species Collections Verification', *The New Zealand Rhododendron*, 5.



C. 'Sweet Jane' (*japonica* x *transnokoensis*).



R. 'Ilam Carmen'



Chaz, Edward and Kyle finishing their planting of Chatham Islands forget-me-nots on the Brewster Walk.

The Gateway programme is a Ministry of Education initiative which is giving High School students the opportunity to learn valuable, practical, work based skills as they look to the future beyond their school years.

The Taranaki Regional Council has established a Gateway relationship with Taranaki Coastal School in Okato under which their students have gained valuable work experience at Pukeiti. We have worked with nine students in the past few years.

This year we have had three young men - Chaz Taipari, Kyle Smith and

Edward Rona working on garden projects each Thursday for 10 weeks. They have made a positive contribution to the garden, and the work has had a positive effect on them as developing young adults.

Just as in the early years of the garden when volunteers toiled to clear the bush, and plant out the rhododendron collection, Chaz, Kyle and Edward have helped with new plantings. This has required the complete clearance of scrubby fern and stumps, then planting, feeding and mulching of the finished garden bed. They have also pruned and cleared view shafts and bush margins

to enhance existing plantings. Their very last project was reminiscent of the 1960s plantings in the Valley of the Giants: manhandling large specimens of *Rhododendron macabeaeanum* up onto a steep slope above the White Walk, then planting and feeding to create what will become a feature hillside of these dramatic and special rhododendrons.

This valuable relationship with Taranaki Coastal School and its students continues to be one of mutual benefit to all as Pukeiti continues to move forward, growing community good in one of the region's gardens.



Kyle planting *R. macabeaeanum*



Chaz clearing bush



Edward preparing planting hole



REPORT ON THE RHODODENDRON CONSERVATION WORKSHOP

HELD AT OAK SPRING GARDEN, VIRGINIA, 17-18 APRIL 2018

Readers may recall that since 2016 I have been working on the New Zealand *ex situ* *Rhododendron* project; one of the most exciting developments from that project was my participation in an international meeting, held in America in April 2018. Following my publication of several research articles on *Rhododendron* conservation in 2016-17 (MacKay & Gardiner 2017a, 2017b; MacKay & Hootman 2017; MacKay et al. 2016, 2017), in late 2017 I was invited by Paul Smith, Director General of Botanic Gardens Conservation International (BGCI) of London, to attend and help plan a workshop on *Rhododendron* conservation, to be held in April 2018 at Oak Spring Garden, Virginia, USA. (BGCI is the world body for botanic gardens and is the lead agency for Red List

assessments under the Global Strategy for Plant Conservation (Convention on Biological Diversity 2012).) In this article I will give an overview of the workshop and its outcomes and indicate how this international development will influence our New Zealand *ex situ* strategy.

The workshop was a small-group meeting that was organised by BGCI and funded by the Oak Spring Garden Foundation. The aim of the meeting was to form a global consortium for conservation of *Rhododendron* and develop an action plan for the same. Seventeen people from fourteen countries were involved (Australia, Belgium, Canada, China, England, Germany, India, Indonesia, Japan, Nepal, New Zealand, Papua New Guinea, Scotland and USA). The proposed format for the meeting was that after a general welcome from Professor Sir Peter Crane of Oak Spring Garden, Paul Smith would give a presentation on the role of BGCI in

plant conservation, and then I would give a presentation on the current status of *Rhododendron* conservation (summarising my research to date). After these presentations there would be discussion on a range of likely aspects of a conservation action plan for *Rhododendron*.

For me, preparation for the workshop involved several pieces of work. First, I worked with Paul Smith on the programme. Part of the background preparation was the creation of the *Rhododendron* Global Update (MacKay et al. 2018), a document which summarised *Rhododendron* conservation as of February 2018. The next task was developing my oral presentation, which highlighted key aspects of the Global Update as well as important issues for conservation planning (MacKay 2018a). Also prior to the workshop, I worked with Paul and the other participants to gather and analyse additional data from the participants' collections. Ten participants contributed data and I

did an analysis and provided each collection with a summary of the numbers of taxa in each Red List category, specific taxa which were uncommon in cultivation (three or fewer records at BGCI), and the specific taxa in each Red List category held in that collection. I also combined these data with my pre-existing data to reveal which collections had the greatest numbers of taxa. This showed that the two largest collections globally are the Rhododendron Species Botanical Garden (720 taxa) and Edinburgh Botanic Garden (684 taxa). These are followed by 'all of Germany' (553 taxa) and 'all of New Zealand' (538 taxa), the National Rhododendron Garden of Australia (494 taxa), Kew Gardens (367 taxa), Wakehurst Place (313 taxa) and then Pukeiti in New Zealand (301 taxa according to the Taranaki Regional Council online database (TRC 2017)).

Having done all the aforementioned preparation, purchased my tickets, obtained my visas, and done a test packing of my luggage, I suddenly found myself on Plan B. A few weeks before I was due to leave I developed a painful difficulty with one eye and could not travel – I was determined not to miss the meeting so a new plan was needed. My oral presentation was the first challenge. After several practice runs (looking at oneself on television is an interesting experience, not always edifying!) I used one of the university's televised-broadcast lecture rooms to record a video of the presentation and sent that to Oak Spring Garden. The second challenge was to stay awake all night for two nights to 'attend' the workshop via video link (although often only by audio as the connection at the US end was unable to support the video much of the time). For those two nights I went to work at 1.00am until about 8.30am to take part (fortified by plenty of coffee and chocolate!).

On the first day of the workshop (17 April USA time) Paul Smith gave his overview of BGCI and its role in conservation, and then my pre-recorded address was played. Following those presentations we divided into groups of 4-5 people and undertook a SWOT analysis discussion

on possible establishment of a global consortium for conservation of *Rhododendron*, with topics including:

- Data availability and quality
- Prioritisation of species
- *In situ* conservation
- *Ex situ* conservation and collections management
- Building a collections network (structure and function)
- Resources required, and funding model
- Recognition, branding and incentives for participation.

On the second day the discussion topics included the possible structure of a consortium, which people and institutions should be included, what should be included in a programme of work in the short and medium term, how participation could be encouraged, and what kinds of funding opportunities are available. Staff from BGCI took comprehensive notes from the discussions and these were sent to participants at the end of the workshop.

The primary result of the workshop was that the participants agreed to form the Rhododendron Consortium, managed by a Steering Committee and aligned with BGCI and the Global Trees Campaign, to develop (and achieve) an international conservation strategy for *Rhododendron*. Since the workshop, BGCI has appointed a new staff member, Ms Noelia Alvarez, whose duties will include the *Rhododendron* consortium. Paul and Noelia have been planning the structure and governance of the consortium along with the various roles and responsibilities. Along with several others, I am working on a set of objectives and an action plan; in July a draft document was sent to BGCI for their review before being sent to all members for contribution and comment. One particular objective identified at the workshop was the need for action on the Critically Endangered (CR) taxa; a draft action plan for this group of taxa has also been sent to BGCI

and in due course all consortium members will contribute to this plan.

Another objective identified at the workshop was the need for further investigation of Data Deficient (DD) taxa. Such taxa are those for which experts believe there is a conservation problem but for which there is insufficient data to make a proper Red List assessment, that is, these taxa are poorly known. The consortium undertook to begin the process of gathering information on DD taxa so that they can be properly assessed in due course. This is a sizable task as there are 316 Data Deficient taxa and only 111 are in cultivation globally (MacKay 2018a). Most countries of origin have fewer than 10 DD taxa and can probably investigate them reasonably easily; however, the task is much more challenging for China (183 DD taxa, 17 shared with other countries), Indonesia (70 DD taxa, 6 shared with Malaysia or Papua New Guinea) and Papua New Guinea (27 DD taxa, 4 shared with Indonesia) (MacKay & Gardiner 2017b). Those consortium members with field expertise will advise on how the DD taxa from China, India and Papua New Guinea can be prioritised for further investigation.

A third aspect requiring further investigation is the Red List assessment of about 150 Not Evaluated (NE) taxa that were not Red List assessed by Gibbs et al. (2011). In due course BGCI will organise a suitable group of experts to make a Red List assessment; however, before this can be done supporting data has to be collected. This includes aspects such as geographical range, population size, extent of reproduction and presence of seedlings, and presence and type of any threats – factors that are needed to determine which Red List category will apply to that taxon. (The categories and their criteria are described in Gibbs et al. (2011).) Field expeditions will be a key aspect of this investigation, as they will be for investigations of the DD taxa, and the consortium aspires to a programme of field expeditions, pending suitable funding.



R. griersonianum. Photo: Sue Davies

Field expeditions also underpin another critical aspect of effective *ex situ* conservation, the presence of a diversity of known-wild-source plant material in cultivation. Data to date suggests that (i) the range of accessions present is often insufficient for genetic representation and (ii) accessions often lose their documentation and become ‘unknown’ (MacKay 2018a; MacKay et al. 2018). Working with the folk at BGCI, I will be investigating the range of wild-source material that is present in cultivation, probably focussing first on the most endangered taxa (Critically Endangered (CR) and Endangered (EN) taxa) and the priority countries of origin (China, Indonesia, and Papua New Guinea (MacKay & Gardiner 2017b)).

Taxonomy is also a key issue. About 90 taxa carry taxonomic queries, most commonly that they are not distinct from a closely related taxon. If a Red Listed taxon is in fact synonymous with a common taxon,

then conservation action may not be needed and resources can be directed elsewhere. The taxonomic experts from the workshop group will review the taxa (probably starting with the CR taxa and then moving through the less threatened categories), to identify those which are probably synonymous with another taxon, and prioritise those taxa for a formal taxonomic review. (To merge two or more taxa a published scientific study is needed; having identified the likely cases the consortium will work with appropriate scientists on these taxonomic reviews.) Eventually a revised Red List document will be published, however there is much work to do before that point is reached.

All of the aspects mentioned above (and more) will be part of the forthcoming action plan for conservation of *Rhododendron*, which will be published by BGCI in the coming months. While the conservation task is large, the *Rhododendron* conservation

workshop has made an excellent start. The participants were all keenly interested and enthusiastic and I look forward to some exciting projects developing from this workshop.

Considering the New Zealand scene, what do these international developments mean for the New Zealand *ex situ* project? To date we (Doug Thomson, Graham Smith and I) have completed the first phase of collection verification and data gathering and several reports and articles have been written about this work (MacKay 2018b, 2017a, 2017b, 2016a, 2016b; Thomson 2017). As the New Zealand work has progressed, and following the Virginia workshop, two key issues are apparent.

First, as the international dataset has expanded New Zealand’s place in the international ranking has changed and ‘New Zealand’ is down two places and is now ranked 4th. The earlier assessment, where New Zealand ranked 2nd (MacKay et al. 2017), did not include data from the *Rhododendron* Species Botanical Garden (Hootman 2017) or the German collections (Schepker 2018) and with those data now on hand ‘New Zealand’ has moved down the rankings. From the New Zealand perspective, the critical aspect is the 129 taxa that have been in New Zealand in the past but which are presently ‘lost’ from our collections (MacKay 2018b) and therefore excluded from the total number of taxa for New Zealand. If these were ‘rediscovered’ New Zealand would have a total of 667 taxa. Obviously some of these taxa will have died out due to climatic unsuitability, but I believe that many others are still



R. taxifolium

'around somewhere' if we could but find them. To this end, one focus for the second phase of our New Zealand project will be a 'search and propagate' programme, informed by the current dataset as to which taxa are of most interest. New Zealand Rhododendron Association (NZRA) members are also active in searching out and propagating uncommon species (particularly wild-source material) and the Pukeiti team looks forward to continuing collaboration with NZRA on this work.



R. wilkiei

The second key issue is that the international analysis shows that New Zealand holds some taxa that are uncommon in cultivation elsewhere, or for which we have useful wild-source material. For example, the draft plan for CR taxa shows that while *R. griersonianum* is relatively common in cultivation (20 records at BGCI), wild source material is listed only at Edinburgh and in New Zealand; our material should be propagated and exported (if regulations allow). Similarly, Edinburgh and New Zealand are the only two places that list wild-source material of the vireya species *R. wilkiei*, but in this case there are only 2 records at BGCI – propagation of this species is more urgent than for *R. griersonianum*. Other taxa for which we hold wild-source material and which are relatively scarce in cultivation are the vireyas *R. rousei* and *R. taxifolium* - if possible these species should also be propagated and dispersed to other collections. Indeed the vireya taxa are one of the most important collections in New Zealand and to this end vireya species will be a particular focus for the 'search and propagate' aspect of the New Zealand project.

At the same time, and working with the Global Consortium, the New Zealand project will also include aspects such as importing a greater diversity of the taxa we already have, and seeking opportunities to participate in collecting expeditions. The New Zealand *ex situ* project and the Virginia workshop are both about groups of people working together to advance the cause of *Rhododendron* conservation. As the global project develops, I expect there will be many opportunities for joint activities and I look forward to working with colleagues in New Zealand and overseas on these exciting and challenging projects.

Participants in the Virginia workshop were:

Tex Moon from the National Rhododendron Garden (Australia), Koen Camelbeke from Arboretum Wespeelar (Belgium), Doug Justice from University of British Columbia (Canada), Weibang Sun from Kunming Botanic Garden (China), Jo Wenham from Wakehurst Place (England), Paul Smith and Abby Meyer from BGCI (England and USA respectively), Ashiho Mao from the Botanical Survey of India (India), Didik Widyatmoko from Bogor Botanic Garden (Indonesia), Akhileshwar Karna from the Department of Plant Resources (Nepal), Marion MacKay from Massey University (New Zealand), Michael Lovave from Lei Botanic Garden (Papua New Guinea), David Knott from Edinburgh Botanic Garden (Scotland), Steve Hootman from the Rhododendron Species Botanical Garden (USA), Nicole Cavendar and Audrey Denvir from Morton Arboretum (USA), and Sir Peter Crane and Max Smith from Oak Spring Garden (USA). Hartwig Schepker from Bremen Rhododendron Garden (Germany) and Yuji Kurashige from Niigata Botanic Garden (Japan) are members of the consortium but could not attend the meeting.

Acknowledgements

Even though I was unable to travel I wish to thank the Oak Spring Garden Foundation, which would have otherwise funded my travel to the workshop in Virginia. I also wish to thank BGCI for giving me the opportunity to participate in the workshop. My work in the New Zealand *ex situ* project has been supported with funding from the Pukeiti Rhododendron Trust and I am very grateful to them for that support. This work also draws upon online collection databases, and data contributed by owners of private collections, and I am most grateful for those contributions to this research.

References

Convention on Biological Diversity. 2012. *Global Strategy for Plant Conservation 2011-2020*. Botanic Gardens Conservation International, Richmond, UK. Online at: https://www.bgci.org/files/Plants2020/GSPCbrochure/gspc_english.pdf

Gibbs D, Chamberlain D, Argent G. 2011. *The Red List of Rhododendrons*. Botanic Gardens Conservation International, Richmond, UK. Online at: https://www.bgci.org/plant-conservation/rhododendron_red_list/

Hootman SE. 2017. *Inventory of the Rhododendron Species Botanical Garden*. Unpublished data from the Rhododendron Species Foundation, Federal Way, USA.

MacKay MB. 2018a. *Overview of Rhododendron Conservation*. Oral presentation at the *Rhododendron ex situ* conservation workshop held at Oak Spring Garden, 17-18 April 2018, Virginia, USA.

MacKay MB. 2018b. Development of a New Zealand *ex situ* conservation strategy for New Zealand: contract report to the end of March 2018. Report to the Pukeiti Trust Board. Massey University, New Zealand.

MacKay MB. 2017a. Development of a New Zealand *ex situ* strategy for Rhododendron: project report to the end of June 2017. *The New Zealand Rhododendron* 5:26-29.

MacKay MB. 2017b. Uncommon *Rhododendron* species in New Zealand: are there any at the bottom of your garden? *The New Zealand Rhododendron* 5: 32-39.

MacKay MB, Hootman SE. 2017. Examining the significance of the *Rhododendron* collection at the *Rhododendron* Species Botanical Garden (Federal Way, Washington State, USA). *Rhododendron Species* (2018): 55-69.

MacKay MB, Hootman SE, Smith GF, Thomson D, Gardiner SE, Smith P. 2018. *Updated global analysis for ex situ conservation of Rhododendron L. (Ericaceae)*. Report to *Botanic Gardens International, January 2018*. Massey University, Palmerston North, New Zealand, and Botanic Gardens Conservation International, Richmond, UK.

MacKay MB, Gardiner SE. 2017a. A model for determining *ex situ* conservation priorities in 'big genera' is provided by analysis of the subgenera of *Rhododendron* L. (Ericaceae). *Biodiversity Conservation* 26 (1): 189-208. Published online 25 October 2016. DOI 10.1007/s10531-016-1237-0.

MacKay MB, Gardiner SE. 2017b. Geographic analysis of Red List *Rhododendron* (Ericaceae) taxa by country of origin identifies priorities for *ex situ* conservation. *Blumea* 62: 103-120. Published online on 16 August 2017. <https://doi.org/10.3767/blumea.2017.62.02.05>

MacKay MB, Smith GF, Gardiner SE. 2017. New Zealand collections of *Rhododendron* as a resource for *ex situ* conservation. *New Zealand Journal of Botany* 55(2): 193-214. <http://dx.doi.org/10.1080/0028825X.2017.1291434>. Published online 2 March 2017.

MacKay MB. 2016a. Development of an *ex situ* conservation plan for *Rhododendron* species in New Zealand. *The New Zealand Rhododendron* 4: 26-27.

MacKay MB. 2016b. Early *Rhododendron* collections in New Zealand: species collected by Douglas Cook. *The New Zealand Rhododendron* 4:38-45.

MacKay MB, Smith G, Gardiner SE. 2016. Analysis of geographic and taxonomic groups informs conservation of *Rhododendron* L. subgenus *Vireya* (C.B. Clarke) H.F. Copel. (Ericaceae). *Blumea* 61: 170-180. doi.org/10.3767/000651916X693275. Published online 20 September 2016.

Schepker H. 2018. *Spreadsheet of Rhododendron taxa held in collections in Germany*. Unpublished data from H. Schepker, Rhododendron Park, Bremen.

Thomson D. 2017. *Rhododendron* species collections verification. *The New Zealand Rhododendron* 5: 22-25.

(TRC) Taranaki Regional Council. 2017. Pukeiti Plant Hunter's Station: 'R'. Online at: <https://pukeiti.gardenexplorer.org/taxalist-R.aspx>. Searched 21 August 2017.



PARTNERING PEOPLE AND PLANTS THE ARS/DRG JOINT CONVENTION BREMEN 2018

Doug Thomson

Pukeiti Rhododendron Trust (PRT) has a long history of forging and maintaining strong links with individuals and organisations. In fact, for 60 years, Pukeiti depended on fund raising and voluntary work which would never have eventuated without the good will and enthusiasm fostered by strong interpersonal connections.

Now, as the Pukeiti Rhododendron Trust has moved away from the management and day to day operations of Pukeiti and has set about building the New Zealand Rhododendron Species Conservation Collection, strong interpersonal connections are still vital. One key way of making those connections is of course by attending conferences. International conferences in particular, offer the chance to meet highly knowledgeable professionals and amateurs from around the world.

So the American Rhododendron Society international convention, held in collaboration with the German Rhododendron Society in Bremen,

Germany, this year, was an ideal opportunity for the Trust. It was scheduled for 21st to 26th of May and was set to include two whole days of lectures and three excursion days visiting gardens and nurseries. Several of the world's authorities on rhododendron collection and cultivation were to be attending the convention and the PRT Board of Trustees felt it was important to send someone to meet up with them. As I had already met Hartwig Schepker, Director of the Bremen Rhododendron Park and convention organiser, and Steve Hootman, Director of the Rhododendron Species Foundation garden in Seattle, who was also attending, the Board decided to send me. This was a chance to build on those relationships and establish new ones as well. Even more importantly, with the conservation collection project well under way the convention was well timed as it would allow me to inform everyone about PRT's progress with, and aims for, the conservation collection. It was not just a chance to describe the verification process being undertaken in participating New Zealand collections and our

aims to prioritise endangered species for conservation, but it was also a chance to invite collaboration with other like-minded organisations.

In the library at Dunedin Botanic Garden we have a copy of 'Rhododendron-Park, Bremen' by Jochen Mönch and Hartwig Schepker, which is an introductory guide to the highlights of the garden. The majority of photos show one of the world's largest rhododendron collections bursting with colour within a beautifully crafted landscape. I remember standing talking to Hartwig as he was about to leave Dunedin after speaking at the NZRA 70TH Jubilee conference in Dunedin in 2014. I said that I would love to visit his garden but couldn't see how that would happen any time soon. Little did I realise that 4 years later I would be on my way. I also didn't realise just how much the quality of the speakers, the contacts and the gardens and nurseries there would make the journey so exceptionally worthwhile.

Flying in over Bremen I was struck by how well wooded it was with tree lined streets and waterways

surrounded by green fields. A ten-minute taxi ride took me from the airport to the centre of town and a welcome hotel room where I rested for the morning before brushing off my school German and venturing out to take a tram to the Rhododendron Park. I was keen to see the park as soon as possible because Hartwig had emailed me advising that due to unusually high spring temperatures, the flowering season was so advanced that much of the colour might be finished by the time of the official convention tour the following Thursday.

The streets leading to the Rhododendron Park are lined with grand houses with large gardens, many with impressive rhododendrons. In Bremen, the design and construction of large houses such as these emerged from a vibrant era of merchant trading that began as far back as the 13th century. Wealthy merchants commissioned these grand designs and established a style of opulence that remains to this day in the wealthier parts of town.

The Rhododendron Park itself began relatively recently when the first rhododendrons were planted under mature trees in 1936, in part of an estate deer park. Today, the deer have gone, and now rhododendrons are the attraction.

The park is thoughtfully designed, with large groups of rhododendrons framed in green by the foliage of trees and surrounding lawn areas. Sweeping patches of evergreen ground cover add texture to the lawn areas, with swathes of ivy, *Galium odoratum* and *Euonymus fortunei* – in places doing a double act with *Dicentra formosa*. The smooth *Euonymus* foliage contrasts with the feathery *Dicentra* and its light pink flowers, but remains after the *Dicentra* has died down.

Groups of large old *R. catawbiense* hybrids flowering in hues of pink and lilac dominated the older plantings, but newer plantings gave a full range of colour. One border had a pleasing jostle of yellow, white, purple, pink, mauve and red. A border of German *R. yakushmanum* hybrids appeared as a long curve of pink and white with healthy plants ensuring a seamless flow

of colour. Of course, *R. yakushmanum* is also valued for its indumented new growth. So, promoting that in favour of flowers as a complement to the swathe of colour, one end of the border hosted groups of *R. yakushmanum* ‘Debbie Dane’, *R. proteoides* ‘Web’s Bee’ and *R. pachysanthum* ‘Silbervelours’, all de-budded to hasten their felted new foliage in various shades of silver and fawn.



Rhododendron blackii



Rhododendron rugosum

As a result of a cancelled flight from Hongkong, I had been travelling for nearly forty hours before my arrival. So, having got my bearings to some degree and whetted my camera’s appetite I decide to return to the hotel before my legs turned entirely to lead.

The following day, Hartwig had invited me to meet him and Steve Hootman at the garden at midday, and when I got there he also introduced me to his chief propagator Martin Monthofer. Thus began a tour firstly of the propagation nursery area and then of the wider garden that lasted nearly 8 hours. First stop was the vireya propagation house where the plants are grown in a free draining mix of coarse peat, perlite and leaf-mould. To ensure maximum drainage they are also grown in plastic-mesh water-lily pots or in ordinary pots which have had 2cm holes drilled in them all around the sides. Although the roots can end up growing through the holes and suffer damage during repotting, as long as any rough ends are trimmed cleanly, die back and disease infection are avoided.

Only a few were in flower. *Rhododendron emarginatum* had one or two of its small glossy, buttery yellow, open faced blooms. Another dwarf

variety was the Australian hybrid *R.* ‘St Valentine’, with glowing red flowers and recommended as a good vireya for beginners. Although not many flowers were on show, the foliage on some was remarkable in its own right. The clusters of new disc-like leaves on *R. blackii* were covered in bronze scales and resembled delicate metallic art installations. Outstanding was *R. rugosum* with its red stems

and petioles carrying new leaves with deeply etched veins shaded-in with reddish brown scales.

Next door, were young plants of mild temperate rhododendrons that would struggle in Bremen’s sub-zero winter temperatures. Having seen only deep wine coloured forms of *R. camelliflorum*, I expressed surprise at one with light pink tones and learned that it also has white and yellow forms. A small potted specimen of *R. dalhousiae* var. *rhabdotum* leaned with the weight of three large red-striped, cream florets. Another plant, with smooth oval leaves, was thought to be a new species from Subsection Thomsonia. Steve Hootman who also had the same accession in his collection at the Rhododendron Species Foundation, showed us a picture he had taken just before leaving for Germany, of the first flower bud opening to reveal deep pinkish red florets.

Moving outside we surveyed some of the milder temperate plants growing in shade houses for protection from the strong sunshine which, although it was still spring, already burned with unseasonal summer intensity. In winter these plants are all taken into polythene tunnels, to be brought out again in March. As specimens



R. catawbiense hybrids from hill

grow larger the process continues by potting up until the plants need to be re-propagated to retain the accession.

Here were specimens of *R. macabeanum*, from 3,600m up on Mt. Saramati in Naga Land. This species grows at altitudes from 2,450 – 3,800m, so these were from the high end of their natural range. Different specimens of *R. edgeworthii* from both the Lower and Upper Dibang Valley in Arunachal Pradesh varied, from having quite oblong lanceolate leaves to the more familiar ovate leaved forms, some with beautiful bronze new growth. Airy young plants of *R. latoucheae* sported pink tinged new growth on slender stems. *Rhododendron polytrichum*, a close relative of *R. strigillosum* from Subsection Maculifera, caught the eye with its greenish bronze new growth covered in white bristles, whilst from Subsection Irrorata, the

drainage. This obviously makes a very lean mix, so nutrition is added through the growing season in the form of liquid fertilisers Universal Green 26-10-15, Hakaphos 15-1-15 and Osmocote Exact Mini in its 3-4 month formulation.

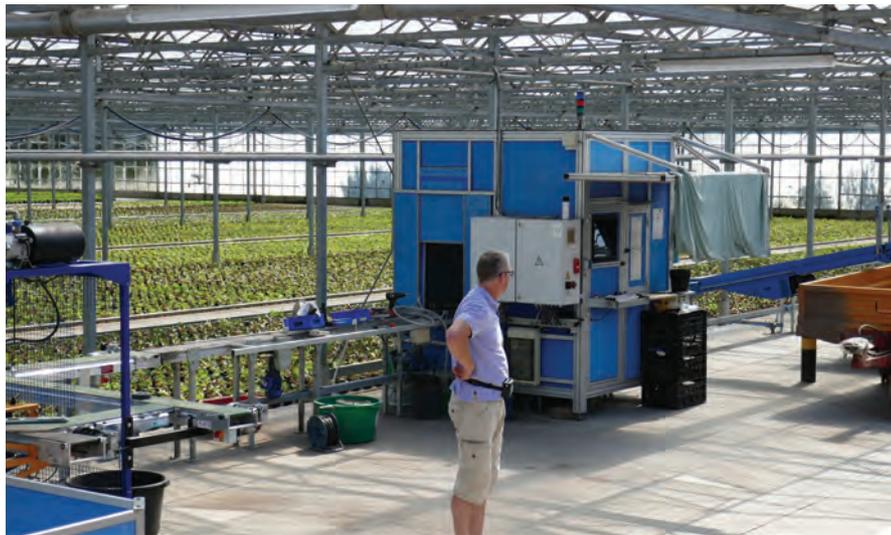
Venturing out to the wider garden the success of this approach was particularly evident in a border of the drainage sensitive Taliensia species. All plants were healthy, compact and well-shaped and again, these had been de-budded to ensure that the new growth stood out as the main feature in the border. A range of effects from white-backed glaucous new leaves (*R. phaeochrysum*) to white tomentose (*R. trillianum*) to greenish bronze (*R. faberi*) blended together, whilst the older leaves also contributed deeper shades of rust coloured indumentum.

flowered Ghent Rusticas followed again by the more vivid Knaphill hybrids. Interesting points made as we wandered around were that some of the Ghents can be more resistant to powdery mildew so they have been used in breeding programmes with Napa hybrids to produce strong coloured azaleas with mildew resistance. Ken Cox pointed out that the so-called Viscosum hybrids don't appear to have any of the late, small flowered white species *R. viscosum* in them and are more likely to be *R. arborescens* x *molle* ssp. *japonicum*. It was also apparent that in deciduous azaleas, scent is limited to yellow, pink and white coloured azaleas as there is a genetic switch that turns the scent off as colours get darker, particularly in the red and orange shades. Curiously, it was also noted that women tended to appreciate fragrance in more azaleas than do men.

Seeing *Rhododendron oreotrephes* from Subsection Triflora in one border and soon after, *R. cinnabarinum* ssp. *xanthocodon* from Subsection Cinnabarina in another, prompted an interesting discussion on their potential relationship. Both specimens had similar campanulate purple flowers, whilst the densely scaled undersides of the leaves were exactly the same. The key difference though was that *R. oreotrephes* had scaly petioles whereas *R. cinnabarinum* ssp. *xanthocodon* did not. It was concluded that *R. cinnabarinum* ssp. *xanthocodon* was a link between the two subsections.

Walking through the park, a tall *Fagus sylvatica* stood out, highlighted by a whitewash coating down one side. Another beech in front of this one had fallen over in the previous year. During the cold North German winters the bark can freeze, so the whitewash protects it from winter sun and prevents it from splitting.

In one border Hartwig had planted ten *Acer palmatum* in an effort to emulate the effect he had seen of mature maples and azaleas at the azalea garden in Dunedin Botanic Garden 2014. Although some had succumbed to verticillium wilt, the remaining plants showed promise in achieving his desired result.



Plant grading unit Schröder's Nursery

new growth on *R. anthosphaerum* stood out with wine-red petioles and bold stripes of the same colour down the centre of each new leaf.

This behind the scenes tour also included vast piles of soil mix consisting of rough peat, pine bark and leaf mould for use around the garden. As we headed out into the wider garden Hartwig explained that the local soil was very clayey, so the strategy was to build up above that with a layer of sand and drain pipes, topping that with a layer of the peat, bark and leaf mould giving perfect

In a vibrant contrast to these subtle foliar variations we moved on to the riotous colour palate of the evergreen Japanese azalea grove. The area holds one of the most extensive collections of Japanese azaleas which, conforming to the German sense of order, were all planted alphabetically. Specimens of the earliest varieties to those of the present day were on show.

Moving from there we continued the colour fest with the deciduous azaleas which were laid out in their hybrid groups. Brightly coloured Occidentale and Mollis hybrids led to the smaller

The battle with fungal disease in the park stems from a high water table with high salt content. In another area, root rot had invaded a stand of rhododendrons which prompted a complete renewal. Cuttings were taken before removing and disposing of all existing plants. The topsoil layer across 1000 m² was stripped off and replaced by the sand, drainage and peat-leaf-mould mix ready for the return of healthy new rhododendrons. Price tag - 37,000 euros.

Every cloud has a silver lining though and the benefit of the renewal operation was a large pile of spare soil that could be used to build a small 15m high grassed hill to give a raised vantage point in an otherwise completely flat garden.

Back on level ground, one of the iconic views in the park is of the Bremen Bull – actually a larger than life bronze statue of a North American bison, framed by Japanese azaleas and a background of trees at the end of a wide grass walk. The statue, by Bremen artist Ernst Gorsemann, was installed at the inception of the park and creates an almost visceral sensation of strength and power amongst the light fragility of leaf and flower.

Towards the end of the day we came to an area where a series of parallel hedges were used as the background for, and also dividers between,

groups of German rhododendron cultivars. Most prominent were two borders featuring red rhododendrons mixed with white ones. One was predominantly white with some red and led at right angles to another of mostly red and some white. By this time Scottish author and plantsman Ken Cox had joined us. Seeing the vibrancy of the arrangement Ken enthused so much about the innovative use of colour that when urged to, he gladly repeated it all on video.

By now we were ready to eat and headed for a nearby Mexican restaurant where a trip to the neighbouring region, Ammerland, was planned for the following day. Hartwig was going to take some of the convention speakers to see nurseries in the area as well as the 4-yearly exhibition “RHODO” in Westerstede, and asked if I wanted to go along.

The next morning a larger group of us including some of the speakers at the convention gathered in the hotel foyer. I was introduced to Ole Jonny Larsen from Norway, Rama Lopez-Rivera from England and Don Hyatt from America, before squeezing into two cars and heading northwest into Ammerland.

Known as the Landscaped Region for its picturesque beauty of open moors, rough marshland, tree lined country roads and beautiful gardens, Ammerland is a prized

holiday destination in Germany. Its flat countryside lends itself perfectly to cycling holidays and its peaceful environment and rural lifestyle attract retirees from the cities. One of the most prominent economic drivers in the region is the plant production nursery industry. The region supports 450 nurseries covering 4200 hectares (ha), produces 25% of all plants grown in Germany, 80% of all rhododendrons in Germany and injects 250 million euros into the German economy.

Our first stop was Schröder’s Nursery where we were welcomed by Managing Director, Timo Schröder, who introduced us to the German nursery touring style. The 60 ha nursery required more than just a guide to navigate its extensive spread. Rather than walking, we all boarded a large trailer decked with hay bales and sat on those as we were towed around the different areas of production. The tour began in a large warehouse where young plants were waiting on multi-tiered trollies for dispatch. Schröders holds onto and recycles all their pots - some of which were now fifteen years old - so plants are grown to 1.5L size and sold bare rooted.

As with the Bremen Rhododendron Park, the concern was that by the time we came here on the convention tour, most of the flowering would be over, so for this visit, colour was our goal. We weren’t disappointed. Our first views were row upon row of small potted plants just coming into flower in a light haze of deep pink across the rows. Moving from there, we went on to the different fields of stock plants and it was here that colour really stole the show.

Hectare after hectare, each stock-plant area was a patchwork of red, white, maroon, purple, yellow or gold with solid blocks of colour varying in size from about 100 to 300 plants or more, according to the popularity of the rhododendron variety in stock. For me it was unparalleled. Ken Cox asked, “Have you ever seen anything like this?” I shook my head, but added in stunned wonder, “It’s like tulip fields - only rhododendrons.”

Timo told us they hold the largest collection of 19th century English



Evergreen azaleas



Schröder's Nursery

rhododendron hybrids and the most complete collection of German hybrids. They produce 1.5 million evergreen rhododendrons each year and 0.5 million deciduous azaleas. As we trundled around I counted at least one hundred and thirty polythene tunnels, each 90m long and containing 11,000 plants.

One cloud on the horizon however was that the German Government was planning to build a new motorway

linking North Germany with Holland. Its track cut through one side of the nursery, limiting any further scope for expansion, and although Timo was trying to negotiate for it to be diverted 100m into surrounding grassland, the Government was, so far, not open to discussion.

Leaving Schröders, we drove on to Westerstede for what is billed as Europe's largest rhododendron show. 'RHODO' is a showcase expo where

local nurseries group together to promote their products, funding and setting up the whole event themselves.

The town square was transformed from an open brick-paved area to a kaleidoscope-themed landscape design with geometric sections of blue-green astro-turf complementing new grass turf laid around rhomboid beds of rhododendrons in full bloom. A 2.5m red, white, purple and pink geodesic sculpture acted as the centre-piece.

Beds of rhododendrons and companion plants extended along adjacent streets and, tying it all together, mature trees had been brought in to provide framework. Nearby, large tents held different nurseries' rhododendron and azalea displays. Stand out plants were a group of *Rhododendron* 'Radistrotum Select' presumably a cross between two of the smallest rhododendrons in the genus, *R. radicans* and *R. calostroturnum*. They were completely smothered in white-centred, lilac coloured flowers and made a charming arrangement in front of the indumented new foliage of *R. pachysanthum* 'Silbervelours', *R. wiltonii* and *R. rex*.

I gave the "Most Unusual in Show" prize to *R. macrosepalum* 'Linearifolium' with 8-10cm long,



Rhododendron display



Education Centre

very narrow, curling, hairy leaves and 5-6cm long very narrow pink petals creating an unusual spidery effect. Close by were groups of *Rhododendron tomentosum* with similarly narrow, but shorter leaves and white pompom-like flower trusses finished off by a frizzy halo of stamens.

On our way back to Bremen we took a quick walk through a conserved native beech and oak forest, stopping to admire a fifteen-hundred-year old oak which was about 3m across the trunk and sporting an impressive 1.5m burr.

Monday was a free day while all the convention speakers went through the tech checks ahead of the first day of lectures on Tuesday. This gave me a chance to return to the Rhododendron Park for a look through Botanika, the park's information/education centre and winter garden complex. Both were outstanding. The education programmes in the park cater for between 400-500 school and student groups each year and every effort had been made to create interest and allure for young and old alike. The partition

walls between information centre displays were built and decorated to look like sections of leaf including cross-section views of the internal leaf structure. Interactive displays explored the structure of leaf, flower and pollination whilst three novelty arm chairs in the shape of Venus fly traps, emitted sounds of viscous mastication whenever anyone sat in them.

The interiors of the winter garden houses were extensively landscaped to emulate rhododendrons' native habitats. A curving set of rock-like,



R. macrosepalum 'Linearilobum'



R. tomentosum 'Lineariifolium'



R. anthosphaerum

molded concrete steps pointed us towards 'Mt Kinabalu' and took us up a steamy mountain side with richly coloured vireyas planted extensively amongst other tropical plants. Next door a high Tibetan pass curved round under an impressive 'rock' overhang complete with waterfall and Tibetan prayer flags. Here were the mild temperate rhododendrons that would not survive the winter outside. It was odd to see *R. arboreum*, *R. magnificum*, *R. praestans*, *R. montroseanum* and *R. protistum* all growing in a glass house but admirable that the effort had been made to cater for them.

The Tibetan theme featured strongly with little shrines, prayer wheels – one as big as a revolving door - and several Buddha statues. There is a strong relationship with the German Buddhist community and pride of place was given to a large golden Buddha statue that had been donated by the Dalai Llama. The Dalai Llama donated one of these golden Buddhas to each continent in the world to promote world peace. Because he had been told of the special cultural atmosphere created at Botanika, the statue for Europe was sent there.

I had not been able to attend the pre-convention tours in the Netherlands, Germany, Sweden and Denmark, however these three days in the Rhododendron Park and Ammerland were an ideal preparation for the convention itself.

Dr André-Michael Schulz, President of the Deutsche Rhododendron Gesellschaft with Ann Mangels, President of the American Rhododendron Society (ARS) and Ken Webb, Western Vice President, opened the convention on the Monday evening, welcoming us and pointing out that there were 197 participants from 18 different countries. As far back as 2010, Bruce Feller, Past President of the ARS, proposed a moving convention in Europe where the ARS also has several chapters. The idea of a joint convention with the DRG emerged from the proposal and was presented, in 2015, to Hartwig who then got the ball rolling. Now after numerous emails, meetings and extensive coordination



Education Centre



Tibetan pass and prayer flags

of many different people and tasks, at last it was happening. Such an enthusiastic response from far and wide was a clear endorsement of the idea and all the work behind it.

Following the theme 'From the wild into our life: Finding Rhododendrons', the first day of lectures on Tuesday was hosted by plant hunters recounting experiences in the field.

Hartwig began the day with a short overview of plant hunting from the past to the present that deftly linked the themes of the talks to follow. He highlighted some of the challenges that faced plant hunters with a 1924 quote by Frank Kingdon Ward on Arunachal Pradesh in N India.

"...perpetual rains, snakes and wild animals, giant stinging nettles, and myriads of biting and blood sucking

ticks, hornets, flies and leeches." Hartwig added that in these respects Arunachal Pradesh had remained the same and that in fact was home to 73 different kinds of leech.

Rama Lopez-Rivera took us on a journey from Taiwan to Heping and from Yakushima to South Korea, seeking different forms of and relationships between *R. pachysanthum*, *R. morii*, *R. pseudochrysanthum*, *R. yakushmanum*, *R. yedoense*, *R. schlippenbachii* and *R. mucronulatum*.

Ole Jonny Larsen explored the variations in the Lapponicas of Sichuan as well as offering from one trip, an image of his blood-soaked sock following the discovery of a leech on his foot. It was a graphic illustration of Hartwig's comments earlier and

also showed that leeches were by no means restricted to Arunachal Pradesh.

Steve Hootman focused on rhododendron species that he had found in more outlying areas of Central and Eastern China, showing us images of new and rare species not yet in cultivation. Some species were restricted to high elevations on mountains as far as 160km apart, isolated by the surrounding tropical environment. Over time this leads to greater speciation, but sadly, also leaves the plants more vulnerable to threats to their habitat.

Ulrich Pietzarka talked on rhododendrons from the far east of Russia, exploring Sichote Ailin Mountain range 20km from the Chinese and Korean borders. This

Seamus O'Brien recounted his journeys of 2012, 2013, 2014 and 2015 through the Sikkim Himalaya and West China following the footsteps of early plant hunters Joseph Dalton Hooker and Augustine Henry. As Director of Kew in the late 1860s, Hooker is credited with developing Kew into the best Botanic Garden in the world. Seed from his expeditions to the Himalayas were sent not only to Kew and Royal Botanic Garden Edinburgh, but also to Glasnevin in Ireland, widening the range of species and fostering rhododendron cultivation there too. Those plants and their progeny, still, 160 years later, continue to fascinate woodland gardeners and prompt expeditions by modern explorers such as Seamus.

ceiling paintings of early monarchs and knights of the city. More breathtaking than all that though, were five models of 15th century merchant trading ships each about 5m long, with masts about 4m tall, suspended from the ceiling by chains. One even bristled with working cannons – which given the surrounding ornamentation fortunately were not fired.

Dr. Lohse welcomed us and gave a brief history of Bremen from its early trading origins to becoming a prominent ship building port. Since the 1960s when that wound down, new industries constructing luxury yachts, cars and aeroplanes have grown. Thus, in spite of 80% of Bremen having been demolished by Allied bombing raids during the war, Bremen is a thriving city once more. As key transport hubs, railway stations in particular were targeted, but the Bremen main railway station remained the only German city railway station to survive the war. Local inhabitants built wooden model cars and placed them on the tracks to give the impression from the air that they were roads and so diverted the bombers' attention elsewhere.

Following the reception, dinner was served in the arched 14th century wine cellar restaurant below the Town Hall. It boasts 600 types of wine, 1000 different named wines, the oldest from 1727 at a price of 4000 euros. The most expensive however would set you back 7000 euros for a half litre bottle. Needless to say, these were not on the menu that night and in fact, buying a bottle requires an interview with the cellar master. He would want to know the reason for buying the wine and that you were not crassly just buying it because you were rich, but that you cherished its heritage value.

On Wednesday morning we boarded buses for our first convention excursion day to Ammerland. First stop was to the 85 year old zu Jeddelloh Nursery in the centre of Ammerland. The nursery has 160 employees covering 6 different locations producing deciduous trees, conifers, rhododendrons, roses and perennials for local garden centres. Their simple but clever system of sinking pots into the ground provides stability for taller plants as well as



Evergreen azaleas

was an entirely different view of rhododendron country, a savannah-like landscape where *Rosa rugosa* is a widespread native plant and *Quercus dentata*, *Q. mongolica* and *Q. alba* form light forest of 2m high. This is the land of *Rhododendron dauricum* Group variously described by lumpers as one and splitters as four species, growing along with *R. schlippenbachii*. In this environment they withstand 25 to 35 degree summer heat but in winter survive -40 to -45 degrees. Forget frost; at these temperatures trees and rocks *explode*.

That evening we attended a special reception for convention registrants hosted by local Senator Dr. Joachim Lohse in the magnificent 15th century town hall which is a UNESCO World Heritage Site. The reception hall was an incredible work of art from floor to ceiling. A parquet floor supported a façade of carved oak panels that formed the walls of a separate chamber which in turn was flanked by an intricately carved oak spiral staircase. Arched stained glass windows let sunlight stream in, whilst overhead, solid oak beams were separated by



Landscaping with mirrors

protection from the cold. A laser-guided machine digs ditches, installs a drain and then empty pots are placed along it ready to hold the crop of potted plants for sale. Some plants are stabilised by circular supporting frames that each pot fitted into, on the soil surface. Stock ranges from 5L to 50L size containers and customers can plan for spring early by visiting the nursery glasshouses where plants are forced into flower through November, December and January.

The 14 ha Park of Gardens came next. Not only did it have a 3.5 ha rhododendron area containing 2000 specimens, but it also had over 40 themed gardens where visitors could find ideas for their own gardens. Its success was confirmed by an annual visitor count of 130,000.

A few caught my eye on the way through. One, a modern, minimalist design with paving, low fountains and the clever use of mirrors contrasted with a cottage style floral display complete with pink pergola. A small wooden chalet with tussock, gravel and rusted iron panels reminded me of a scene from Central Otago. Applying my own rusty German to one of the iron panels it was inscribed:

“The garden is entered not with the foot, but with the

heart”, which although a little twee, is nonetheless true.

Our afternoon destination was to the 50 ha Van der Berk Nursery that specialised in buying in rhododendrons at 30 – 40cm and growing them on to sell as semi-mature or mature plants.

Once they reach 70cm they are ready for sale, but if they don't sell at that size, they are grown on, and transplanted every 3 years. The largest grades are up to 4m high, have root balls over 2m across and cost between 5000 and 6000 euros. The rhododendrons grow in a layer of naturally formed peat that is at least 1.5m and as much as 4m deep.

Every year seasonal workers from Poland arrive to de-bud the plants, preventing flowering and stimulating leaf and branch growth instead. Along with regular pruning over several seasons, the results are full, compact plants that are wider than normal and which, once planted by the customer, look good at any time of year.

The Convention's visit to Bremen Rhododendron Park on Thursday was organised into 5 separate tours, with each tour guide looking at a different aspect of the garden. We were given a choice of 3 out of the 5 so I opted for Ken Cox's focus on the use of species, azaleas and

hybrids in the woodland along with Steve Hootman's exploration of rhododendron species and park staff member Anne Dau's look around the different main features of the park.

Nearly a week on from my first tour a lot of the plants were certainly beginning to fade in the heat, but there was still plenty of colour. The tours reprised many of the points covered on my tour the previous Saturday but a few other highlights emerged. Ken commented on the waterways and ponds which feature strongly in the park, saying that this allows perspective in the garden. In an acknowledgement that for many of us, empty space is an irresistible potential planting site, he said the fact that you can't plant in a pond means the garden does not become a 'rhododendron jungle'.

We passed two small rhododendrons that could easily have been missed. *R. 'Lori Eichelser'* and *R. 'Rödhätte'* are red flowering Repens hybrids that were popular for their low growing habit and bright flowers until they lost favour following the introduction of *R. yakushmanum* and its hybrids. *R. 'Lori Eichelser'* combines the features of its parents *R. forrestii* ssp. *forrestii* 'Repens' and *R. 'Bow Bells'*, as a compact plant with dark shiny green



Hornbeam arches for sale at Bruns Nursery



Cloud pruned conifers at Bruns Nursery

leaves and deep red flowers, so it was good to see it still represented in the Bremen collection. *R. 'Rödhätte'* is more lax in habit and its drop in favour was more understandable.

An evergreen azalea hybrid with rose pink flowers and mounded habit from Ken's own nursery at Glendoick caught his eye. This was *R. 'Wombat'*, one of a range of Glendoick *R. nakaharae* hybrids which do not need heat to flower.

Steve Hootman toured us through the species area where most of the plants had finished flowering so the focus shifted to leaves and habit. We did not stop only at rhododendrons though and *Hydrangea sargentiana* stood out with large soft, greyish leaves and very bristly stems. Along with *Hydrangea aspera* 'Hot Chocolate' which we had seen earlier with reddish brown new growth, they raised my estimation of hydrangeas considerably.

Steve made an important point as we stopped at a specimen of *R. sinogrande* with curled, distorted leaf tips. This effect is the result of low humidity and regardless of how much we irrigate large-leafed species such as these, if there is not enough moisture in the air around the plant, the distortion will happen regardless.

The second day of lectures titled 'From the wild into our life: Using Rhododendrons', on Friday, focused on the research and cultivation of rhododendrons.

Professor Matthias Ullrich from Jacob's University Bremen gave us a perspective that few of us were familiar with – rhododendrons as medicinal plants.

On the basis that rhododendrons have poisonous compounds, his team's strategy was, using the Bremen Park collection as a resource, to isolate those compounds and investigate whether they could be used safely as alternatives in chemotherapy or antibiotic use. Compounds from *R. ferrugineum*, *R. ambiguum* and *R. anthopogon* ssp. *anthopogon* were the top 3 with most potential for chemotherapy. Low doses of compounds from *R. collettianum* were identified as effective against bacteria and because they were not a variation of existing antibiotics, represented a breakthrough in antibacterial research. *R. collettianum* is a rare species from Afghanistan however, so work was being done with cultivated plants to generate cell cultures in large quantities.

Ken Cox's talk on woodland gardening gave a great overview, tracing its history and development along with use of colour and landscape design from different examples around the world. One strategy he showed was the use of 'transparency pruning' where trees and shrubs are pruned to allow clear views through the woodland garden. For years I have followed the idea of creating screens to allow for surprise and 'discovery' as people arrive in a new space. However, there is certainly a place for gardens with tree stems exposed to show their graceful lines and allow more distant views. In such gardens the view unfolds rather than being unveiled.

Jürgen Schlenz, a consultant from the Nursery Advisory Service at Westerstede talked about the close working relationship not only between the different nurseries in the region, but also with advisory bodies such

as his. This collaborative approach allowed everyone to thrive and enabled fast effective responses to threats from disease, which could otherwise quickly spread through the region.

The reason for such a concentration of highly productive nurseries, he said, was due to different soils that changed every few kilometres having been left behind by glaciers following the ice age. Although our focus had been mainly on rhododendrons, the close proximity of marshland, peatland and sandy soils allowed for cultivation of a wide range of different crop types throughout the region.

An important problem however was the high level of iron in the soil which is a focus of study by eight different research stations in North Germany.

Trading is facilitated by good road and motorway connections with the rest of Europe along with rail transport which has been effective since 1867.

The last talk of the day was a light-hearted look at rhododendrons in the arts, again by Ken Cox. He showed us different images of them in prints and paintings and even found them in a song. I think only Ken could have come to a rhododendron convention and led all participants in three choruses of *Je N'aime Pas Les Rhododendrons* – 'I Don't Like Rhododendrons'!

Following Ken's talk there was a gap in the schedule for a few announcements where I was given the opportunity to address the convention. Although I had been letting everyone I talked to know about my main reason for attending the convention, this was a chance to make sure everyone there was aware of Pukeiti's Rhododendron

Species Conservation Collection initiative and the aims behind it.

My announcement also prompted John Roy from the Scottish Rhododendron Society to announce that his group also was involved in a similar project in Scotland. With continuing pressure on species in the wild, conservation projects such as these will at least ensure species are not lost from cultivation. Passing on details of our progress to such an influential audience of rhododendron gardeners and collectors is valuable as it encourages further work in this direction and stimulates ongoing debate on the merits of *ex situ* conservation.

The visit to Schröder's Nursery on the last day of the convention proved how lucky I had been to see it the previous Sunday. The colour display was well over, but Jörn Schröder, Operations Manager, led our tour this time and explained more of the nursery's methodology.

Their annual production of 2,000,000 plants was entirely grown from scion cuttings rather than from tissue culture because in the time it took to prepare 1 tricky and fiddly tissue culture, staff can do 10 cuttings. The scions were then grafted onto unrooted *R. 'Cunningham's White'* cuttings to bond together and form roots in one operation.

We arrived at one vast glass house containing 150,000 plants and one remarkable machine. A system of conveyer belts fed potted rhododendrons through a unit containing a computer. In a stunning combination of technology and efficiency, the computer not only photographed them, but also assessed their quality and graded them. Different grades of plant were then conveyed onto dedicated pallets to be picked up by a fork lift and assigned to appropriate customers with corresponding quality requirements.

At pinching out time, another machine supporting platforms big enough for six people to lie on would be brought in. It would then move across the plants allowing dangling hands to remove the buds efficiently and no doubt also avoid back strain.

The nursery holds 2200 varieties in stock to ensure availability if required, but only has 170 varieties in production at one time. In addition they also produce about 200 species on special production for specialist

growers. Jörn added though, that rhododendrons were not popular with young people who generally disliked gardening, so marketing was becoming a challenge.

The nearby Bruns Nursery represented an entirely different level of production to anything we had seen before. Rather than a few score or even a few hundred hectares, Bruns covered 1000 hectares. Going from the administration building at the entrance, to the furthest of 4 production depots, takes 15 minutes *by car*. During the peak of the season, 50 trucks of orders leave the nursery every day and plants are exported throughout Europe and to Turkey, Russia and China.

Their catalogue is a weighty bible of a book, with separate versions published in German, English, Russian and Turkish, and offering 4000 different types of plant. It is actually as much a reference book as it is a catalogue, with detailed descriptions of growth habit, flowering charts, diagrams of different root systems and extensive cultivation details.

Trees comprised 50% of their stock with plants available to suit every landscape. The scope ranged from natural field grown forms to topiarised and cloud-pruned conifers. Speciality lines included cones, ball shapes or cubes. Many of the larger deciduous trees were given similar treatment and trained into umbrella shapes, ready-made sections of hedge and, even complete hornbeam arches where 2 trees were trained towards each other. Beyond that were their 50 year old extra heavy standard trees, transplanted 5 to 7 times to maintain well-formed root systems.

Transport requires road closures and when speed is of the essence, even the use of helicopters, for carrying a tree from dispatch to its new destination. It is no surprise therefore, that the asking price is usually between €8000 and €10,000, but sometimes up to €18,000.

The end of the tour took us through the nursery's rhododendron park where the first rhododendrons planted in the 1950s grew in a naturalistic woodland of oak and Scots pine. These rhododendrons had been the foundation of the nursery's regeneration following WW2. At the end of the war, the Allies decreed that all ornamental plants were to be

disposed of in favour of food crops. Rather than do that though, the Bruns family shrewdly transplanted their rhododendrons to this nearby woodland for safe keeping until Germany returned to prosperity.

The convention ended with a farewell party at the Bruns Rhododendron Park pavilion, complete with brass band and lavish buffet served amongst a landscape of flowering rhododendrons and woodland park. It was the ideal end to a remarkable week. My expectations had been high, but had been well and truly surpassed by the phenomenal gardens and nurseries and illuminating selection of lectures. The organisation was flawless, catering exceptional, and the atmosphere warm and inclusive. Paramount for me though, was that it had been the perfect platform to inform an international audience of rhododendron enthusiasts about the New Zealand National Rhododendron Species Conservation Collection initiated by Pukeiti.

The ARS/DRG Convention 2018 was the ultimate expression of Bruce Feller's original idea and I think everyone who attended will be judging all future conferences against it. I know I will, and I will be surprised if they match up.

References: Cox "The Larger Rhododendron Species"

McQuire and Robinson "Pocket Guide to Rhododendron Species"

Monch/Schepker "Rhododendron Park Bremen"



Azaleas Island at Bremen Park

THE 2018 BANKS MEMORIAL LECTURE:

"PLEASE SIR, I WANT TO
WORK WITH PLANTS"
– AND LOOK WHERE
THAT ENDED UP!

Graham Smith Dip. Hort. Kew, AHRIH



My start in horticulture was not auspicious when I made the above statement to the careers' teacher at Grammar School, North London in 1960. His best suggestion was that I join the Royal Navy, as it was an outside occupation of great merit, but that suggestion was lost on me at the tender age of 15. Yes, I enjoyed the outdoors but it was nature in all its forms that stimulated me and plants in particular. Encouraged by gardening parents after the Second World War, wheelbarrow rides to the local allotment, growing things fascinated me and that led to reading all about what I was seeing and how plants fitted into the world around me.

A remarkable stroke of fortune occurred just a month before I was due to leave school in July when the Royal Parks of London advertised a new Horticultural Apprenticeship scheme, starting in August 1960. I immediately applied and eventually was selected and became the first apprentice in The Regent's Park, part of the old royal hunting estates in central London. I could not have been more excited but my parents brought me down to earth by asking how I was going to get there when we were 20 miles from the centre of London and work started at 7 am! A motorcycle was the answer and so started my big adventure with plants.

The Regent's Park

Regent's Park was a wonderful training place, full of magnificent old trees, huge lakes, the largest rose garden in London, and surrounded by the elegant Nash Terrace houses ringing the park boundary. It was old fashioned schooling amongst



Begonia Garden, Regents Park

older men brought up in service on big estates, expert gardeners and plantsmen in different ways, plus an organised teaching programme at college one day a week. Many great characters were part of the scene and all contributed to my education as a young novice in all facets of life. School was never like this! I was determined to do well and started accumulating certificates and RHS exam passes. Five years passed very quickly before the next stage approached and with encouragement from senior peers I applied for and was accepted into the new three year Diploma Course at Royal Botanic Gardens, Kew, in 1965.

Kew

Kew is an institution with an incredible 300 year history of plant collecting, researching, naming and distributing economic plants to all parts of the world. It was like stepping back in time going from newish glasshouses to the historically famous Palm House and Temperate House from centuries earlier. Even questioning “why were certain things done this way?” brought the inevitable answer “because it has always been done that way!” But I loved Kew and all it had to offer in the way of plants and their stories from around the world. I was surprised that the majority of my fellow students were not plant focused, but instead concentrated on the sciences or systems that were going to be their future direction of employment.

Kew was divided into six main sections, Tropical Palm House, Tropical Orchid and Victoria Lily Houses, Temperate and Australian Houses, Herbaceous and Alpine, Arboretum, and Decorative. Students generally got to spend six months in each department which was quite stimulating, except when you spent the tropical section in summer and the arboretum in winter! Crown thinning of a very large plane tree on the boundary of Kew Road with double decker buses passing below you was not much fun and a steep learning curve.

If there was a favoured section that could help with future plans then consideration was given to working in that area, and I had the chance to be in charge of the New Zealand collection in the Temperate House. Not that it did me much good for my career to come, because plants in clay pots on

benches looked nothing like the real thing in the bush at Pukeiti! My only claim to fame there was being asked to prune the large titoki, *Alectryon excelsus*, up in the roof of the house and reachable only from the upstairs gallery. I had to reduce the top to just below the gallery railings by leaning across with a long pole saw. Not easy as the crown was dense and until you cut a few holes in it the branch structure was hidden. Everything crashed down to the ground below, thankfully roped off to the public, and at the end of the day I had two large trailer sized piles. Whilst loading these I noticed a branch with clusters of fruit which looked most attractive and put these aside. When finished I took the branch to the Assistant Curator and said that these were a nice surprise. He looked at them, jumped up and was off out of the building. I was later to find out this was the first recorded fruiting of the tree in the UK and the specimen was duly painted for *Curtis's Botanical Magazine* and the story told – but no mention of me!

Somehow I found myself Chairman of the Students Council in my second and third year at Kew. This involved bringing ideas, problems and event planning before the Director, Sir George Taylor, which was rather daunting. But he listened and you got some wins and some losses and I managed to get a bit closer to the Curator of Kew, Dick Shaw, through these meetings. Both men were Scots but Mr Shaw was much younger and



The Queens Garden - redeveloped from 1968



Summer bedding outside Palm House - Kew Garden



Smith on the tree gang 1967 - Note health & safety?

more progressive and he enjoyed the fact that students wanted to freshen up the place. We developed a good relationship which continued during my career at Pukeiti and after he had returned to RBG Edinburgh.

New Zealand

New Zealand beckoned in 1968 and at a Kew Diploma gathering I talked to Frank Knight, former Director of RHS Wisley Garden, who had recently returned from a visit there. He was full of praise for the country and wished he had made the trip when younger. Little did I know that Pukeiti had been partly responsible for his visit. On the 10th October my wife and I sailed from England and arrived in Auckland exactly one month later, on the 10th November 1968. Regent's Park friends were waiting to meet us and we stayed with them in Devonport

until a flat was found. I had a position lined up with Auckland Parks, my Kew background working for me, looking after the Domain Tropical House. Life was good with jobs for both of us, great weather and much better pay rates. The first weekend I was on duty I spotted an advert for the Curatorship of the Pukeiti Rhododendron Trust, and asked my co-worker if he knew about the place. It turned out that he had just visited over Labour Weekend and was full of praise for what he had seen. He said "Go for it!" so after discussion with my wife I made enquiries, thinking at least it might get us a trip to New Plymouth, which with the mountain looked an amazing place.

We received information and an interview with a Pukeiti Board Member who lived in Auckland, more of a friendly chat with him and his wife than that at Kew where seven senior staff asked probing questions. It must have gone well as soon after we were asked to fly down for a viewing and in December 1968 we took the short flight south to be met by another Board Member. As he drove us slowly up the narrow metalled road, we wondered where on earth we were going. The drive through the bush was fascinating and I was immediately lost in the lushness of it all. Arriving at Pukeiti Lodge we were greeted by Rob and Ina Hair, Curator and Hostess at the garden and after a welcome cup of tea we were off on a whirlwind tour.

Rob, for all his 65 years, was as fit as a fiddle and it took a while to get used to his fast pace – but we did and I endeavoured to both answer questions

and make observations as we went. After a restful lunch in the Lodge we were off again, this time learning what life was like living at Pukeiti and the duties involved. At the end of an exhausting day we were delivered to a motel in New Plymouth with bus tickets for the morning service back to Auckland. In mid-January 1969 we were offered the position and after some soul-searching said "Yes", and moved down to Pukeiti in mid-February on our motorcycle. The rest of our belongings came by freight carrier, turning up about a week later. We chose to live in the newer empty staff house at the end of the garden, and we spent the first week or so buying second-hand furniture to make it our home. We were impressed that the Pukeiti name opened up all sorts of perks and donations to help us get started – amazing!

Pukeiti beginnings

When I actually started work as Curator I had a new staffer in the Lodge who with his wife were Custodians and he had no garden experience at all, plus another two part-timers, ex-farmers who had been there for many years, and Rob Hair continuing in a voluntary role to assist me. In the meantime many members of Pukeiti came up to see us and my wife was busy meeting with them as they were sussing us out. My first challenge was getting to grips with a septic tank, something I had never seen before and much amusement was shown by my part-timers waiting for me to come unstuck – so to speak. The laugh was on them when I discovered, after much digging, that the tank was empty because the floor had separated from the tank itself and had been like that for some time! A new tank was ordered and they had instructions from me to dig out a bigger hole to accommodate it. It was an omen for how things were going to be and as newbies we became accepted, accents and all. It was then that I learned that the position of Curator attracted 25 applications of which five were interviewed – but it was my Kew Diploma that settled the decision.

My role at Pukeiti was to bring some professional practice, particularly with



Carrington Road 1958



Curator at work 1971

managing the rhododendron collection and increasing its integrity on a world-wide basis. For me it was coming to grips with this totally alien environment and learning how it worked and what the components were that made it special. I asked for two years to live, breathe and learn about Pukeiti before making any forward recommendations for the future and this was accepted. As a Charitable Trust with a nationwide Board of 12 members and a local Executive Committee of 16 members it felt like I had 28 bosses at times but gradually it settled down as we learned to gel with each other.

At the end of the two years we had to make the decision that would affect us for the rest of our lives, as we originally had come out for a two-year working holiday, and family needed to know what we planned for the future. I floated the idea of us going back on a six week break to see family and make a tour of major rhododendron collections in the UK, establishing contacts for the future. This was agreed to and we, along with our baby daughter, were able to see family again, explain our future at Pukeiti, and arrange for what we had in storage to be shipped out to New Zealand. I made contact with more than 25 key garden owners and managers. The difference this time was not just the Kew connection, but that I was Curator of Pukeiti, a garden that was already being talked about in the UK, particularly after Frank Knight returned from his tour. From these contacts the first of many plant introductions were made into the Pukeiti quarantine house, and over time these have become popular as good garden plants. These include *Rhododendron maddenii* Gigha Form, *R. calostrotum* 'Gigha' and Wisley

hybrid rhododendrons 'Billy Budd', 'Beefeater' and 'New Comet'.

New Zealand Rhododendron Association

I learned, if anything, that making good contacts wherever you go is a key to building working relationships and these have led to sharing information, seed swapping, plant sharing and being prepared to tell your experiences to societies and organisations around the world. If Pukeiti was going to be number one then I had to become involved with everyone else in the game. The starting point for me was the New Zealand Rhododendron Association (NZRA), the national society. I became a member, was elected to their Council in 1974, and set up the NZ Rhododendron Register under RHS oversight in 1975. Conference attendance enabled me to go around the country sorting out the New Zealand hybrids in cultivation and have them registered by their owners to achieve a strong starting point. An Award of Distinction was introduced in 1983 for plants that had stood the test of time and a panel convened by me met annually to review plants nominated. *Rhododendrons* 'Charisma' (Award of Distinction 1984), 'College Pink' (Award of Distinction 1984), 'Falcon's Gold', 'Ilam Cream' (Award of Distinction 1983), 'Irene Bain' (Award of Distinction), 'Ivan D. Wood', 'Lemon Lodge' (Award of Distinction 1983), 'Rubicon' (Award of Distinction 1984), and 'Spiced Honey' are some of the originals that were honoured and many of these are sold in other parts of the world.

The NZRA has been active in distributing seedlings of species and

hybrids for many years and some very important rhododendrons were introduced to the trade, some of which still appear today in garden centres. The hybrid cross *Rhododendron macabeaenum* × *R. 'Unique'* has yielded 'Jeanne Church', 'Yellow Moon', 'Beauty of Ben Moi' and 'Spiced Honey', all excellent for larger gardens. A seed collection from Taiwan from John Patrick resulted in about ten species of rhododendrons being introduced, many not seen in New Zealand before such as *R. morii*, *R. oldhamii*, and *R. pachysanthum*, well suited to our milder climate and still thriving at Pukeiti.

Membership of the American, Australian and British Rhododendron societies was important and built up a group of contacts that was beneficial for information and later visits. This in turn led to the sharing of this association of like-minded people through tours with Pukeiti members to many parts of the world. For me, the first of these was in 1981 visiting the west coast of the USA, British Columbia and the UK. The key was the American Rhododendron Society annual convention in San Francisco where we were able to meet and mix with the major American enthusiasts and listen to excellent presentations before heading up the western coastline. Seeing the redwood forests, fine gardens in the Seattle-Portland areas and Vancouver, then flying on to the south of England with its great gardens and up the coast of western Scotland all made for a special tour.



Hybrid Block 1964



R. polyandrum Gigha Form



R. 'Beefeater'



R. 'New Comet'



R. 'Charisma'



R. 'Ivan D Wood'



R. 'College Pink'



R. 'Lemon Lodge'



R. 'Falcons Gold'



R. 'Spiced Honey'



R. 'Rubicon'



R. morii RV9809



R. pachysanthum RV72001



Stanley Smith Display House at Pukeiti, Just planted 1977.

Papua New Guinea and vireyas

In 1983 a chance meeting at Pukeiti with John Womersley, Director of Forests in Papua New Guinea, led to an invitation to join him and a group of Australian Vireya *Rhododendron* enthusiasts in August to collect vireyas in the wild. This was a huge opportunity to obtain new species from known locations to add to the

collection I had started in 1976 in the Stanley Smith Display House at Pukeiti. This was named after an Australian man who made his money selling war surplus machinery and eventually moved to the Bahamas. He was a passionate tropical plantsman and had contacts with Sir George Taylor at Kew which led to his setting up the Stanley Smith Horticultural Trust with Sir George as Chairman. Sadly Mr Smith died soon after visiting

Pukeiti in 1967 but I was able to tap into his Trust Fund to build the house in his name, the first of its kind in New Zealand. The tour to PNG was a great success and introduced me to people who knew more about vireyas than I did and who would end up being contacts for years to come. All up about 50 species of vireyas and other genera were brought back and successfully quarantined at Pukeiti. Importantly, I had seen first-hand the conditions they grow in and so was able to replicate these with some assurance. Having an airy glasshouse that ensured we did not get saturated soil conditions in the coldest months of the year was more important than the cold effect itself.

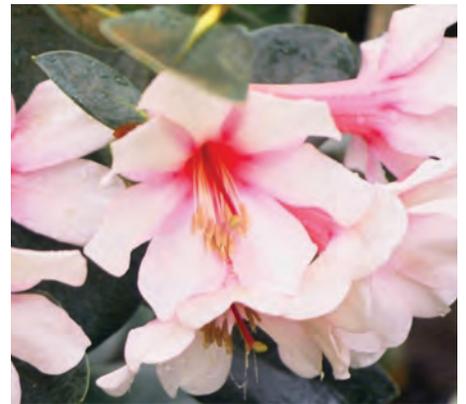
I followed this trip up in 1986 with a Pukeiti tour to PNG which included New Zealanders, an Australian and three Americans. This proved to be even more successful from the collecting aspect and for meeting with Canon Norman Cruttwell, the cleric turned botanist who was running a vireya and orchid



R. superbum and *R. christi*, Mt Miap



R. christi on a mossy log



R. superbum first flower at Pukeiti 2002, 19 years later



R. saxifragoides, at Pukeiti



crossed with *R. 'Hot Tropic'* by Os Blumhardt produced



R. 'Saxon Glow'

sanctuary in the Highlands of PNG. For many years he was the voice from PNG and still collecting and documenting into his 80s and we kept in touch until he left PNG. In return, Pukeiti hosted Cruttwell's PNG deputy for five months to give him more experience at managing collections in a public garden. Many new introductions were made but perhaps the two most unusual were the alpine *R. saxifragoides* and the creeping *R. rubineiflorum* which were unknown in cultivation at that time. The *R. saxifragoides* × *R.* 'Hot Tropic' hybrids 'Saxon Glow' and 'Saxon Blush' were a result of this



Garden Week show, Ellerslie 1984



2000 Ellerslie Flower Show, Gold Medal Display - Eastwoodhill and Pukeiti

collection and an example of the late Os Blumhardt's hybridisation vision.

We were asked on many occasions to put on a display of rhododendrons and other Pukeiti plants for horticultural shows and we tried to say "Yes" most times. Much earlier in 1978 I collaborated with John Bond at Savill Garden, Windsor, to send over a display of large-leaf rhododendron flowers for an RHS London show. It had never been tried before and we did not know if it would work, but by forward planning – i.e., phytosanitary inspection, treatment, airline timetables and then John being able to collect at the Heathrow end – he had the flowers on display, slightly tired looking but a huge surprise for the show visitors. John Bond was just one colleague who helped us

out over the years and this was an ongoing relationship culminating in a regular series of guest speakers coming on tours of New Zealand with the NZRA. In the meantime Pukeiti exhibited at the earliest Ellerslie Flower Shows and went on to win a Gold Medal with Eastwoodhill in 2000 at new Ellerslie, combining the work of Douglas Cook in establishing both gardens. An earlier show garden built for the first Taranaki Rhododendron Festival in New Plymouth in 1993 was the beginning of an association which I chaired for nine years and was involved with for 29 years.

Coinciding with this move to showcase Taranaki to a wider audience, The Gatehouse was opened in 1987, welcoming visitors to a new Pukeiti with display rooms, souvenir sales and a café. At this time I was approached by a local

botanical artist Susan Worthington, asking if I might be interested in her doing some work painting special Pukeiti plants – and so began a long association that continues today. Susan produced a wonderful portfolio of the large-leaf rhododendrons in the garden and this work led to her being invited to provide select paintings for the *Highgrove Florilegium* for Prince Charles.

A busy period in 1988 saw the establishment of a new extension to the Vireya House using a natural timber frame with a simple rigid plastic roof and no sides for good airflow, effectively turning it into a bush garden under cover, with four times the planting space, which we filled inside two years. I also attended the Australian International Rhododendron Convention in Melbourne and gave a paper on growing 'Vireyas in a



Beverley McConnell House 1993

Cool Climate'. At the Convention I was appointed Vice-President of the International Rhododendron Union which was an attempt to bring the leading growers and scientists together to co-ordinate rhododendron research and cultural development.

The cyclone decade at Pukeiti

For all the wrong reasons Pukeiti was in the national news in the 1980s when Cyclone Bernie struck in 1982 followed by Cyclone Bola in 1988. Both were devastating, the first because it was out of the blue and Pukeiti was an isolated pocket of damage whilst Bola was far worse in its widespread destruction.

Both took a toll on morale and the time that was needed to clear away the thousands of trees and shrubs that were felled. However, as always, there was a positive in that Pukeiti members and the local community rallied around and helped shorten the recovery. It also gave us time to reassess how we gardened at Pukeiti and we replanted to protect from the easterly gales that cause the damage. The old single specimen plantings in grass were gradually converted to bed systems where plantings were denser with companion plantings and lower maintenance. Ten years later there was little sign of the cyclone

events, such is the healing power of the rainforest environment.

As a direct result of the cyclones and the loss of several large *Pinus radiata* blocks that were to be future funding boosts, a radical decision was made to replant the smaller block with more than 1,000 rimu as a forest, believed to be a first in the country. In addition, rimu plantings around all the track margins became a priority as a Pukeiti member- sponsored project, particularly effective whilst the bush itself was so open after all the battering. It is heartening to see these now, many over 5 metres tall.



Cyclone Bola 1988 severe damage to canopy and garden



1992 Hybrid Block, shelter still thin but garden beds developing with replanting

CHINA, YUNNAN SPECIALITIES

The 1990s moving forward

The 1990s were notable for an increased expansion of Pukeiti tours which became a focal point for membership and further contacts with fellow professionals. I led tours to Tasmania, the UK, Holland, and Canada, and after my first trip to Yunnan, China, collecting species seed, I organised two more for members in 1998 and 1999. This established a close working relationship with Professor Guan Kaiyun, Director of the Kunming Botanical Garden, which continues today. One development from this was that we sponsored his daughter Mei to come to New Plymouth to attend a tourism management school for a number of years, achieving a degree and then New Zealand citizenship.

I was appointed Director of Pukeiti in 1995, recognising that the management of Pukeiti had become more complex and needed full time paid staff to run everything in-house, reporting to the Board several times a year. It meant that my role was less focussed on the day-to-day running of the garden but recognised that we needed well established staff to continue that part of the operation. Funding regulations for a Charitable Trust required increasingly complex and restrained practices with legal ramifications and took up a considerable amount of my time. Pukeiti had wisely established a Trust Fund in the 1970s, managed separately from the garden, and income from this was to prove vital for its survival at times.



3 Pagodas, Dali



Baishuitai Golden Terraces



Old Burma Road



Hand building Stone Arch bridge



R. sinofalconeri, a new species



The New Vireya Conservatory 2000

50th Jubilee of Pukeiti

The year 2000 saw planning for the 50th Jubilee of Pukeiti in 2001 as a milestone and the project that marked the occasion was a new conservatory. Designed to bring all the Vireya houses together as one large complex, funding was sourced from a number of contacts and the result was a fine, high-roofed building with a courtyard

in the middle and bush surrounds. Opened in November 2001 it allowed us to show the full extent of the Vireya rhododendron collection, started in 1975 and now second only in the world to the RBG Edinburgh. I was able to visit Edinburgh the following year for the Rhodo 02 International Conference and gave a paper 'Growing Rhododendrons at Pukeiti, New Zealand' and I acknowledged

the close association Pukeiti had with RBGE and in particular Dr George Argent, the world's leading Vireya botanist and a close friend.

In 2003 I visited the Seattle region and spoke to the Olympia Chapter of the ARS comparing the west coast USA and Pukeiti climates and how we manage our collections. I visited the Meerkerk Rhododendron Gardens on Whidbey Island and saw a plant of *Rhododendron protistum* 'Pukeiti' growing in the Douglas fir forest. It was a good feeling to know that we shared plants like this around for all to enjoy and preserve. Driving down to San Francisco, we chanced upon the Darlingtonia Reserve beside Oregon Coast Highway 101, and marvelled at thousands of amazing pitcher plants (*Darlingtonia californica*, the cobra lily) growing just metres off the highway. The road trip ended with another gathering of enthusiasts in San Francisco for a Vireya talk amongst friends.

50th Jubilee rimu plantings in Cook Block



Fred Whitney, USA President of ARS and Graham Smith doing their bit for close relations



John Goodwin and blessing the plantings by local Iwi

Hawaii and Tasmania

I was invited to address the International Vireya Conference in Hawaii in 2006 and talked about 'Growing Rhododendrons in a Rain Forest', something that we both shared even if the climates were different. I repeated this in Burnie, Tasmania, later that year at the Pacific Conference. Tasmania and in particular the Emu Valley Rhododendron Garden have been special places for me and I have been privileged to work with them over many years. They are very much in the Pukeiti mold in the way they set up the garden on private land and worked it originally with volunteers. I was able to supply them with the Pukeiti Management Blueprint from our early days and advised on pitfalls and promotions to avoid. This eventually led to a commission to overview all aspects of their operation and I was able to visit the local Burnie Council to ascertain their level of support and also the Royal Tasmanian Botanical Gardens, Hobart, regarding a memorandum of understanding. My observations were well received by many of the Emu Valley Society and not at all by others, which I had expected, but it was interesting to note that many of my recommendations were followed up in the year or two after. I still enjoy keeping in touch with this 'Little Pukeiti' because we share so much and we are all part of a global family that has to be nurtured.

Records at Pukeiti

All through my time at Pukeiti I emphasised the importance of getting the collection named accurately and recorded for posterity. The original plantings were listed in a planting book and under the late John Goodwin's eye they had a register made and then hand painted labels were placed in front of each group of plants. Behind the scenes Pukeiti members volunteered to make these from rimu offcuts or galvanized sheet metal for larger ones. That some labels survived nearly 50 years gives credit to the craftsmanship involved. However it was obvious that better records were needed and I started off with a card index system with every rhododendron coming into the garden being given a code accession number and that followed the plant through to final positioning with cards being updated. That was the theory, but as often happens it was never quite up-to-date.

A Gravograph labelling machine was purchased and engraved sheets of Formica were used to make hanging labels, complete with accession numbers and it often became a 'wet-day' job – Pukeiti has a few of those! Technology started to move quickly and we tried to keep up with what would assist us in recording. Eventually I migrated to BG-Base, a botanical database management system. In 2008 my 'after Director' mission was to transfer all the rhododendron records into this system. I did this as a sponsored contract to Pukeiti and it took me two years to complete and then hand over to the new staff. Little did I know then what was going to unfold at Pukeiti and set it on a completely new pathway for the future with its new custodians, Taranaki Regional Council.



Hawaii - Mitch Mitchell's Vireya Garden, Volcano, 1300M ASL, 2006



R. 'Pukeiti', Meerkirk, Whidby Island, USA



Darlingtonia californica, Oregon, USA



Emu Valley Rhododendron Garden - Species Hillside, Tasmania, Australia



Pruning *Cupressus sempervirens* beside Lake Como, Italian Lakes - 2007



Monets garden, Giverny, May, France 2007



Alan Jellyman with *R. protistum*, the first to ever flower in the U.K. at 30 years old. Inverewe Garden N.W. Scotland

Later tours

Before retirement I was busy organising another special Pukeiti tour, this time a grand European garden experience in 2007. This started in northern Italy around Lakes Como and Maggiore and the magnificent chateaux of the region. Nice and Menton on the French Riviera was followed by Paris and Monet's garden in Giverny, then a tour of northern gardens of the UK included Alnwick Castle, Inverewe, Gigha, Crarae and Edinburgh. Finally back to Cornwall and the Eden Project garden, Tresco on the Scilly Isles, and a finale at the Chelsea Flower Show. I thought this was to be my swansong tour but that changed again.

In 2010 Professor Guan Kaiyun organised an International Rhododendron Festival in Wuhan, South East China, and he wanted Pukeiti represented to give as much credit as possible. This was based in Macheng, a small city north east of Wuhan in a mountainous area noted for incredible displays of the native *Rhododendron simsii*. Unfortunately the Gods were not told about this and the flowering season was two weeks late. Although we missed out on the display the conference was a great success and I was able to present a paper on the 'Chinese Rhododendron Species at Pukeiti' which went down very well, striking a note of pride among the locals. To give a genuine flavour to the conference I was listed as the UK representative which seemed to please the organisers, much to the amusement of my fellow travellers! The rest of the tour took in the Three Gorges Dam and the countryside around it, back to western Yunnan near the

Burmese border and then all the way back to Shanghai for a huge International Expo beside the Yangtze River.

Whilst the rest of the tour party went home my wife and I were treated to a private visit to a mountain area north of Kunming which Guan thought we should see. Guan organised an SUV vehicle with driver and a staff botanist to guide us. Jiaozishan turned out to be breathtakingly beautiful and unlike anything I had seen before and worth a later visit. The hurried two days turned out to be more eventful than we expected when the car rolled on a tight bend after rain and landed on its roof. We were unhurt thankfully but now with no vehicle. Nobody stops in China at accidents for fear that they will be accused of causing it so it took some time before we were able to get a lift into the nearest town and back to

Kunming four hours late. The next morning, due to fly out of China, we were warmly received by an Australian garden group staying in the hotel who had heard about our problems. Many of the party we knew so it was another of those moments that was meant to happen.

As a result of this last tour, one more beckoned – an amalgam of the very best places to visit botanically in Yunnan, back into the mountains. 2012 was for me a retrospective tour taking in some of the earliest sites visited and now, 18 years later and retired, very different in many respects. Chinese tourism has increased hugely and many of the pristine sites we saw earlier are now commercialised in a big way. One has to respect the right of the Chinese people to enjoy their own country but the mind-set for most is in comfort and with haste. Why walk when a gondola can take you up a mountain and have shops in the meadow when you get there? Thankfully we could also take advantage if we wanted to and speeding up over the trees is another way of experiencing something special and you could guarantee that the locals will not venture far off the main track. This was a trip for plant lovers and I think we saw more rhododendron species this time than on any other tour. Jiaozishan was included at the end and was the probably the highlight for our party. This involved a gondola ride to 4,000 m and then walking in the primula meadows high up on an escarpment which is a ski resort in winter. I took a photo of Guan Kaiyun leaning on a railing above a vast valley 4,200 m below and his big smile told me he was happy and that was so important for me as a colleague and friend.

Recent changes at Pukeiti

Two years after I retired the Taranaki Regional Council took over management of Pukeiti and the Pukeiti Trust became a partner in the future development. In many ways it was a relief for me, ensuring a healthy future, but sad that the Trust after 60 years would not be in charge. The partnership has generally worked well with TRC being able to finance the big projects needed to move forward and Pukeiti members still able to contribute in numerous ways. My colleagues and I seem to have settled into advisory roles which suits us well and I enjoy being involved with the new staff regime. Being able to assist them to fulfil the wider Pukeiti dream is invigorating. It has also given me time for other projects and one of these was the publication in 2015 of a specialist book *Big-leaf rhododendrons: Growing the giants of the genus*, co-authored with Glyn Church and Pat Greenfield. It took more than three years to get it into print but I am proud of what we achieved and it was well received by the international rhododendron community. I had already co-operated, in 1997 with Pat Greenfield on a book telling the story of Pukeiti and titled *Pukeiti: New Zealand's finest rhododendron garden* and this was also very popular with members and a great tribute to Pat's photographic skills.



R. simsii, Guifeng Shan, Macheng, Wuhan - China 2010



Rhododendron landscape under Gondolas, Jiaoxishan, N.E. Yunnan, 3500M



Primula nanobella, 3850m



Prof. Guan Kaiyun, Jiaoxishan, 4200m, N.E.China 2012

Some New Zealand plant introductions made by Pukeiti

Asteranthera ovata, a Chilean species introduced from Savill Garden, UK.

Dactylorhiza elata, introduced from the western Mediterranean region.

Dimorphanthera amoena, introduced from Papua New Guinea.

Dimorphanthera kempteriana, introduced from Papua New Guinea.

Hydrangea paniculata 'Kyushu'.

Luzuriaga radicans, introduced from Chile.

Rhododendron 'White Waves'.

Rodgersia pinnata 'Rosea'.

Tecomanthe montana, introduced from Papua New Guinea.



Conservatory 2001



Tecomanthe montana - P.N.G



Dimorphanthera amoena - P.N.G



Dactylorhiza elata



Dimorphanthera kempteriana - P.N.G



Luzuriaga radicans, Chile



Rodgersia pinnata 'Rosea'



R. 'White Waves'



Hydrangea paniculata 'Kyushu'

Gwavas Station

The latest chapter in this journey is working with the Hudson family of Gwavas Station in Hawke's Bay and their incredible woodland garden. A visit by Alan Jellyman and me in 2012 made us realise, with the owners now in their 80s and a new generation having to come to terms with managing this priceless heritage, that perhaps we might help by cataloguing the collection. Michael Hudson, a Founder Member of Pukeiti, was able to help as he was still fit and his memory of plants remains extraordinary. Our proposal was accepted and although we had no idea of what lay ahead or how long it would take, we knew it was going to be a lot of fun. I set up an Excel spreadsheet to manage the process and we began a regular pattern of 2–4 day visits every 2–3 months. We started with working out a series of plots that covered the nine hectare site, originally planted with shelter trees in the 1860s. It took two years to gather the information with more than 4,000 separate entries, and each was verified by the notes Michael was able to give us and my research to provide a suitable description for future identification. Almost everything was labelled and if not, Michael could provide a name. Much of the unique collection has been grown from seed from various botanic gardens, private collectors, including their son Tom Hudson, or sourced from throughout New Zealand over more than 70 years.

Having produced a register of the plant collection and getting it into a print version for the family we were then able to work with the daughter and son-in-law as to how they might use the information, which was also transferred to an electronic version that they could update when needed. It soon became obvious that another factor had come into play, that of labelling. Michael had used aluminium Hartley labels most of his life and they were still in good condition but frequent overwriting was a problem. So the next stage was a new label system using the template that had been adopted for Pukeiti, embossed aluminium labels. Because of the Pukeiti connection and the sharing of

plant material between the gardens we were able to contract label production from Pukeiti, with me providing a computer label list at regular intervals. So it was back to the regular visits to place each batch of labels, check for any changes, additions and deletions, etc. This remains a work in progress until later this year (2018) when the project should be completed.

This project has led to the conclusion that there are many original estates in New Zealand that hold good heritage plant collections and whilst they may not match the botanical depth of Gwavas, they are repositories of plants that are no longer in commerce. Local knowledge is the key to the possibilities of tapping into this resource for conserving the material and propagation for future replanting.

Currently I am also working with Dr Marion McKay from Massey University on the New Zealand involvement with the International Red Data List for Rhododendron Species. On the international stage it is interesting to see where Pukeiti is situated. The stats tell us second in the world for vireyas and third for overall species – both results are very satisfying.

Some plants grown at Gwavas

Acer fabri.

Camellia impressinervis.

Dipelta (Linnaea) yunnanensis.

Illicium simonsii.

Magnolia cathcartii.

Paeonia 'Boris'.

Rhododendron falconeri
subsp. *eximium.*

Styrax fabri.



Acer fabri



Camellia impressinervis



Illicium simonsii

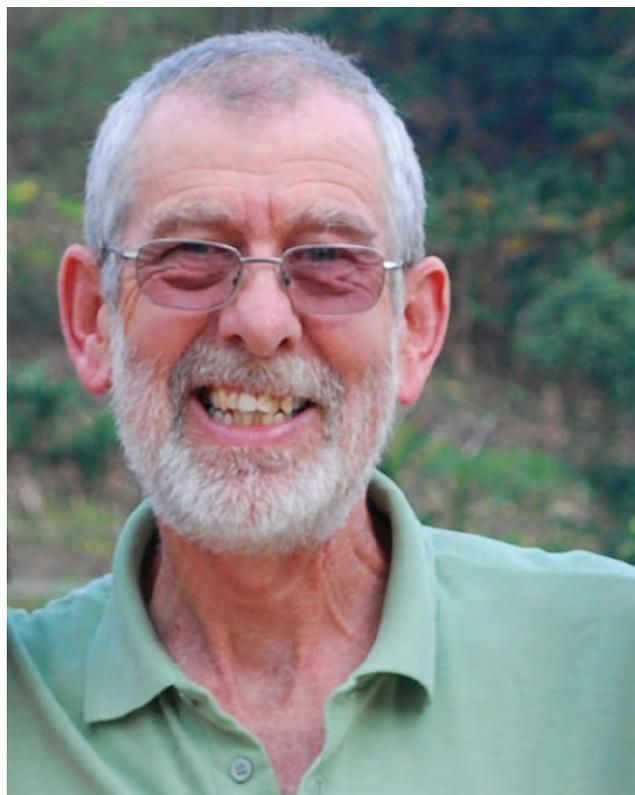


Magnolia cathcartii

Final thoughts

Throughout my working life I have strived to learn as much as I could about the plants I have come in contact with and the people that are part of the story. They have built up the knowledge that I have – and still can remember – and I cherish them all. As time has gone by it has become more important to give back to the community, the places and people, and hopefully encourage them to enjoy and learn about the plants and natural world around us.

Horticulture is a great career if you have that interest and I will say to any young person who shows they do, go for it, because you never know where it might lead and who might be there to assist you. If you are fortunate enough you might end up on the other side of the globe doing something you never knew existed, but you have to make that first step for yourself.



Graham Smith

References

- Angel, H. (1993). *A world of plants: Treasures from the Royal Botanic Gardens, Kew*. Collins and Brown with Royal Botanic Gardens, Kew. [The plant collections at RBG Kew through the ages and how they have contributed to botany, horticultural science and economic distribution around the world. The influence of Sir Joseph Banks who with King George III provided the impetus in 1772 to establish the premier scientific botanical garden that continues today.]
- Argent, G. (2006). *Rhododendrons of subgenus Vireya*. The Royal Horticultural Society with RBG Edinburgh. [Monograph of the Vireya Section of *Rhododendron* species by the world's authority from RBG Edinburgh with more than 300 species described and most illustrated. The author spent more than 25 years at Edinburgh and made many scientific collections of vireyas *in situ* to establish the living material from which the book was produced.]
- Ballard, C. (2006). *Oswald Blumhardt: New Zealand plant pioneer*. David Ling Publishing, Auckland, New Zealand. [An account of Os Blumhardt's overseas plant collecting and New Zealand breeding work of camellias, magnolias, rhododendrons, vireyas and other plants.]
- Bingham, M. (1975). *The making of Kew*. Michael Joseph, London. [A folio miniature short history of the development of Kew Gardens with coloured reproductions of 1,700 and 1,800 paintings and prints.]
- Church, G.; Smith, G.; Greenfield, P. (2015). *Big-leaf rhododendrons: Growing the giants of the genus*. David Bateman, New Zealand. [Practical guide on growing all known species of big-leaf rhododendrons.]
- Cox, P.A. and Cox, K.N.E. (1997). *The encyclopedia of Rhododendron species*. Glendoick Publishing, Scotland. [Comprehensive work on the species of rhododendron, except vireyas, grown, seen in the wild, collected and distributed through their nursery in Scotland. A seminal work, fully illustrated with the modern interpretation of the botanical hierarchy of genus *Rhododendron*.]
- Feng Guomei and Yang Zenghong (1999). *Rhododendrons of China*. Vol. 3. Science Press, Beijing and New York. [*Rhododendron* species indigenous to China described in botanical detail along with natural distribution maps and detailed colour illustrations of plants *in situ* and flower close-ups, part of a published series.]
- Greenfield, P. (1997). *Pukeiti: New Zealand's finest rhododendron garden*. David Bateman, New Zealand. [History and development of this world renowned garden in Taranaki lavishly illustrated by Pat Greenfield's superb photography. Local flora and fauna dealt with by Graham Smith.]
- Grey-Wilson, C. and Cribb, P. (2011). *Guide to the flowers of Western China*. Royal Botanic Gardens, Kew. [A comprehensive study of the Chinese flora in the western Provinces following the established hierarchy of botanical families and fully illustrated by more than 2,000 photographs and details of habitat and distribution.]
- King, D. and Ranck, S. (eds.) (1982). *Papua New Guinea Atlas: A nation in transition*. Robert Brown and Associates with University of Papua New Guinea. [An overall study of the development of PNG as a nation and the geological, environmental and physical environment that supports the people who call it home.]
- Lancaster, R. (1989). *Travels in China: A plantsman's paradise*. Antiques Collectors' Club, Woodbridge, Suffolk, England. [Travels of botanical interest taken in the 1970s–1980s with Chinese botanists as guides when China was just opening its borders to western scientists again. Written by one of Britain's most recognised plantsmen.]

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Rhododendron protistum 'Pukeiti' KW21493 in the bush - what Pukeiti is all about.

THE WANING POPULARITY OF AZALEAS AS GARDEN PLANTS

Alistair Duncan

Ever since azaleas have been sold to enhance our domestic gardens they have simply be known as azaleas, divided only by being evergreen or deciduous. The botanists, holding sway over the common gardeners, include them in the single genus *Rhododendron*, for example *R. kuisianum* 'Mursaki Shikabu', or if they are hybrids, for example *R. x obtusatum* 'Amoenum'. The parentage of most garden azaleas, though, is complex and garden centres simply sell them as Azaleas 'Pink Ruffles' 'Ward's Ruby' etc., and it is by these common names that they are mostly known.



Clipped Azaleas at Pukeiti

Most azaleas are long lived and quite hardy. Like their rhododendron cousins they too have fibrous root balls and can be easily lifted and moved to another site. I have a friend

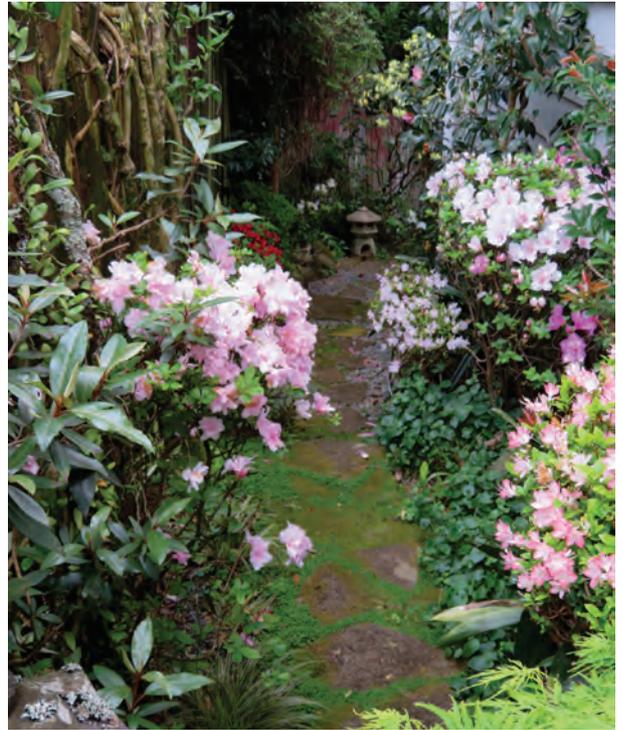
who lifted her azaleas and left them for an entire year on the lawn before replanting them in the new chosen site. I have been to gardens where 'Fielder's White', transplanted a number of times, has thrived for seventy years or more.

When we ran Woodleigh Nurseries, adding a wide range of azaleas to our already extensive collection of rhododendrons seemed a natural progression to complement these ever popular garden plants.

Rhodos and azaleas had always been my two favorite garden plants as they were among the first group of plants I was allowed by my father to transfer from his nursery to our new garden when the family house was built in the late 1940s.

They have been used in a number of ways to enhance gardens. On the grass slopes at the old Barrett St hospital in New Plymouth, on the slope facing the adjacent Morley St. a colorful display of azaleas provided by my father spelt out N.P. HOSPITAL. It was a prominent feature for several decades.

My favourite azaleas are definitely the Kurumes. These were first seen in the west in 1915 when the Japanese nurseryman Kojiro Akashi from Kurume on the island of Kyushu sent an exhibition of them to San Francisco. In 1918 the plant collector E. H. Wilson visited Kurume and selected what he considered the fifty best forms for the Arnold Arboretum in Boston USA. From there a selection was sent to Wisley Gardens in England. Many can still be seen there and in the 'Punch Bowl'



A garden planting of Azaleas

in Savill Gardens at Windsor. A small selection was first offered by Duncan and Davies Nursery in 1924. Savill also holds the National Collection of Glen Dale azaleas bred to be later flowered and thus escape the cold winters of the northern hemisphere.

Kurume azaleas should be grown with plenty of exposure to the sun to ripen and harden off the wood and promote flowering. They can be clipped to shape as you might see in a typical Japanese garden, preferably after flowering in the spring. They flower profusely, covering the whole plant with bloom which ranges in colour from blood-red to delicate lavender, often with hose-in-hose flowers.

Unfortunately few Kurumes are available now as most garden centres stock only a limited range of evergreen azaleas, mainly the bigger flowered 'Indica' types.

Looking back through an old Woodleigh catalogue from the 1980s we had offered 148 varieties of azaleas from 11 different groups including: Azaleadendron, Coolidge, Indica, Glenn Dale, Kurume, Kaempferi, Satsuki, Pericap, Shammerlo, Vuyk and Gable – a comprehensive collection by any standards and they complemented the 189 varieties of other rhododendrons we sold.



Rhododendron 'Lapwing', Christchurch Botanic Gardens.

A SHORT TRAVELOGUE IN ELEVEN PARTS

PUKEITI TOUR TO XINJIANG, CHINA
4-28 SEPTEMBER 2017

Kate Ballard



A scene from Starwars

This study tour for 37 Pukeiti members was guided by longtime friend of Pukeiti, Prof. Dr. Guan Kaiyun, Deputy Director of the Xinjiang Institute of Ecology and Geography, Chinese Academy of Sciences, assisted by two of his professional staff, Dr. Li WenJun and Dr. Liu Huiliang, a 50 seat very comfortable bus and Mr Yang a driver of consummate skill who daily amazed us with his expertise.

Flying to Xinjiang requires a stop-over, and so we took advantage of that and spent two days in Guangzhou to sample a China very different from the province in which we would spend the next 3 weeks.

Tuesday and Wednesday:

Guangzhou, hot steamy, lush and green. The latter is a surprise but shouldn't be – this city, formally Canton to westerners, is on the Pearl River delta. A teeming metropolis it has been settled for at least three centuries.

We had a jam packed sightseeing programme with a mile a minute guide for one and a half days. Starting with breakfast in the top storey (33) of the hotel overlooking a bend in the Pearl River, in our flight befuddled state we were overwhelmed with a choice of every western and Asian breakfast food. I dived into steamed buns, fruit, boiled eggs and pickles ---strange mix. Coffee not great so decided to drink just tea and beer on this trip.

We were quickly hustled into the bus and in the middle of a tropical downpour, delivered to a 2000 year old tomb discovered in 1983. On to a Folk Arts museum which is housed in the Chen Clan Ancestral Hall, essentially a highly decorated Chinese house designed to accommodate a large extended family, with rooms surrounding a large courtyard (reputedly the best decorated and preserved example of ancient architecture in the Guangdong province). Back to the hotel for our

first Chinese banquet which is how we ate dinner and most lunches for the whole trip. Seated at tables



The old Guangzhou, Chinese Medicine Market

accommodating 10 to 20 people, with a lazy susan in the middle, first tea and beer and then at least a dozen dishes were served very quickly. Fresh vegetables lightly cooked and spiced with hot sauces, meat in great variety - we were on a culinary adventure!

The next day started early and finished late – exhaustion was setting in! First, with bellies well satisfied, we walked the Chinese medicine market. A fascinating, busy, narrow street with our guide being constantly questioned about what was what. From here we took a pedestrian bridge which crossed a six lane motorway and canal, both lined with flowering bougainvillea and trees, and entered the area conceded to the British, Americans and French when China first opened up to trade with foreigners. We walked the well preserved precinct past impressive colonial style buildings from the 1800s and bronze statues depicting scenes from that era. The Six Banyan Tree Buddhist Temple was a quiet respite after lunch, followed by a visit to a huge stadium/park complex on a bank of the Pearl River, and which was the site of opening and closing ceremonies of the 16th Asian games. Dinner and a cruise on the river after dark where the lights of Guangzhou almost rivalled those of Shanghai.

Thursday and Friday: But now the tour proper was starting, with our arrival, after a six hour flight, in Urumqi, where we were met by a very delighted Deputy Director Guan and his two helpers, Li and Liu, both research fellows at the Xinjiang Institute of Ecology and Geography which had organised our study tour. The Institute is a post graduate University with 400 students working on research projects and an overall staff of 1000. Overseas students are welcome, with scholarships and an intensive three month language course available. We were given a tour of the Institute and the projects we were going to visit were explained. A tour of Urumqi followed with a visit to the museum and the large international market. The museum underlined the importance of this area in the movement of trade and ideas from west to east and vice versa. Human artefacts from 4th century BC, fossils



The new Guangzhou



Urumqi

from dinosaurs, marine deposits from before the uplift of the Himalayas were all displayed. One branch of the Silk Road passed through Urumqi and we found ourselves constantly travelling, albeit on modern motorways, along various Silk Roads as we traversed Xinjiang province. We were also introduced to our 50 seater bus which was to be our home for 20 days and its driver, Yang, who drove us long kilometres through some difficult situations with skill and patience.

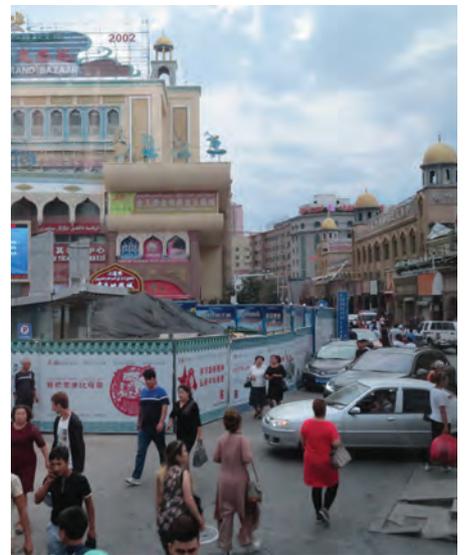
Saturday and Sunday: Left Urumqi early, heading north towards Fuyun and the Mongolian border, through mostly arid land with the Altay mountain range to our right occasionally displaying a snowy peak. Security delayed us several times. We had been warned security would be tight during our journey so this was the introduction to what continued every day. Security points at regular intervals along major roads and at the entry to towns and cities required passports and, at times, more extensive inspections. Our passports



Tourists gather in the Market for a photograph with a local, Urumqi.



Mosque, Urumqi



Urumqi



The road heading north towards Fuyun and the Mongolian border.

had been photocopied and in most cases presentation of copies was sufficient. Li attended to these security checks with occasional back up from Guan when deemed necessary. Only twice did the police enter the bus and inspect us. They all seemed quite jovial despite their armoury, but we were warned to fasten our seat belts and take no photos as we waited to be cleared. This province has had recent unrest and terrorist attacks and is close to many sensitive borders – Kazakhstan, Kyrgyzstan, Afghanistan, Tajikistan, Pakistan, India and Tibet.

Beside the motorway as we travelled through this undulating desert we could see more roads or railways being constructed and three lines of white posts evidently marked the fibre optic cables belonging to the three telecommunications companies in this communist/capitalistic country. No matter how isolated and desolate the landscape, there were always first class highways, power pylons and cell phone coverage. We were excited by our first glimpses of herds of horses – this is an ungulate Nature Reserve for the preservation of the wild horse.

Coming out of the desert to the oasis-like greenery of Fuyun was pleasant and we sampled great tasting locally grown fruit at an evening market – nectarines, grapes, peaches, apples, small persimmons, fresh Chinese dates and lots of unknowns. These markets or simple roadside stalls kept us in fruit for our whole tour. The river valleys in the otherwise arid landscape were always intensely cultivated with sophisticated irrigation of orchards, vegetables, maize, cotton and many unidentified crops. Poplars are the trees of China. Every green space we passed through included poplars. Of course there are many species native to this area and they are ideally suited to the climate. *Populus euphratica* is particularly suited to arid, saline conditions.

From Fuyun we travelled beside the river to the Keketuohai Geological Park, and deep into the mountain range. All day we passed mobs of sheep, horses, goats and camels being driven down from their summer grazing by their Kazakh owners – the autumn muster. As we rose higher we could see the summer camps – yurts in various stages of being dismantled, hay being stored or transported down to the winter quarters. Camels were laden down with household stuff. They are not eaten but used for milking and transport. Horses were ridden but most of the herd was destined to be eaten. The fat tailed sheep and a few goats were kept for slaughter and wool. There were a few motorbikes and utes in use. The geology and vegetation was very similar to Yosemite in the US – glaciated, bare, rounded rocks soaring above with a scattering of evergreen and deciduous trees clothing the gentler slopes and the river rushing clean and sparkling from the snow melt beyond. The park was crowded with local tourists pushing the traditional inhabitants and their stock off the road with their honking small buses. One wonders what this new phenomenon of Chinese tourism is going to do to traditional life in the isolated corners of the country.



Herds of horses - in the Ungulate Nature Reserve



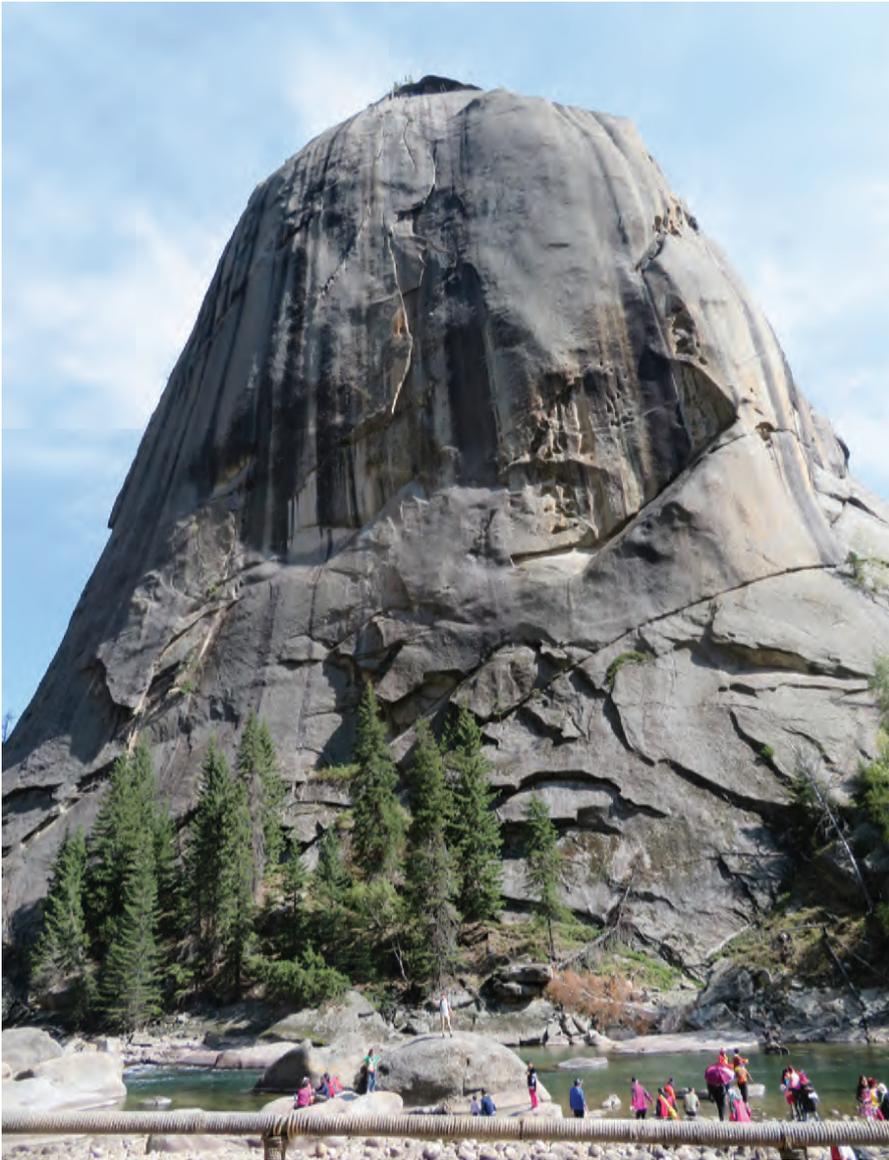
Identifying plants on the road to Fuyun



Anabasis sp.



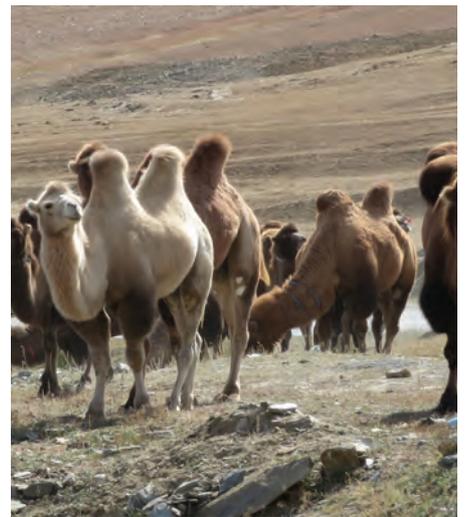
Ephedra sp.



Bell Mountain at the Keketuohai Geological Park



The autumn round up- sheep and goats being driven from their mountain pastures



Camels



The entrance to the Keketuohai Geological Park



Geological Park near Burqin

Monday and Tuesday: Leaving Fuyun we moved west to Burqin following the same river as it flowed west to eventually enter Kazakhstan. On the way we visited another Geological Park, the first of many amazing geological landscapes with flaming colours. Here we could walk amongst the rocks in a tourist designed setting but all through the tour we could see mountain ranges where you seem to be looking at the bones of the earth. The climate is too dry and extreme for plant growth, there is no snow at this time of

year so the rocks in all their colourful glory are there to astonish. East of the Himalayas the striations and uplifts of the rocks show the extreme crumpling geological action that has taken place over the millennia. The colours are brilliant, evidence of a complex chemical composition.

Our lunch stop was memorable with dumplings the main dish. Eight different types were served. The Chinese consider eating 20 a satisfactory number – I probably ate 12 and was way beyond most—the left overs vanished into the back of the bus!

Burqin to Kuitun was a long distance travelling through lumpy moraine and then into oil fields. A tourist site showed and explained the discovery and development of this oil field where the oil bubbles up out of the ground in places and overall is very close to the surface. ‘Donkeys’ litter the landscape, working away incessantly delivering oil to the surface. This field was discovered in 1955 and the nearby city Karamay has sprung up since to service the petroleum industry. But now as the oil is becoming depleted, planning for new enterprises to provide



Burqin, grazing plastic deer



Karamay



Lake Sailimu

work in the area is underway, mainly by using water brought by canal from hundreds of kilometres way in the north to enable horticultural and agricultural development. Guan and his research team are involved in this, especially in the field of optimising the use of this precious water.

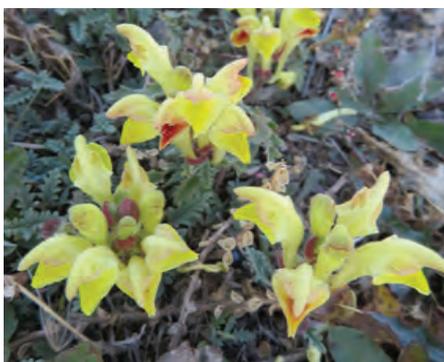
Wednesday: Kuitin to Yining: Completely different scenery as we climbed to the wetter mountain pass in the Tian Shan mountain range across to the warm, moist Ili Valley through some spectacular natural scenery and human construction. First were the motorways sweeping over the rolling grassland which has been grazed for a thousand years. An extensive windfarm covered the saddle. As we finally topped the highest point we looked down on the large Lake Sailimu which is being developed as a holiday area. All very new and under construction but with a feel of Central Otago with its rolling, golden grasslands, glacial blue/green water and distant snow-capped peaks. We had a picnic lunch

here, wandering along the extensive board walks and shooting photos of distant yurts and herds of horses. This whole area will be covered in deep snow over winter and the pass closed to all traffic for months.

On the southern side the terrain is more rugged and the road becomes a mixture of spectacular bridges and tunnels with a spiral like passage down the steep descent. The main bridge is called Guozigou – Fruit Valley Bridge, over 200m high but still less than half the height of China’s highest bridge which soars 565m. Still there were mobs of stock being moved, often on roads specially constructed for them to compensate for the rude intrusion of modern transport. Yurts are scattered over the easier slopes and the native vegetation includes wild apples and apricots. That is why we were coming to the Ili valley – to see the original wild apples, apricots, roses, plums and the new botanic garden being set up by Guan and the Institute to study these plants, collect

their genetic material and provide a protected area for their preservation.

Thursday and Friday: Yining to Xinyuan: The Ili valley has a substantial river running through it and the mountainside to the north - the southern slopes - is quite moist. We headed west along the south side of the river on our way to the new Yili Botanic Garden. The valley is intensely cultivated with all the crops and orchards we had seen elsewhere. We stopped at a small market/toilet stop and bought fruit and samosas freshly pulled out of the oven. The roads are mainly occupied by trucks – an endless supply of goods moving around China. Alongside the highway was construction of another road or railway along with the usual concrete batching factories. We crossed the river and travelled up the gentle slope towards the foothills and the Botanic Garden which will not open to the public until 2020. Guan and the Institute have designed this garden and are very involved in its development, construction and the research it is



Lakeside plants



Lakeside plants



Corn and poplars



Guozigou - Fruit Valley Bridge, 200m in height

already undertaking. We had lunch in a yurt with staff from the garden and Guan outlined their plans, before we took off in a convoy of cars to the headquarters higher up the foothills. The total area is 35 square km and stretches from the river to the plateau over and beyond the foothills, a vertical rise of 2000m. Thus it provides a complete ecosystem in which to preserve the existing flora and to research new horticultural opportunities like floriculture.

The flora in this area is unique—one of the eleven floral kingdoms of the world. It is the original home of apples and apricots and many other species which have been cultivated globally. The grassland hillsides are scattered with very old apple or apricot trees. The apples are suffering from infestation of an insect which has come from outside the area and many trees are dying or ill-thrifty, so

researching this problem is the first scientific project. Is it insect damage, over grazing or something else? The Chinese are collaborating with the Kazakhs who have the same problem in their ancient apple fields. An area has been fenced to keep out stock, enabling the effects of over grazing to be monitored. Genetic material has been collected. The ailing trees are being cut back, seed has been collected, and young seedlings planted out amongst the ancient trees are showing good growth at three years old.

We spent some time wandering through the brilliant beds of annuals which have been planted to attract visitors and to start a flower growing experimental programme. Trialling different cultivars will eventually be one branch of the garden's research.

It was exciting to see this grand endeavour at its inception. The enthusiasm of Guan and the staff was obvious. They are planning for this Botanic Garden to develop over a hundred years and become a place of great importance in the horticultural science of the Xinjiang province and globally.

East of Yining we climbed again into the foothills and then in shuttle buses higher onto a grassland plateau where we once again came across yurts and livestock been moved out for the winter. This road pierced the foothills, the grassland plateau and the next mountain range, giving access deep into the hinterland and opening up a remote area of country previously known only to the summer graziers who were now brought into the modern world with its vehicles, cell phones and hordes of tourists. Commercial enterprises had been set up at the numerous stopping places---



The Ili valley



Yili Botanic Garden



The tour party in the Yili Botanic Garden

hawk/eagle flying, snack foods, horse riding. We spent a while exploring these ventures and photographing the magnificent scenery but then returned part way down the road and set off on a long drive amongst the grassy foothills with their scattering of apples, apricots, willow, poplars, birch and evergreens, mostly Abies. This road travelled on a contour, in and out of ridges and valleys, giving us glimpses of the further away snowy peaks and down to the river valley. Eventually we returned to the valley as the other summer inhabitants and their livestock had mostly already done.

That night, joined by local dignitaries we had another spectacular evening of eating, entertainment and dancing in a beautifully decorated yurt in our hotel grounds. Guan remained

behind when we left in the morning - he was attending an official opening of the gardens with some seriously important regional and national people attending. He was hoping to secure significant extra funding for further development [which he did].

Saturday and Sunday: We had to retrace our steps through the mountains, over the magnificent bridge and to travel a long distance east past Urumqi, which we skirted, and down south to Turpan. The reason for this long back track was that the more direct mountain pass through the Tian Shan range was unsuitable for such a large bus. Guan flew to Turpan to join us two nights later. With a night in Jinghe on the way it was essentially an uneventful, very long bus trip but we gleaned a few facts and figures along the way:

By 2020 all households in China should have a tarsealed road to their boundary. One-fifth of people will live in the countryside - much fewer than now. Agriculture and cropping will become much more mechanised and supposedly more efficient, requiring fewer workers.

In Xinjiang each household receives a yearly allowance to assist with renovating or building a new house. By 2020 every house in earthquake prone areas of China will be brought up to earthquake resistant standards.

Between Urumqi and Turpan the landscape changed from the valley with a mountain range to the south to a steady descent through a pass in the Tian Shan range, down to Turpan at 154m below sea level. In the saddle there was a huge windfarm [80 x 20 km when built in



2012 and still growing!] Also a high speed railway which comes from Beijing and travels between Turpan and Urumqi (200km) in 40 minutes.

Monday and Tuesday: And so began our experience of the Tarim Basin, the second lowest place on earth after the Dead Sea.

Turpan was an important city on the Silk Road, a place where travellers to the west decided whether to veer north and travel the road we had come on or to veer west, the more direct route, but into the hazards of the Taklamakan Desert, the second largest sand-dune desert in the world. Between the two routes is the massive conglomerate of mountains collectively called Tian Shan.

The low altitude and rainfall make this area hot [100 days over 45

degrees] and the atmosphere very dry [annual average precipitation 16.4mm] There is much of historic interest in Turpan and for our first day history was our focus. Just 11km outside the 'modern' city is the ancient town which was built with rammed earth and bricks 2300 years ago and was of great strategic importance as traffic moved east/west and vice versa. Without walls it is protected by precipitous cliffs which drop to the well-watered valleys below. This city is the oldest and the largest of its era in the world. In ruins now it is a fascinating tourist destination.

Turpan, like other Silk Road oases was dependant for water on the development of an amazing ancient underground irrigation system called Karez, which from

about 800BC was used to bring ground water to the surface. A well preserved example of this was shown to us at the Botanical Gardens.

We then visited the Grape Valley, another tourist venue and one in which it was hard for our large bus to stop other than at designated places. The houses we passed were all built from mud brick or rammed earth and very traditional with beautiful painted doors, all quite unique. The grape growing area was very old, with stone walled terraces where the irrigation channels take water in a maze amongst the gnarled trunks of the grape vines. These grapes are sent all over China fresh and dried and there is a large industry involved in producing raisins, sultanas and muscatels of all descriptions. The high sunshine



Mount Bogoda in the Tian Shan Range

hours ensure intense flavour and excellent drying conditions. This area produces 90% of China's table grapes.

We were unsure what 'Flaming Mountains' meant but the next morning we soon found out. We were in for a treat of amazing geological sights, mountains, hills, passes and gorges all in hues of red but of very different structure from those previously seen. The area is all very arid and has been formed over millions of years by the crumpling of the earth's crust as the tectonic plates crashed and ground against one another, pushing up the Himalayas.

Amongst our journeys through these ranges we spent some time in another grape growing valley and were able to see how grapes are dried

to produce super-sweet raisins, in special breezeblock brick buildings.

A visit to the Museum followed lunch.

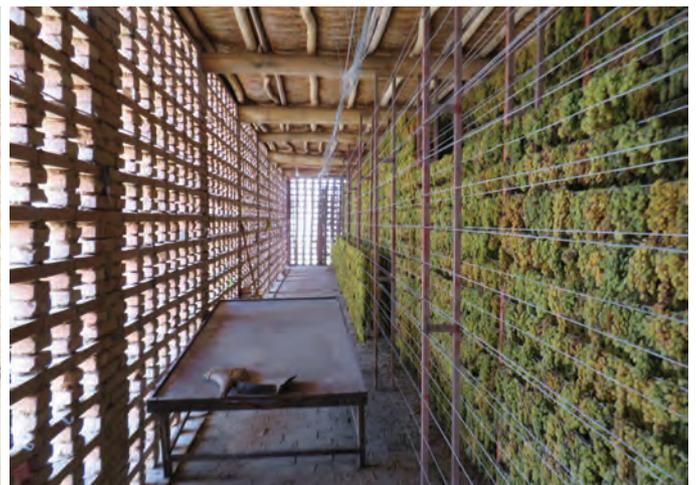
On our way to the Botanic Garden in the afternoon we passed many tunnel houses. These are interesting structures used to produce green vegetables over winter. One third of the curved wall is rammed earth with the base very wide and tapering to the top where steel rods take over the tunnel shaped structure. These rods are covered with plastic. In winter despite the sun shining every day, the temperature drops to -28C, but inside the plastic the temperature rises during the day and with a felt covering added at night the internal temperature remains above 15 C.

The Turpan Eremophyte Botanic Garden was established in 1972 (see the 2017 *Rhododendron Journal*). It is 150 hectares with 11 plant collection sections. Rainfall is about 16mm and the garden lies at between 76m and 105 m below sea level, making it the lowest Botanic Garden in the world. There is a good example of the Karez irrigation system within the garden and we started out our tour there, following the course of water in underground channels and seeing the well and pumping structures. We then walked the garden viewing the different plants, many of which we would see in the desert. Much research has been done finding the species most resilient to drought, analysing why they are so resilient and in some cases, like cotton, genetically modifying crops so that they can succeed with less water. The ground water level has dropped in this area from 8m in the 1980s to 40m now. Plants are mostly irrigated once a month in summer, so most of the plants we saw cannot live here without human intervention. The plants ranged from low shrubs to large trees and their study will greatly assist globally in the management of deserts and water.

It was late evening but still very hot. The tower gave a grand view of the whole garden. At the headquarters a fabulous feast had been organised for us. An endless succession of dishes appeared as well as barbecued kebabs and copious supplies of beer and 'Chinese Water' - probably rice wine. We had a grand time with the



Breezeblock brick buildings for grape drying





Turpan Museum

garden staff and our own Chinese hosts Guan, Li and Liu. It was late when we returned to our hotel, it having taken our bus nearly 2 hours to navigate 18km of city streets and we were very ready for deep sleep!

Wednesday and Thursday:
Turpan to Korla to Kucha

The next day we set off on a long drive to see the results of the research carried out at the Botanic Garden put into practice in the desert. Along the way we stopped to inspect what looked like a scrubby mixture of plants on

the roadside. There we saw *Capparis spinosa*, the plant which produces capers, both the seedpods, which are the “berries” and the flower buds, which are plain capers. Under the shrubs you could feel faint moisture trapped by the leaves from the night time dew. That is all the plants exist on as rainfall and even snow is almost non-existent here. We passed through a spectacular 1700m mountain pass with the brightly coloured rocks completely bare of vegetation and showing off all the geological



Turpan Mosque



Old Buddhist Priests - reproduction of a frieze in a local Buddhist tomb

events that had shaped them. We continued to see these amazing rock formations until we reached Kashgar.

An advantage of long travelling time was that we could ply Guan and the boys with some of our endless questions, and so we learned that schooling is free for 12 years in China but 15 years in Xinjiang with 15% going on to university where entry is very competitive. There is a shortage of labour which is why more robots are being developed and used. People retire at 60 and receive a pension of 80% of their wage. Some decide not to retire – like Guan. Overtime for labourers attracts double pay. Wages in Xinjiang are 25% lower than in eastern provinces. It is hoped that by 2020 the average income will mirror that of the west.

Korla was a green oasis with a strongly flowing, wide river running through it. In the early morning we walked along the river path and saw an elderly man brushing calligraphy onto the paving using a large brush/ broom and water. Ephemeral art! Large groups practiced Tai Chi. Others were walking, running and cycling. We stayed in a large hotel in the centre of town - obviously a wealthy district with many high end stores nearby.

The next day we ventured well into the desert along the Tarim highway where the Institute had planted irrigated desert plants to prevent sand blow damage to the road. This



Desert near the Bezeklik Buddhist Caves

highway extends 552km from north to south across the Taklamakan Desert, and is the longest road across a shifting sand desert anywhere.

The atmosphere became more and more hazy, the vegetation smaller and smaller and the soil/sand white with salt in places. Sandstorms can completely obliterate views but some days are completely clear. We passed through a few small villages where some irrigation provided a bit of greenery and some crops but it was hard to see why anyone would willingly live in such an environment, with only a smattering of small industrial plants, mainly oil related. At last we crossed the Tarim River which was quite substantial at that point but which disappears into the sand eventually. The river-watered greenery disappeared behind us except for a few large, very old poplar trees existing on a deep underground



Flaming Mountains (Huoyan Shan)



Lunch in the Taklamakan Desert

supply, but others were dead indicating that the water table has dropped too low for them to survive.

We stopped for a picnic lunch under an old poplar tree with a few other hardy species surviving nearby but eventually there were only sand dunes beyond the roadside plantings which had been established in an attempt to keep the highway clear of sand. At 5km intervals alongside the road were water-pumping stations, each manned for 9 months of the year only as no irrigation is needed over winter. The cost of maintenance of this planting is greater than the cost of establishment. The plants are stabilising the sand, but they will always need the irrigation so there are doubts about sustainability. It is a project on a massive scale and has won the team many awards.

The Great Green Wall of the Sahara is benefiting from this research and its implementation done here in the

Tarim, however it has been a problem getting people to work on the project there and so the Chinese are doing a small section in Mauritania to show what can be achieved, to hopefully encourage greater enthusiasm.

It was a very long day driving almost entirely in the desert but it did give us a great feeling for that hostile environment and an appreciation of the difficulties of living there. Despite all this, traffic flowed constantly – mostly large trucks moving the goods of China to the outposts of their world.

What a relief to arrive at Kucha, a very old but now industrial city, at 9.30pm to an amazing restaurant sited in the middle of a tropical garden. We were all tired but our spirits lifted immediately in this lush environment created inside a huge greenhouse.

Friday and Saturday: Aksu was our next stop on this long drive to Kashgar but on the way we had

a very interesting detour to the Buddhist Caves at Kizil. These are the oldest Buddhist caves in China, said to have been developed between 3rd and 8th centuries. There are 236 caves carved into the cliff above the green and fertile valley through which the Muzat River flows.

We entered 8 different caves viewing the remaining murals and the damage caused by looters over the centuries. Firstly the Muslim invaders removed statues and gold; later when European explorers found the caves in the early 1900s some removed frescos and other artefacts. Many are held at the Berlin Museum as a result of von le Coq's vandalism and many were destroyed there during the bombing of Berlin during WW2. Guan gave us a great translation from the Chinese guide's tour as rain poured down outside. Later it cleared and we picnicked beside the substantial river. This is a UNESCO Heritage



Salt pans on the edge of the desert



Taklamakan Desert sands



The road to the Buddhist Caves at Kizil

Site. The caves were developed by powerful, wealthy Buddhists as a symbol of their devotion, thereby seeking to secure a better future life. The craftsmanship is impressive and makes you realise how sumptuous they must have been in their original state.

The road to the caves took us through more geological wonders and we had intended to continue on a loop road through another spectacular gorge to rejoin the main highway to Kashgar, but unfortunately authorities had other ideas. At an early morning check point, they had retained our drivers' documentation, forcing us to back track to retrieve it – all the way to Kucha! The reason given for this was that we were very close to the border over which he could disappear!

The Aksu region is renowned for its apple growing. We arrived late and left early for Kashgar so our view of the city and surrounds was limited. The road to Kashgar continued along the foot of the mountain range, flat and dry for the most part. We saw the highest peak in the Tian Shan range – Tomur, 7439m. This is usually climbed from over the border in Kyrgyzstan.

We were given very strict security warnings before we arrived in Kashgar--no one to wander off on their own, always to go in groups of at least four and to expect extra security in the hotel and tourist sites. As it turned out

none of this happened and although we did stay in groups as we wandered around independently probably for the first time on the tour, and there was a constant police presence, we were not affected in any way.

Our large hotel, home for three nights, was very close to the old British consulate which has been turned into a restaurant where we ate each evening. Although some of it has been modernised in a very ordinary way some of the old, delightfully decorated, rooms remain. A very old tree adorns the courtyard entrance but much of the building's surrounds are crumbling.

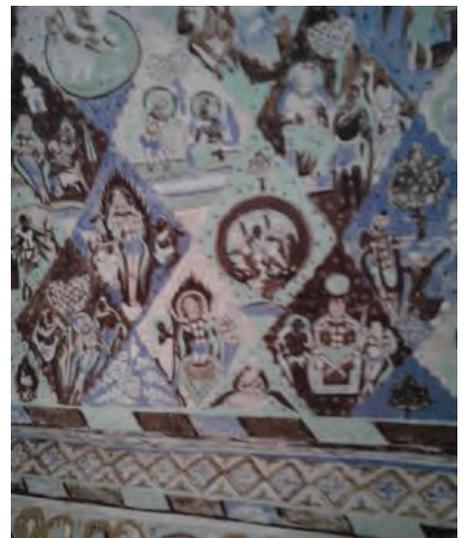
Sunday and Monday: Exploring Kashgar started with a visit to the animal market – a bit of a tourist trap in that most of the visitors were obviously tourists but never-the-less a fascinating close up look at the livestock we had seen along the way. Also the people. The local population is largely Uighur but this is the great melting pot of the Silk Road so every race, colour, shape and degree of wealth could be seen in the streets.

Donkeys, mules, sheep, cattle, buffaloes, camels – all were for sale at the market along with food cooked in traditional ways, produce from some of those same animals.

We then visited a jade shop which also sold silk and wool carpets, and some silk material and had the



The Buddhist Caves



Interior of the Kizil Buddhist Caves each of which was painted with different designs always featuring the Buddha.

best toilets of the whole tour. A few carpets were bought and I inspected some lovely silk. Purchases made all arrived home safely. Across the street was a “fruit road” where we went for a wander and an ‘independent’ lunch. I guess we had been spoilt up until then with not having to make decisions about buying food or working out where to go, what to pay etc. However it turned out to be great fun and no hassle. Westerners are a novelty in this part of the world so we were well looked after and the food was delicious. There were also many stalls selling local crafts.

Early next morning a brisk walk in the crisp, fresh air took us to a restored ‘old city’ section near the hotel and lots of photo opportunities. Police checks were everywhere. We then left by bus to the real Old City in time for a special ceremony held only on Mondays; some lively singing and dancing by local people at the one gate into the city, then we were free to wander for three hours. All very pristine and a little artificial near the entrance. Chinese flags flying everywhere. I wondered if they were compelled to fly them - a feeling that was re-enforced when we saw police knocking on doors which would open a crack before a person came out and went along the street to a small square where what looked like a political meeting was taking place.

However the general impression was charming. Beautiful buildings with traditional decoration on the doors and walls lined the streets. Shops occupied many of the street level spaces with people living upstairs. Many local crafts were being sold with some being created in open workshops – wood, iron, hats, scarves. Food stalls cooked on site too---bread, kebabs, samosas. But the place that drew us all in was the coffee shop. We hadn’t found decent coffee since we arrived in China and here was a genuine café with good quality espresso, cakes, English books and magazines, delicious Turkish coffee, comfy sofas and chairs and a few other western travellers with whom to gossip. Sacrilege on our last day to revert to type!

Last dinner - two birthday boys served a cake and a special whole sheep, probably cooked in a tandoori type oven, brought to the table for Guan to carve, although he was quickly replaced by the waiter. Farewell to our great driver and after the flight to Urumqi which gave us amazing views of the bones of the earth we farewelled Guan, Li and Liu. What a wonderful time they had given us! They patiently

answered our most banal questions, guided us through all those security checks, through long and at times difficult travelling conditions, showed us their exciting and important research projects. We had a wonderful time and were privileged to have these knowledgeable people to introduce us to their Xinjiang, the history, the science, the plants, the agriculture, the geology, the people, and the cultures.



The old City of Kashgar enclosed by new wall



Animals for sale at the Kashgar Market

TECHNOLOGICAL OBSERVATIONS MADE MAINLY THROUGH A BUS WINDOW, XINJIANG, CHINA, SEPTEMBER 2017

Tony Burrell

Wind farms on the road to Turpan from Urumqi

For power generation, coal fired stations dominate, producing 80% of Xinjiang's electricity. These appeared to be dotted around the outskirts of the major cities. Even with better technology coal is a dirty fuel and produces smog as well as vast quantities of CO₂, a greenhouse gas. No doubt some of the haze we encountered in the cities was due to the nearby emissions from the coal stations. By contrast, New Zealand [NZ] produces 80% of its power from renewables - hydro, geothermal and wind power.

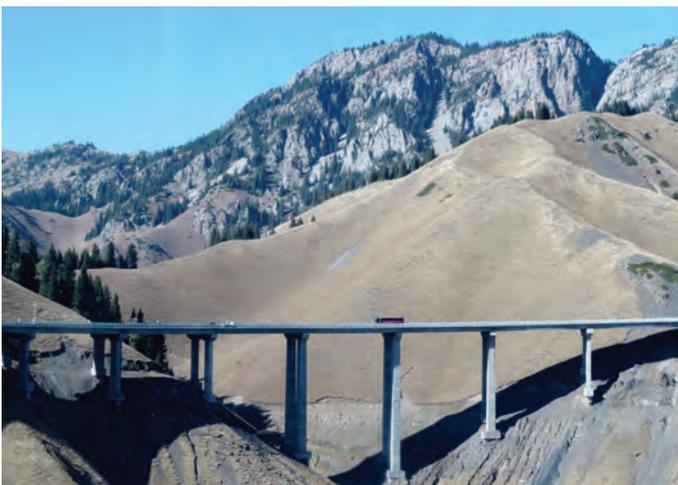
Xinjiang has a large potential for renewable energy development. There are large wind corridors on the edges

of the deserts, abundant rivers for hydro development and sunshine hours for solar we can only dream about. As we saw, China does things on a huge scale and has started developing large wind farms which we witnessed on our travels. Growth has been rapid, with a rate of two wind turbines being installed every hour, however rapid growth has also created issues with the power supply system. China's electricity demand has slowed and the dominant coal fired stations are given priority access to the grid. Also, the wind farms are normally some distance away from the population centres and the transmission grid is unable to handle the volume of new wind capacity additions. In the NZ electricity market, wind generation is dispatched first so there is no wastage.

At present in Xinjiang 38% of the available wind generation is wasted. This may be the reason we saw many of the wind turbines not operating while others were happily turning.

China is very serious about greenhouse emission reductions and the need to reduce pollution. There is air particulate monitoring in all the major cities and this data is published in real time. Results over the past couple of years show that the worst cities in the east are improving air quality by attacking the three main causes of air pollution, which are coal burning, vehicle exhaust and emissions from factories.

A surprising result is that despite the monitoring, the air quality in Xinjiang has deteriorated at a sharp



A viaduct approach to the Guozigou - Fruit Valley Bridge.



The road to Fuyun through the desert



Coal fired power station

rate. Kashgar and Urumqi are now ranked as having the worst winter air quality of all the cities in China. Seven of Xinjiang's cities are now listed amongst China's 20 worst cities for air quality. Improving the air quality in Xinjiang will be challenging for some time to come, as there are a number of new coal fired stations in the pipeline. We travelled at a time of year where the air quality didn't appear too horrid. Many of the coal-fired power stations we passed were not operating at full capacity

but would no doubt power up later in the year for the winter demand. A carbon trading scheme was planned for introduction in late 2017 to reward the companies that cut pollution while laggards would pay a higher price. Also in 2017 China stopped the building of 100 new coal fired stations. The reason for the sudden deterioration in Xinjiang air quality is likely to be a combination of factors, with dust and sand storms having a big impact.

Back to clean and green, we passed a number of solar power stations



Oil donkey in Karamay

on our travels. Xinjiang has high annual sunshine hours compared to NZ. The best areas in Xinjiang have nearly 60% more sunshine than the best areas in NZ. Solar energy provides 3% of Xinjiang's total electricity requirements. In comparison NZ solar provides 0.1% of the NZ electricity requirements. We apply a few solar panels to some of our residential homes and small businesses. In Xinjiang we saw few buildings with solar panels. The focus appears to be going big and covering hectares of land with panels. China has the world's largest solar power station which covers an incredible 30 square kilometres. It has recently opened the world's largest floating solar farm, which is ironically positioned over an old coal mine.

China had already, in 2017, exceeded its 2020 solar power target, three years ahead of schedule. All sounds good, and it is, but solar across China provides still only 1% of its energy demand. Coal reigns supreme in its energy mix. With China's electricity generation increasing at 5% per year, the growth of thermal stations (mostly new coal stations) is still the largest. Replacing coal's dominance will be a real challenge.

Going north from Urumqi we witnessed a new highway in active construction for hundreds of kilometres. As we travelled around the region many highways were under



One of many new towns powered by a wind farm

development. We were travelling during a period of unparalleled highway construction in Xinjiang. The government had approved the start of construction of a staggering 6096km of highway in Xinjiang for 2017. The budget for this work was 170 billion Yuan. The main toll highways we travelled on appeared to be better built and the surface in better condition than that of NZ roads. They use the more expensive hot mix surface on the roads. We still use a lot of noisy and shorter life road chip to keep our costs down. Small loop walls were built at an angle to the road so any drainage water was channelled away from the road and through to culverts running under the road. Road cuttings were all lined with panels, stone or a concrete support structure. Looking at their budget figures, they will be building their highways in Xinjiang at about one fifth of what our highways are presently costing us.

The tolls to use the new highways are not cheap. Cars appeared to pay around \$7 a section and the bus paid between \$16 and \$50 depending on the length of the toll road. Our driver was always trying to keep our costs down and where requirement for declaration of bus class wasn't totally clear he would go low, but the toll operators were super sharp and he was usually caught out and had to pass over more notes!

Yang was a very skilled driver, as we all witnessed. Xinjiang had journey surveillance systems on the highways which recorded vehicles entering and exiting road sectors. If your time through the sector was less than the speed limit time, you could be fined. Journey management was designed as a speed deterrent and turned many drivers into road tortoises. Our driver, who no doubt was trying to be helpful in getting us to our destination in the best time, enjoyed the role of the road

hare. Slow trucks and not so slow trucks were dispatched with a blast of the horn to get them to pull over and a precision passing manoeuvre followed. The bus had systems to help the driver know when he was under-time for the exit sector. This sometimes resulted in a crawl in the last couple of hundred metres and, just like the tortoise and hare story, sometimes a truck that had been recently passed would trundle past us and out of the sector first. There were very few police cars out on the roads. There was the occasional speed camera well hidden behind the armco barrier but the bus had a warning system and our driver would delight in locating the very well hidden devices.

In the larger cities the traffic lights had count down indicators in the green and red phase. This appeared to assist with smooth transitions and overall traffic flow. These devices are not too expensive and would be a real asset



Freeway into Guangzhou

at some of our intersections in NZ.

Car ownership is new in China so most of the cars were also relatively new. There is an even mix of mainly medium sized European (mostly German), Japanese, Korean and Chinese brands. American cars were light on the ground for some reason. The Chinese buyers are selecting the best of overseas models and this will no doubt result in the Chinese car manufacturers upping their game to compete in this market. I foresee it will not be long before China is producing some real world-class cars and in large numbers.

Didn't see any recognizable electric cars or charging stations in Xinjiang. China already has more electric vehicles than America and the numbers could ramp up quickly as China has introduced a requirement on car manufacturers and importers to have 10% of the range electric by 2019.

There was a surprisingly high number of trucks in Xinjiang powered by LPG or CNG. CNG was also being trucked to supply remote filling stations away from gas pipelines. About 30 years ago NZ was a leader in CNG vehicle use and experimented with CNG and LPG powered trucks. Once government incentives were removed and gas retailers ramped the price up the industry collapsed. With a large number of gas fields in Xinjiang, they can no doubt offer attractive pricing for truckers. In the north-east of China there has been a large demand for new LPG trucks as new tough emission standards have barred diesel trucks from some areas and from October 2017 diesel trucks have been banned from carting coal on the roads. LPG trucks cost about \$12,000 (NZ) more than a diesel truck to buy, but LPG is presently between 10%-30% cheaper than diesel fuel and a lot cleaner on the environment. Many of the operators driving long distances will pay off the extra in fuel savings within a year.

In parts of Xinjiang the electric scooter was the dominant form of city transport. The batteries were located below the floor, which resulted in a very stable and manoeuvrable device. The seat layout meant that

they could be used as family transport. The weirdest combination I saw on a scooter was two people and a fully grown sheep balanced across the knees. Scooters cost the equivalent of about \$500-\$600. The cities have special cycle lanes to accommodate them. By contrast, NZ electric bikes are mainly recreational bikes. These carry one person, have limited suspension, no lights or indicators and most require pedal assist for the motor to work. Our e-bikes start at about \$2200 to buy. The Uighur women would be seen riding their scooters to work in their high heels. Try that on our e-bikes?

In rural areas the humble three-wheeler utility was the working vehicle of choice. It was basically a small farm trailer with the draw bar removed and replaced with the front part of a motor bike. Incredibly well designed, simple and built in various configurations and sizes. Most of the newer ones were electric. The bench bike seat arrangement was turned sideways and the batteries were stored in the boxed space under the seat. It really was an eye-opener during our travels seeing what was carted around in the back of these three wheelers. The simple no frills design meant these could be bought for \$400-\$1000 NZ. In NZ we are sold the four wheeled farm ATV vehicles which start at \$12,000 and go up to over \$20,000 depending on the features. The four wheelers are definitely a better vehicle on our hill country farms

but for the flat farms, horticulture blocks, Parks and Reserves and dare I say it, Pukeiti, the far cheaper three wheeled electric ute would do the job just as well. Interestingly four wheeled ATV's have not made any in-roads in rural China. They probably aren't seen as providing any real advantages for the extra cost involved.

In Guangzhou we witnessed Chinese-developed bike technology called "Uber for Bikes" which is sweeping through the large cities. It is basically a modern commuter hire bike which is unlocked using a smart phone. To find the closest bike there is a GPS app which can be used. There are no docking stations so you just park the bike where you finish and re-lock the bike. Hire costs are now down to as little as 20 cents an hour. The growing pains of rapid growth and its unregulated nature is seeing some popular locations having bikes piled up in heaps due to lack of room and broken bikes discarded in flower beds. Solutions are being worked on as well as plans by the major Chinese operators to roll out the "Uber for Bikes" model in other large cities around the world.

Guangzhou banned petrol engine bikes about 10 years ago so it is now electric or commuter bikes. Not the vast numbers of electric scooters that we saw in Xinjiang cities but instead, many foldable electric bikes, no doubt easier to store for apartment dwellers.



The 50 seater air conditioned bus in which the group travelled through Xinjiang

GROWING VIREYA RHODODENDRONS IN THE HOME GARDEN

Trevor Lupton and Chelle Gandell

About 15 years ago we decided to build a deck into the garden on the northern side of our house. We wanted a garden with a tropical theme, palms, cycads, bromeliads, clivia, orchids and vireya rhododendrons for colour. However the soil in our garden has a shallow clay pan, wet in winter, dry in summer. Far from suitable for vireyas.

The solution was to include a planter box around the edge of the deck. The planter box is about 0.75m deep and wide and filled with potting mix. Vireyas grew well in this, however despite living in Gisborne we are not

frost free and after two winters with major frost damage we decided to replant the vireyas in large plastic pots. The pots are lifted in winter and placed under trees or the eaves of the house to avoid frost. In spring after frosts have passed they are placed back into the planter box.

We now have 40 to 50 vireyas, larger specimens in pots, smaller plants in hanging and wall baskets.

Vireyas are reasonably easy to grow provided they have excellent drainage and soil aeration. Our oldest plants are around 25 years old.

In pots and baskets they require water every 2-3 days in summer, once

a week in winter. We apply a slow release fertiliser 2-3 times a year. In Gisborne's hot dry summers they are susceptible to powdery mildew which is easily controlled with some of the new fungicides. Some varieties can also suffer from thrips, mostly when they are in the shade. An oil and insecticide once a year is generally sufficient to control thrips.

Some vireyas can become leggy. We will prune these by shortening back when removing spent flowers. Occasionally we have resorted to hard pruning leggy plants back to 0.2m above ground. Provided the plant has healthy roots this works well, although you may lose a year's flowering.



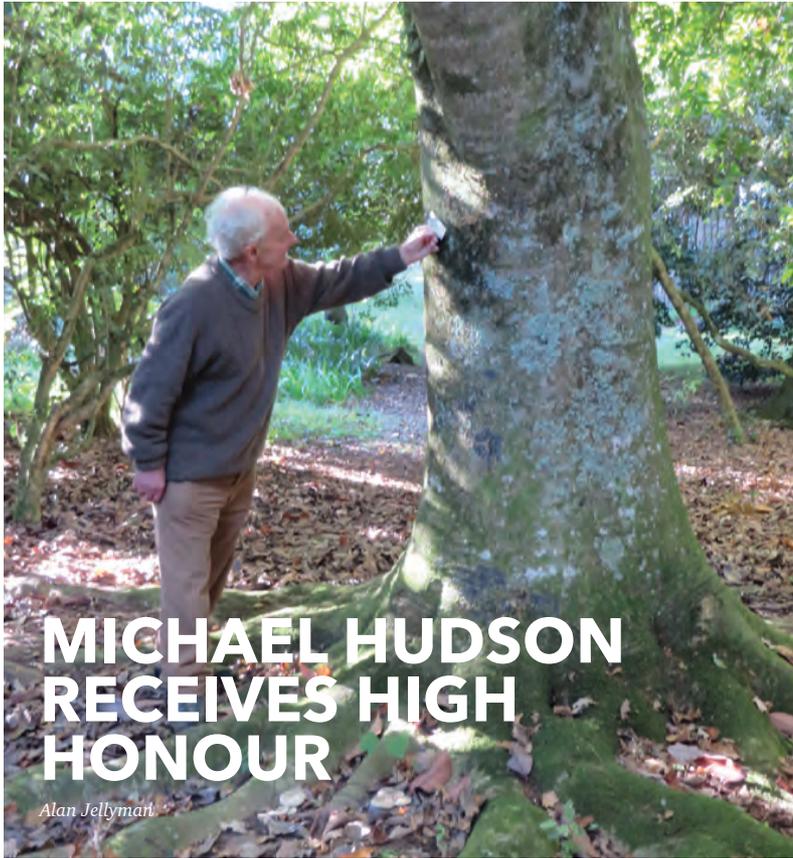
R. 'Rio Rita'



R. 'Popcorn'



R. 'Watermelon Dream'



MICHAEL HUDSON RECEIVES HIGH HONOUR

Alan Jellyman

Magnolia doltsopa given to Michael by Douglas Cook

All those who know Michael Hudson will be delighted to join with me in extending to him our heartiest congratulations on his being awarded the prestigious Royal Horticultural Society's Veitch Memorial Gold Medal, as announced earlier this year. It is appropriate that this award commemorates one of Britain's famous 19th century nurserymen and plant collectors, James H. Veitch. This is the highest award of the Society for people not resident in Britain and is awarded to: 'persons of any nationality who have made an outstanding contribution to the advancement and improvement of the science and practice of horticulture'.

Michael was an early member of the NZ Rhododendron Association and became a Foundation Member of Pukeiti after an approach from William Douglas Cook, who enticed him with a young imported plant of the then rare *Magnolia doltsopa*. [Cook, the founding father of Pukeiti, was awarded this same medal for his work at Eastwoodhill, the New Zealand

Rhododendron Association and Pukeiti]. Michael is one of three surviving foundation members of Pukeiti, the others being Roland Stead and Graeme Petterson.

Gwavas Garden is the home of Michael and his family; a property that has been in the family since 1858. As a young man he took over the property, balancing his love of plants with the needs of managing farm operations. From the outset he embarked on a programme of importing key plants, adding to the extensive collections of his forebears. In addition he obtained seed from various international sources and scoured New Zealand for outstanding plants.

Rhododendrons were among some of the much sought after collections and he was an eager recipient of plants offered by both the Association and Pukeiti. He continuously added to the early 1900 imports of hardy hybrids that still make an avenue along the drive to Gwavas today. Always willing to share his treasures, Pukeiti has in turn been able to receive propagating material of many of the selected forms of the more than 200 species within his collection. It is interesting to note

that this year a new feature of some of the Gwavas *Rhododendron nutalli stellata* hybrids is being established in the Hybrid Block at Pukeiti.

Although the Hawke's Bay climate is challenging for these plants, through his careful management of overhead shade and high tree canopy control, plus watering of stressed individuals, Michael and his wife Carola have been able to maintain many very fine plants, some of which do not do so well at Pukeiti. In fact Gwavas Garden demonstrates best practice of canopy management that allows for a wide variety of trees and shrubs to thrive in the local climate.

A feature of the Gwavas collection is the way new introductions of subjects like magnolia and camellia have been obtained and established. Today you can see some 65 named *Camellia reticulata* hybrids, representing most of the introductions from C. 'Captain Rawes' onwards. These are large trees today and in themselves are just another example of Michael's contribution to ornamental horticulture.

Over a 65 year period Michael Hudson has made an outstanding contribution to the practice of horticulture through nurturing and building an extraordinary collection of trees and shrubs and demonstrating best woodland management practice, sharing knowledge and material, and serving the New Zealand Rhododendron Association and Pukeiti with distinction. The Veitch Memorial Gold Medal is a just recognition of this life time of service and endeavour.



Paeonia 'Boris'



IDS STUDY WEEKEND CORROUR ESTATE JUNE 2018

Jeremy Thompson and Shashil Dayal

The delegates at Corroul Estate, Scotland

An IDS study weekend arranged by Peter Hutchinson and Tom Christian, with the theme ‘Corroul Estate: its Rhododendron and Forestry Collection’ was a not-to-be-missed reason for visiting Scotland in June.

A twin passion beckoned – rhododendrons and forests, and an invitation to visit a very private and unique Scottish estate could not be resisted.

Corroul, a remote Highland shooting estate in Argyll, near Ben Nevis, was once owned by wealthy Glasgow industrialist Sir John Sterling Maxwell. In the late 19th century, he successfully established a comprehensive conifer collection on the shores of Loch Ossian, with the aim of identifying new commercial species for afforestation.

A substantial hunting lodge was built in 1899, and in the 1920s and 30s, Maxwell, a prodigious collector, planted 25 acres of species rhododendrons on the shores of Loch Ossian. This time was the

Golden Age of plant hunting.

Plants were obtained from the RHS Edinburgh, and had been grown from seed collected by Forest, Wilson and Kingdon Ward. Most were new to cultivation. The Corroul collection is now one of the five most important rhododendron species collections in the United Kingdom. Maxwell designed the approach to his lodge to pass through his prized collection. The Rhododendron Planting was a source of great pride to him.

In 1942 the lodge and all records were lost in a disastrous fire. Rebuilding during the war was impossible, the estate became run down and was eventually sold in 1965. Thirty years later it was sold again to Lisbet Raushing, daughter of Tetra Pak billionaire Hans Rauching.

Lisbet immediately commenced comprehensive redevelopment, adopting modern sustainable practices and injecting serious funding into the 65,000 acre estate.

Traditional pursuits of deerstalking and fishing are now on offer, an

agenda promoting biodiversity and sustainability is underway, birch woodland is regenerating and buildings and roads have been refurbished. The Scottish ‘freedom to roam’ laws encourage many of the 12,000 visitors to Corroul each year to enjoy camping and hiking.

Forest land has been acquired and now accounts for 10,000 acres of the total of 65,000 acre estate. An outstanding contemporary £20 million lodge was completed in 2004. We were graciously provided with a four course luncheon in the grand dining room of the lodge.

Despite intervening years of abandonment, the rhododendrons have survived, in fact flourished, to become a 25 acre impenetrable thicket.

So to 2018, seven years into the restoration and identification project.

Dr David Chamberlain - a key contributor to the Red List of rhododendrons, John Hammond, John Roy, Tom Christian and a dedicated group of volunteers have been labouring in this rhododendron



Shashil meets Peter Cox at Glendoick

gold mine. They are painstakingly restoring watercourses, rogueing out unidentified seedlings, cutting back and identifying. An immense task, of sheer physical exertion, with weather conditions in the remote highlands often extreme. The sympathetic owner requires that the collection be identified and documented but with no visible labelling.

I realised at Corrouar that Pukeiti's Conservation Strategy has very similar objectives. It is an interesting coincidence that Pukeiti's rhododendron conservation program and the work of this group of international experts so closely align. To recap - the Pukeiti

strategy of assessing nearly all the known species collections in New Zealand, producing a list of species currently growing in New Zealand and matching these with the Red List is just what the Scottish group members are undertaking at Corrouar. They have been able to reference sales from the RHS Edinburgh and are able to piece this together with what they're finding in their jungle.

There is possibly an opportunity for collaboration, particularly the sharing of wild collected seed to augment our respective gene pools.

An unforgettable afternoon also was spent with Peter and Patricia Cox



R. keiskii

at Glendoick. It was very interesting to see how much the garden had matured. Much of the work today is constant, ensuring adequate light conditions in the woodland. Peter did enjoy seeing photos of Shashil's Mt. Saramati *Macabeanum* in flower as his plant has yet to do that. Peter showed us a stand of Shashil's 1994 collection of *Lilium mackliniae*, which he also mentioned in the RHS journal as being collected where Kingdon Ward discovered it in the Dzoku Valley, Nagaland, in the 1940s.

All in all it was a wonderful educational trip, seeing many gardens and mouth-watering plants.



Corrouar Forrest



The shores of Loch Ossian



SEARCHING FOR THE 'LOST' VIREYAS: THE NEXT PHASE OF THE NEW ZEALAND EX SITU CONSERVATION PROJECT

Marion MacKay

R. gardenia - Edinburgh

In 2018 one of the most exciting recent developments in *Rhododendron* conservation was the conservation workshop, organised by Botanic Gardens Conservation International (BGCI) and held at Oak Spring Garden in Virginia (MacKay 2018a), where key issues of *Rhododendron* conservation were considered. Following that workshop, an important aspect of conservation action is that each country that holds significant *Rhododendron* collections should clarify its holdings and accurately record the wild-source accessions that are held (Rhododendron Conservation Consortium 2018).

This presents a challenge (and perhaps some fun exploring!) for us in New Zealand. Why? One of the outcomes thus far of the New Zealand *ex situ* conservation project (MacKay 2016, 2017a) is the realisation that about 120 *Rhododendron* taxa that have been in New Zealand in the past are presently 'lost' from cultivation and have no current collection or trade records (MacKay 2018b). These 'lost' taxa comprise about one third Vireya taxa and two thirds temperate

taxa, with recent analyses indicating that Vireya taxa should be a global priority because they have significant conservation issues and are relatively poorly represented in cultivation (MacKay 2018c; MacKay et al. 2018; MacKay & Gardiner 2017). To this end, one focus for the second phase of the New Zealand project will be on searching New Zealand sites and collections for those 'lost' taxa, and propagating and dispersing those that are located. (International readers should note that under current New Zealand biosecurity regulations we cannot import taxa that have not previously been in New Zealand, therefore finding any of the 'lost' taxa assists us in our conservation efforts.)

This group of Vireya taxa was identified from two sources. First, from a list of Vireya taxa that have been lost from Pukeiti or for which there are limited accessions (Coxhead 2018). Second, from examination of the MacKay database of taxa in cultivation in New Zealand (construction of the database and its components is described in MacKay et al. (2017) and MacKay (2017b)). Key sources for Vireya taxa in the database include current and previous records for Pukeiti (PRT undated, 2005, 2008; TRC 2016), Eastwoodhill

(Eastwoodhill Arboretum 2016; MacKay 1996), Victoria Esplanade (MacKay 2014) and published lists of taxa historically available in commercial trade (Gaddum 1999, 1999a; Smith 1983). Commercial trade data were also acquired from the MacKay catalogue collection of the 1990s, and a recent (2010-2017) survey of about 50 nurseries. Listings on the Plant Biosecurity Index were checked (MPI undated), although this index is not a complete record of cultivated plants in New Zealand (Dickson 2009). Historical data were also obtained from searches of the Newsletters, Bulletins and Plant Sales lists of Pukeiti Rhododendron Trust (years 1995-2016) and New Zealand Rhododendron Association (years 1956-2016), and from offerings by New Zealanders on the American Rhododendron Society seed lists from 1974-1998 (http://www.rhododendron.dk/ARS_seed.htm, searched August-September 2017). Number of records on the database at Botanic Gardens Conservation International (BGCI 2017) was used as an indicator of scarcity in cultivation; fewer than three records is a risk threshold at which action becomes high priority. Current conservation assessments (the Red List status of each taxon) were taken from either Gibbs et al. (2011) or Argent (2015). These assessments (criteria are outlined in Gibbs et al. (2011)) indicate the level of risk to the species in its native habitat and, in decreasing order of severity, are: Extinct (EX), Extinct in the Wild (EW), Critically Endangered (CR), Endangered (EN), Vulnerable (VU), Near Threatened (NT), and Least Concern (LC). Taxa for which experts consider there to be a conservation problem, but which cannot be quantified on current knowledge, are listed as Data Deficient (DD). (DD taxa are therefore a high priority for further research.) The final category, for taxa that have not yet been assessed, is Not Evaluated (NE).

Using the aforementioned database, Vireya taxa that lack a current New Zealand listing (evidence of a live plant in the last approximately five years), but which the historical records show have been here in the



R. anagalliflorum - Edinburgh



R. aurigeranum - Edinburgh



R. bagobonum 1990124A



R. christii - Edinburgh

past were collated (Appendix 1). Several characteristics of these taxa are evident. First, while many of the taxa are assessed as Least Concern (i.e. they are common in the wild), most are uncommon in world cultivation as demonstrated by the relatively low numbers of BGCI records. There are also several threatened taxa listed in Appendix 1 and most of these are also uncommon in cultivation, which emphasises the importance of any New Zealand material. Second, many of the taxa were wild collected (often several times) by some of our most excellent vireya folk – Keith Adams, Os Blumhardt, the Philipson's and Graham Smith. This wild source material is important for conservation and it would be marvellous to find some of it again. Third, most of these Vireya taxa have never been sold commercially in New Zealand. Several have been distributed through 'Plants for Members' channels; however, overall these taxa do not circulate through mainstream commercial outlets. Although there is no real commercial presence, it is likely that plant enthusiasts will have swapped or acquired plants over the years and some of the 'lost' taxa are still alive in someone's collection.

As part of progressing the New Zealand *ex situ* project, we hope to rediscover some of the lost vireya taxa and propagate those plants and re-establish them at appropriate collection sites, primarily at Pukeiti, in association with Taranaki Regional Council. (In due course, the 'lost' temperate taxa will also be investigated whereupon we will collaborate with the excellent work already being done by NZRA on those taxa). Should you have, or know of, plants of any of the vireya taxa listed below and are prepared to share propagation material please get in touch with either myself, Doug Thomson or Graham Smith. At the same time, if you have vireya species that are not on this list but which you think are unusual, do get in touch as there may be more material out there than we are presently aware of. We would be pleased to hear from you. The overall aim is to enhance the diversity of vireya

collections in New Zealand and make a useful contribution to conservation of this group of rhododendrons.

References

- Adams K. 1990. Letter to the editor describing a collecting expedition to Sarawak and Peninsula Malaya in 1990. *Vireya Vine* 27: 212-213. Downloaded from Vireya.net on 17 Nov 2016.
- Adams K. 1992. List of species donated to Pukeiti by Keith Adams in 1992. Unpublished document, Archive held at Pukeiti Garden, Taranaki Regional Council.
- Adams K. 1996a. Notes from a plant hunter's diary. *Journal of the American Rhododendron Society* 50(1): 6-8. VirginiaTech Digital Archive. Accessed 29 Jan 2016.
- Adams K. 1996b. Letter to the editor describing a collecting expedition to Sulawesi in 1996. *Vireya Vine* 48: 3-4. Downloaded from Vireya.net on 13 July 2017.
- Argent G. 2008. Some recent species introduced into cultivation. *Scottish Rhododendron Society Yearbook* 10: 103-116. Downloaded from Vireya.net on 17 Nov 2016.
- Argent G. 2015. *Rhododendron* of the subgenus *Vireya*. 2nd edition. UK, Edinburgh: Royal Botanic Garden, Edinburgh, in association with The Royal Horticultural Society.
- ARS (American Rhododendron Society). 2013. Vireya seed distribution list 2013. Hawaii chapter of the American Rhododendron Society. Downloaded from <http://www.Vireya.net/ARSeedList-Apr13.pdf> on 18 September 2017.
- ARS (American Rhododendron Society). 1995. American Rhododendron Society Vireya seed list 1995. *Vireya Vine* 44: 3-5. Downloaded from Vireya.net on 25 September 2017.
- ARS (American Rhododendron Society). 1994. American Rhododendron Society Vireya seed list 1994. *Vireya Venture* 17:3. Downloaded from Vireya.net on 25 September 2017.
- ARS (American Rhododendron Society). 1990. American Rhododendron Society seed list 1990. Downloaded from http://www.rhododendron.dk/ARS_seed.htm on 18 September 2017.
- ARS (American Rhododendron Society). 1989. American Rhododendron Society seed list 1989. Downloaded from http://www.rhododendron.dk/ARS_seed.htm on 18 September 2017.
- Ballard K. 2015. Rhododendrons in Northland. *The New Zealand Rhododendron* 3: 38-39.
- BGCI. 2017. *Botanic Gardens Conservation International: Plant Search*. Online at: https://www.bgci.org/plant_search.php. Searched on 06 Jan 2017.
- Binney D. 2003. *Rhododendron* collecting in Sulawesi. In: Argent G, MacFarlane M. editors. *Rhododendrons in horticulture and science*. UK: Royal Botanic Garden Edinburgh; p111-114.
- Binney D. 2001. List of Vireya species donated to Pukeiti by D. Binney in 2001. Unpublished document, Archive held at Pukeiti Garden, Taranaki Regional Council.
- Binney D. 1998. Letter to the editor describing a collecting expedition to Sulawesi in May 1997. *Vireya Vine* 52: 3-4.
- Blumhardt O. 1989. List of plants donated to Pukeiti by O. Blumhardt in 1989. Unpublished document, Archive held at Pukeiti Garden, Taranaki Regional Council.
- Blumhardt O. 1981. List of plants donated to Pukeiti by O. Blumhardt in 1981. Unpublished document, Archive held at Pukeiti Garden, Taranaki Regional Council.

Clark G. 2001. Vireyas at latitude 45 south. *NZRA Bulletin* 89:46-50.

Coxhead L. 2018. List of Vireya taxa that have either been lost from Pukeiti or for which there is only one accession. Unpublished list, Pukeiti Garden, Taranaki Regional Council.

Dickson M. 2009. The Plants Biosecurity Index (PBI). *New Zealand Garden Journal* 20(2): 8-9.

Eastwoodhill Arboretum. 2016. *Our collection*. Available at www.eastwoodhill.org.nz/explore/our-collection/CollectionSearchForm. Searched on 25.11.2016.

Gaddum M. 1999. *The trade plant finder 1999-2000*. Gisborne: New Zealand Plant Finder Ltd.

Gaddum M. 1999a. *The trade plant finder 1999-2000 supplement*. Gisborne: New Zealand Plant Finder Ltd.

Gibbs D, Chamberlain D, Argent G. 2011. *The Red List of Rhododendrons*. UK (Richmond): Botanic Gardens Conservation International. Available from bgci.org.

Jury. M. 1998. List of Vireya species donated to Pukeiti by Mark Jury 23/9/1998. Unpublished document, Archive held at Pukeiti Garden, Taranaki Regional Council.

Kenyon J, Walker J. 1997. *Vireyas for New Zealand gardens*. Godwit Press, Auckland.

MacKay MB. 2018a. Report on the Rhododendron conservation workshop held at Oak Spring Garden, Virginia, 17-18 April 2018. *The New Zealand Rhododendron* 6:

MacKay MB. 2018b. *Development of a New Zealand Rhododendron ex situ conservation strategy for New Zealand: contract report to the end of March 2018*. Report to the Pukeiti Trust Board, March 2018. Massey University, New Zealand.

MacKay MB. 2018c. *Overview of Rhododendron Conservation*. Oral presentation at the *Rhododendron ex situ* conservation workshop held at Oak Spring Garden, 17-18 April 2018, Virginia, USA.

MacKay MB. 2017a. Development of a New Zealand *ex situ* strategy for Rhododendron: project report to the end of June 2017. *The New Zealand Rhododendron* 5:26-29.

MacKay MB. 2017b. Uncommon *Rhododendron* species in New Zealand: are there any at the bottom of your garden? *The New Zealand Rhododendron* 5: 32-39.

MacKay MB. 2016. Development of an *ex situ* conservation plan for *Rhododendron* species in New Zealand. *The New Zealand Rhododendron* 4: 26-27.

MacKay MB. 2014. *List of Vireya species at Victoria Esplanade, Palmerston North*. Unpublished field notes. Massey University, New Zealand.

MacKay MB. 1996. *Management of the plant collection at Eastwoodhill Arboretum. Vol 2. Appendix 1: Catalogue of the collection. Vol 2 Appendix 3: Catalogue of the previous collection*. Unpublished PhD dissertation, Massey University, New Zealand.

MacKay MB, Gardiner SE. 2017. A model for determining *ex situ* conservation priorities in 'big genera' is provided by analysis of the subgenera of *Rhododendron* L. (Ericaceae). *Biodiversity Conservation* 26 (1): 189-208. DOI 10.1007/s10531-016-1237-0.

MacKay MB, Hootman SE, Smith GF, Thomson D, Gardiner SE, Smith P. 2018. *Updated global analysis for ex situ conservation of Rhododendron L. (Ericaceae)*. Report to Botanic Gardens International, January 2018. Massey University, Palmerston North, New Zealand, and Botanic Gardens Conservation International, Richmond, UK.

MacKay MB, Smith GF, Gardiner SE. 2017. New Zealand collections of *Rhododendron* as a resource for *ex situ* conservation. *New Zealand Journal of Botany* 55(2): 193-214. <http://dx.doi.org/10.1080/0028825X.2017.1291434>. Published online on 2 March 2017.

McAlister M. 2004. The Vireya collection at the National Rhododendron Garden. *The (Australian) Rhododendron* 44: 51-54.

MPI. undated. *New Zealand Ministry for Primary Industries Plant Biosecurity Index*. Available from <https://www1.maf.govt.nz/cgi-bin/bioindex/bioindex.pl>. Accessed 10 October 2015.

NZRA (New Zealand Rhododendron Association). 1987. Recent arrivals at Pukeiti. *NZRA Bulletin* 75: 58-59.

NZRA. 2003a. New Zealand plant hunters. *NZRA Bulletin* 91: 28-33.

NZRA. 2003b. Graham Smith's Papua New Guinea collections 1983-1986. *NZRA Bulletin* 91: 47.

Philipson M. 1969. Plant hunting in New Guinea. *NZRA Bulletin* 54: 10-14.

(PRT) Pukeiti Rhododendron Trust. undated. *Historical card file of Rhododendron accessions covering 1950s-1990s*. Unpublished archive held at Pukeiti Gardens, Taranaki Regional Council.

(PRT) Pukeiti Rhododendron Trust. 2005. *Inventory of Rhododendron species*. Unpublished species list, Pukeiti Rhododendron Trust, New Plymouth.

(PRT) Pukeiti Rhododendron Trust. 2008. *Inventory Rhododendron subgenus Vireya – March 2008*. Unpublished species list, Pukeiti Rhododendron Trust, New Plymouth.

(PRT) Pukeiti Rhododendron Trust. 1992. Newsletter.

(PRT) Pukeiti Rhododendron Trust. 1971. *Plants imported 1971*. Unpublished document, Archive held at Pukeiti Gardens. Taranaki Regional Council.

Rhododendron Conservation Consortium. 2018. *Draft action plan for Rhododendron conservation*. Unpublished document held by Botanic Gardens Conservation International, Richmond, UK.

Smith EW. 2000. Vireya species in cultivation around the world, as of January 2000. *Vireya Vine* 58: 4-7. Downloaded from Vireya.net on 17 Nov 2016.

Smith G. 1999. Letter to the editor describing *Rhododendron* species in cultivation at Pukeiti. *Vireya Vine* 55: 5-6.

Smith G. 1983. *Rhododendron species and hybrids in New Zealand*. Published by Graham Smith in association with the New Zealand Rhododendron Association, the New Zealand Nurserymen's Association, Pukeiti Rhododendron Trust and individual growers.

Smith G. 1984. Plant collecting in Papua New Guinea. *NZRA Bulletin* 72: 39-45.

Smith G. 1986. Recent arrivals at Pukeiti. *NZRA Bulletin* 74: 63-64.

(TRC) Taranaki Regional Council. 2016. *Pukeiti Plant Explorer. Online database of the plant collection at Pukeiti Gardens*. Available at: pukeitigardenexplorer.org/taxalist-R.aspx. Searched on 25 Nov 2016.

Withers RM. 1991. A history of the introduction of Vireya rhododendron species into cultivation in Australia. *The Rhododendron (Australia)* 31: 3-15. Downloaded from Vireya.net on 13 July 2017.

Appendix 1: List of Vireya taxa that have been in New Zealand in the past, but which have no current collection or sales record in New Zealand



R. citrinum - Pukeiti



R. hyacinthosmum - Edinburgh



R. javanicum ssp. *kinabulense* - Edinburgh



R. leptanthum var. *warianum* - Edinburgh

Species	Origin	Red List	No. of records at BGCI in 2017	Sales in New Zealand	Evidence for presence in New Zealand
<i>abietifolium</i>	Malaysia (Borneo)	VU	3	Never	Wild collected by Keith Adams in 1990 (NZRA 2003a p30). Accession RBGE 80-1209 given to Pukeiti by D. Binney in 2001 (Binney 2001). MPI=N.
<i>acuminatum</i>	Malaysia (Borneo)	EN	3	Never	Wild collected by Os Blumhardt in 1979 (NZRA 2003a p28) and by Keith Adams in 1990 (NZRA 2003a p30). Imported into Australia from Pukeiti in 1980 (Withers 1991). MPI=N.
<i>alticola</i>	PNG	DD	2	Never	Supplied to Pukeiti by O. Blumhardt in 1989 (Blumhardt 1989). MPI=N.
<i>anagalliflorum</i>	Indonesia (Papua), PNG	LC	3	Never	Wild collected from PNG by W & M Philipson in 1988(?) (NZRA 2003a p28) and by G. Smith in 1983 (Smith 1984 p42). MPI=N.
<i>arfakianum</i>	Indonesia (Papua), PNG	LC	1	PPM 1990 PPM 2004	Pukeiti used to have a 1984 accession from G. Snell in Australia (PRT undated). In the Cullinane collection in 1999 (Smith EW 2000). MPI=N.
<i>aurigeranum</i>	PNG	LC	13	PPM 1990 PPM 1992 PPM 2012 CON 2015	Wild collected in PNG by G. Smith in 1983 and 1986 (NZRA 1987 p58; NZRA 2003b p47). In the Blumhardt and Cullinane collections in 1999 (Smith EW 2000). Offered for sale by Container Nurseries (CON) in 2015. MPI=Y.
<i>bagobonum</i>	Indonesia (Borneo, Maluku, Sulawesi), Malaysia (Borneo), Philippines	LC	5	Never	Wild collected by Os Blumhardt in 1979 (Kenyon & Walker 1997; NZRA 2003a p28) and by Keith Adams in 1992 (NZRA 2003a p30). Introduced into cultivation by Keith Adams in the 1980s (Argent 2008). In the Cullinane collection in 1999 (Smith EW 2000). MPI=N.
<i>beyerinckianum</i>	Indonesia (Papua) PNG	LC	8	Never	Wild collected by G. Smith in 1983 (NZRA 2003b p47). Wild collected plants alive in the Blumhardt collection in 1987 (Ballard 2015 p39). Supplied to Pukeiti by O. Blumhardt in 1989 (Blumhardt 1989). Offered for sale by Pukeiti on the 1995 ARS seed list (ARS 1995), and the 1994 ARS seed list (ARS 1994). In the Binney and Cullinane collections in 1999 (Smith EW 2000). MPI=N.
<i>bloembergenii</i> (<i>R. rhodopus</i> is now a synonym.)	Indonesia (Sulawesi)	LC	2	Never	Introduced to cultivation in NZ by Keith Adams in 1996 (Argent 2015 p339). Supplied to Olinda (Melbourne) by David Binney in 2003 (McAlistair 2004). MPI=N.
<i>borneense</i> ssp. <i>villosum</i>	Malaysia (Borneo), Brunei	LC	3	Never	<i>R. borneense</i> wild collected by Keith Adams in 1980, 1984 (NZRA 2003a p29-30) and (permit 31287) in 1992 (Adams 1992). MPI=N.
<i>buxifolium</i>	Malaysia (Borneo)	LC	3	Never	Wild collected by Os Blumhardt in 1979 (NZRA 2003a p28) and by Keith Adams in 1980 (PRT 1992 p13). Imported into Australia, from Pukeiti in 1980 and 1983 (Withers 1991). In the Clark collection in Dunedin (Clark 2001). Donated to Pukeiti in 1998 by Mark Jury (Jury 1998). MPI=Y.
<i>christii</i> Large Leaf Form	Indonesia (Papua), PNG	LC	4?	Jury 1990s, (<i>R. christii</i>)	Acquired by Pukeiti from Mark Jury (ex P. Kores, via USA) (PRT undated). <i>R. christii</i> (ex Kores large form) offered for sale by Pukeiti in the 1995 ARS Vireya seed list (ARS 1995) and the 1994 ARS Vireya seed list (ARS 1994). MPI=Y.
<i>citrinum</i>	Indonesia (Java, Bali)	LC	3	Never	In the Binney collection prior to 1999 (Smith EW 2000).
<i>cuneifolium</i> var. <i>cuneifolium</i>	Indonesia (Borneo)	LC	1	Never	Wild collected by Os Blumhardt in 1979 (NZRA 2003a p28), and by Keith Adams in 1984 (NZRA 2003a p29) and 1992 (NZRA 2003a p30). <i>R. quadrasianum</i> var. <i>cuneifolium</i> collected by Keith Adams from Sulawesi in 1996 (Adams 1996b). MPI=N.
<i>dielsianum</i>	PNG	LC	15	PPM 2004 PPM 2015 WOO 1996	Wild collected by G. Smith in PNG in 1983 (NZRA 2003b p47). Obtained by Pukeiti from the Species Foundation (USA) in 1985 (Smith 1986). In the Blumhardt and Cullinane collections in 1999 (Smith EW 2000). Offered for sale by Woodleigh Nursery (WOO) in 1996. MPI=N.
<i>durionifolium</i> ssp. <i>durionifolium</i>	Indonesia (Borneo), Malaysia (Borneo)	LC	4	Never	Wild collected by Keith Adams in 1984 and 1989 (NZRA 2003a p29). Imported from Sarawak by Keith Adams (permit 31287) in 1992 (Adams 1992). Introduced into cultivation by Keith Adams in the 1980s (Argent 2008). MPI=N.
<i>gardenia</i>	Indonesia (Papua), PNG	LC	5	Never	In the Cullinane collection prior to 1999 (Smith EW 2000). MPI=N.
<i>gaultherifolium</i>	Indonesia (West Papua)	LC	1	Never	Wild collected from PNG by WR & M Philipson (Philipson 1969) and by G. Smith in 1986 (NZRA 2003b p47). Wild collected plants alive in the Blumhardt collection in 1987 (Ballard 2015 p39). MPI=N.
<i>glabriflorum</i>	Indonesia (West Papua)	LC	1	Never	Listed by Smith (1983). MPI=N.
<i>hyacinthosmum</i>	PNG	LC	6	Never	Wild collected by G. Smith in PNG in 1983 (NZRA 2003b p47). In the Binney and Cullinane collections in 1999 (Smith EW 2000). MPI=N.

Species	Origin	Red List	No. of records at BGCI in 2017	Sales in New Zealand	Evidence for presence in New Zealand
<i>javanicum ssp. brookeanum</i>	Indonesia (Borneo), Malaysia (Borneo), Brunei	LC	5	PPM 1998 PPM 2004 PPM 2012	Wild collected by Os Blumhardt in 1980 (Kenyon & Walker 1997) and in 1983 (NZRA 2003a p29). Pukeiti used to have a Blumhardt collected plant (PRT undated). MPI=Y for species.
<i>javanicum ssp. gracile</i>	Indonesia (Borneo), Malaysia (Borneo), Brunei	LC	2	Never	In the Cullinane collection in 1999 (Smith EW 2000). MPI=Y for species.
<i>javanicum ssp. kinabulense</i>	Malaysia (Borneo)	LC	5	Never	Wild collected by Os Blumhardt in 1983 (NZRA 2003a p29). A plant (ex ARS seed) given to Pukeiti by D. Binney in 2001 (Binney 2001). MPI=Y for species.
<i>javanicum ssp. palawanense</i>	Philippines (Palawan)	VU	1	Never	Pukeiti previously had 2 accessions. MPI=Y for species.
<i>javanicum ssp. teysmannii</i>	Indonesia (Sumatra, Java, Bali), Malaysia	DD	2	Never	Pukeiti had 1 accession, ex John Rouse, acquired in 1979 (PRT undated). MPI=Y for species.
<i>konori var. phaeocephalum</i>	Indonesia (West Papua)	LC	4	Never	Listed by Smith (1983). In the Blumhardt and Cullinane collections prior to 1999 (Smith EW 2000). MPI=Y for species.
<i>leptanthum</i>	PNG	LC	9	Jury in about 1999	Wild collected from PNG by Felix Jury in 1958 (Kenyon & J Walker 1997; NZRA 2003a p28). Obtained by Pukeiti from E. Perrot in 1971 (PRT 1971). Wild collected plants alive in the Blumhardt collection in 1987 (Ballard 2015 p39). Wild collected material supplied to Pukeiti by O. Blumhardt in 1989 (Blumhardt 1989). Offered for sale by K. Adams on the 2013 ARS Vireya seed list (ARS 2013). MPI=Y.
<i>leptanthum var. warianum</i>	PNG	DD	1	Never	No notes. MPI=Y for species.
<i>leptobrachion</i>	Indonesia (Sulawesi)	LC	1	Never	Binney reports finding this species on an expedition in 2000 to Mt Sojol in Sulawesi (Binney 2003). MPI=N.
<i>lindaueanum var. lindaueanum</i>	Indonesia (West Papua), PNG	LC	1	Never	Wild collected by G. Smith in PNG in 1983 (Smith 1984 p43). MPI=N.
<i>multicolor</i>	Indonesia (Sumatra)	LC	3	PPM 2004	Listed by Smith (1983). In the Blumhardt and Cullinane collections in 1999 (Smith EW 2000).
<i>nervulosum</i>	Malaysia (Borneo)	Vu	5	Never	Collected by Os Blumhardt in 1979 (NZRA 2003a p28) and supplied to Pukeiti in 1981 (Blumhardt 1981). In the Binney collection in 1999 (Smith EW 2000). Listed by Smith (1983). MPI=N.
<i>nieuwenhusii</i>	Indonesia (Borneo), Malaysia (Borneo), Brunei	LC	2	Never	In the Binney collection prior to 1999 (Smith EW 2000).
<i>orbiculatum</i>	Indonesia (Borneo, Sulawesi), Malaysia (Borneo), Brunei	LC	7	PPM 1990 Jury 1990s	Wild collected by Keith Adams in 1980, 1984 and 1989 (NZRA 2003a p29.) Wild collected by G. Smith in 1992 (NZRA 2003a p30). Imported from Sarawak by Keith Adams (permit 31287) in 1992 (Adams 1992). Collected by Binney/Brown in 1998 from Sarawak (NZRA 2003a p31). In the Clark collection in Dunedin (Clark 2001). MPI=N.
<i>pulleanum var. maiusculum</i>	Indonesia (West Papua), PNG	LC	0	Never	Wild collected by G. Smith in PNG in 1983 (NZRA 2003b p47). Listed for Pukeiti by EW. Smith (Smith EW 2000). MPI=N.
<i>radians var. pubitubum (R. pubitubum)</i>	Indonesia (Sulawesi)	DD	0	Never	Wild collected by Keith Adams from Sulawesi in May 1996 (Adams 1996b p3). On display at Pukeiti, from D. Binney (Smith 1999). <i>R. radians</i> listed by Smith (1983). MPI=N.
<i>retivenium</i>	Malaysia (Borneo)	LC	4	Jury 1990s PPM 1998 PPM 2004 PPM 2015	Wild collected by Os Blumhardt in 1979 (Kenyon & Walker 1997; NZRA 2003a p28). Imported into Australia from Pukeiti in 1983 (Withers 1991). Pukeiti had a wild collected Blumhardt plant (PRT undated). Pukeiti offered seed for sale on the 1995 ARS Vireya seed list (ARS 1995). MPI=N.
<i>robinsonii</i>	Malaysia (Malayan Peninsula)	LC	4	PPM 2011	Wild collected by Keith Adams in 1986 (NZRA 2003a p29). Pukeiti had a 1979 accession from John Rouse in Australia, and a 1986 Adams accession (PRT undated). Supplied to Olinda, Melbourne, by Pukeiti in 2003 (McAlistair 2004). MPI=Y.
<i>salicifolium</i>	Malaysia (Borneo)	VU	3	PPM 2004	Wild collected by Keith Adams in 1982 (NZRA 2003a p29). Introduced into cultivation by Keith Adams in the 1980s (Argent 2008). A plant (ex Snell) given to Pukeiti by D. Binney in 2001 (Binney 2001). MPI=N.
<i>santapaui</i>	India	EN	5	PPM 2012	In the Binney collection prior to 1999 (Smith EW 2000). Donated to Pukeiti by Mark Jury in 1998 (Jury 1998).
<i>saxifragoides</i>	Indonesia (Papua), PNG	LC	5	Never	Wild collected by G. Smith in PNG in 1983 (NZRA 1984 p43) and in 1986 (NZRA 2003b p47). Wild collected plants alive in the Blumhardt collection in 1987 (Ballard 2015). Supplied to Olinda, Melbourne, by Mark Jury in 2003 (McAlistair 2004). MPI=N.

Species	Origin	Red List	No. of records at BGCI in 2017	Sales in New Zealand	Evidence for presence in New Zealand
<i>scortechinii</i>	Malaysia (Malayan Peninsula)	LC	2	Never	Wild collected by Keith Adams in 1984 (NZRA 2003a p29) and 1990 (Adams 1990). MPI=N.
<i>sessilifolium</i>	Indonesia (Sumatra)	LC	3	Never	Pukeiti had a Binney supplied plant in 1995 (PRT undated). Wild collected by Binney in May 1997 (Binney 1998). In the Blumhardt and Cullinane collections in 1999 (Smith EW 2000). D. Binney had two forms of this species (Argent 2015 p297). Supplied to Olinda, Melbourne, by David Binney in 2003 (McAlistair 2004). MPI=N.
<i>stenophyllum</i> var. <i>angustifolium</i>	Indonesia (Borneo), Malaysia (Borneo), Brunei	LC	5	Never	Wild collected by Os Blumhardt in 1979 (NZRA 2003a p28) and in 1983 (NZRA 2003a p29). In the Blumhardt and Binney collections in 1999 (Smith EW 2000). MPI=Y for species.
<i>truncicola</i>	PNG	LC	3	Never	Introduced to NZ in 1988 by Michael Cullinane (Argent 2008; Argent 2015, p126). Donated to Pukeiti by Mark Jury in 1998 (Jury 1998). MPI=N.
<i>vaccinoides</i>	Nepal, India, Bhutan, China, Burma	LC	3	Never	Imported by Douglas Cook of Eastwoodhill from Hillier & Sons, England in 1964 (MacKay 1996). At Pukeiti in 1987 but died (PRT undated). Donated to Pukeiti by Mark Jury in 1998 (Jury 998) and by D. Binney in 2001 (Binney 2001). MPI=N.
<i>vanvurenii</i>	Indonesia (Sulawesi)	LC	2	Never	Binney found it in the field in 1998 (Binney 2003). There is a white form in NZ (Argent 2015, p343). <i>R. vanvurenii</i> (Gunong Kemiri, Sumatra [yes, the source note does say Sumatra]) given to Pukeiti by D. Binney in 2001 (Binney 2001). MPI=N.
<i>x variolosum</i> (<i>jasminiflorum</i> x <i>malayanum</i>)	Indonesia (Borneo), Malaysia (Borneo)	LC	1	Never	Collected by Keith Adams in 1982 from South Sarawak (NZRA 2003a p29.) MPI=N.
<i>womersleyi</i>	PNG	LC	4	PPM2004	Wild collected by G. Smith in PNG in 1983 (NZRA 2003 p47). Introduced to NZ by G. Smith in 1983 (Argent 2015 p179). Wild collected plants alive in the Blumhardt collection in 1987 (Ballard 2015). Offered for sale by Pukeiti on the 1995 ARS seed list (ARS 1995). MPI=N.
<i>wrightianum</i> var. <i>wrightianum</i>	Indonesia (Papua), PNG	LC	7	Never	<i>R. wrightianum</i> (ex G. Snell) given to Pukeiti by D. Binney in 2001 (Binney 2001). In the Binney and Cullinane collections prior to 1999 (Smith EW 2000). MPI=N.
<i>wrightianum</i> var. <i>cyclopense</i>	Indonesia (Papua)	LC	3	Never	No data. Pukeiti used to have two 'ex Currie' accessions. MPI=N.
<i>yelliotii</i>	PNG	LC	1	Jury in the 1990s	Wild collected from PNG by WR & M Philipson (Philipson 1969 p14) and by G. Smith in 1986 (NZRA 2003b p47). Offered for sale by Pukeiti on the 1989 and 1990 ARS seed lists (ARS 1989, 1990) and the ARS 1995 Vireya list (ARS 1995). Supplied to Olinda, Melbourne, by David Binney in 2003 (McAlistair 2004). MPI=N.
<i>zoelleri</i>	Indonesia (Maluku, Papua), PNG	LC	17	Several	<i>R. zoelleri</i> obtained by Pukeiti from E. Perrot in 1971 (PRT 1971). <i>R. zoelleri</i> 'Island Sunset' supplied to Pukeiti by O. Blumhardt in 1989 (Blumhardt 1989). In the Binney, Blumhardt and Cullinane collections in 1999 (Smith EW 2000). MPI=N.

*Pukeiti Plants for Members – annual sales list of plants offered to members only.



R. gaultherifolium - Edinburgh



R. multicolor - Pukeiti



R. retivenium - Pukeiti



R. robinsonii - Pukeiti



R. saxifragoides - Edinburgh



R. vanvuurenii (white form) - Pukeiti



R. stenophyllum ssp. *angustifolium* - Pukeiti



R. womersleyi HF052 - Pukeiti



R. truncicola - Pukeiti



R. womersleyi Mt Giluwe, 1983378 - Pukeiti

Acknowledgements

The New Zealand *Rhododendron ex situ* conservation project has been supported with funding from Pukeiti Rhododendron Trust and I thank them for their support of the project. This work has also been supported by New Zealand Rhododendron Association and by members of Pukeiti and NZRA who have contributed information of various forms; I thank those institutions and individuals for their contribution to this project.

RHODODENDRON HIPPOPHAIOIDES VAR. HIPPOPHAIOIDES - A PEN PORTRAIT

Andrew Brooker

Regarded as one of the finest *Rhododendron* species within the subsection *Lapponica*, *Rhododendron hippophaoides* var. *hippophaoides* is known for its stunning bluish purple blooms that appear for us in New Zealand from mid-October through November.

While compact in height this is a relatively open growing shrub with small pale, slightly glaucous green leaves. This species holds two distinct advantages for the gardener – it is very frost hardy, making it suitable for the colder climes of New Zealand and is also tolerant of moist soils. When viewed in the wild around Zhongdian in NW Yunnan province, China, on a Pukeiti trip, its natural environ appeared to be boggy fields grazed by yak – making it truly versatile in our Taranaki rainforest garden.

This species was first introduced to the Pukeiti collection as live plants in 1955 by W.D. Cook and H.W. King, and at least one of these plants is still happily growing near the Vireya Walk in the lower drive area. This became known as the Cook form which had previously been given an Award of Merit in 1927 by the Royal Horticultural Society, and the flower display each year certainly reflects this honour. Also in 1955, another plant of *hippophaoides*, subsequently referred to as the Duncan & Davies form, was planted in the Lodge lawn border. This plant was considered slightly different as the clusters of flowers were smaller and somewhat earlier. Other plants can be seen around the garden, principally beside the lawn and in the Keiller Home Garden. No recent wild introductions have been added since these earlier plants arrived, with

historic records indicating that all of the plantings within the Pukeiti collection originated from these.

Botanical description; *shrub height to 1.25m, low growing, sprawling. Leaves 0.8 – 3.8 x 0.5 – 1 cm in size, elliptic to oblong. Upper surface pale, slightly glaucous green, lower surface lepidote with overlapping yellowish buff. Inflorescence 4-8 flowers per truss, broadly funnel shaped, lavender blue.*

Red List status: vulnerable

References:

Iris BG – Taranaki Regional Council plant database

Pukeiti Rhododendron Trust historic plant card index

Peter A. Cox and Kenneth Cox, *The Encyclopedia of Rhododendron Species*, N.E. Cox, page 265

Douglas Gibbs, David Chamberlain and George Argent, *The Red List of Rhododendrons*



Rhododendron hippophaoides var. *hippophaoides*



R. hippophaoides in situ Zhongdian NW Yunnan China



At Pukeiti

A LITTLE HISTORY OF COLLECTIONS AND THE RHODODENDRON GARDEN, ORTON BRADLEY 1985 TO 2018.

Kathryn Millar.

From 1943 [when Mr Orton Bradley died] until 1974, the property provided an income for remaining members of his immediate family. Subsequently a Private Members' Bill established the Trust and the first Board was set up in 1977.

The history of this fertile sheltered place, however, goes back far beyond the tenure of the Bradley family. The Ngati Mamoe farmed and fished here from the time Henry 8th was on the throne of England. They were eventually defeated by the Ngai Tahu, who are currently the tangata whenua. For 50 years, Mr Orton Bradley collected and planted, developed the water wheel, and resultant electric light. A legacy for the people of Canterbury resulted. We members of the CRS have continued his philosophy in our creation of a rhododendron garden and collections of world note and class. Hard work – yes – but what a privilege.

Why rhododendrons? Hamish Deans (Arboretum Society) and Ron Coker (from the newly formed CRS) held a creative conversation at the Christchurch Club in 1983. The idea of showing rhododendrons to attract the public and raise gate money found favour. Donations for fencing followed, from Roland Stead and his cousin the late Dermot Richards of Windwhistle particularly.

Others came into the picture about this time. The Park Board had engaged a landscaper who gave approval for the rhododendrons to be planted, but with strict limitations. None were to be named and all must be white or cream flowered. Among the first were: *R. johnstoneanum*, 'Dora Amateis', *R. dalhousiae* and many other *Maddenia* including *ciliicalyx* seedlings – one of which, in 1998, *R. 'Orton Bradley'*, became the first to be registered by the Canterbury Rhododendron Society.

In August 1985 the first plantings proved difficult. PDs had cleared the scrub under the guidance of the late John Moffat, but we had no water other than Te Wharau creek, and many plants died. The Rhododendron Society realised that the site, as first thought, because it was frost free, with the Te Wharau stream keeping the humidity up during summer Banks Peninsula heat, was a *Maddenia* paradise.

The arrangement was not formalised and the development of the garden has required compromise between the CRS and the Park Board over a period of 33 years since it was first established. When the public started to come I would often be there in my working clothes and not knowing that I was from the CRS, people would say,

"Don't they know you can get coloured ones?" So we dealt with that. Then I would be told, "They have names you know!" That took a bit of working through because of the rule that plants were not to be named. It was realised they had to be. As Mr Bradley's will said that the garden would be, "for the benefit and enjoyment of the people", and as the CRS constitution aims state, "to educate the public and promote the genus" we gently moved to fulfil these objectives, despite the earlier ruling, and label the plants.. Naming the rhododendrons was a nightmare of approximately two years duration - no plan had been kept and labels had been removed. Ron Coker and Gordon Lang, with me acting as scribe, spent many days on that project.

To fulfil the goal of making Orton Bradley a rhododendron garden of note CRS members fund all straw/plants and in addition have funded the installation of the irrigation system. We do not receive any gate money.

We do get offered and usually accept plants from any collection of renown, but we do not accept other people's diseased or cast off plants! The first

interpretation plinths were made by CRS members and installed much to the joy of the public, but additional plinths are required. We have funding on hand: \$1,000 - a gift from NZRA, \$1,000 - a gift from Methven Conference, \$2,500 from the Hammer Conference which was a CRS instigated event when Helen Coker and I were council members. Member's generous donations, up to \$800 annually, are used for plant purchases – although these are relatively few nowadays. Usually the 'hard or impossible to get' [or as after the floods] replacements are preferred.

Planting day 2016 items have done well; this year from the Dunedin Rhododendron Group our order includes another form of *R. mallotum*, *R. mucronulatum*, 'Danella' and 'Flamingo', totalling \$98.00.

During 2017 we cleared a big cabbage tree which fell during a storm on to our fabled group of 7 Kiwi Magic plants. GPS has been suggested as back up of our data base and garden plan.

We did not purchase pea straw last year because of weed importation concerns. This year, though, we have received 121 clean bales and their transport, as a gift from the Ellesmere Lions.

Volunteers are advised of working bees; keeping to the no-hoe policy is a challenge. Home gardening and CRS 'long distance gardening' are different processes altogether. Experimental cutting back has been commenced with original plantings, as has a regime towards easier maintenance - forget-me-not in restricted areas only - and shifting pieces of hosta to create further ground cover. 'Energetic' perennials will continue to be removed.

At working bees, the sight of approaching cars bringing more volunteers is heart-warming.

The garden committee thanks all who have helped and offered encouragement.



1



3



2

- 1. Entrance to Orton Bradley Park
- 2. R. 'Floral Sun'
- 3. R. 'Molly's Gift'
- 4. Branches of *R. veitchianum (cubittii)*
- 5. R. 'Harry Tag'
- 6. R. 'Razorbill'
- 7. R. 'Sir Charles Lemon'

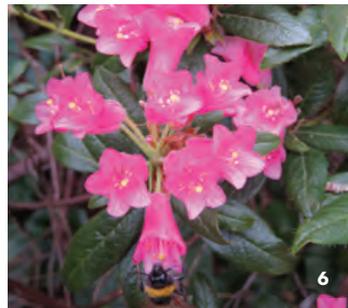
A WALK THROUGH ORTON BRADLEY IN EARLY OCTOBER



4



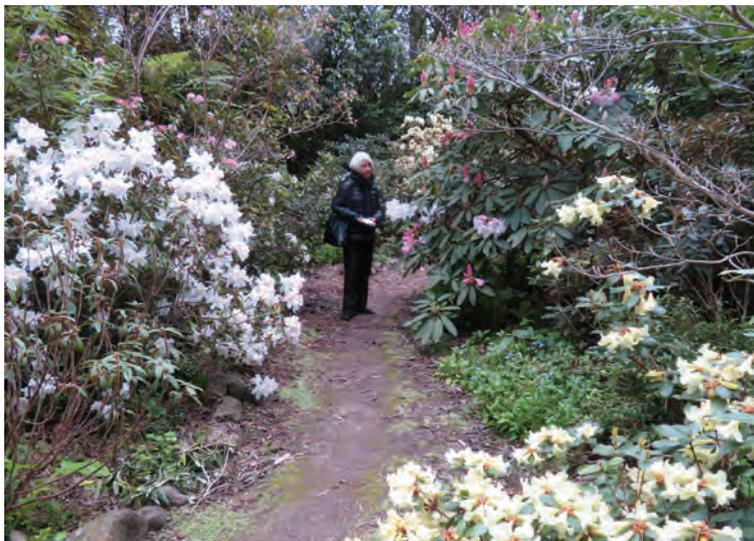
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6



7



Walk past R 'Else Fry' and *R. burmanicum*

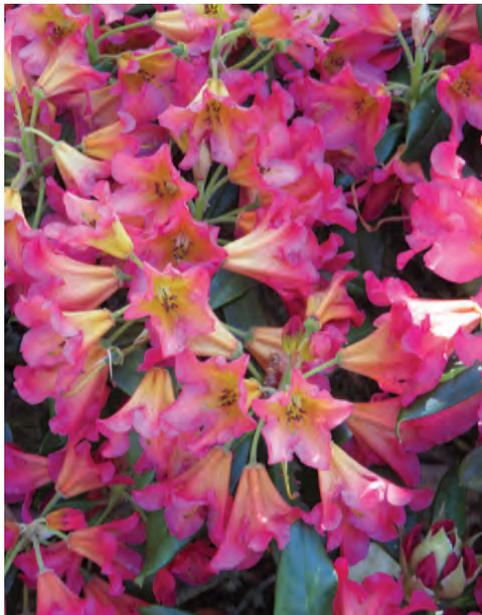


Path past young *Cardiocrinum* leaves and R 'Floral Gift'



NELSON CONFERENCE GARDENS - RHODOLEE *The Garden of Miriam and Andrew Lee*

*Photos by
Lynn Bublitz*



R. 'Golden Pheasant' at Rhodolee Garden



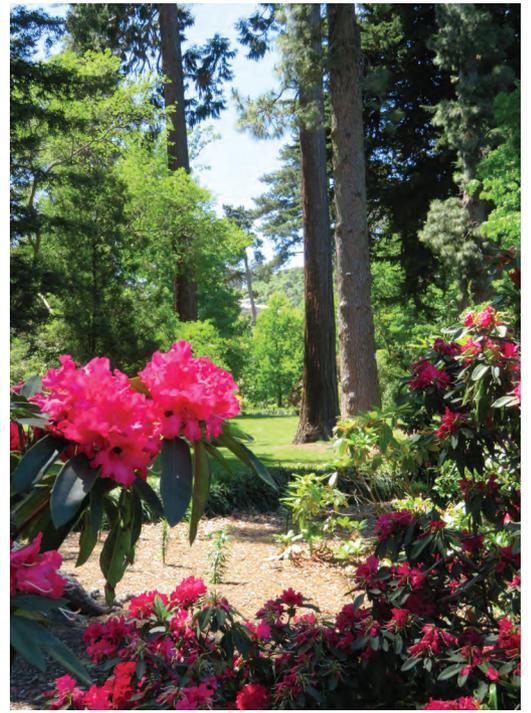
R. 'Cinnamon Bear' at Rhodolee Garden



R. 'Gwen Bell' at Rhodolee Garden



Queen's Garden, Chinese Pavillion, Nelson City



Isel Park, Richmond



Leon Page's Tropical City Garden



R. 'Red Mountain'



R. 'Butterscotch'



R. 'Saxon Glow'



R. 'Sappho'



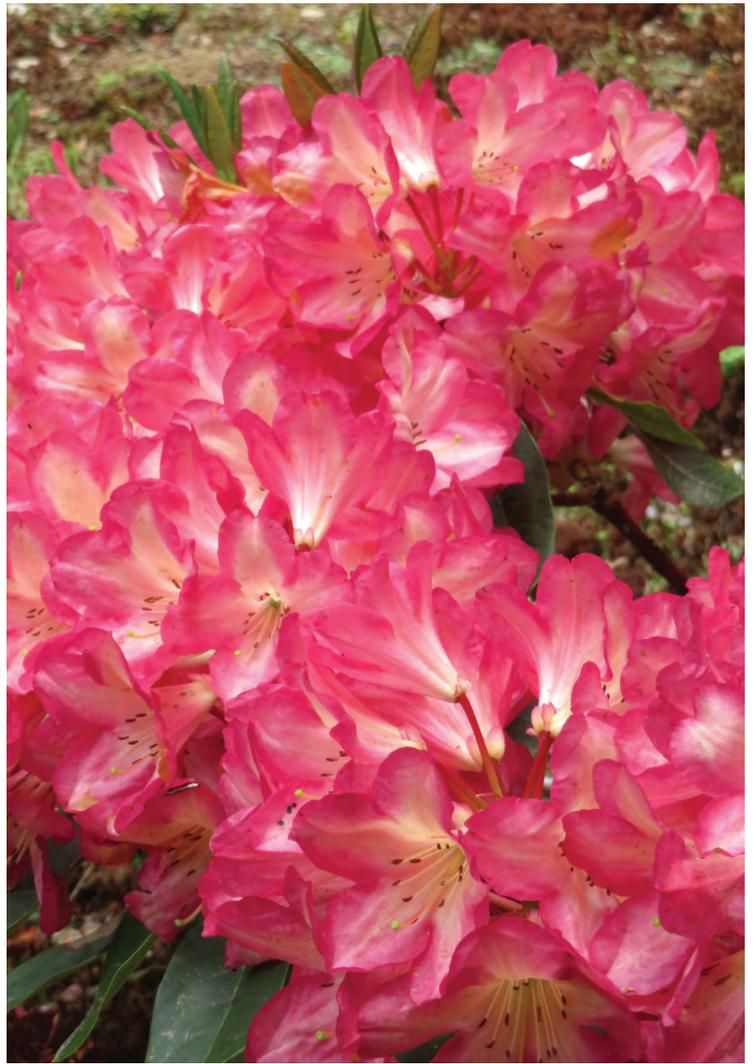
R. 'Fatuosum Plenum'



Thackwood, the garden of Karyn and Murray Gill, Nelson



R. 'Cherry Cheesecake'



R. 'Evening Star'

GEMS AT CROSSHILLS *Lynn Bublitz*



R. 'Lems Cameo'



R. 'Beverly Tasker'



Standard *R. yakushimanum*



R. 'Gibraltar'



R. 'Irene Bain'

LEMON TREE BORER AND THE RHODODENDRON

Andrew Brooker



Webbing camouflage



Major borer damage



Cut branch section revealing borer damage

Rhododendrons do not always have it easy in the garden, as all gardeners know. And we do ask a lot sometimes to be able to display our most prized and precious.

One of the myriad of insect pests that trouble our rhododendrons here in New Zealand does its job initially by stealth, its presence and effect usually discovered when it's too late. This pest is a native insect, the lemon tree borer or *Oemona hirta*. Not satisfied with citrus alone as the name suggests these borer can attack a wide range of hardwood trees and shrubs – rhododendron included.

So what do you look for? The first visible signs are branch collapse in otherwise healthy plants, which even in young plants can give the look of age - related thinning. Unfortunately, other plant health issues can also present in this manner so we need to know a little more about the insect's habits and stages to establish the best diagnosis and treatment.

There are in fact two stages of infection/ damage as the larvae go to work. Stage one will appear in young thin twigs around November/ December, as recently hatched borer larvae mine the plant, feeding and growing. Some of this damage might be discounted as

minor by the gardener and ignored. Unfortunately, it doesn't stop there.

Stage two occurs in the larvae's second year as they seek more room to develop and more plant to eat. By now they have reached the larger stems and trunks creating tunnels through the cambium layer and completely disrupting the flow of materials in the xylem and phloem, your plants nutrient and energy source. Large sectional damage can now be observed and will mean a large loss of limb, requiring heavy pruning.

What can we do about lemon tree borer? Masters of camouflage, these unwanted larvae hide their location well with a web like mesh over the entry wound which is in turn smothered in the frass they excrete, leaving a soft but convincing covering behind them.

Vigilance is the key. As soon as you suspect something is amiss, yellowing or lighter green stunted growth being the first clue, and light powdery sawdust caught on the bark being the second, start to seek out the webbing-covered holes.

Manual and chemical controls are available for controlling this pest. If the webbing is visible and unbroken, try using a thin piece of wire to pierce the larvae and remove them from the hole. Alternatively a can of pyrethroid

borer spray or even a syringe filled with white spirits, can be used to inject the hole. Both methods will effectively do the job destroying the larvae before further damage can occur.

Of course if you find damage it is too late. This kind of damage indicates that the larvae have reached the stage of hatching whereby the webbing has been broken and a young borer beetle has flown off in search of new plants. At this point all that can be done is to remove the limb, completely cutting to healthy wood below the damage site.

- So in summary the key points to remember if you suspect lemon tree borer have visited your garden are;
- Lighter green unhealthy foliage contrasting with other healthy branches on the same plant require closer inspection.
- Visible webbing, undamaged, indicate the pest is present.

Broken or no webbing and complete ring barking show the last stages have occurred in the lemon tree borer's metamorphosis and the culprit has flown in search of a new host plant.

Investigate carefully and control thoroughly.



Lemon Tree Borer adult

NEW ZEALAND RHODODENDRON ASSOCIATION INC.

75TH JUBILEE ANNUAL CONFERENCE

ROTORUA NATURAL GEOTHERMAL WONDERLAND, NEW ZEALAND

TUESDAY 29TH OCTOBER — FRIDAY 1ST NOVEMBER 2019.

The Rotorua organising committee extend a very warm welcome and invite you to revel in the beautiful gardens in the Rotorua district, an area where rhododendrons and companion plants grow to perfection.

In line with the conservation theme of the conference, the keynote speaker will be Doug Thomson, Collection Curator-Rhododendron, Dunedin Botanic Garden, whose presentation title will be 'Fighting Rhododendron Extinction'.

The conference will be based at The Holiday Inn, 10 Tryon St, Rotorua. Early booking is advisable as we are dealing with a tourist city.

The following are hotels and motels with within 0.5 km, flat walking distance from the Holiday Inn, that you can book with. We will not be picking up from motels but there is plenty of parking in the vicinity of the Holiday Inn if people choose to stay further afield.

Distinction Hotel, 390 Fenton St, 07 349 5200

Regal Palms Resort, Fenton St, 07 350 3232, 0800 743 000

New Castle Motor Lodge, 116 Ward Ave, 07 346 3001

Copthorne Hotel, Fenton St, 07 348 0199

Ashleigh Court, 377 Fenton St, 07 348 7456

Wylie Court, 345 Fenton St, 07 347 7879

Alpin Motel and Conference Centre, 16 Sala St, 07 348 4182

There is some discounted accommodation at the Holiday Inn.

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Pukeiti

Pukeiti Rhododendron Trust Inc.

PUKEITI RHODODENDRON TRUST INC.

www.trc.govt.nz/gardens/pukeiti/pukeiti-rhododendron-trust/

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New Members Welcome

Subscription \$35 per household.



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The NEW ZEALAND
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R. 'Eric Surprise' at Heritage Park, Kimbolten, New Zealand