

Plant Collecting in Chile[©]

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INTRODUCTION

The purpose of my visit was to search for and collect hardy ferns, which were of potential interest to the U.K. and European markets. The idea arose from a meeting with Anja George, who was a member of a delegation of Chilean growers who visited the U.K. in 1999. She was to act as my host and guide for some of my time in Chile. This paper reports some of the highlights of places visited and plants seen. A full report is available to Mary Helliar patrons.

Chile is a long, thin country with a wonderful range of habitats. It is 4329 km long and extends through more degrees of latitude than any other country in the world. It is a land of great contrasts and extremes. In the north, the great Atacama Desert is the driest place on Earth. In the east runs the snow-capped Andean mountain range, which is the world's longest range of mountains. In the extreme south are snow, ice, and constant freezing winds across Tierra Del Fuego and around Cape Horn. To the west sits the mighty Pacific Ocean. Central south there are numerous picturesque snow-capped volcanoes and mountains, which are flanked by lush, mainly evergreen, temperate rainforests and it is here that most of the Chilean plants cultivated in the U.K. can be found.

An introduction to the diversity of ferns and other plants encountered came on our way to Anja George's nursery. We pulled over to the side of the main road to look at an exposed rock face covered in plants, especially ferns, including species of *Blechnum*, *Adiantum*, and a beautiful climbing fern called *Gleichenia quadripartita*. At the base of the rock face grew *Gunnera tinctoria* and the bamboo *Chusquea culeou*. Clinging to the rock face was a mixture of semi-dwarf shrubs including *Fuchsia magellanica* and species of *Gaultheria* (syn. *Pernettya*), *Amomyrtus*, and *Genista*. Also on the rock face grew a wide range of alpine-type plants including *Calceolaria biflora*.

On the opposite side of the road the bank tumbled away into a deep valley where we could see hundreds of beautiful *Embothrium coccineum* (Chilean fire bush) absolutely covered in bright red flowers — a memory never to be forgotten. There were so many plants often found in English gardens but here growing as a dense jungle-like scrub: *Buddleja globosa*, *Drimys winteri*, *Eucryphia cordifolia*, *Rosa moschata*, *Ribes valdivianum*, and *Sophora microphylla* were just some. I'll never forget seeing the masses of *Berberis darwinii*, covered in orange flowers, which were visited by busy humming birds pausing and hovering for just a second to rob the flower of its nectar and then flitting onto the next in the blink of an eye.

PARQUE PUMALIN

Some plant collecting was undertaken at Parque Pumalin under the supervision of its curator, Carlos Alberto Cuzman Ugalde. Pumalin is a 3000 square mile, privately owned rainforest reserve, an area of wilderness beyond civilisation, stretching from the Argentine border to the Pacific Ocean fiords. It is raw wilderness, the ecosystem is unique and the top predator, the Puma mountain lion still thrives undisturbed.

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Here in one of the few remaining expanses of temperate rainforests left in the World, 3000 year old *Fitzroya cupressoides* can be seen standing impressively gnarled after centuries of exposure to the elements and heavily blanketed in deep layers of moss, lichen, and ferns which thrive in the damp air. The Pacific Ocean sends in more than 3000 mm of rain most years to the area. Along with the *Fitzroya* stand 1000-year-old specimens of *Eucryphia*, *Nothofagus* and *Podocarpus*.

Among them grow *Gunnera*, bamboo, white *Libertia*, *Gaultheria*, *Myrtus*, *Fuchsia magellanica*, *Drimys*, and *Embothrium*, which formed huge trees busily visited by bees, insects and humming birds.

Ferns were also very profuse, with great thickets of *Lophosoria quadripinnata* — a large fern with gracefully arching, 2.5-m-long fronds; green above but with a beautiful silvery blue colour beneath. Also covering the ground was a beautiful fern called *Blechnum chilense* — these have amazing, leathery, bright-red new fronds, which grow to about 1.3 m long. In more exposed positions along grassy banks grows *B. penna-marina*, which has coppery tinted tips to the ends of its fronds, this is a small ground hugging fern growing no more than 25cm tall.

Among the ferns and vegetation grows *Blechnum magellanicum*, a most beautiful fern with long, glossy, cycad-like fronds that form a fibrous trunk, a true tree fern. The specimens we saw along the forest tracks were only juveniles on short 15- to 30-cm-tall trunks, but with gorgeous 60- to 90-cm-long glossy fronds.

Deeper into the forest where the air was more humid, an even greater diversity of ferns was found settling among the moss-covered stems and branches. Particularly noteworthy were the species of *Hymenophyllum*, beautiful and very primitive filmy ferns, which need damp, humid, and shaded situations.

Also growing in the trees and on the ground were huge clumps of bromeliads, many of them displaying bright red flower shoots. The majority of the trees were huge *Fitzroya*, towering 25 to 30 m into the sky, with bases 4 to 6 m across. Also growing were *Podocarpus* and *Eucryphia cordifolia* — again monster specimens each playing host to its own ecosystem of hangers-on and parasites. But even in this remote location we very sadly came across huge trees that had been burnt and felled, only the charred stumps remaining.

In one clearing we spotted our first of many mature *Blechnum magellanicum* on a trunk 2 m tall. This was a truly magnificent tree fern quite unlike any I had ever seen before. Bursting from its central crown were 20 to 30 new fronds unfolding tightly rolled bright, golden crosiers, which looked like brand new, freshly minted, golden coins.

Honey production is a key element of the economy of the settlements around Pumalin. Bees gather nectar from the many flowering trees especially *Embothrium*, *Luma*, and *Ribes*, but the most treasured honey of all is that of the *E. cordifolia*.

Fast flowing streams of icy cold, totally clear water flow down from the mountains to the fiords, their banks blanketed with *Gunnera* species and bamboo. On one such bank I found a very interesting climber. Commonly called quilmay, *Elytropus chilensis* is an evergreen climber with glossy leaves very similar to *Trachelospermum jasminoides*. The flowers hang like little bells, pure white in colour, giving off a rich, sweet scent.

Propagation at Pumalin. We were inspired by a visit to the propagation facilities of the Pumalin Foundation set up by Veronica Orias. She has established a nursery where she lives on her own in a remote log cabin at the bottom of a valley among huge snow topped mountains.

It is a very basic nursery consisting of a series of netting structures over prepared open ground beds. Here native tree and shrub cuttings are directly stuck into the ground. Their main purpose is to root *F. cupressoides*. Cuttings used range in size up to 30 cm long and are simply pushed into the ground with no wounding or hormone treatment and no specific protection from the elements, yet a considerable number of plants do root.

ANJA GEORGE'S NURSERY

Peonies appeared to be an up and coming crop for the home market. They are grown in the open ground during the spring and summer and then lifted and divided in the autumn. The roots are then potted up for sale in black poly-bag pots. While walking through the fields, flocks of yellow-necked ibis constantly called out as they prodded the tilled soil for worms and insects. The fields are divided up with hedgerows of *E. coccinium*, *Crinodendron hookerianum*, and *F. magellanica*.

There were two particularly interesting plants on the nursery. The first was a yellow flowered *E. coccinium*, which is propagated by cuttings from material obtained from a single wild plant found high up in a valley near to Alerce Adino National Park. The second was a beautiful *F. magellanica* with white sepals and violet petals; quite different to any I had ever seen before. This was found high up in the Andes near the snow line so it should prove to be very hardy.

PUYEHUE NATIONAL PARK

Puyehue National Park is a massive 15,000 sq km area of protected wilderness, one of the largest in the Andes. The land has high temperate rainforests spread over two volcanoes, Puyehue (2240 m high) and Casablanca (1990 m high). It is also famous for its hot thermal springs.

In clearings and on the roadsides we saw huge 6- to 10-m-tall, white-flowering *Abutilon vitifolium* along with the usual scrub including bamboo, *Gunnera*, *E. coccinium*, *D. winterii*, *F. magellanica*, etc. Ferns were plentiful with *B. chilense* and *Lophosoria* species forming dense undergrowths, while up on the trees filmy ferns and bromeliads made their home.

These forests were also home to the following plants in cultivation in Europe: *Berberis darwinii*, *Buddleja globosa*, *Desfontainia spinosa*, *Eucryphia* species, *Lapageria* species (Chile's national flower), *Gaultheria mucronata*, *Ribes trilobum* (yellow flower), *R. magellanicum* (green flower), *Solanum* species, and large bamboos (ranging in stem colour from green and yellow through to dark mahogany).

On the trees were two very interesting parasitic climbers: *Tristerix corymbosus*, a beautiful red flowering plant which hangs in great balls from the branches, very similar to mistletoe; and *Luzuriaga radicans*, a beautiful feathery leaved climber which runs up the trunks of the tree sending out its leaves, from which very pretty white flowers hang, followed by orange berries.

Bamboos still thrive at the 1100-m snowline but they are much smaller species than those found in the lowland forests. Stunted bushes of *F. magellanica*, *G. tinctoria*, and *Gaultheria* species also grow here. The kings of these high peaks are old, twisted and knarled, totally weatherworn *Nothofagus* species. Up here where the air is constantly wet, curious mosses and lichens hang from the trees giving the whole place a very ghostly feeling. Even at this height we found ferns, including *B. magellanicum*, albeit on very short stems.

PUNIHUIL BAY, CHILOE ISLAND

Punihuil is a small protected area cared for by the Otway Foundation, a conservation charity group. This natural paradise is home to an incredible diversity of flora and fauna, the only place in the world where the endangered Humbolt penguin and its more common cousin the Magellanic penguin nest together. The flora was diverse and interesting. We saw *Gunnera* species covering large areas of coastline and actually growing on the sandy beaches and on small, volcanic rock islands. *Escallonia rubra*, *B. darwinii*, *F. magellanica*, *Gaultheria*, bamboos, and myrtle all grow along the cliff tops and anchor themselves to rocky outcrops.

White libertia, orchids, *Eryngium agavifolium* and small highly scented yellow *Viola* species grow among the grassy banks and hedgerows, along with *B. pennamariana* ferns. Old wind-swept *N. dombeyii* line the coastal areas, decorated with bromeliads and *Sarmienta repens* — a very unusual climbing plant with leaves that resemble a succulent, and beautiful, tubular red flowers.

On the lee-side of the *Nothofagus* trunks grow more filmy fern species, evidence of high annual rainfall. Other ferns not seen elsewhere on the trip were *Rumohra adiantiformis* and *B. hastatum*, growing on some of the small islands around the bay.

Further inland are dense, scrubby forests of *E. coccinium* and *D. winterii*, where we found red-flowering *Mitraria coccinea* — a lovely tall, twiggy bush with tubular flowers, similar to fuchsias, and an unusual griselinia, *Griselinia scandens*. Here, *Luma apiculata* grows into huge trees covered in highly scented white flowers, supported by beautifully twisted cinnamon coloured trunks and branches.

VOLCANO OSORNO

Osorno is a huge snow-capped volcano some 2652 m in altitude. Above 600 m the land is pure scree, volcanic ash and rock. From a distance you would think that nothing could survive but on closer inspection we found perfectly formed dwarf *Nothofagus* trees no more than 30-cm tall, *Gaultheria* bushes no bigger than a tennis ball, and a whole range of alpine plants, mainly silver in foliage colour creeping tightly to the ground, among these plants brightly coloured lizards scurried for cover as we approached.

From the town of Osorno we decided to cross over the Andes and trek between the Chilean and Argentinean frontiers. Here we found a very rare fern called *Polystichum multifidum*. It is quite similar to the U.K. native *P. setiferum*, but with very lacy divided fronds — a very beautiful fern.

FERNS WITH COMMERCIAL POTENTIAL

In all 51 different types of ferns were found on the trip of which I believe the following are of commercial interest: *Blechnum arcuatum*; *B. chilense*; *B. magellanicum*; *L. quadripinnata*, and *P. multifidum*.

Anja, my contact in Chile, is now looking at ways to propagate these ferns from spores and grow them on into modules, which can then be exported to me. My aim is to eventually introduce these ferns into the UK industry, working in such a way that income is also derived to boost the struggling economy of the Chilean nursery industry.

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