



TIMBER TREES OF THE FUTURE

- MIRO (*PRUMNOPITYS FERRUGINEA*)

Ian Barton

INTRODUCTION

Miro is a member of the Family Podocarpaceae and originally went by the name Podocarpus ferrugineus. The new genus Prumnopitys was established in 1978 and consists of 9 species extending from Costa Rica, through Chile and across to New Caledonia, Queensland and New Zealand. New Zealand has two of these, miro and matai.

HISTORY

The Maori people did not use miro timber to any extent but they did make great use of the tree because of the attraction of its fruit to the kereru. Probably because a meal

of miro berries made kereru thirsty, hunters would place water troughs near the trees and set snares around them. The other main use made of the miro by Maori was medicinal. An oil expressed from the drupes was used as an insect repellent when rubbed on to the skin and was also given to help recover from fever. The gum exuding from the bark was applied to wounds and ulcers; a liquor prepared from leaves and bark was taken internally for gonorrhoea and a bark infusion used for stomach ache. The



Miro fruit - the source of biodiversity

early Pakeha bushmen also used miro as an antiseptic. The bled resin and the bark are a rich source of diterpenoides. Maori also ate the fruit, despite it smelling and tasting like turpentine. European use of the timber has seen it usually sawn and sold as rimu but it is an inferior timber. (see below) Its main claim to fame in earlier years seems to have been its strength; often being used for beams.

DISTRIBUTION

Miro is found throughout New Zealand growing wherever rimu grows and is most common on the West Coast. It grows up to about 1000 metres a.s.l in the North Island; to 750 m. in the South Island and only 300 m. on Stewart Island. Miro is found on most soil types but does not do well on waterlogged or droughty sites

TREE SIZE AND GROWTH

Allan records miro as growing to 25 metres tall and 1 metre diameter. However it has been known to reach 30 metres height and 1.25 metres diameter. The only tree recorded in Burstall and Sale is one that was probably planted near New Plymouth and is the largest open grown miro recorded. However it has only reached 14 metres height and 87 cm diameter.

Growth data for planted trees is relatively scarce. The best height growth appears to be 28 cm annually and the best diameter growth about 5.8 mm. Averages are much less, with height about 20 cm and diameter 4 mm.

TIMBER

Timber characteristics, with *P radiata* figures shown in brackets for comparison, are as follows: -

Density:	625kg/ m3	(500 kg/m3)
Moisture content: green heart	98 %	(130%)
Tangential shrinkage	5.9%	(4.7%)
- green to 12% m.c		
Radial shrinkage	2.5%	(2.2%)
Modulus of rupture	94Mpa	(90 Mpa)
Modulus of elasticity	10.1Gpa	(9 Gpa)

The heartwood is light brown in colour with a greyish tinge and dark red/black streaks. It has a reputation for distortion and, when sold mixed with rimu, often caused problems leading to it being culled for many uses. Its main uses are flooring, weatherboarding and furniture.

POTENTIAL

Because of its relatively slow growth rate and the difficulties with using the timber, miro has only a minor place as a timber tree at this time. However it is a very important biodiversity species which seeds almost every year and provides important food for several important bird species. It is considered that a few miro should always be planted, along with trees used for timber, whenever any major establishment is undertaken.

RESEARCH REQUIREMENTS

Miro has the ability to survive in relatively low light conditions but also, as a mature tree, will grow in full light. Establishment trials, to enable it to be successfully grown for biodiversity purposes are needed. It is likely that miro should be planted after most other species are reasonably established -about 5-8 years after the main planting is done. It is also likely that, providing berry bearing trees are planted early (eg Coprosma), birds visiting to feed on them will bring miro into a newly established area. How these seedlings are best managed will also require some investigation.

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EDITORIAL — DOING AND FUNDING THE WORK

Over the past year the Trust has been heavily involved in project work and the setting up and running of the Conference to celebrate the ten years of Tāne's Tree Trust -held last November at the University of Waikato. We were so busy that it did not become apparent until early this year that our expenditure was beginning to exceed our income. The main problem is that we are not getting enough income to fund the operation and administration of the Trust. Although we are reluctant to do it, this can be partially overcome by increasing membership fees. Because our subscriptions are lower than most other similar organizations the Trustees will recommend to the 2010 AGM that an increase be made. The other action being considered is the appointment of a properly paid, part time Executive officer. The Trust's activities have grown so much over the past couple of years that it is not possible for us to continue with me being Chairman and E.O, in any case I am fast running out of steam and the job really requires someone with more energy and zip.

But to take this step we must have access to a higher level of funding, probably in the vicinity of \$20,000 annually. The Trust has begun to examine ways and means of attaining this and will be making some major decisions at the next meeting in June. We would also like to hear from our members on this subject, and if any of you are

able to suggest ways of funding this expanded activity please get in touch. One of our major objectives over the next 12 months is to begin running workshops again as it has become obvious that this is our most effective means of getting information out to people and in recruiting new members. However we failed to get funding for this purpose from the Sustainable farming Fund and will have to find other ways to fund future workshops. The new Handbook, of which Part One is due out in June, is a major effort which is costing more than expected but is an integral part of the new workshop series -and we still have to find ways of funding the production of Part Two!

Several good ideas came from the Conference and last AGM, which mainly involved increasing our public image by having stands at Mystery Creek and provincial Field Days. A small start will be made at Nelson's Ecofest in August and expanded at the various Agricultural Field Days next year

So the Trust is at a crossroads; we can either try and live within our present means or make the effort to get increased funding and expand in the way most of us would like to see happen. If you have any ideas, no matter how far out, please talk to any Trustee -we would love to hear from you.

Ian Barton

TRUST ACTIVITIES - JANUARY TO MAY 2010

TRUST OPERATION:

Much time has been spent over the past four months considering how best to take the Trust forward. This has been occasioned by Ian Barton's desire to reduce his workload; mainly because of age and health issues. At the February Trust meeting it was resolved that a subcommittee of Mark Dean, Ian Barton, Roger MacGibbon, Murray McAlonan and Peter Berg be set up to determine the best way forward. The group met on 29th March and resolved as follows:-

It was resolved that a recommendation be made to the next full Management Committee meeting that:-

- All job functions will be consolidated with a new paid part time Executive Officer.
- The Trust seeks a 'Host Organisation' in Hamilton to host our office.
- Re-define the roles of Chair, Secretary, Treasurer and Newsletter / Publications editor.
- Immediately seek funding support for the new Executive Officer role
- Prepare a 'Value Proposition' for prospective hosts and funders

Murray / Roger — Carried

This resolution was confirmed at the April meeting of the Management Committee and will be acted upon by the next full Trust meeting in June.

The biggest problem we have is that our current 'non project' income is already lower than our expenditure in the membership support area, publishing the newsletter, maintaining the membership records, website etc. For this reason the Trustees will recommend to the next AGM that

subscriptions from the 2011-12 year be increased: see Renewal of Subscriptions. However the proposed increases will not even come close to providing the funding to pay the proposed Executive Officer.

If any members can suggest ways to implement the above recommendations, especially anyone who can suggest firms who could be approached to host our office (it does not need to be in Hamilton, but should preferably be in the upper North Island) and any sources of funding which we have overlooked, please contact Ian Barton.

NEW TRUSTEE: At it's February meeting the Trust welcomed Helmut Janssen as a Trustee to replace Maggie Lawton. Helmut is an environmental scientist specializing in resource information and integrated management of useful natural resources via ecological reforestation of native forests.

PROJECTS:

Applications were made to the Sustainable Farming Fund for minor funding to run "Indigenous forest workshops for iwi and farmers; for carbon, timber and landscape values" and to set up "A Northland Totara case-study - An assessment of the scope for livelihood improvement and ecosystem protection through the sustainable management of regenerating areas of indigenous forest under the Forest Act provisions". Both applications were unsuccessful.

Our other SFF projects are all running to schedule. The Beech bulletin and the survey of plantings are due to be completed by June 2011.

We have completed one planting project for the Lake Taupo Protection Trust and further funds have been granted to expand this work.

The handbook on planting native trees is still scheduled for publication by 30 June 2010.

STRATEGIC PLAN:

It was resolved at the March meeting that the current strategic plan be updated for the three years 2010 – 2013 but that it be considered for a major revision in 2013.

RENEWAL OF SUBSCRIPTIONS:

Subscription notices for the 2010/11 year are sent to you with this newsletter. It would be appreciated that if you do not wish to continue with membership you let us know immediately upon receipt of the invoice. Those members who have paid in advance or who joined after 1 January 2010 have paid for the 2010/11 year and you will not receive an account.

As noted above the AGM to be held next July will be asked to confirm the increases below, which will take effect from April 2011.

Individual	\$40 plus GST
Family and non profit organisations	\$50 plus GST
Corporate	\$150 plus GST

DONATIONS, GRANTS AND SPONSORSHIP:

The Trust is indebted to the Sustainable Farming Fund for money made available for our beech bulletin, planting survey, handbook and conference projects. In addition the past year has seen sponsorship or grants made by the Indigenous Forestry Section NZFFA, Deed Print Ltd, Scion, Environment Waikato, Greater Wellington Regional Council and the Lake Taupo Protection Trust.

During the 2008/09 year donations were received from the following network members: -

S Anderson	B McClure
M Andrews	D M McIntosh
Baker Boys Wholesale Nursery	T McMains
C Barnard	D Nicholls
J Barton	F Olsen
P Berg	J Purey-Cust
A E Beveridge	J Reynolds
J Black	H & D Roberts

D Blackwell	A M & Y R Robinson
M Blair	K Robinson
N Bryant & B J Austen	R Robinson
L Burdett	G Rosoman
P Carr	T Roxburgh
D G Cooper	P Sewell
M Dick	P G Shepherd
B George	Snowberry NZ Ltd
D & J Gillies	R Stenger & A Ah Chee
A Goodwin	K Stevenson
H Gordon	A S Steward
B T & E J Gray	G Steward
R & M Haliburton	R J Swan
M Hayes	J Tregidga
P Houghton	M von Tippelskirch
M Johnston	J Wells
T Le Gros	D White
A Levett	L Whittle
A Luddington	T & S Wilding
H Luschberger	A Williams & J Parfitt
J Manning	

A.G.M

The Annual General Meeting for 2010 will be held at Tapapakanga Regional Park on Saturday the 24th July. After the meeting, which will be quite short, David Bergin will conduct a tour of his totara provenance trial which was established on the park in 1988. A sheet with full details and directions is included with this newsletter.

TANE'S TREE TRUST CALENDAR FOR 2012

The Trust began to plan for a 2010 calendar for sale to members but put it aside while planning the 2009 Conference. It is now proposed, providing we can get enough sponsors, to print one for 2012. The calendar will be A3 size and printed on thick, high quality paper and it is intended to have it available by mid 2011. If anyone can suggest firms we might approach for sponsorship please contact Ian Barton.

INDIGENOUS LOOK-UP TABLES

MAF have now published the latest look-up tables for indigenous species which are much better than the old ones that simply increased the volume per hectare by 3 m³ annually. For example on the old table 20 year old trees had gained only 60 tonnes of carbon per hectare; the new table gives 158.7 tonnes. The full publication, entitled, "The Indigenous sequestration rate and enhancing Calculation of Emissions and Removals" February 2010, can be found at: <http://www.maf.govt.nz/sustainable-forestry/ets/post-1989/ilut-consultation-doc.pdf>. Or you can request a copy from

Ministry of Agriculture and Forestry
PO Box 2526
Wellington 6140

STUDY TOUR 2011 – EUROPEAN SUSTAINABLE FORESTRY

Tāne's Tree Trust is planning to take a study tour to Europe next year to look at the latest ideas in sustainable forestry. At this stage planning is tentative but we are looking at a trip of 3 weeks leaving in late August 2011 and visiting Germany, Italy, France and the UK.

We are currently seeking expressions of interest so that detailed plans can be made. If you are interested and would like to join this trip, please contact Mark Dean at: - mark@naturallynative.co.nz or phone either 07 543 1494 or 021 942 339

TOTARA HARVEST PUTS THEORY INTO PRACTICE!

Paul Quinlan

Last month Podocarpus Ltd (Paul Quinlan & Chris Kennedy) put theory into practice during a trial harvest of totara from a Northland farm. The harvest was from trees that have naturally regenerated on the farm and are now covered by a Sustainable Forest Management Permit under the Forests Act. Concepts of Continuous-cover-forestry were applied to reconcile a production harvest with the high ideals of responsible long-term forest management. The result was most pleasing.

In nearly every instance, harvested trees were individually selected from either a tight group of stems or from a pair of trees standing close together (Figure 1). The policy was to leave the best trees standing and use the harvest as a stand improvement tool. In many cases the decisions were fairly easy. The larger dominant trees usually had thinner but better formed trees right beside them. The removal of some of these bigger trees should be to the benefit of the residual trees and improve the quality of this regenerating forest. The growth will now be going onto trees with taller boles and less branches.

In a few areas appropriate selections were not so obvious. Harvestable sized trees were also taken from areas where the abundant natural regeneration of saplings and poles will be relied upon to replace them over the next decades (Figure 2). Trees were felled with care to minimise damage to adjacent thickets of regenerating saplings and advanced pole-sized trees. Sustainability is ensured in these instances by the conservative harvest volume of the permit relative to the actual forest resource.

The success of the natural regeneration process is clearly evident on this farm. In several instances the trees that were harvested, were only metres away from stumps of totara trees that had been harvested within the last 50 years. They were not old-growth forest trees but also farm-grown trees.

The mean diameter at breast height of the harvested trees was 56.3cm and the mean bole length 6.7m. Growth rings were counted on some tree stumps and logs. Many of the harvested trees were younger than expected and ranged between 60-100 years. The growth rate of some

trees exceeded 1cm in trunk diameter annually. This implies what a realistic target might be for managed forests.

A characteristic of this farm-totara resource is that it tends to occupy the fringes of paddocks (Figure 3).. The trees were easily accessible. Most of the logs were pulled out with a 95 horse-power 4wd tractor using short a short wire rope or chain (Figure 4). A D6 Bulldozer with a winch was also used to get some logs out of a steep gully. The winch meant it did not need to enter the forest area and it was easy to avoid bruising or damaging residual trees due to the short pull distances involved.

Logs were gathered from collection points around the farm by a truck and milling was completed on-site. Two different types of portable sawmill were used for comparison. A milling study will determine recovery rates and timber grades that can be related to tree form characteristics.

Overall this trial harvest ran very smoothly. However, most important is the confidence that comes with now having successfully put theory into practice and the satisfaction of knowing that the forest will be even better in the future.



Figure 3. 5 trees were harvested from this typical farm stand



Figure 1. Residual stems after two trees harvested



Figure 2. Residual stems after harvest with seedling regeneration



Figure 4. Extraction from a farm stand