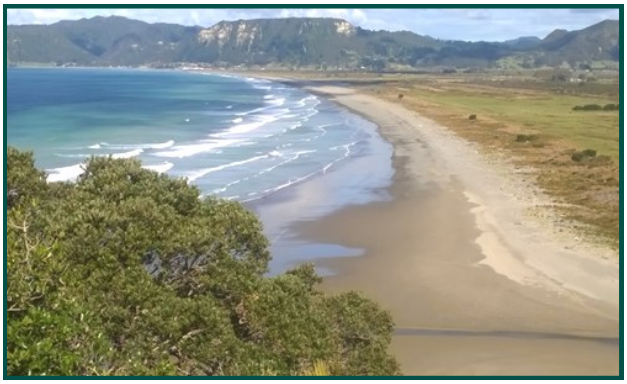
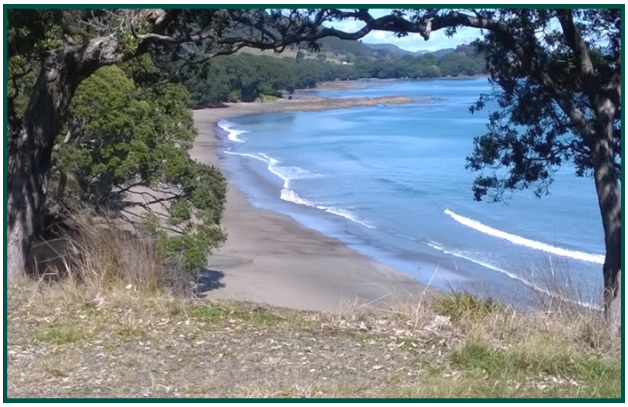
Tāne's Tree Trust
Native trees for the Future
Newsletter
November 2015
Newsletter No. 37 ISSN No 1176-1245

Pohutukawa, an opportunity for action

The largest pohutukawa in NZ is at the end of Te Araroa beach, but the full length of this magnificent beach is essentially devoid of trees of any sort. A recent drive along the coast shows that nine beaches from Opotiki to East Cape have beach fronts which are crying out for some tree cover and surely pohutukawa is the tree of choice.



So is there a challenge for TTT here to become involved along with both Project Crimson and the Dunes Trust to attempt to rehabilitate these magnificent beaches? It is not proposed to plant a continuous hedge but widely spaced trees and groups of native species that would enhance the views, would stabilize the beach, and would provide a marvellous seascape integrating the beach front with the tree covered headlands of many of the beaches.



Thank you to our Grant Sponsors

Blue Sky Community Trust

the Southern trust

Why are these beaches bare? Many reasons are given, one being the droving of stock along the beach, another the grazing of horses and cattle on the foreshore, and also the high tide movement of drift wood. There is no doubt that pohutukawa and associated species such as ngaio, karo, taupata and flax are capable of growing on the upper beachfront. This has been proven by Graeme Atkins who has planted all of these species along the beach fronts at the cape and at Ruatoria.

A possible scenario for progress would be to form a joint working party with the above three groups along with district and regional councils and DoC, to identify one beach for treatment and set up a demonstration planting that could stimulate locals to translate to other situations. One essential element in such a proposal will be to obtain local buy-in and ownership to secure maintenance of any plantings. Graeme Atkins has the experience to guide such a project from the local area and has trialled many of the necessary species and planting regimes. Any comments and suggestions from members would be welcomed especially enthusiasm to become involved.

TIMBER TREES OF THE FUTURE *Ian Barton*

POHUTUKAWA (*Metrosideros excelsa*)

INTRODUCTION

The first article in this series, appeared in the second newsletter (November 2002) and was about Pohutukawa. Thirteen years later an update seems appropriate.

Pohutukawa is member of the over 3000 strong Myrtaceae Family, distributed mainly in the tropics and sub-tropics and including such important genera as the Eucalypts. Genus Metrosideros consists of 20 species found in New Zealand, Australia, Malaysia and the Pacific.

HISTORY

To the Maori pohutukawa is a sacred tree, for it is from the ancient trees on the cliffs at Te Reinga that the spirits of the dead left this land. Legend tells us that the red of the flowers comes from the blood of the mythical hero Tawhaki, who fell to his death from the sky.

When Europeans first arrived in New Zealand they found pohutukawa reaching form Cape Reinga south to Poverty Bay and Urenui and on the shores of the Rotorua lakes, where it was probably planted by early Maori. It is now established over most of New Zealand, as far south as Dunedin and mainly in areas close to the sea. The oldest planted trees are at least 160 years old. It has also been planted in many overseas countries and has been adopted as the floral emblem of La Coroña in NW Spain; but in South Africa and San Francisco it is now regarded as a pest species.

The Maori used the hard, dense wood of pohutukawa for canoe keels, small implements, paddles fern root beaters, mauls, hammers, clubs and other weapons. Early Europeans used pohutukawa extensively for the curved members of boat frames and tree numbers were greatly reduced in areas adjacent to boat building yards. Being so hard it was usually worked green which often led to problems later on. When straight lengths could be obtained it was could used for piles, stringers, bridge & wharf planking and mining timbers. It is much valued by wood turners.

Because it flowers profusely, and at Christmas time, it was early called the NZ Christmas tree and it plays an important role in areas of tradition and nostalgia. Images of the tree appear in photographs, paintings and Christmas cards. It is found in plays, poems and literature and even the titles of Mills & Boon novels.

TREE SIZE and GROWTH

Burstall and Sale (1984) contains records of many large pohutukawa. Some of these are listed below (all measurements in metres): -

	Trunk diameter	Height	Crown diameter
Mangonui	3.24	18	36.5
Tiritiri Matangi	3.20	25	52
Mayor Island	3.22	17.4	36.5
Te Araroa	6.46	20.3	40.3
Lower Hutt	2.40	14.6	15 [planted ca. 1860]
New Plymouth	2.27	20.2	19.1 [planted 1874]

Planted pohutukawa have been recorded as growing quite fast and this is especially so on the fertile soils around Pukekohe. Information that is available suggests height increment up to 50 cm and diameter increments between 0.9 and 1.8 cm annually on better sites.

TIMBER

The wood is a rich reddish brown in colour, heavy, compact and of great strength. It is reputed to be durable and is resistant to the marine worm, teredo. As already indicated it is easier to work when green but often shrinks later.

The major problem with the timber is that the spreading growth habit of the tree makes it almost impossible to obtain long, straight pieces and it is likely that this is caused by the tree having poor apical dominance. However, when trees are grown close together they are forced to grow upward rather than spread. Pohutukawa crossed with northern rata is quite common, especially on Rangitoto Island and there trees usually have a more erect form.

While there appears to be no published data on the timber properties of pohutukawa, details for its very close relative, northern rata do exist and are expected to be similar to pohutukawa:

Density:	880 kg/m^3	(500 kg/m^3)
Moisture content:	70%	(130%)
Tangential shrinkage from		
green to 12% m.c	6.9%	(4.7%)
Radial shrinkage	3.8%	(2.2%)
Modulus of rupture	114 MPa	(90Mpa)
Modulus of elasticity	21.2 GPa	(9 Gpa)

(As a comparison, figures in brackets are for P radiata)

HONEY

Pohutukawa produces a top quality honey, although it does not have the prophylactic values of manuka (also a member of Myrtaceae) honey. A major source is Rangitoto Island where honey has been harvested since 1957. Until about 1985 annual production per hive ranged between 34 and 64 kg but from 1986 increasing depredation by possums caused production to fall to 7 – 8 kg per hive. Once the possums had been dealt to, production rose again -reaching 81 kg per hive in the 1997/98 season.

POTENTIAL

Because of the strength properties, density and probable durability of the timber, there is good reason to consider growing pohutukawa for productive purposes. The drawback is of course is its apparent inability to grow as a straight, single trunked tree. If this problem can be overcome there is considerable potential for the species. Anecdotal evidence suggests that straight, single stemmed pohutukawa do exist although they may be hybrids with northern rata. Indications are that it may be possible to select seed trees with the required characteristics of straightness and upright growth and grow seedlings from these at spacings close enough to encourage erect growth.

RESEARCH REQUIREMENTS

First we need to determine the basic site requirements of the species by field evaluation. At the same time locate straight growing pohutukawa (or pohutukawa x northern rata) and propagate plants for a trial. This would probably involve spacing and site preparation considerations and the possible use of nurse species for nitrogen production and an intermediate crop. If, as expected growth on reasonable sites is about 1 to 1.5 cm diameter annually, it should be possible to grow millable trees in 50 to 60 years.

REFERENCES:

Bergin, D. & Hosking, G. *Pohutukawa: Ecology,* establishment, growth and management. NZ Indigenous Tree Bulletin series No. 4, 2006.
Burstall, S. W. & Sale, E. V. *Great Trees of New Zealand*, 1984.
Clifton, N. C. *New Zealand timbers*, 1990.
Mowbray, S. C. *Eradication of introduced Australian marsupials (brush tail possum and brush tailed rock wallaby) from Rangitoto and Motutapu Islands, New Zealand.* In: Veitch, C.R. & Clout, M.N. (Editors), Turning the tide: the eradication of invasive species, 2002.
Project Crimson, The living library. *http://www.projectcrimson.org.nz/living_library.html, 1999.*

Project update:

TOTARA AND RIPARIAN MANAGEMENT PROJECT

This Tāne's Tree Trust project is funded by Reconnecting Northland and demonstrates the management of native forest areas on a Northland dairy-farm, to combine productive and ecological benefits. Primarily, it focusses on managing the naturally regenerating totara stands already integrated into the gullies on the farm. But it also involves extending the area with demonstration planting for additional riparian enhancement, connectivity, fencing and silvicultural trials for biodiversity gains.

The first year of this 3 year project has now been successfully completed. It has been well supported by partner organisations and individuals, with significant 'In-kind' time/resource contributions. Student participation has been a strong feature of the first year, with workshops on water-quality monitoring and field surveys of stream health and life in the waterways complementing the native forestry aspects and the focus on management of the existing regenerating totara. There has also been a number of trial 'firsts' test run in this work.

Photograph of a thinned Permanent Sample Plot (PSP) within a natural stand. Note the shaded conditions in the unthinned area above this thinned plot. Growth response of the residual totara trees after thinning will be measured and also the response of understorey vegetation development to the increased light conditions.

Work involved this last milestone period has included:

- The establishment of 8 Permanent Sample Plots (PSPs) & Recce plots within a 6ha area of naturally regenerating totara forest on the property. These will record responses to trials targeting both silvicultural aspects and ecologi cal /biodiversity enhancements through management;
- Water quality testing and stream health surveying at two sites on the property.
- The thinning of 4 of the PSPs to test a theoretical management prescription for optimal growth rates (i.e. to a Stand Density Index of 25%) and as demonstration management areas
  N.B. this was the first ever field-testing of a new computer model developed to help select trees/stocking rates for thinning;
- The completion of over 1km of fencing to exclude livestock from nearly 6ha of existing totara forest and the gully watercourse contained on the farm;
- The site preparation and planting of over 1900 native plants to extend the vegetated area and enhance species diversity in the gully and to demonstrate planted totara forest establishment and management (juxtaposed for com parison to management of naturally regenerated stands);
- Student workshops in the field, on water-quality monitoring and stream health, planting, and practical silviculture;
- Conducting a wider forest survey/inventory on the property and the preparation and submission of a Draft Sustain able Forest Management (SFM) Plan, under the Forests Act, for the areas of totara forest on the property. **N.B.** - This is the first external test in applying a template prepared by M.P.I for "Totara SFM Plans".

Students helped fence/repair more than 1km of fence line that now excludes livestock from 6ha of native forest in the gully area above the dam and new plantings.

Overall, this phase of the project has gone extremely well.

For further information, please contact the project manager: **Paul Quinlan**, on (021) 1478-279, or email: pdq@pqla.co.nz

Project update:

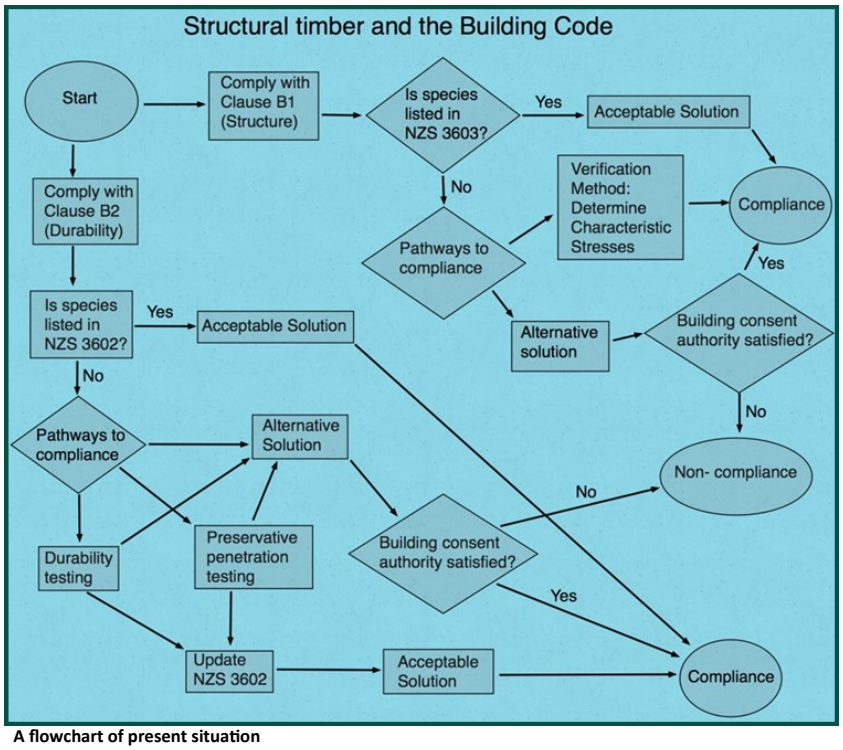
PATHWAYS TO BUILDING CODE COMPLIANCE FOR FARM TOTARA TIMBER

This is a Tāne's Tree Trust project (on behalf of the Northland Totara Working Group and the NZ Farm Forestry Association) that is funded by MPI through the Sustainable Farming Fund.
It is a scoping study which aims provide a critical and planned approach to achieving code-compliance and full utility of farm-totara timber. This may involve recommending a range of technical wood property tests, treatment options and/or potential changes to code compliance regulatory documents (such as NZS 3602 etc.).

Maximising Building Code compliance is likely to have a significant impact on market demand for farm-totara timber and increase the value of the resource to land-owners. This, in turn, will encourage land-owners to manage areas of regenerated totara and plant more forest area.

The project started 1st July and the first three month milestone period has been successfully completed. Dean Satchell has undertaken a literature search, contacted the key stakeholders and investigated the current provisions of the Building Code. He has also looked at how other alternatives timbers, such as Douglas Fir, have gained compliance status.

Dean will continue to engage with stakeholders/agencies (particularly MBIE & Scion) to complete a critical analysis of the situation and potential options. And through his involvement in the review process for NZS 3602, he will also keep the project team updated on any implications and/or opportunities for change, in the regulatory framework.



A flowchart of present situation

For further information on this project contact: **Paul Quinlan** (09) 405-0052, or email: pdq@pqla.co.nz

Tane's Tree Trust AGM & Field trip

The 2015 AGM was held at Jaap and Sue van Dorsser's property repeating a wonderful AGM occasion some nine years previously. For those of you not present you missed three treats; firstly the AGM and all its good news about a year well spent, secondly to hear again Jaap and Sue's inimitable explanation of how to treat a container grown plant for transplanting, and thirdly to enjoy the amazing restoration project that they have initiated in the Awahou stream running from farmland into Lake Rotorua.

As usual we were treated to a sumptuous morning tea on arrival, then straight into the AGM where we announced that three trustees, Ian Campbell, Roger MacGibbon and Mark Dean have resigned and we have elected one new trustee Gerard Horgan.

This was followed by talks on indigenous forestry and its possible future. Our chairman Peter Berg outlined the TTT role in this and we also heard from representatives from BOP Regional Council, SCION, MPI and Cimino Cole from Mahurangi Action all of whom spoke positively about the future role of indigenous forests both as production forests and as carbon sinks. Other details of business at the AGM are detailed in the minutes of the meeting which members can access on the website or request a copy from Mel.

The real entertainment was reserved for the session prior to lunch where Jaap and Sue entertained us again on their methods of plant preparation for planting out. Jaap of course pioneered the open ground method of seedling preparation for radiata and native species and has vast experience in seedling preparation. Briefly he is adamant that container grown seedlings must have most of their soil removed immediately prior to planting out, the roots to be teased downwards and cut off at about the level of where the bottom of the pot would be, plants then dipped into water and placed in a plastic bag to be carried to the planting site. This story is told as a duet by the two with great good humour and a confidence obtained by many decades of experience.

After lunch we were given a tour of the amazing riparian planting overseen by Jaap and Sue where they and local friends have spent over 3 decades transforming one of the major streams of Lake Rotorua, the Awahou, from weeds to natives. This has involved large scale clearing of stream sides, terraces and wetlands dominated by dense blackberry as well as willow, pines and other exotics and planting a diverse range of native wetland, shrub and tree species. Substantial areas of shrubland now thrive along the stream including examples of inter-planted native conifer and hardwood timber species – totara, rimu, matai, miro, tawa, hinau, silver beech, red beech and kahikatea.

SUBSCRIPTIONS:

If you received a complimentary copy of KAURI (Agathis australis) Forests: THEIR MANAGEMENT and PHYSIOLOGICAL REQUIREMENTS with this newsletter, then your membership is up to date. If you didn't, we haven't received your payment for the 2015-2016 year. Please contact Mel in the office, office@tanestrees.org.nz if you have any questions or wish to find out payment options.

DONATIONS:

A note from the treasurer

All members should be aware that all donations, but not subscriptions, are eligible for a 33.33% tax rebate on your income tax. We will be able to send you a certificate of donation for you to submit to IRD with your tax return.

Please remember us in your bequests.