Tāne's Tree Trust Newsletter
Native trees for the Future
October 2013

Newsletter No. 31 ISSN No 1176-1245

Media release – September, 2013

Sampling finds no kauri dieback in Coromandel, Waikato or Bay of Plenty

A new round of soil sampling to detect kauri dieback shows that the disease has not been found in any new regions. It has spread only within areas or nearby areas where it has been previously detected. It appears to be spreading more slowly than previously feared. The response had earlier predicted the disease would spread more rapidly, especially if left unchecked.

The organism that causes kauri dieback disease is a microscopic fungus-like pathogen that attacks and kills kauri trees of all ages and sizes. It is spread by spores found in soil and was identified as a major threat to kauri in 2008. A multi agency response to combat the disease was launched in 2009.

Tangata Whenua, The Ministry for Primary Industries (MPI), Department of Conservation (DOC), Auckland Council, Northland, Waikato and Bay of Plenty Regional Councils are working together to combat kauri dieback.

Kauri grows naturally in the top third of the North Island - from near Cape Reinga, in the north, to the Kaimai Mamaku Range, in a line across to Kawhia, in the south.

Previous soil sampling established kauri dieback has contaminated kauri in Auckland, Northland and on Aotea (Great Barrier Island). New soil sampling, carried out late last year, involved soil samples taken from Te Paki in the north, to Rapurapu, in the Kaimai Mamaku Forest Park, in the south. This sampling adds to all of the previous sampling taken over the past 4 years.

"Kauri in the Hunua Ranges in south Auckland, on the Coromandel Peninsula and in the Kaimai Mamaku Forest Park, between Waikato and Bay of Plenty, appear to remain free of this deadly disease" says Erik Van Eyndhoven, MPI, Chair of the response Leadership Team.

"That's a good outcome of this soil sampling and means it's not too late for us to save many stands of kauri from contamination with kauri dieback.

"The agencies that have joined with Tangata Whenua to combat this serious threat to kauri will continue working hard to keep non-contaminated kauri forests free of kauri dieback.

"The results of this sampling, provide valuable information that will help our efforts to contain kauri dieback and keep it out of areas free of the disease.

"To achieve this we need the support of all New Zealanders to ensure the disease is not being spread. Everyone visiting kauri needs to take a precautionary approach: treat all kauri areas as disease-free (ensure gear is clean of all soil on arrival) and when you leave a kauri area, treat your gear as being potentially contaminated (clean gear thoroughly of all soil on departure)."

Scientific research is continuing and the more we learn about the disease the more we are able to stop its spread. Community efforts continue to raise awareness of the problem and encourage all forest users to undertake precautionary actions: clean shoes, equipment, machinery in all circumstances. Stay on the track and off kauri roots. Prevent stock from entering any kauri areas.

Media Contacts

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Background information

The full "Surveillance 2 Report" and associated maps can be found on the website: www.kauridieback.co.nz

Kauri dieback disease, caused by an organism known as Phytophthora Taxon Agathis (or PTA) was identified as a new disease to science and a major threat to kauri in April 2008. It is specific to kauri and is killing trees of all ages and sizes.

It's a fungus-like disease that is spread in soil via two different forms of spores, oospores and zoospores. The oospores have a hard outer shell. This allows survival in soil and transportation within soil on footwear, earth moving machinery or by animals. ►

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The zoospores have a small tail which allows movement in soil-water to non contaminated kauri nearby a diseased tree.

How can people prevent the spread of kauri dieback?

• Make sure shoes, tyres and equipment are clean of soil before and after visiting kauri forest.

• Clean shoes and any other equipment that comes into contact with soil after every visit to a kauri forest, especially if you are moving between bush areas.

• Keep to defined tracks at all times in kauri forest. Any movement of soil around the roots of a kauri has the potential to spread the disease.

• Keep your dog on a leash at all times in a kauri forest. Dogs can inadvertently spread the disease if they disturb the soil around the trees.

• Keep stock out of kauri stands and forests.

What are the symptoms of kauri dieback

Infected kauri can show a range of symptoms. These include globs of gum at the base of trunks often developing into collars of gum encircling the lower trunk. Other symptoms are yellowing leaves, reduced leaf size, thinning canopy, dead branches and sudden death of the tree.

Areas where kauri dieback has been detected

Auckland: Waitakere Ranges, Awhitu Peninsula and the Rodney region in northern Auckland

Northland**:** Kaiwaka, Mangawhai and Pukekaroro south of the Brynderwyns. Glenbervie Forest north of Whangarei. Waipoua Forest and Trounson Kauri Park north of Dargaville. Punaruku, south of the Bay of Islands. Omahuta Forest, north of Okaihau. Raetea Forest near Kaitaia.

Aotea/ Great Barrier Island.

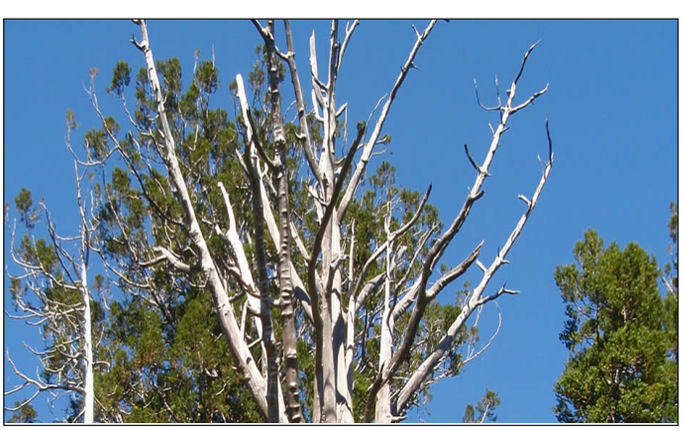
Areas where soil sampling has not detected kauri dieback

Coromandel Peninsula. Hunua Ranges, south Auckland.

Kaimai Mamaku Forest Park between Waikato and Bay of Plenty.

Waiheke Island, Kawau Island, Hauturu/Little Barrier Island in the Hauraki Gulf Marine Park

All other kauri areas not named above should be treated as free of the disease.



TTT Technical Handbook – New technical articles update

Michael Bergin

The Tāne's Tree Trust (TTT) Technical Handbook, now in its third year since first published, has several technical articles that have been revised and several new articles recently published. These seven articles ranging in length from 4 to 12 pages are included in Section 10 of the handbook – Native tree plantations. The first five articles were published as part of the Tāne's Tree Trust Indigenous Plantation Survey funded by the Sustainable Farming Fund. More recent articles in this section include case studies of plantations established by the Kauri 2000 Trust and the Montfort Trimble Foundation.

10.1 – Nationwide Survey of Planted Native Trees. Relatively large numbers of native trees have been planted throughout New Zealand for well over a century some of which were planted with the option of providing timber in the long term. The last decade has seen a resurgence of interest in ecological restoration and the planting of native trees for a wide range of objectives. This article provides an introduction to a comprehensive nationwide survey of indigenous plantations carried out by Tāne's Tree Trust, Scion and various other organisations within the last few years largely funded by the Sustainable Farming Fund. This 8 page article covers the project's purpose, methodology and a summary of the work completed and also describes the new TTT Indigenous Forestry Plantation Database.

10.2 – Performance of Planted Native Conifer Trees. This article provides a summary of the growth performance of planted native conifer trees from stands throughout New Zealand. Several of our highest profile native timber species are amongst the most widely planted native timber species in the country. These include kauri, totara, rimu and kahikatea, with smaller numbers planted of tanekaha, matai, miro and kawaka. Growth models were developed for each species from data gathered in the national survey project including predicted average heights and DBH (diameter at breast height) by species as well as mean annual volume increment for planted native conifer stands.

10.3 – Performance of Planted Native Hardwood Trees. This article provides a summary of the growth performance of planted native hardwood trees from stands surveyed throughout New Zealand. Species included red, black and silver beech, puriri, rewarewa, karaka and kohekohe. Hardwood trees made up only a small fraction of the planted native tree and shrub species measured that are now part of the TTT Indigenous Plantation Database. The article includes height and diameter growth models for each of these.

10.4 – Performance of Planted Native Shrubs. Fast-growing, hardy native shrub species are favoured for providing shelter on exposed sites and providing a rapid canopy cover on cleared sites prone to weed growth. These early successional species are often required as a nurse crop to allow inter-planting or encourage natural regeneration of later successional conifer and hardwood trees already described in the early articles 10.2 and 10.3. This article provides a summary of the growth performance of planted native shrubs from selected stands surveyed throughout New Zealand. This includes mean height and root collar diameter growth for up to 40 years after planting and estimates of canopy closure times based on plant spacing.

10.5 – Carbon Sequestration by Planted Native Trees and Shrubs. There is considerable interest in planting trees for►

◄carbon sequestration. While most of the focus is on establishing fast growing exotics such as pines and eucalypts, there is also considerable interest in using native species. To determine the potential of a species for carbon sequestration, both tree measurements and models for predicting carbon sequestration from these measurements are required. Based on the recently completed Tāne's Tree Trust survey of native tree plantations throughout the country, this article uses these measurements and carbon models to determine typical carbon sequestration rates for a range of planted New Zealand native tree and shrub species.

10.6 – The Kauri 2000 Trust. Plant a kauri – recreate a forest. The Kauri 2000 Trust has seen the successful establishment of many thousands of kauri throughout the Coromandel Peninsula over the last decade. This article describes the vision and work of the Kauri 2000 Trust. The early performance of the Trust's plantings is compared with the Tāne's Tree Trust national survey of indigenous plantations. While the Kauri 2000 Trust is focused on planting kauri for future generations to enjoy as conservation forests, the principles of planting and early management are similar to planting native forest for multiple purposes and are therefore a useful case study of best practice for establishing native tree plantations.

10.7 – Establishing a native production forest – Rewanui Forest Park, Wairarapa. The Montfort Trimble Foundation is a Wairarapa-based trust that has, over the last five years, established plantations of 15 native tree species at their Rewanui Forest Park located near Masterton. These include most of the common native conifer and hardwood trees. All species have timber potential and are highly prized for their timber quality and specialty uses. In a joint project with Tāne's Tree Trust, the Foundation has been monitoring the early performance of these native trees, which are planted on pastoral hill country typical of the eastern North Island. This article first describes the origins of the Montfort Trimble Foundation, and second provides an insight into the planting, monitoring and early growth of the newly established native plantation resource at Rewanui Forest Park.

Copies of these technical articles are now available from the TTT office, office@tanestrees.org.nz. Individual article copies cost $5 for TTT members and $10 per article for non-members. Copies of the complete TTT Technical Handbook are also available at $35 for TTT members or $55 for non-members.

TIMBER TREES OF THE FUTURE

Ian Barton

RIMU *Dacrydium cupressinum*

DISTRIBUTION

Dacrydium is a genus of 21 tree species found in SE Asia, New Guinea, New Caledonia, Fiji and New Zealand. Rimu is the sole New Zealand species although H. H. Allan's *Flora of New Zealand* (1961) listed seven New Zealand Dacrydiums; the others now being in the Genera Halocarpus, Manoao or Lepidothamnus. Rimu is probably our best known and most easily identified native tree. It is found throughout New Zealand in lowland to sub-alpine forests and is probably the most widely occurring native tree being rare to absent only in some beech forests. It is the dominant species in forests around Lake Taupo, Westland and coastal Southland. Rimu grows from sea level to 1100 metres, reducing to 300 metres on Stewart Island. It occurs in most parts of New Zealand where the annual rainfall is over 1000mm and is tolerant of temperatures down to -11ºC. The species also occupies a wide range of soils although it will not grow on swampy soils and is intolerant of extreme podzols. The fastest growth rates are on deep, well drained river terraces.

HISTORY

Maori made use of rimu for canoes, but only when totara or kauri was not readily available. They also used the timber for house planks. In contrast the early Europeans soon identified the species as a suitable general purpose timber which was readily available. Only the heart wood was considered suitable since sapwood, although it finishes well cannot be treated and is very susceptible to the house borer and two toothed long horn borer. Until about 1970 it was the most important general purpose timber in New Zealand, producing over half of the total production, but since then the quantity sawn has dropped to very low levels and use is now generally confined to high quality furniture

Rimu was used medicinally by the Maori as a cure for wounds; a lotion being made from a mixture of the bark being cut and boiled with tawa bark and tutu leaves while pulped inner bark was applied to burns. Captain Cook, always concerned about the effects of scurvy, brewed what he called spruce beer from the young shoots, which was found to be very efficacious. ►

◄TREE SIZE AND GROWTH

Allan records that rimu can be up to 60 metres tall and 1.5 metres in diameter. Mean annual growth rates of planted trees range from 26 to 46cm height and 2.1 to 7.3mm diameter with best trees reaching mean annual increments of 54cm height and 8.1mm diameter. The largest tree recorded in Burstall and Sale is at Pureora and in 1980 was 41.5 metres tall and 2.53m diameter.

TIMBER

The dry heartwood is reddish brown to yellow, the sapwood pale brown. An intermediate grade had to be carefully graded out because it dries at a different rate to heart and sapwood. Timber characteristics, with *P radiata* figures shown in brackets for comparison, are as follows: -

Density:	595 kg/m^3	(500 kg/m$^{3)}$
Moisture content: green heart-heartwood	130%	(130%)
Moisture content: green heart-intermediate	60%	-
Moisture content: green heart-sapwood	140%	-
Tangential shrinkage – green to 12% m.c	4.2%	(4.7%)
Radial shrinkage	3.0%	(2.2%)
Modulus of rupture	88 Mpa	(90 Mpa)
Modulus of elasticity	9.6 Gpa	(9 Gpa)

POTENTIAL

Although relatively easy to grow and manage rimu is not as favoured as totara or kauri for management because it produces heartwood relatively slowly and it is likely that planted trees would not be suitable for harvest until well over 100 years old. Therefore, at this time, the economic viability of rimu is nowhere near as good as species like totara, kauri and puriri. However as with these species it is very likely that the growth rate of rimu can be considerably improved.

RESEARCH REQUIREMENTS

The most obvious research requirement is to investigate the possibilities of faster heartwood production and until some progress is made on this front there is little use in planting large areas of rimu for productive purposes. However small scale siting trials should continue, aimed at discovering optimum siting requirements for rapid growth.

REFERENCES

Allan H H, *Flora of New Zealand,* Vol. 1 Government Printer Wellington 1961.

Barton I, Continuous Cover Forestry; A handbook for the management of New Zealand forests.103 pp. Tāne's Tree Trust 2008.

Brooker S G, Cambie R C & Cooper R C, *New Zealand Medicinal Plants.* Heinemann 1981.

Burstall S W & Sale E V, 1984. *Great Trees of New Zealand,* Reed 1984.

Clifton N C, *New Zealand Timbers,* GP Publications 1990.

Farjon A, *World Checklist and Bibliography of Conifers* (2nd ed.) Royal Botanical Gardens, Kew 2001.

Hinds H V & Reid J S, *Forest Trees and Timbers of New Zealand*. Govt Printer Wellington 1957.

Pardy G F, Bergin D O & Kimberley M, Survey of Native tree plantations. FRI Bulletin 175, 1992.

Planted rimu sapling ca *20 years, Hunua forest.*

MEMBERSHIPS

As a charitable organisation we rely on our members to pay their memberships to assist with the costs of running the trust. We are currently experiencing difficult financial times and ask that all members please ensure their membership is up to date, or if you wish to no longer be a member please advise us at office@tanestrees.org.nz. Outstanding membership notices are currently being sent out.

OFFICE

If you wish to contact the office, please contact us on office@tanestrees.org.nz and Mel will reply as soon as possible. Or you can contact us on **027 900 7853**. Please note our phone number 07 858 4404 no longer works.