



EDITORIAL

WHY ARE THERE SO MANY EXOTIC TREES IN NEW ZEALAND?

In December 1863 Europeans had been in New Zealand a mere 25 years or so and were already warring with the native inhabitants. They had also begun the extensive clearing of the indigenous forests of this country; although a few people were beginning to realise that this wholesale destruction would bring problems in the years ahead. The proffered solution though, even at this early stage, was to plant exotic species. The following article is summarised from one which appeared in Auckland's "Daily Southern Cross" On 21 December 1863.

It begins by commenting that today's laws are often lengthy, convoluted and verbose (shades of the RMA) and quoted a Scottish law of 1424 which, in its entirety was brief and to the point. "It is ordainit that all Crown vassals shall not only plant wood and make edge rows, but shall bargain with their tenants to do sich lyke, and sow broom in places convenient, according to the extent of their mailing. (1)" Brief or not, this ordinance seems to have been largely ignored because in 1503 it was being reported that the woodlands of Scotland were utterly destroyed and efforts were being made to remedy the situation. In 1621 a Breadalbine ordinance stated that, "tenants and cottars sall plant young trees in their kail yards (2), viz., every cottar sall plant three, either of ash or plane; the lord's gardiner to furnish the young plants, at the rate of twa pennies a-piece."

New Zealand in 1865 was thought to be little different from Britain; both situated between two stormy seas and both requiring the protecting shelter of forest and woodland. "For this country is getting bare of timber... of what infinite value would be clumps alone or belts of growing trees scattered on the wide

and naked plains of Canterbury and what shelter would they not afford on the bare scalps of Otago hills?" Nelson however was lauded for its attention to trees by, "planting for shelter from their Waimea winds."

Several species were being suggested for planting; the Eucalypti, Callitris family (quoted as being indigenous to New Zealand!), the Araucarias, especially Norfolk Pine, Scots fir (they must have meant Scots pine), Pinus maritima (P. pinaster), lime trees and Weymouth pine (P. strobus). Interestingly P. pinaster was quoted as being able to withstand the salt air, which implies that it could have been in New Zealand for some years before 1863. Was it the first pine to be introduced into this country?

However indigenous species were not ignored by the newspaper, as the article states, "We have enquired with no profitable success, whether any attempts have been made in Auckland or vicinity to cultivate and raise from seed, the valuable kauri pine; a timber of this excellence is surely as worthy of colonial patronage, as the best varieties that can be introduced from other countries or colonies."

It is known that several native trees were planted in the Auckland Domain soon after this but later measurements showed that the growth rates were not very good, certainly nowhere near those obtained from trials a hundred years later.

This whole issue raises some interesting questions! New Zealand was settled at the height of the period when plant collectors, especially from Britain, were scouring the

world for new species, often with the objective of acclimatising them in Europe. The thinking of the time was that acclimatisation was good -in fact the earliest environmental societies formed in New Zealand were Acclimatisation Societies- and that there was much benefit to be gained from introducing a wide range of plant and animal species into New Zealand. Had Europeans colonised New Zealand 200 - 300 years earlier, as was the case with North America, it is unlikely that such widespread introductions would have taken place –there are no important exotic timber tree species in U.S.A and Canada.

This widespread introduction of exotic trees to New Zealand soon demonstrated that most of them grew faster than our indigenous trees; or so our forbears thought! However they were not comparing like with like, for many of the exotic species had considerable

practical experience behind their growing. As well most of our native species were growing in forest conditions where, as we now know, their ecological niche is determined by many factors which often means that a species is commonly found on a site where it cannot grow to its maximum potential.

Thus New Zealand species, because of their perceived slow growth rates, were disregarded as suitable forestry species without reasonable testing. Today we are beginning to realise that many of them do have tremendous potential as timber producing trees for this country. To paraphrase a statement in T ne's Tree Trust's brochure, getting people to accept the undoubted values of our native tree species is what T ne's Tree Trust is all about.

Ian Barton

1. Mail is a Scottish and North Country term for rent.
2. Kail yard –Scottish term for cabbage patch or vegetable garden.

TRUST ACTIVITIES (December 2006 to May 2007)

Website:

The website continues to run well and attracts a small but steady flow of queries and the occasional new member. Don't forget that all past newsletters are on the web site and this year we will probably be adding a link to the data collected in our Archives project

Keep checking the site www.tanestrees.org.nz

Renewal of Subscriptions:

Subscription notices for the 2007/08 year are attached to this newsletter. The Trust would be grateful if you could renew your subscription before mid July if possible and if you do not wish to continue with membership it would be appreciated if you could let us know. Those members who joined after 1 January 2007 have paid for the 2007/08 year and you will not receive an account

Donations:

During the 2006/7 year donations were received from the following network members: -

S Anderson	C Barnard	J Spiers	D Hammond	M Harris
A Williams & J Parfitt	A Edgar	W Silvester	L Burdett	D McIntosh
N & B J A Bryant	P McKelvey	E Macky	P Whitmore	P Sewell
A McPherson	A E Beveridge	H Phibbs	P & A Millen	A Levett
J Purey-Cust	T & S Wilding	A Reid	D White	D McDonald
Greenmantle Tree Farm	B Hayes	E Scarlett	P Shepherd	J Manning
R & M Haliburton	M Firth	J Tregidga	N Bevan	B Grant
M von Tippelskirch	I Brennan	P & P Bell	T McMains	L Carr & C Ward

Funding:

The Trust could not function without the very generous funding assistance from a range of organisations, chief of which is the Sustainable Farming fund from whom we have received \$59671 in the last financial year. The Trust is greatly indebted to all of these organisations.



The bulletin for project "*Opportunities for Native Trees on Farms*" is complete and your copy is included with this newsletter.

The workshops project is also complete –the last one at Gisborne on 6 May- with 17 full workshops held plus presentations about the Trust given at other workshops and meetings. The workshops have been a good source of new members and the questionnaires filled in indicate a high level appreciation by those attending; 80% of those attending rated the workshops very good or excellent. We have been successful in getting a new one year grant from the Sustainable Farming Fund for the 2007 / 08 year to reorganise the workshop format to make them even more useful. Trial runs of the new format will be held in the Waikato /Auckland / Northland areas over the next 18 months.

The project to create a database of early indigenous forest research work is on schedule and should be available, probably in digital form, in July or August this year.

The Continuous Cover forestry manual has been completed and is now being worked on by three technical editors. The project is running a little late but it is hoped it will be published about September this year.

We were successful in getting through to phase 2 with our applications to the Sustainable Farming Fund to produce a bulletin on beech management and to set up the database to record details of indigenous planting and growth rates. We should know the outcome of these applications in late June.

Other Funding:

Over 12 months to March 2007 we have also secured funding from the following organisations: -

Forest Owners Association	\$5625)	Assistance with publication Pohutukawa bulletin and
F.I.T.E.C	\$5625)	Native Trees reprint
Montfort Trimble Foundation	\$2250	To set up planting trials on their property at Masterton
Northland Regional Council	\$2250)	Assistance with costs of "Native Trees on Farms" bulletin
Environment Waikato	\$2250)	
Landcare Trust	\$2000	Assistance with Continuous Cover manual

Membership:

Membership continues to increase and has now reached 323, of which 29 are corporate members. Existing members are encouraged to tell others about the Trust and encourage them to join. The Trust brochure has been reprinted and copies are available on request to anyone who would like them to distribute. (note the membership figures are for May 28th 2007 and not the 31st March)

Trustees:

Trustees retire by rote each November but are eligible for reappointment. Those who stand down next November are Bruce Burns, Maggie Lawton, Rob McGowan and David Bergin. In addition, Toko Te Aho has resigned because he now lives in Australia so we are calling for nominations for 5 Trustees to be appointed in November 2007. The 4 standing down by rote are all offering for re-election. A nomination form is included with this newsletter and any network member is able to nominate any person to be considered for Trusteeship. If there are more nominations than places, a committee consisting of the Trust Chairman, one other Trustee and 2 Trust network members or Trustees to be elected by the AGM, will consider the nominations and make a recommendation to the trust as to who should be appointed.

A.G.M JULY 28 2006

This year's A.G.M. will be held at the Kauaeranga Valley Hall and will be followed by a joint meeting with Kauri 2000. Following a couple of presentations we will visit some of the earliest of Kauri 2000's plantings in the Kauaeranga Valley. An agenda is included with this newsletter.

NGA WHENUA RAHUI -Rob McGowan

Most people have not heard of Nga Whenua Rahui. It is in fact one of the most significant conservation agencies in New Zealand.

Nga Whenua Rahui is the Maori equivalent to the Queen Elizabeth II Trust. It was set up in 1991 to provide Maori landowners with a way of protecting the biodiversity their land in a way that reflects Maori values and aspirations. In particular it ensures that owners retain their tino rangatiratanga (ownership and control) over their land while at the same time enhancing the natural values.

Fifteen years on there are now 230,000 hectares of indigenous forests, wetlands, dunelands and tussock-lands, nationwide, under NWR protection; almost all of it in the North Island. Of particular interest to members of Tane's Tree Trust is that among those lands under covenant (kawenata) are some large and outstanding tracts of forest. Much of this in on the East Coast and central North Island, and contains both largely unmodified forest and extensive tracts of cutover and regenerating forest. Many of the blocks of land are very large, several more than 10,000 hectares, and many several thousand hectares or more.

Each year more than one million dollars is spent on animal pest control. A key aspects of NWR's approach is to train locals to do the pest control and restoration, where required, rather than leaving it to outside contractors.

A NWR kawenata enshrines the right to cultural harvest. In the 21st century the ngahere (forest) is still the source of rongoa (traditional medicines), weaving material, various kai, and timber for carving, and much more. Such harvest is still governed by traditional protocols to ensure that a resource is managed carefully and sustainably. There is much comment these days about such protocols. It need only be said that in the lands under kawenata those traditional management practices are strictly upheld.

Totara, kauri and other timbers are still much used for carving. In fact there has been a resurgence in recent years in the building of waka (canoes) and whakairo (carving). More than anybody Maori realise that such timber is in very short supply. Much more is needed than carefully managing the remaining resource.

There is growing interest within Maoridom in the growing of totara, kauri, matai and other timber trees. This presents a unique opportunity for Tane's Tree Trust. We need to be listening to and working with Maori to achieve the objectives for which the Trust was established. For Maori the emphasis is not so much on eventual profits, carbon credits, or even landscape enhancement. The trees are taonga, something to be treasured; in caring for those taonga, we ourselves will benefit. Our own well being is intrinsically connected to the well being of the forest and all that it contains.

To Maori we are not the most important creatures on the planet. We are important, we are part of Tane's family; in fact we are the potiki, the youngest of all his children. Perhaps if we remembered that more often we might find it easier to respect the earth better and uses its resources with more care. Then perhaps "sustainable living" might start to become a reality.

To find out more about Nga Whenua Rahui go to the Department of Conservation website; www.doc.govt.nz and click on "Getting Involved", and then "landowners".

TIMBER TREES OF THE FUTURE

KAIKAWAKA (*Libocedrus bidwillii*) [With some notes on *L. plumosa* –kawaka] -Ian Barton

HISTORY

Kaikawaka appears to have been little used by the Maori (who also know it as pahautea) although its light weight made it useful in the construction of backpacks used to carry heavy loads like stone. It was found useful by early European settlers because it was originally supposed to be quite durable and, like totara, was used for fence posts, house blocks, roof shakes and weather boards. Unfortunately later tests proved it to be of only moderate durability.

DISTRIBUTION

The species is found from latitude 36° 50' (Mt Moehau) south, but not in Fiordland or on Stewart Island. Generally regarded as montane species it grows between 450 and 1200 metres altitude in the North Island and in the South Island between 300 and 1200 metres. The main concentrations of the species are the mountains of Nelson, Westland, the Catlins, Tongariro National Park and the Ruahine Ranges. Its northern counterpart, *Libocedrus plumosa* (kawaka) is generally much less common and grows from the Far North south to NW Nelson; so overlapping *L. bidwillii*.

TREE SIZE and GROWTH

Not a large forest tree, kaikawaka grows to about 20 metres tall and one metre in diameter, but more usually 30 – 60 cm. Kawaka is slightly larger –to 25 m. tall and 1.2 metres diameter. The largest recorded tree is in South Westland and is 20 metres tall and 125 cm in diameter. Little information is available of growth rates, the only details found giving an average height growth rate of 16 cm (max 25 cm) annually with diameter at 3.1 mm. Trials with kawaka in the Hunua Ranges show its growth rate to be faster; up to 46 cm height growth and 6.2 mm diameter growth per annum for 15 year old trees.

TIMBER

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

Density (green)	977 kg/ m ³	(930 kg m ³)
“ (dry)	415 kg/ m ³	(500 kg/m ³)
Tangential shrinkage -green to 12% m.c	4.5 %	(4.7%)
Radial shrinkage	1.8 %	(2.2%)
Modulus of rupture	43 Mpa	(90 Mpa)
Modulus of elasticity	5.1 Gpa	(9 Gpa)

A dry density of 415 makes kaikawaka the lightest native timber species. It is however slightly heavier than *Thuja plicata* (370 kg/ m³) and *Sequoia sempervirens* (380 kg/ m³)

It is also a very soft and brittle wood. The heartwood is reddish brown and the sap yellow to pinkish white. While the sapwood is not durable it is resistant to the common house borer. An interesting and useful characteristic of the timber is that it fire-resistant.

POTENTIAL

As the lightest New Zealand timber, kaikawaka may have uses where lightness and moderate durability are desirable attributes. One major potential is for roof shingles, given that the timber splits easily, is light and relatively fireproof. An important non timber use might be as a foliage and tub plant.

RESEARCH REQUIREMENTS

Knowledge of the growth rate and ecological requirements of kaikawaka appear to be poorly understood and need to be investigated before it can be grown as a possible timber tree.

REFERENCES

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- Pardy G F, Bergin D O & Kimberley M O. 1992. *Survey of Native tree plantations*. FRI Bulletin 175
- Wardle J. 2007 Mountain cedar (*Libocedrus bidwillii*) pahautea. *Indigena* Feb 2007. 26 - 28

SOME PRELIMINARY OBSERVATIONS ON THE REGENERATION OF INDIGENOUS TIMBER SPECIES UNDER A RANGE OF NURSE CROPS. -Ian Barton

In the 1970's, while Forester in the Hunua water catchment, I established a trial to investigate the affect of different nurse species on the growth of kauri. This was located in the lower Mangatawhiri Valley in the central Hunua Ranges, the site consisting of about 2.5 hectares of poor quality grassland with blackberry and a few other weeds. Average rainfall at the site is quite high, averaging about 1620 mm annually. The grassed area was surrounded by, and being invaded by, kanuka to about 12 metres tall. In addition, near the NE edge was a single female kahikatea (*Dacrycarpus dacrydioides*). The area was laid out into plots 10 x 10 metres square, the nurse species planted between 1974 and 1980 and the kauri, usually between two and four years after the nurse, from 1980 to 1984. A number of plots with no nurse plants, but planted with kauri, functioned as controls. Other plots, surplus to requirements for this experiment, were planted with blackwood (*Acacia melanoxylon*) in 1979. Several of the nurse species failed; notably karamu (*Coprosma robusta*), tutu (*Coriaria arborea*) and yellow lupin (*Lupinus arboreus*). The other nurse species can be seen in Figure 1. From 1989 the trial was largely abandoned when the Forestry Section of the ARC was abolished by Local Government reorganisation.

The purpose of this note is not to report on the kauri growth but to comment on a side effect of the project which was noticed when T ne's Tree Trust, with funding from the Sustainable Farming Fund, relocated the original trial and assessed growth in 2002.

One thing which became obvious in 2002 was that a large number of native species, most not present in the area in the 1970's, had become established throughout the plots. Most of these were fern and shrub species but 8 timber species were also recorded. It was decided to list all of the species and assign frequency values and to count all of the timber seedlings present. It soon became obvious that the plots with the most timber tree seedlings were those with blackwood as a nurse (Figure 1). The whole trial is being remeasured in 2007 and analysis of this data, plus that obtained in 2002 will be reported on in the future; both the kauri growth response and the influx of other indigenous species.

However, while doing the recent measurements I decided to record the influx of timber tree seedlings on to a sample of nine plots which were planted only with blackwood in 1979 and a comparable set of nine plots which were never planted but allowed to revert naturally. These plots are marked on Figure 3, as is the location of the seeding kahikatea. In 2007 the blackwood in these plots is 28 years old and plot stockings equate to between 400 and 1600 stems per hectare. Diameters range between 10 and 58 cm with an average of 30 cm and basal areas are between 28 and 123 m² per hectare, with an average of 69 m². The estimated mean merchantable height is 8.8 metres (range 4–15 m.). Total stem height is up to 26 metres.

Only 4 native tree species are present as seedlings on this sample of 18 plots with the blackwood plots carrying an average stocking of 722 kahikatea per hectare, plus 22 totara and 11 each of tawa and maire (*Nestegis spp*); total stocking 766 per hectare. On the unplanted plots there are very few tree seedlings, only 5 kahikatea (56 per hectare). A statistical test shows that the difference between the blackwood plots and the unplanted plots is very significant; suggesting that some factor or factors on the blackwood plots encourages the establishment of native tree species. While the total number of all species on the unplanted plots (12.2) is slightly less than the blackwood plots (14.1) the difference between the two is not considered to be significant. (Figure 2)

Apart from kahikatea being the most common species there is also a reasonably strong negative correlation (-0.625) between the numbers of seedlings on the plots and the distance the plots are from the kahikatea seed tree (Figure 3). The further from the seed tree the fewer seedlings there are. Although there are not enough figures to be sure this also appears to hold true for the plots without nurse trees.

The reason why blackwood stands are so much better than the unplanted sites as a nursery bed for seedlings is possibly related to the quality of the litter on the forest floor –it is moist and appears to break down quite rapidly compared with non blackwood sites. The other native species coming into the blackwood sites may also play a role. Blackwood plots have a greater frequency of species like kanono (*Coprosma grandifolia*) and less of species like kanuka (*Kunzia ericoides*) which will possibly improve the quality of the litter. However these are only suppositions and more work is required to determine why blackwood may be such a good nurse; not only for planted seedlings but also for the germination and establishment of species brought into a blackwood stand by birds and the wind.

FIGURE 1 DISTRIBUTION OF TIMBER TREE REGENERATION UNDER DIFFERENT NURSE SPECIES IN 2002

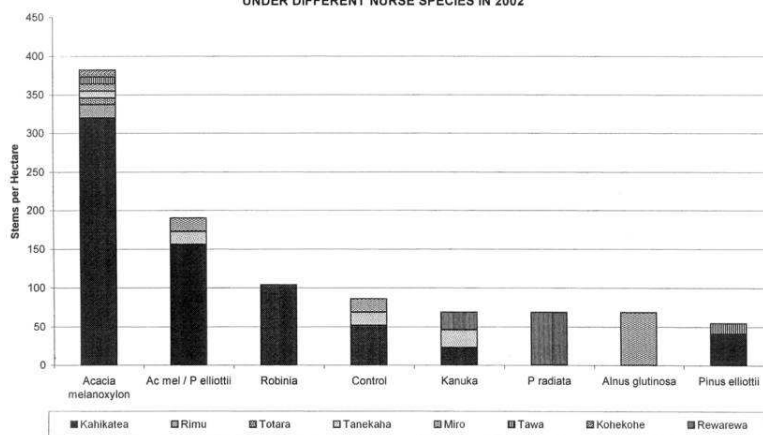


FIGURE 2

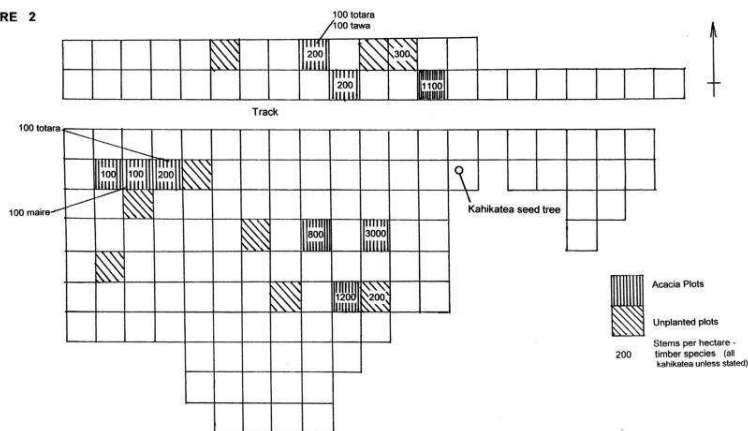
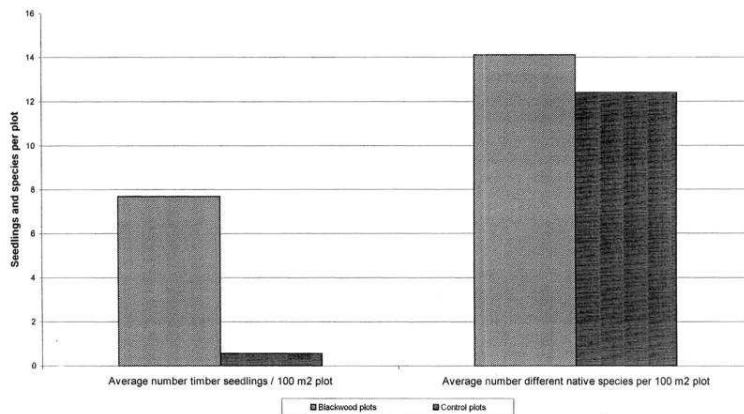


FIGURE 3 STOCKING AND SPECIES ON BLACKWOOD AND CONTROL PLOTS IN 2007



PUBLICATIONS AVAILABLE

*On joining members have the choice of one free publication from those on the list marked *. Others can be purchased at the members rate listed below, sales to non-members usually being \$5.00 more. Some publications, because they have been paid for from grants are free and these are usually sent to members when they become available.*

Back numbers of Newsletters 1, 2, 3, 4, 5, 6, 7, 8 & 9	\$1.00 ea
Proceedings of the launch of T ne's Tree Trust (fir st copy free)	\$6.00
T ne's Tree Trust brochures (free copies to pass to others)	No charge
Totara: Establishment, growth and Management by David Bergin *	\$10.00
Kauri: Ecology, establishment, growth and management by David Bergin and Greg Steward *	\$10.00
Native Trees: Planting and early management for wood production by David Bergin and Luis Gea. *	\$15.00
Pohutukawa: Ecology, establishment, growth and management by David Bergin and Gordon Hosking. *	\$18.00
Indigenous Forestry: Sustainable Management. MoF & NZFFA (212p)	\$25.00
Performance and tree health of a six year old planted kauri stand in the Bay of Plenty by Greg Steward & Ian Barton. T ne's Tree Trust Bulletin No. 1	\$3.00
Profiting from Biodiversity: Reducing the impediments to planting native Trees. Proceedings of seminars held May 2003 Eds: Ian Barton, Roger MacGibbon, Bruce Burns and Peter Berg.	No charge

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