

Tāne's Tree Trust's vision – weaving more native forest back into our landscapes

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Abstract

Tāne's Tree Trust (TTT) is a nationwide charitable trust with a vision of seeing landowners successfully establishing and sustainably managing native forest for multiple purposes. This includes non-timber values, such as enhancement of indigenous biodiversity, water quality, cultural identity and aesthetic landscape values, and other environmental and cultural benefits. It also includes the option for sustainable production of high-quality timber and other resources, where appropriate, via continuous-cover forestry regimes.

The Trust is committed to scientific research as a basis for developing best practice. It has an applied research and development (R&D) programme and collaborates with organisations that have a shared ethos.

In 2021, the Trust launched a collaborative platform with Pure Advantage to promote more widely the benefits of, and best practices for, establishing and managing multi-purpose native forest. This led to a well-received conference in October 2022. The ultimate aim is to see more native forest successfully woven back into our landscapes and sustainably managed in perpetuity.

Introduction

The Trust had its origins in 1999 and was formally established in 2002. It is managed by a CEO, a chairperson, and a group of trustees with decades of experience in scientific research, forestry, farm forestry, ecology and conservation. The Trust has two patrons – Drs Andrew and Mary McEwen.

The Trust has a broad membership base and works with a wide range of organisations, including allied non-government organisations (NGOs), local and central government, research organisations, iwi and landowners. Funding comes from membership, donations and legacies. Direct and in-kind funding for projects comes from central government departments, such as the Ministry for Primary Industries and the Department of Conservation, philanthropic organisations like The Tindall Foundation, and local authorities. The Trust is always on the look out for more funding.

Aims of the Trust

The main goals of the Trust include:

- Promoting best practice establishment and sustainable management of native forests for multiple benefits
- Reducing impediments to establishing and managing native forest

- Identifying knowledge gaps and priorities for applied research
- Advocating for increased funding into research and technology transfer
- Maximising economic incentives, including advocating for landowner incentives and reducing the cost of establishment and early management
- Promoting indigenous forestry as an attractive land-use option by advancing knowledge through research and practical demonstration
- Encouraging and facilitating knowledge-sharing amongst stakeholders and interest groups.

TTT's work programme

TTT undertakes applied research to deliver practical science-based technical information. Projects are based around forest establishment (planting and assisted natural regeneration) through to supporting long-term sustainable management of permanent native forest.

Normalising Native Forestry (core research programme)

This is funded by The Tindall Foundation, with additional support leveraged from other funders. It includes six workstreams:

1. Working with nature to establish native forests at scale through planting and encouraging natural regeneration.
2. Promoting continuous-cover native forestry for sustainable harvesting.
3. Making the most of TTT's growth and reference databases.
4. Incentivising landowners by developing an economic case for native forestry and supporting incentive schemes.
5. Evaluating novel transitional ecosystems – transitioning of exotic species to native forest.
6. Collaboratively building capability by working with others involved in, for example, pest animal, bird predator and selective weed control.

Other ongoing and recently completed work

- Native Forest Toolkit (Figure 1) – calculators developed for: (i) planting and budgeting; (ii) productivity; (iii) carbon sequestration; and (iv) economics (returns and benefits). Largely funded by the Sustainable Farming Fund (SFF) and based on the Trust's Indigenous Plantation Database.

- Adaptive Management of Coastal Forestry Buffers, with the Coastal Restoration Trust. Preliminary guidelines are available for this recently completed SFF-funded project.
- Factsheets on forest establishment (planting and assisted natural regeneration) funded by Te Uru Rākau.
- Re-measurement of farm-tōtara trials established by the Northland Tōtara Working Group.
- A practical guide to the management of tōtara on private land, co-funded by Te Uru Rākau.
- Videos and workshops on best practice restoration and management of native forests – a collaborative project, co-funded by the Department of Conservation.
- Establishing seed islands, Waikereru Ecosanctuary, Tairāwhiti.
- Monitoring system for early survival and growth of plantings in collaboration with Trees That Count, Tasman Environment Trust, Auckland Council and Pamu Farms.
- Transitioning exotic forest to natives – a recently initiated five-year project, largely funded by the Sustainable Food and Fibre Futures Fund (SFFF).
- Valuing ecosystem services – a recently initiated multi-agency collaboration with Pāmu Farms, largely funded by SFFF.

- Ongoing work on submissions and consultation with the Government, advocating for all aspects of native forestry, and incentives for landowners.

More information on these projects, and others not listed here, is available in the Trust’s Annual Report available on the TTT website: www.tanestrees.org.nz

Why are native forests important?

Prior to human arrival, Aotearoa New Zealand was almost entirely forested below the tree line. The current forested area represents over 70% reduction from the pre-human state. This large-scale deforestation has been disastrous for our soils, water and biodiversity.

According to the Tax Working Group (2019), the well-being of New Zealanders is critically dependent on the state of our natural environment and the health of our ecosystems, with natural capital ‘a profound and non-substitutable basis for the economy.’ This is something long recognised by indigenous cultures.

‘Ka ora te whenua, ka ora te tāngata – When the land is well, we are well’

Māori proverb.

A recent TTT project reviewed non-timber values (NTVs), focusing on native forests outside the conservation estate (Aimers et al., 2021; Figure 2). NTVs cover all elements of the ecosystem services concept other than wood products. NTV categories include: (i) non-timber forest products (NTFPs) and other provisioning



Figure 1: The Native Forest Toolkit can be accessed via the TTT website. The four calculators are designed to assist with planting and managing native trees for multiple objectives

services; (ii) environmental regulating services; and (iii) socioeconomic, cultural and spiritual services.

Knowledge gaps and deficiencies were identified, and implications for land-use decisions and policy-making were examined. Weaving more native forest back into our rural and urban landscapes would provide a myriad of ecosystem services that would improve environmental and cultural values. It would also mitigate the effects of climate change, urbanisation and intensification of land use. Native forestation should be incentivised as the benefits accrue far beyond the sites where landowners sustainably manage and extend native forest cover.

Aggregated NTVs of native forests are likely to be greater than for exotic plantations, particularly concerning scenic, cultural and spiritual values, biodiversity, water quality and the protection of erodible steep land, downstream infrastructures and ecosystems (Aimers et al., 2021). NTVs are best viewed in a broad context, rather than focusing on a single NTV, which could lead to perverse outcomes. However, the research indicated that biodiversity is a pivotal NTV, i.e., efforts to increase biodiversity values will likely concurrently increase most other NTVs.

Native forest, carbon sequestration and climate resilience

In its advice to the Government, the Climate Change Commission recommended the establishment of nearly 300,000 ha of new native forests before 2035, to help meet New Zealand's international climate change commitments (CCC, 2021). This was followed by a commitment in the first Emissions Reduction Plan to establish native forests at scale to develop long-term carbon sinks, and improve biodiversity values and climate resilience.

A major focus for TTT's R&D work programme is cost-effective ways of weaving more native forest onto private land. While planting of natives remains important, TTT advocates for assisted natural regeneration for landscape-scale native forest establishment, i.e. working with nature to re-cloak vast areas of marginal eroding hill country (Bergin, 2021). Key elements include:

- Pest animal control
- Selective aggressive weed control
- Bird predator control
- Fencing
- Strategic use of planted seed islands
- Interplanting of key native tree species where needed.

TTT also advocates for integration of more native forest within our lowlands, to enhance existing productive land uses, rather than compete with them. This is where native forest is now particularly scarce, and where the greatest gains will be in growth and carbon sequestration.

TTT is aware of unmanaged, degenerating remnants of native forest throughout New Zealand. Fencing and excluding browsers, pest animal and weed control, and enrichment planting would quickly result in a flip from carbon loss to carbon gain, plus a myriad of other ecosystem services. This is an example of 'additional' in carbon sequestration in existing native forest.

TTT's research shows that sustainably-managed planted native forest is better at sequestering carbon than commonly considered (Kimberley et al., 2022). This research is based on TTT's indigenous plantation database, which is New Zealand's largest national database for planted native forest. It comprises over 60 different native tree and shrub species, ranging from five to 110 years old in over 100 planted stands surveyed nationwide. Growth rates of planted natives are generally faster than naturally-regenerating sites, which are often on exposed marginal sites.

TTT are currently working with the Ministry of Primary Industries to provide data for Look-up Tables for planted native forests, to complement the current Look-up Table for natives, which is based on naturally-regenerating kākūka/mānuka shrubland.

Strategically established native forests can have many benefits (Aimers et al., 2021):

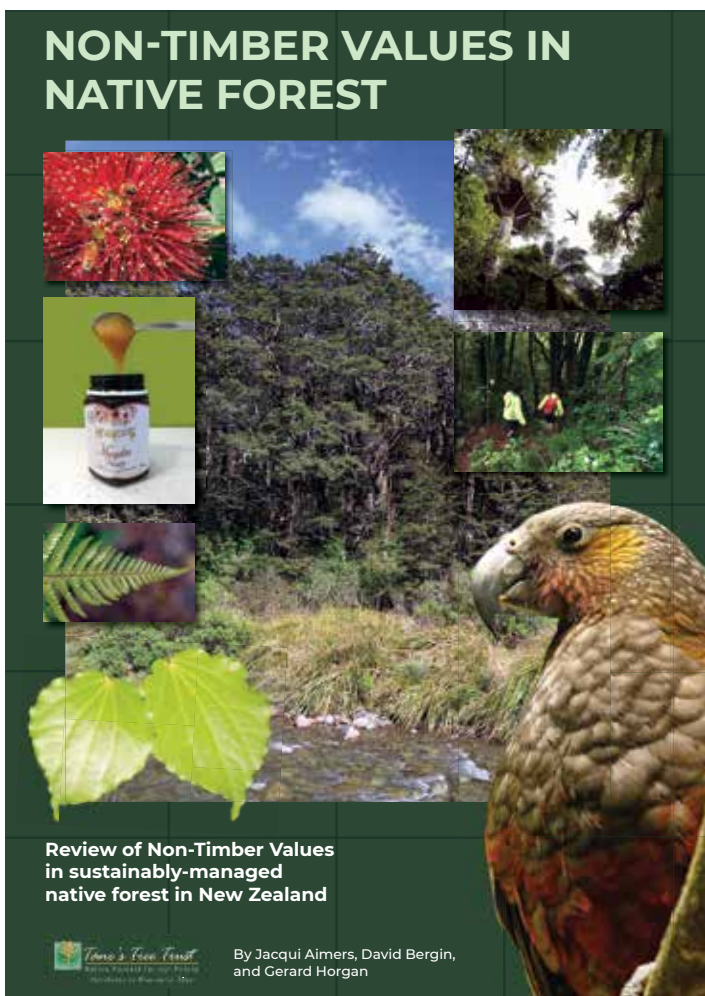


Figure 2: TTT bulletin on NTVs in sustainably-managed native forest, available on the TTT website www.tanestrees.org.nz

- Climate resilience via soil stabilisation and catchment protection
- Green firebreaks that reduce the risk of wildfire spread (if largely constructed with low-flammability species)
- Shade, shelter and trapping of moisture, ameliorating local climate issues
- Green infrastructure and coastal buffers that reduce the impact of extreme weather events, including floods and storm surges
- Co-benefits such as improved water quality and biodiversity values.

Urban forests also have benefits (Aimers et al, 2021):

- Mental and physical well-being and community values
- Flood alleviation, shade and amelioration of the urban heat island effect
- Improvement of air and water quality and biodiversity values
- Cultural services, including recreation and amenity values.

Forest products

Some native tree species can be utilised for timber on a sustainable basis, as exemplified by the Northland Tōtara Working Group (NTWG) and the Tōtara Industry Pilot project (Quinlan et al., 2011; Steward & Quinlan, 2019; Dunningham et al., 2020). TTT facilitates NTWG, in collaboration with other stakeholders, to promote the management of naturally-regenerating second-growth, tōtara-dominant forest on farmland in Northland based on continuous-cover forestry methods.

TTT Trustee Paul Quinlan has a key role in managing NTWG and promoting sustainable management of tōtara-dominant regenerating forest on Northland farms. Trustee Jon Dronfield, based in Westland, promotes the management of beech forest using continuous-cover forestry principles.

Our native trees provide an alternative suite of timbers with a range of characteristics, including greater hardness, distinctive colour and figure, and some with natural durability and outstanding wood-working properties. Some species are prized for high-value cultural and contemporary end uses (Bergin & Gea, 2007).

Low-impact sustainable harvesting of farm-tōtara has been demonstrated in Northland via best practice continuous-cover forestry principles (Quinlan, 2022). Harvesting is undertaken as single-tree or small-group felling, to ensure the NTVs of high forest are not compromised, as described in the TTT Bulletin on continuous-cover forestry by retired Trustee Ian Barton (Barton, 2008).

There are also non-timber forest products. Mānuka and kānuka are often planted as a pioneer nurse species

and are increasingly used for honey, oils, medicinal and cosmetic products, along with other native species (Aimers et al., 2021). There is a base of cultural knowledge (rongoā) increasingly being supported by scientific evidence showing that extractives from some native species have important medicinal properties.

Resources

TTT has a wide range of free resources accessible via the website (www.tanestrees.org.nz), including:

- The TTT Technical Handbook
- Native tree species profiles
- Bulletins and technical reports (e.g. Figures 2 and 4)
- Newsletters and project updates
- Factsheets (Figure 3)
- Toolkit – suite of calculators (Figure 1)
- Videos on best practice establishment and management.

Technology transfer is an integral part of the Trust's work. Workshops are held regularly for landowners, community groups, allied NGOs, iwi and local authorities.

O Tātou Ngahere campaign

The O Tātou Ngahere (Our Forest) campaign is a collaboration between TTT and Pure Advantage. The overarching goal has been to influence a shift from a perception of native forests being an unproductive land use, to where they are seen as a valuable use of land. The campaign was launched in March 2021 with a 12-minute documentary, plus 36 topical articles and related webisodes from subject experts (www.tanestrees.org.nz/projects/o-t-tou-ngahere-our-forest/).

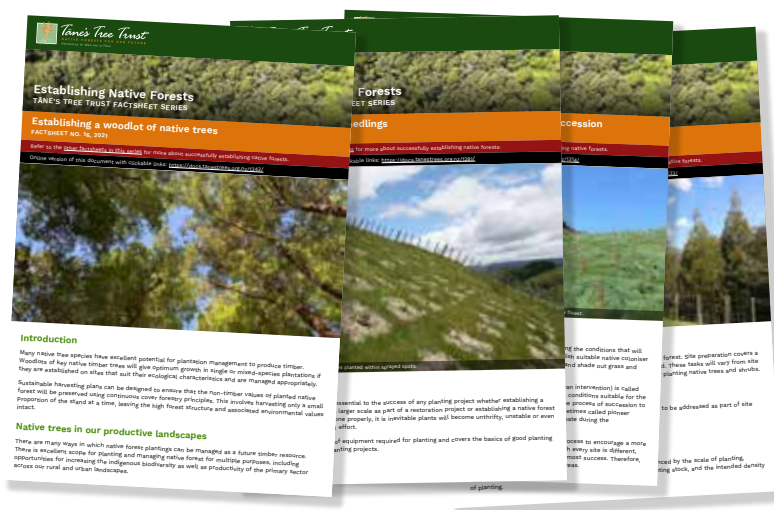


Figure 3: Native Forest Factsheets Series on establishing native forest via planting and assisted natural regeneration, which will soon be available via the TTT website. Nine Factsheets have been completed, with a further nine in the pipeline



Figure 4: 'A Practical Guide to Managing Tōtara on Private Land', recently published by Trustee Paul Quinlan and available via the TTT website. Short instructional videos are also available

This was followed by the O Tātou Ngahere Conference – Regenerating Our Landscape with Native Forest, in October 2022. Over 1,000 people attended the two-day conference, which we believe broke records for a forestry conference in New Zealand, reflecting enthusiasm for native afforestation. Many speakers highlighted the need to urgently recalibrate our policy settings to incentivise the protection of existing native forests and the establishment of new native forests.

There was a strong consensus for the need to tackle both the biodiversity and climate crises, with recognition of the potential for native afforestation to heal our landscapes. Conference organisers ran a poll to rank the top 'where to next' themes. The top theme by a strong margin was to 'Encourage urgent action by the Government to establish a biodiversity credit "standard".'

A biodiversity credit in this context is an earnable commodity that represents a return on investment either by afforestation, or by additionality in existing native forest (as explained above). This would encourage:

- Native afforestation, by bridging the gap between native trees becoming established and increasing their growth rate to earn enough carbon credits to reward landowners
- Good management of existing native forests, much of which are currently threatened by browsers, predators and weeds compromising ecosystem services, including carbon storage.

These points were communicated in a joint letter to Government ministers.

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