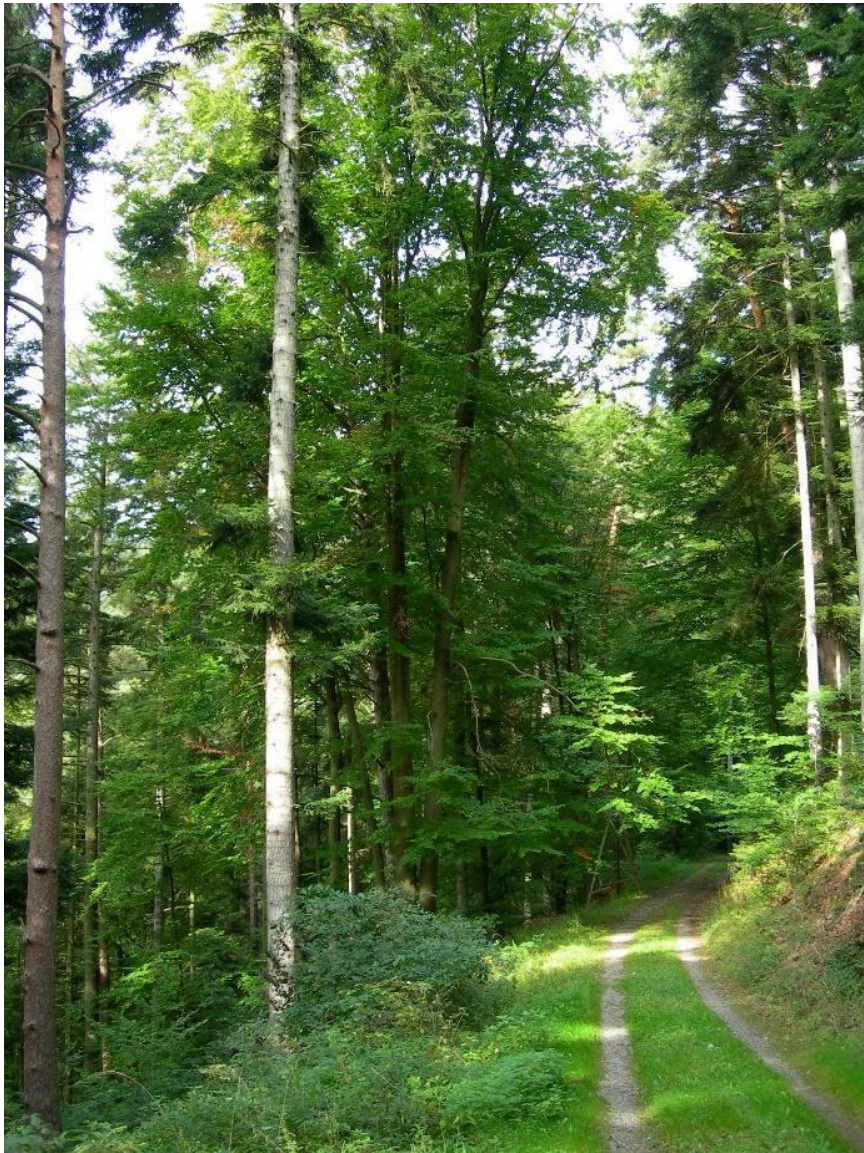




Tāne's Tree Trust
NATIVE FORESTS FOR OUR FUTURE
Hereherea te Wao-nui-a-Tāne

ANNUAL REPORT

2023



The Continuous Cover Forestry project involves learning from international experiences of Close to Nature forestry, including regulatory frameworks and market environments.

**To be presented at the Annual General Meeting
Saturday 4th November 2023, 4.30pm
at Kings, Ohakune**

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AGENDA OF THE 2023 ANNUAL GENERAL MEETING

1. Welcome from Chairman Peter Berg
2. Apologies
3. Minutes of 2022 AGM
4. Matters Arising
5. Chairman's Report
6. CEO's Report
7. Treasurer's Report
8. Trustee Appointments/Renewals
9. Project Updates
10. Other Business
11. Meeting Close

CHAIRMAN'S REPORT - November 2023

Like every one of the past 23 years, 2022-23 has been another filled with a lot of activity and the continued growth of interest in expanding and better managing Aotearoa-New Zealand's native forests. It sounds simple enough, and it really should be, however we never quite get there. It's either complicated regulations, bureaucracy or people simply not understanding some fairly basic features of forestry. I'm reminded of Katherine Craster's poem "The Centipede's Dilemma" –

*A centipede was happy - quite!
Until a toad in fun
Said, "Pray, which leg moves after which?"
This raised her doubts to such a pitch,
She fell exhausted in the ditch
Not knowing how to run.*

Simply put ... if you think too much about something you normally do, it can become difficult to perform the task and if we want people to join the drive to get more and better native forests, we need to make it as easy for them as possible.

One of our major efforts over the last year or two has been our Normalising Native Forestry programme, supported by The Tindall Foundation, for whose support we are hugely appreciative. This has enabled us, in cooperation with a small number of co-funders, to complete a number of "how-to" guides and videos, talk to a number of key organisations such as the NZ Institute of Forestry, appear at the Agriculture Fielddays at Mystery Creek, support a couple of appearances on Country Calendar and host visits by organisations such as the Office of the Parliamentary Commissioner for the Environment and the Climate Change Commission. Much of this is driven by their need to know more about our native forests and what we can do to repair the damage of the past.

Similarly, there is interest in how we move forward and we have been invited to join into additional work being done on matters such as transitioning from fast growing plantation forests, advancing the case for Continuous Cover Forestry and better understanding the non-timber values of forests (the last two being matters we have provided comprehensive advice on over the last few years).

These, and many other aspects of our ongoing work, are discussed in the reports which follow. It is sufficient to note that our leadership in this space continues to be acknowledged and our advice and participation sought.

Most of this effort and interest stems from the realisation that unless the land, the whenua, is healthy our (or at least our descendants') future is bleak. There is a movement, Tiwaiwaka, who make the point that caring for the land must be the first priority and that this sits in advance of all other objectives (such as economic development). There are many connections and it is the sum of these that is critical – focusing on these one at a time does not always serve us well and it is by maintaining the web that we can expect the best outcomes. While I'm not an expert of Tiwaiwaka I can see how this applies to our efforts around expanding the area and quality of management of native forest. There is a popular lexicon - right tree, right place, right purpose – which works well for a single outcome, but of course for every site there is more than one species which will grow well and probably a better message could be ... right forest, right purposes. We still seem to overlook the situation that if you plant a tree or forest it is going to be there for a very long time and will meanwhile transform landscapes and the environment. Strongly promoted goals, for example to sequester carbon or protect biodiversity, are hugely important to our future. However, even these need to be leavened with recognition that other outcomes are an inevitable result and should not be ignored. We know that over time significant quantities of carbon may be sequestered and permanently stored by a tree or in a forest; nevertheless it is also likely that the other values that these trees are providing (environmental, cultural, social, landscape and so on) exceed the C value and this should not be the only consideration, or even the leading reason for planting a forest.

Against that background the National Policy Statement for **Indigenous Biodiversity** (NPSIB) was gazetted on 7 July 2023 and came into force recently. Notably, while the principal purpose of the NPS is clear, the acknowledgement that modest sustainable yield from native forest under carefully controlled conditions is acknowledgement of this spread of values and a maturing of attitude towards managing some native forest – and a situation already relatively commonplace in northern hemisphere “close to nature forestry”.

As I noted last year, Tāne's Tree Trust has tried to remain a balanced contributor to the view that every forest has multiple values, providing a plethora of information, fronting with workshops, case studies and hosting field days aimed at encouraging and facilitating the establishment and management of native trees and forests, and of course we are delighted at the now much more widespread recognition and participation in the establishment and management of native forests for the ecological, social and cultural well-being of Aotearoa-New Zealand.

Also last year I commented upon the O Tātou Ngāhere (Our Forests) programme we facilitated in conjunction with **Pure Advantage** (PA). Last year's hugely popular conference at Te Papa Tongarewa pushed for further action and the partnership, driven more particularly by PA, is now planning to launch a nationwide campaign in support of every New Zealander planting native trees.

I know it is repetitive but annually I have to acknowledge that our ability to participate/lead as we do is very dependent upon a great deal of hard work and some wonderful supporters and once again I want to acknowledge that goodwill, support and the volume of work members, trustees and funders put into our activities. As a consequence, our profile, influence and progress remains as great as it ever has.

We obviously take some pride in this work and the influence it has upon wider policy decisions, but I am even prouder that as a consequence of this support the Trust's future remains very robust.

This Annual report otherwise gives updates on many of these matters and members and others will find it a comprehensive account of where we have been engaged most recently.

TRUSTEES

The trustees are – Jacqui Aimers, Ian Brown, Ian Brennan, Peter Berg, David Bergin, Michael Bergin, Paul Quinlan, Robert McGowan, Wayne O'Keefe, Michael Orchard, Warwick Silvester, Jon Dronfield, Gerard Horgan and David Horgan. Meanwhile Ian Brennan and Ian Brown retired by rotation, and both being willing to attend the Trust for another term, they have been reappointed.

We were delighted that Mike Orchard, David Horgan and Michael Bergin agreed to join the Board – all three have been pitched into the deep end with various projects and connections passed their way. Mike Orchard and Jon Dronfield have the additional responsibility of representing us in the South Island.

We of course welcome additional Trustee applicants and note that presently we would be delighted to have more women and Maori representation.

OUR PATRONS

The Trust's patrons, the Drs Mary and Andrew McEwen, are wonderful representatives of TTT and its work. Their support and guidance is greatly appreciated, they are regular attendees at Trust events and also provide many connections to other groups, and we hope this continues for a long time to come.

NETWORK GROUP

The number of members/participants on our network group is reported on by the CEO. I simply note that we continue to attract new members, while our social media pages and website have a growing number of followers. Subscription rates remain at \$45 annually, although many members take the option of also providing a donation to the Trust and its various programmes - this sort of support is particularly important in insulating the Trust against fluctuating income and ensures we retain the ability to maintain Trust services to members and our key programmes.

EXECUTIVE TEAM

In Mel and Keri, we have an outstanding executive team - ensuring we have remained on task and on time, and the professionalism of both in this respect continues to be reassuring for our supporters, members and the Trustees alike.

TRUST FUNDING

Members will note that in many parts of this report significant projects and funding support is noted – we could not do anything of major value without our backers and we continually strive to ensure that they are thoroughly informed of progress and satisfied with the investment they have made in us and our work.

As usual, draft annual accounts for the past year's activity are attached for member's advice; they have been independently reviewed and otherwise indicate the breadth of our effort and our present situation, and as mentioned above we intend to hold the modest membership charge at its present level.

IN SUMMARY

2022-2023 has been another busy but also very productive year for the Trust with an ever-widening range of projects underway. We appreciate the ability to work with other groups – another way to enhance the value we all obtain from our projects. Our team has once again worked brilliantly together and we expect to continue providing guidance and leadership in the establishment and management of native forests for many years to come.

Peter Berg – Chairman.

CEO UPDATE

2022/23 has been another busy, successful year for TTT. As you can see from our project updates, we have completed, or are near completion of, a number of projects, as well as new exciting projects being started. Our O Tātou Ngāhere conference which coincided with our AGM last year was a huge success, and I think everyone will agree it was one of the largest forestry conferences in NZ.

Subscriptions have been sent out for the 2023/24 year, and the annual subscription remains at \$45.00. There are currently 703 members, which is fabulous growth in our membership. We have 510 paid members to date for the 2023/24 year, which continues the trend of good membership renewal.

Amy left us at the end of 2022, and we welcomed back Keri Wilson into the role of Office Manager. Keri worked with us a number of years ago, and has slotted back into the role seamlessly. Thank you Keri for all your effort and work this year.

Please contact either Keri or myself at the office, office@tanestrees.org.nz if we can be of any assistance or if you wish to obtain any of our publications.

Mel Ruffell – CEO

TREASURER'S REPORT

We are now in the middle of what has become our third triennium acknowledging significant base funding from The Tindall Foundation. Members should be aware that most granting agencies require evidence of a significant internal funding base, applied as co-funding to grant applications. We have been fortunately able to do that, and along with that co-funding, in-kind assistance allows us to mount the extraordinary range of projects that you will read about in this annual report. The preparation of grant applications is a significant chore that some of our staff have perfected with continuing success, and much of that work is done without remuneration.

We continue to be a very lean operation, with over 95% of income applied to projects. This has allowed us to accumulate a significant contingency, giving us the freedom to fund important non-budgeted issues that arise. This flexibility has proven most useful, especially when responding to the changing pronouncements on forest issues being floated in Government circles.

Our programme leaders are doing an astonishing job, both in winning significant contracts and applying funding in a most productive way. Please read the research reports in this report and look at results on our website.

Our executive team of Mel as CEO and Keri as Office Manager do a quite spectacular job in keeping us in order financially and administratively. With Amy leaving us during the year we have been most fortunate to secure Keri into a more permanent role. It would not wish for a better team at the helm.

The latest financial report can be found at Appendix 1. As treasurer I can assure members that we are incredibly well served by Mel in keeping the accounts in order. Our auditor comments every year on how well we are served by Mel and our whole administration team.

Warwick Silvester – Treasurer

PROJECT UPDATES

Normalising Native Forest (NNF)

PROJECT STATUS: Year 2 completed

Introduction

The second year of the three-year Normalising Native Forestry Programme (NNF), supported by The Tindall Foundation (TTF) and managed by Tāne's Tree Trust (TTT), has been completed. The aim of this three-year research programme is to continue developing and providing the urgently needed tools, resources, and advice to support native forestation at scale in Aotearoa.



The programme of applied research and technology transfer addresses the urgent need for science-based information and technical advice for establishing native forest at scale to address climate change and environmental degradation. It focuses on working with nature, demonstrating managed regeneration to cost-effectively establish native forest at scale, and providing options for sustainable management of nature-based native forestry.

Workstreams

Research, collaboration and information sharing has continued across six workstreams during Year 2.

Workstream 1. Working with nature - native forestation at landscape scale

The Climate Change Commission recommended a major upscaling of native forestation efforts, nearly 300,000 ha of new native forests within the next 15 years. With the cost of planting often at \$20,000 per hectare, cost-effective establishment at scale requires working with nature by encouraging natural regeneration as well as planting. Progress with projects within this workstream during Year 2 has included:

- **Seed island demonstration sites** – A co-funded project has been developed with Trees That Count, supported by Z Energy, to run for the next three years to set up seed island demonstration areas across five regions, along with various satellite sites from Northland to Southland aimed at promoting natural regeneration combined with pest browsing animal, bird and seed predator, and selective exotic weed control.
- **Working with nature** – Contributing to the debate with policy makers promoting regeneration as a realistic option for establishing native forest at scale across marginal hill country, as part of submissions supporting the Climate Change Commission and the Ministerial Inquiry on land use in Tairāwhiti. This includes promoting a mosaic of land uses that includes integrating native forestry and exotic production forestry on appropriate sites with agricultural and horticultural land uses.
- **Measuring success** – The TTT Monitoring system for planted native forest is completed and will be launched in late 2023. Project partners include Trees That Count, Auckland Council, Tasman Environmental Trust and Pāmu Farms, in collaboration with iwi, landowners, environmental NGOs

and community groups. Four videos on monitoring are almost complete with support from the DOC Community Conservation Fund and TTF co-funding from the NNF programme.

- **Videos and factsheets on best practice** – Ongoing NNF co-funding support from Department of Conservation and Te Uru Rakau on promoting best-practice establishment and management of native forest for environmental and production purposes with the series of new factsheets to be launched in late 2023 and further release of practical ‘how to’ videos.



Working with nature by allowing reversion of pastoral hill country is an option for large-scale restoration of native forest, such as this natural regenerating tōtara-dominant forest in Northland, and in this case in the presence of grazing.

Workstream 2. Promoting nature-based indigenous forestry in Aotearoa

We are well positioned to develop nature-based forestry in NZ, with a good track record already with tōtara (Northland) and beech (Westland). NZ currently imports about \$100 million per year in specialty timbers, some of which could be substituted with sustainably grown native timbers.

This workstream continues from the “Building on the Northland tōtara work” work completed during the Our Forests Our Future programme. It is intended to promote the development of nature-based forestry to establish and manage long-term sustainable native forest resources for multiple benefits. This has included:

- **Promoting sustainable native forest management on private land** – for multiple benefits and values.
- **Legal impediments** – Work on resolving the legal and regulatory impediments and disincentives to sustainable native forestry.
- **Northland Tōtara Working Group** – Convene the NTWG and support the next phase development of the Tōtara Industry Pilot (TIP) project.

- **Technology transfer** – Continue to develop and provide advice to landowners, NTWG newsletters, hold field days, and give workshop and conference presentations, and technical resources via our website.
- **Research topics** – Continue to scope/prepare bids for funded research on native forest management.
- **Sustainable management of other forest types** – Promote nature-based forestry systems for tōtara and other species nationwide including sustainable specialty timber production using CCF of both planted and regenerating forest, e.g., beech in the South Island.
- **Collaboration** – Networking and information exchange with overseas groups such as Pro Silva.
- **Servicing** – Requests for information related to native forestry matters.



Dense kahikatea pole stands on Weka Station, a Pāmu (Landcorp) farm near Lake Brunner.

Highlights of this year's accomplishments include:

- Successful application to MPI for a funded project on business models for Continuous Cover Forestry (CCF) in NZ – TTT as a collaboration partner with The Connective, Ngā Pou a Tāne, and SCION.
- Co-organised a series of six online 1.5hr wananga (workshops) on CCF with expert speakers and around 70 invited participants.
- Field visits with Rt. Hon. Minister James Shaw, Parliamentary Commissioner for The Environment team, and a training day for the Northland Regional Council land manager team, at a Northland tōtara project property.
- Preparation of a SFM Plan application at Pāmu's Weka Station property near Moana (Lake Brunner).
- Production of the Northland Tōtara Working Group newsletter 2023.
- Submissions on the National Policy Statement for Indigenous Biodiversity, Far Inquiry North District Plan, and input into TTT's submission on the Ministerial Inquiry into Land use in Tairāwhiti.
- Planned a spray screening trial over tōtara seedlings for the herbicide Haloxyfop.

Workstream 3. Making the most of Tāne's Tree Trust's databases

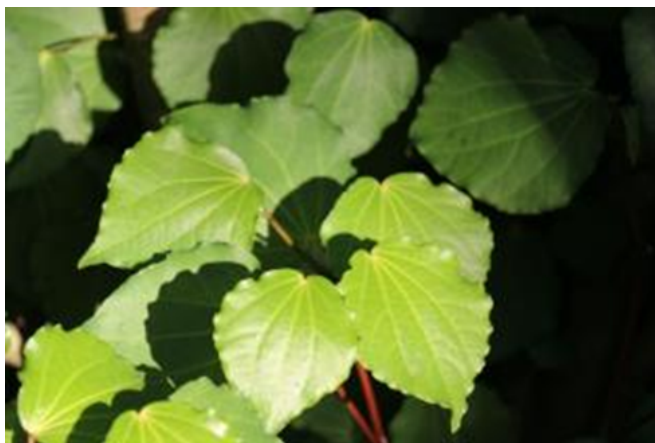
Tāne's Tree Trust has the most comprehensive national database for planted native forests, which has been used to develop models and calculators. This database and associated tools are providing essential data for policy-makers, investors, and the forestry and farming sectors. Projects underway and progress during Year 2 include:

- **TTT Plantation Database** – Restructuring of the Tāne's Tree Trust plantation database is continuing to convert this from an Excel spreadsheet system into a purpose-built relational database in Microsoft Access. The database is being designed to include data from managed regenerating farm stands and transition pine to native forestry projects underway.
- **Survey of native plantings** – The national survey of indigenous plantations is set up and awaits a major co-funder for a three-year period to start the survey of an anticipated minimum of 150 stands, ranging in age from five to 110 years old located nationwide. Permanent Sample Plots will be established in at least 50 new sites when surveying begins.
- **TTT native forestry toolkit** – The TTT toolkit, comprising calculators for Planting and Budgeting, Growth and Yield, Carbon, and Economics was launched in time for the O Tātou Ngāhere National Conference on native forestry at Te Papa, co-funded by MPI's Sustainable Farming Fund and TTF.
- **TTT monitoring tool for planted natives** – Co-funded project completed, with an online app for assessing early survival and growth of planted natives, which is user friendly, now available on the TTT website.

Workstream 4. Incentivising landowners – an economic case for native forestation

The cost of planting natives remains a limiting factor for landowners. The business case for native forestation, therefore, relies on decreasing the costs, and also compensating landowners for the non-timber values that accrue to the wider community, but do not currently have a market value. The Climate Change Commission's advice to Government includes creation of incentives for establishing native forest. Progress on various initiatives during Year 2 included:

- **Valuing native ecosystems on farms** – A multi-agency \$1 million programme, led by Pāmu Farms, is underway with the first year focused on two Northland stations with areas of wetland, freshwater and native forest stands that are in various states of restoration. The aim is to assess the relative quality and ecosystem service values before and after restoration efforts, using a valuation framework unique to NZ. A web-based tool will ultimately be created for landowners to help them make their own assessments.
- **Recognising non-timber values** – The recently launched TTT toolkit includes multiple non-timber benefits that users can enter for their project. This will provide further impetus for developing a biodiversity incentives system for restoration and management of native ecosystems across working landscapes.
- **TTT economics calculator** – As part of the toolkit on establishment of natives, the cost and benefits of planting and managing natives for multiple objectives, including the long term option of specialty timber production from appropriate sites, is completed and available on the TTT website.
- **Carbon sequestration** – Ongoing collaboration with Pure Advantage in quantifying and comparing carbon sequestration for a range of planted and regenerating native forestry scenarios as an option for offsetting NZ's greenhouse gas emissions and reducing reliance on offshore carbon credits.
- **Presentations** made to various industry and community groups on the wider values of native forest, plus advocacy for landowner incentives for establishing and managing native forest.
- **Multiple submissions** have been made, including to MPI for the Pricing Agricultural Emissions consultation, to the Climate Commission's advice on the second Emissions Reduction Plan, and to MfE/MPI on the Permanent Forest Category in the ETS.
- **Ongoing involvement in stakeholder consultation workshops with government** on potential development of a biodiversity credits incentives scheme, which went out for public consultation in July.
- **Conference presentation** on *Investing in Natural Capital - Weaving native forest back through NZ's landscape*, for the trans-Tasman 2023 Australia & NZ Institute of Forestry Conference - Embracing Our Natural Capital.



As an example of non-timber value, kawakawa is of high cultural value for Māori and is becoming increasingly important in the natural pharmaceutical industry and can be grown as a forest understory crop.

Workstream 5. Evaluating novel ecosystems - transitioning exotics to natives

Exotic woody plants that dominate many of our landscapes can potentially be transitioned to native forest. Carbon forestry interests are currently investing in permanent carbon forests, capitalising on the fast early growth of radiata pine, then leaving it as a nurse for permanent native forest. It is important to understand the factors that affect native regeneration and natural succession under exotic species and also how we can weave more native forest into our landscapes and what new forms that may take. This year the workstream has involved:

- Contact with various stakeholders in the transitional forestry sector.
- Supporting the SFFF Transitional Forestry project (see project report by Meg Graeme).
- Input to TTT submission on the Permanent Forest category of the NZ Emissions Trading Scheme.
- Exploring further potential research projects on novel ecosystems and transitional forestry.

Workstream 6. Collaboratively building capability

A holistic, multi-agency approach is required for native forest to be successfully established at scale. Working with other entities to tackle herbivory, bird and seed predation, and control of vigorous weeds is a priority. Collaboration underway included:

- **Partnerships in restoration of native forest** – Collaboration with Trees That Count, Z Energy, Pāmu Farms, NZ Arboricultural Association, Longbush Ecological Trust, Pro Silva Continuous Cover Forestry, Te Kohaka o Tuhaitara Trust and Kaipara Moana Remediation Project to jointly promote restoration of native forest for multiple purposes, integrated with pest weed and animal control, supplementary planting and bird predator control programmes.
- **Workshops and technology transfer to iwi, landowners, managers** – Organising and contributing workshops and field-based events across iwi and farming and forestry sectors and for land managing agencies, both private and public, requesting latest best-practice guidelines on native forestry establishment and management to meet multiple objectives.
- **National Fielddays** – Participation in the National Fielddays at Mystery Creek in November 2022 and June 2023 as part of the TUR/MPI Forestry Hub with 40 forestry entities including NZ Farm Forestry, NZ Forest Owners, Forest Growers Research, Scion, forest biosecurity, native and exotic forestry consultants, native plant nurseries, Toi Ohomai Institute of Technology, wood processors, etc.
- **NZ Institute of Forestry** – Dr Jacqui Aimers, TTT trustee, elected as council member of the NZ Institute of Forestry, providing technical advice on native forest management and promoting collaboration between NZIF and the wider forestry sector and TTT.
- **Two professional training sessions** were provided for NZ Institute of Forestry members on various aspects of native forest establishment and management.
- **Assisted Parliamentary Commission for the Environment** with their investigation on native forestry, including organising field trips to Cassie's Farm, Adam Thompson's Restore Native Nursery, and the Northland farm-tōtara work.
- **MPI/TUR collaboration** – Various initiatives are underway to collaborate with the Ministry of Primary Industries and Te Uru Rakau farming and forestry teams, in supporting farm and forestry advisors with professional development to upskill in the integration of native forestry with the wider farming and production forestry sector.

Tāne's Tree Trust Planted Native Forestry Toolkit

PROJECT STATUS: Completed

This four year project was completed and is now available online via the TTT website <https://www.tanestrees.org.nz/resources/native-forest-toolkit/>. The project was funded jointly by the Ministry for Primary Industries' Sustainable Farming Fund and TTT with co-funding from The Tindall Foundation as part of the Normalising Native Forestry programme.

The calculators for planted native forests

This free online toolkit comprises four calculators that have been developed to assist those planting and managing native trees to meet multiple objectives from environmental restoration to sustainable production. The toolkit draws on scientifically robust data from the Tāne's Tree Trust Indigenous Plantation Database to provide foresters, farmers, iwi, environmental NGOs, community groups and individuals with realistic expectations for their plantings. This includes the option of continuous cover forestry to provide a sustainable supply of specialty timber from appropriate sites planted with natives.

1. Planting and Budgeting Calculator

Want to calculate the number of plants you will require for your restoration project, and the costs of the project? This calculator can be used for any restoration project and by anyone who wants to plant natives. Users can access a menu that they can easily follow to enter their data or use default values by clicking the "Next" button to work through the steps. Once these steps have been considered and data entry completed, of which not all are mandatory, then you simply press the "Submit" button to generate a one-page report online or as a printed PDF listing the user inputs and then the calculated costs for each, along with a total figure for planting their site. A per hectare cost can also be generated.



The screenshot displays the 'TANE'S TREE TRUST NATIVE FOREST TOOLKIT' website. The navigation menu includes 'PLANTING & BUDGETING', 'GROWTH & YIELD', 'ECONOMICS', and 'CARBON'. The 'Planting & Budgeting Calculator' is selected, showing a sidebar with 15 steps: 1. Introduction, 2. Area, 3. Spacing, 4. Shrubs/trees, 5. Species, 6. Proportions, 7. Seeding cost, 8. Site preparation cost, 9. Planting cost, 10. Consumables cost, 11. Weed control cost, 12. Fencing cost, 13. Other site costs, 14. Silviculture costs, and 15. Report. The main content area features a photo of people planting trees in a field and an 'Introduction' section explaining the calculator's purpose and providing a note about GST.

2. Growth and Yield Calculator

This calculator allows you to estimate the growth and yield of a planted native forest at various ages since planting. These models provide realistic estimates of growth and yield for planted native forests, for landowners and managers evaluating land-use options. The calculator allows users to account for site quality by specifying the site as Poor, Average or Good. Alternatively, users can enter their own stand

measurements. Graphs of changes in stocking, height, diameter, basal area, volume, and carbon at stems per hectare basis are generated, along with a growth and yield report based on user selected planting age and area of their planting site.

3. Economics Calculator

If you are wanting to develop a business plan for planting a native forest, then this calculator allows you to input the establishment and management costs and can provide you with an estimated return from potential income streams. Revenue options include carbon sequestration, and longer term, potential sustainable timber production. While valuing the non-timber benefits and the wider ecosystem services can be challenging, the calculator also allows users to input their estimated or actual costs and revenues, or a rating for what they consider a priority, such as biodiversity, landscape, cultural and social benefits of establishing and sustainably managing native forests.

4. Carbon Calculator

The Carbon Calculator helps you determine how many native shrubs and trees you need to plant, over a defined period of time, to off-set your carbon footprint. It also allows you to work out how much carbon your planted native forest is storing over a defined period of time. The actual amount of carbon sequestered by a particular stand can vary from the calculator predictions, and is dependent on site quality and the stand characteristics and management. Some examples are provided of how many planted native trees are required to offset emissions from common activities such as air travel, household emissions, and average annual use of the family car.

The screenshot shows the 'Native Forest Toolkit' website. The header includes 'TĀNE'S TREE TRUST' and 'NATIVE FOREST TOOLKIT' with navigation links for 'ABOUT', 'DISCLAIMER', and 'CONTACT'. A menu bar highlights 'PLANTING & BUDGETING', 'GROWTH & YIELD', 'ECONOMICS', and 'CARBON'. Below the menu, there are links for 'Carbon Calculator', 'Carbon footprint & climate change', 'Reducing impacts of climate change', 'Carbon models for planted natives', and 'Carbon calculation examples'. The main content area is titled 'Carbon Calculator' and contains a brief description of the tool's purpose. Below the description are three green buttons with the following questions: 'How many native trees are required to offset emissions from common activities?', 'How many native trees are required to offset my CO₂ emissions?', and 'How much CO₂ will my planted native trees remove from the atmosphere?'. A section titled 'Carbon calculation examples' follows, listing eight scenarios for using the calculator.

Carbon Calculator

This calculator allows you to work out how much carbon your planted native forest is storing over a defined period of time. It also allows you to determine how many native shrubs and trees you will need to plant to off-set your carbon footprint.

Learn more about the carbon calculator or to start using the calculator select a type of calculation using the buttons below:

- How many native trees are required to offset emissions from common activities?
- How many native trees are required to offset my CO₂ emissions?
- How much CO₂ will my planted native trees remove from the atmosphere?

Carbon calculation examples

Below are several examples of how you can use the [Carbon Calculator](#).

1. Household wanting to offset emissions for one year
2. Household wanting to offset all current and future emissions using a single planting of native trees
3. Large corporate wanting to offset emissions
4. Medium sized business wanting to offset emissions
5. Community planting group wants to know how much carbon their planted forest will sequester
6. Carbon sequestered by a single planted native tree
7. A farmer has measured a stand of native trees she planted and wishes to know how much carbon they have sequestered
8. A small bus company would like to offset emissions from their fuel consumption by planting native trees

Establishing seed islands, Waikereru Ecosanctuary, Tairāwhiti

PROJECT STATUS: First year completed

Introduction

The second year of planting seed islands at Waikereru Ecosanctuary was undertaken in June 2023. This is a joint project involving Tāne's Tree Trust, the Longbush Ecological Trust and other partners. The Waikereru Ecosanctuary is over 100 ha of mostly regenerating hill country adjacent to the Longbush Reserve in the Waimata River valley, approximately 10 km north of Gisborne.

The project comprises several components with our main role in setting up a demonstration area of planted "seed islands" of selected native trees and shrubs to rapidly increase biodiversity, targeting gaps of various sizes within the regenerating kanuka. With recent damage to the Tairāwhiti region and similar steep

marginal hill country, this project aims to provide landowners with options to speed up succession of kānuka shrubland into a diverse native forest to mitigate ongoing impacts of climate change, biodiversity losses and restoration of waterways.

Concept of seed islands

Establishing 'seed islands' across landscapes is a method for large-scale establishment of native forest. It is a pragmatic and cost-effective option, given the high cost of planting natives (\$20,000 or more per ha), and the impracticality of intensive blanket planting on a large scale. The aim is to plant intensively managed small groves of native trees and shrubs to provide greater diversity of wind- and bird-dispersed seed across the wider regenerating landscape such as at Waikereru Ecosanctuary.

This allows for the re-introduction of a range of native tree and shrub species that were once common in the area and will help accelerate the regeneration process to a complex high forest with a diverse mix of species. Seed islands will become like stepping stones, attracting birds to roost, feed and fly between groves and assist in spreading seed across the wider regenerating or planted landscape. This concept works with nature, enlisting the help of birds and wind as agents of seed dispersal. For further information on the concept of seed islands refer to Tāne's Tree Trust Factsheet 2022 – How to establish 'seed islands' of natives.

Work to date

Over the first year, project partners have completed a survey and mapped the landforms to provide a context for monitoring natural regeneration and establishment of a network of seed islands. A network of permanent plots to monitor natural regeneration has been established and a comprehensive botanical survey completed. Pest animal control (both browsers and bird predators) and selective weed control is ongoing as necessary to support the regeneration.



View north of the Waimata River valley with Waikereru Ecosanctuary on the left and the Longbush Reserve on the river terraces centre.

In addition to the 20 seed islands established in the first year, a further 11 seed islands have been planted by Ecoworks New Zealand Ltd in Year 2, bringing the total number of native trees and shrubs planted to over 1000. Seed islands have been planted within the regenerating kanuka stands with the selection of sites aimed at comparing survival and early growth within three categories of sites:

1. Natural canopy gap – open grass site with surrounding edge kanuka;
2. Partial shade gap – a light covering of scattered kanuka within the plot; and
3. Dense shade – planted natives within overhead canopy of kanuka.



A natural open gap within the natural kanuka stand with exotic grasses dominating the ground.



A partial shade gap where the natural kanuka is closer but still allowing light in from overhead. Exotic grasses and herb species are present, however much less dense than the wider open gaps.



A shaded canopy site where cover from the natural kanuka is suppressing most of the light, restricting understory and ground cover growth. The ground is largely litter debris and mosses.

Gap size was governed by the natural openings in the kanuka dominated shrubland with 30-100 seedlings of a mixture of tree and shrub species planted randomly within each seed island to provide a diverse local seed source to supplement the kanuka.

Seedlings were supplied from the local Native Garden Nursery funded by Trees That Count. The site has been registered as a planting site by Trees That Count and early survival and growth are being monitored. Baseline measurements were completed soon after planting in mid-2022 and mid-2023.

Shrub and small tree species planted included ngaio, fivefinger, karamu, kohuhu, wharangi, lacebark and wineberry. Planted tree species included kowhai, rewarewa, titoki, puriri, tōtara, kahikatea, tanekaha, northern rata, black beech and kohekohe.

Preliminary assessment

Year 1 seed islands were remeasured in August 2023 and indicate excellent survival of planted native shrubs and trees within all seed islands. Tairāwhiti did not experience the usual summer drought during the 2022/23 period and this is likely to be a contributing factor to the good performance of planted natives.

When comparing the three site types, the best height growth was in the seed island located within partial kanuka shade. Most seedlings had doubled in height 12 months after planting. Puriri in particular had grown over 1m in height within the first year.

Despite deer fencing of the property and the ongoing pest animal control programme, a small number of goats and deer have resulted in some browsing of highly palatable planted natives such as kohekohe.

Cost-effective planting and reversion scenarios for establishing native forests – Factsheets

PROJECT STATUS: Final year

Introduction

A new factsheet series is almost completed and will be available on the Tāne's Tree Trust website to download by the end of 2023. The series is funded by the MPI's Billion Trees Programme to provide the latest information on a range of site-specific, low-cost planting and regeneration scenarios that are required for establishment of permanent native forest, especially for scaling up the establishment of native forestry across marginal, pastoral hill country.

Factsheet content

The factsheets provide the latest information and best-practice guidelines on establishment and early management of native forest for multiple objectives, targeting landowners, community groups, iwi and the general public. Factsheets topics cover both planting and managing natural regeneration.

A brief summary of the first factsheets is provided.

Why plant natives

Tens of millions of native trees and shrubs are being planted annually throughout New Zealand by various agencies, landowners, iwi, and community groups. Reasons for planting include enhancement of native plant and animal biodiversity for conservation; establishment of native cover on erosion-prone sites; improvement of water quality by revegetation of riparian areas; and management for production of high-quality timber.

Large-scale planting of natives is being undertaken in urban and rural areas in many regions, supported by local authorities, iwi and community groups. Most visible are the large areas along roads and motorways planted in a wide range of native species. Other planting programmes are evident beside rivers and streams where natives are planted in fenced-off riparian areas.



Planting native trees on steep marginal farmland near Cambridge, Waikato. Research shows that the area of soil eroded by storms is consistently less where native forest is retained, or marginal land is allowed to revert to native, or forest is planted – as compared with pastureland.

The basics of planting natives

Planting nursery-raised seedlings is the most widely used option for the establishment of native forests, planted to meet many objectives. It allows control of the species mix and density of planting, and with appropriate after-planting care, can be highly successful. Planting is, however, an expensive and labour-intensive method for establishing natives so getting the basics right is paramount.

Planting requires a substantial commitment of time and resources. Identifying factors that are likely to reduce success such as browsing animals that need to be controlled. Also, exploring opportunities to assist natural reversion to complement planting is recommended.

Seed collection for native trees and shrubs

Most native forest restoration programmes rely on planting nursery-raised seedlings of a selection of shrub and tree species. Many projects involve planting thousands of seedlings where the vast majority of plants are raised from seed.

Collection of seed by individuals, skilled seed collectors and native plant nurseries requires a knowledge of the species including seeding characteristics and timing of seed maturity, and skills in collecting, storage and treatment before sowing. Seed collection, handling, storage and germination are described in this factsheet for the more commonly planted native shrubs and trees raised in nurseries for restoration planting programmes.

Ecosourcing of native species for planting

Ecosourcing is defined as the sourcing of seed (or vegetative material) from nearby natural populations to propagate native planting stock for planting in the same locality, i.e., collection of seed from wild populations that are as close as possible to the area being planted. Issues with ecosourcing include defining the boundaries for local provenances for different native species, lack of local seed sources including fragmented and rare species, and assurances from nurseries that they are providing ecosourced stock.

While ecosourcing should be included in the planning stages of native plantings, recommendations are provided for a pragmatic approach to incentivise the adoption of ecosourcing principles in raising and planting natives for multiple purposes.

Site preparation for planting natives

Good site preparation is critical for successful establishment of native forest. Site preparation covers a multitude of tasks that need to be addressed before the site is planted. These tasks will vary from site to site. This factsheet covers the requirements for preparing a site for planting native trees and shrubs including fencing to exclude domestic grazing stock, pest animal control, and management of existing vegetation cover.

The prescription for, and intensity of, site preparation is influenced by site characteristics, scale of planting, resources available including labour, quality and size of planting stock, and intended density of planting.

Getting ready for planting

Before the planting spade hits the ground, there are important issues to consider when planning a native planting project, whether you are planting a few natives for a community-based restoration project or establishing native forest on a large scale.

This factsheet covers the basics of preparing a planting project on-the-ground, essential to both small and large planting programmes. Aspects include whether the planting project is to be undertaken by community volunteers or by contract planters, options for planting time, transporting and storage of plants at the planting site, and methods for laying out plants to achieve the desired planting pattern for tree spacing and species mix.

How to plant native seedlings

Good planting techniques are essential to the success of any planting project whether establishing a few natives in a garden or at a larger scale as part of a restoration project or establishing a native forest plantation. If planting is not done properly, it is inevitable plants will become unthrifty, unstable or even die - wasting time, money and effort.

This factsheet provides a list of equipment required for planting and covers the basics of good planting methods for small or large planting projects. This includes checking root systems of planting stock, good planting technique, options for marking and protecting seedlings after planting, and use of fertilisers and mulches.

Right species right place

An understanding of ecological requirements of each of the native tree species and restoration sites will allow matching of appropriate species to suitable sites. This approach that follows local successional pathways is more likely to mimic the often slower natural regeneration processes and lead to good early performance.

There is considerable variation in the ecological requirements and site preferences for native species. Some require shelter in early years on open sites to improve growth while others tolerate specific site conditions such as greater moisture levels. Planting native species at random through an area is unlikely to match species to most suitable sites and therefore will probably compromise overall performance.

Natural regeneration of native forests

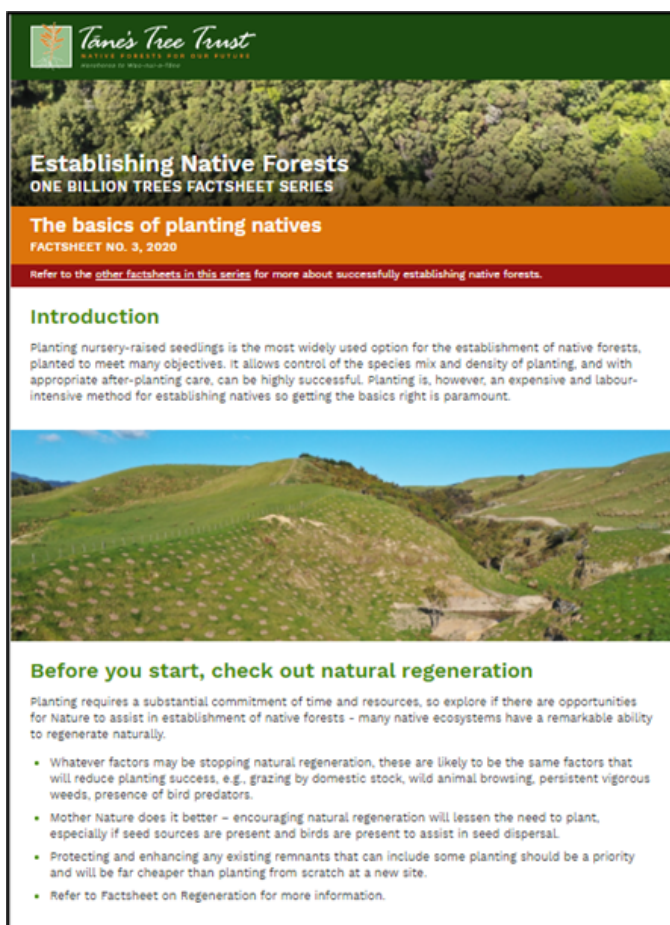
Regeneration or reversion of native forest is the process by which land reverts either naturally, or with human assistance, to a vegetation cover dominated by native species. Natural regeneration is promoted and partially funded by the One Billion Trees (1BT) programme where active management is undertaken by the landowner.

This factsheet considers the opportunities to work with nature to establish native forest. While the success of regeneration can be site-specific, there are options for landowners to encourage regeneration of native forest. Successful regeneration requires a nearby seed source, birds to spread seed, and typically involves exclusion of livestock by fencing, control of animal pests, and where necessary, selective control of potentially aggressive and persistent brush weeds such as blackberry. Supplementary planting is another management option that can speed up regeneration.

How to establish “seed islands” of natives

Establishing ‘seed islands’ across landscapes is a method for using small target planting areas to assist nature to establish diverse native forests at scale through natural regeneration. It is a pragmatic and cost-effective option, given the high cost of planting natives at \$20,000 (or more) per ha, and the impracticality of intensive blanket planting, especially on a large scale.

The aim is to plant intensively managed small groves of native trees to provide greater diversity of wind- and bird-dispersed seed across the wider regenerating or more sparsely planted landscape. Intensively managed seed islands focuses time and resources to ensure greater success of planted groups of natives at small scale by high density planting using tall well-conditioned seedlings, providing extra shelter species if required, reducing pest animal browsing, ensuring timely weed control, and where practical, undertaking control of predators of rodents and mustelids to boost bird populations and seed production of natives.




Establishing Native Forests
ONE BILLION TREES FACTSHEET SERIES

The basics of planting natives
FACTSHEET NO. 3, 2020

Refer to the [other factsheets in this series](#) for more about successfully establishing native forests.

Introduction

Planting nursery-raised seedlings is the most widely used option for the establishment of native forests, planted to meet many objectives. It allows control of the species mix and density of planting, and with appropriate after-planting care, can be highly successful. Planting is, however, an expensive and labour-intensive method for establishing natives so getting the basics right is paramount.



Before you start, check out natural regeneration

Planting requires a substantial commitment of time and resources, so explore if there are opportunities for Nature to assist in establishment of native forests - many native ecosystems have a remarkable ability to regenerate naturally.

- Whatever factors may be stopping natural regeneration, these are likely to be the same factors that will reduce planting success, e.g., grazing by domestic stock, wild animal browsing, persistent vigorous weeds, presence of bird predators.
- Mother Nature does it better – encouraging natural regeneration will lessen the need to plant, especially if seed sources are present and birds are present to assist in seed dispersal.
- Protecting and enhancing any existing remnants that can include some planting should be a priority and will be far cheaper than planting from scratch at a new site.
- Refer to Factsheet on Regeneration for more information.



Establishing Native Forests
TANE'S TREE TRUST FACTSHEET SERIES

Getting ready for planting
FACTSHEET NO. 8, 2020

Refer to the [other factsheets in this series](#) for more about successfully establishing native forests.



Introduction

Before the planting spade hits the ground, there are important issues to consider when planning a native planting project, whether you are planting a few natives for a community-based restoration project or establishing native forest on a large scale. This factsheet covers the basics of preparing a planting project on-the-ground, essential to both small and large planting programmes. Aspects include whether the planting project is to be undertaken by community volunteers or by contract planters, options for planting time, transporting and storage of plants at the planting site, and methods for laying out plants to achieve the desired planting pattern for tree spacing and species mix.

Volunteer and contractor planting

- Many natives are established successfully as part of community-based projects where volunteers undertake planting either as part of occasional mass-public planting events or as regular planting bees by small dedicated groups.
- For large-scale plantings (i.e., thousands of plants), which is often on private or Maori land and in remote locations, planting is usually done by experienced contractors.
- Whether utilising community volunteers or planting contractors, the basics of good planting methods is still an essential component of successfully establishing a native forest.

Planting nurse species – the concept of succession

Mature indigenous forest develops in multiple steps, with each step providing the conditions that will suit the next group of plants. The first step in forest restoration is to establish suitable native coloniser plants, often referred to as nurse species, which will cover the site quickly and shade out grass and weeds.

The process of recolonising a bare patch of land (either naturally or via human intervention) is called ‘succession’. During the succession process, early colonising species creates conditions suitable for the establishment of other later successional species. It takes many years for the process of succession to transform an area from bare land to a mature forest. Coloniser species, sometimes called pioneer species, grow on open sites as they can cope with the extremes of local climate during the establishment phase.

Establishing a woodlot of native trees

Many native tree species have excellent potential for plantation management to produce timber. Woodlots of key native timber trees will give optimum growth in single or mixed-species plantations if they are established on sites that suit their ecological characteristics and are managed appropriately.

Sustainable harvesting plans can be designed to ensure that the non-timber values of planted native forest will be preserved using continuous cover forestry principles. This involves harvesting only a small proportion of the stand at a time, leaving the high forest structure and associated environmental values intact.



Tamie's Tree Trust
NATIVE FORESTS FOR OUR FUTURE
Established in 2004

Establishing Native Forests

ONE BILLION TREES FACTSHEET SERIES

Ecosourcing of native species for planting

FACTSHEET NO. 5, 2020

Refer to the other factsheets in this series for more about successfully establishing native forests.

Introduction

Ecosourcing is defined as the sourcing of seed (or vegetative material) from nearby natural populations to propagate native planting stock for planting in the same locality, i.e., collection of seed from wild populations that are as close as possible to the area being planted. Ecosourcing should be included in the planning stages of all native plantings.



The fundamental unit for ecosourcing is the local population, or provenance; i.e., a group of individuals of the same species that live in a particular geographic area. Ecosourcing is particularly important for ecological restoration projects but may be less relevant for other types of plantings, as discussed below.

The ecosourcing concept also includes collecting seed across a large range of individuals within the source population. This results in a broader and more representative genetic base, which increases adaptive fitness and decreases the risk of inbreeding depression in forest plantings.

The concept of genetic pollution

- Natural wild populations will occasionally have new genetic material introduced via pollen or seed dispersal. This adds to the within-population genetic diversity.
- However, if a large amount of new genetic material is artificially introduced into an area, then this could change the genetic character of the local population over time, i.e., genetic pollution could undermine the unique inherited characteristics of the local populations.
- Care needs to be taken to avoid planting either different provenances or commercially-bred strains near natural forest of high conservation value that contains the same species - due to the risk of genetic introgression or 'genetic pollution' undermining the unique inherited characteristics of the natural population.



Tamie's Tree Trust
NATIVE FORESTS FOR OUR FUTURE
Established in 2004

Establishing Native Forests

ONE BILLION TREES FACTSHEET SERIES

Natural regeneration of native forests

FACTSHEET NO. 12, 2020

Refer to the other factsheets in this series for more about successfully establishing native forests.



Reversion of pastoral hill country is a common in many regions in New Zealand such as this natural regenerating totara-dominant forest in Northland, and in this case in the presence of grazing.

Introduction

Regeneration or reversion of native forest is the process by which land reverts either naturally, or with human assistance, back to a vegetation cover dominated by native species. Natural regeneration is promoted and partially funded by the [One Billion Trees \(1BT\) programme](#) where active management is undertaken by the landowner.

This factsheet considers the opportunities to work with nature to establish native forest. While the success of regeneration can be site-specific, there are options for landowners to encourage regeneration of native forest. Successful regeneration requires a nearby seed source, birds to spread seed, and typically involves exclusion of livestock by fencing, control of animal pests, and where necessary, selective control of potentially aggressive and persistent brush weeds such as blackberry. Supplementary planting is another management option that can speed up regeneration.

Selecting the right stock

The use of strong, healthy planting stock is critical to the success of any planting programme. And planning is vital. Seed must be collected from the best sources and nursery stock raised for the particular programme well ahead of the planting season. A variety of plant grades and container types are available, as described below, with application to operational-scale planting.

Most of the information presented here is based on experience rather than on comparative experimental trials. Factors that should be considered before planting include relative suitability of bare-rooted and container-grown stock; appropriate plant size and quality; and the type and size of containers.

Maintenance of planted natives

For a period of more than a century, hundreds of thousands of native tree seedlings have been planted with the aim of establishing a native forestry resource. A nationwide survey of native tree plantations identified

suppression by grasses and herbaceous weeds, ground ferns, and exotic scramblers and shrubs or brush weeds as the main cause of poor survival and slow growth.

Only a fraction of the planted stands have survived to the present day and most do not reflect their true potential in terms of survival and growth rates. While existing stands bear evidence of poor matching of species to site, the vast majority of failures and poor performance of planted natives is due to the lack of maintenance – for the most part, timely and adequate weed control.

Establishing logged exotic forest with natives

There is increasing interest in landowners who have recently, or are about to, clearfell stands of radiata pine and want to replace them with a permanent native forest. These are at all scales from small 1-2 ha blocks to substantial areas owned by iwi, some well over 1000 ha. Most stands are radiata pine and other exotic conifers but there are also a range of exotic hardwood stands such as eucalypts, willows and poplar.

This factsheet covers the issues landowners need to consider when contemplating converting an exotic stand, that has been managed and clear-felled as a productive timber crop, to a permanent cover of native forest. The focus is on a clear-felled site where the merchantable logs have been removed; the option of manipulating a standing semi-mature or mature pine stand by partial felling or other options such as poisoning to slowly open up the canopy to allow native understorey or interplanted natives to take over is not considered in this factsheet.

Monitoring success of planted and regenerating natives

Most native planting projects are focused on planting, and few follow up with monitoring other than a cursory glance that hopefully most planted natives have survived and beaten the weeds. Planting trees is only the first step toward establishing new areas of native forest.

Monitoring early survival and growth of your plantings will provide you with valuable insights into what is working or not. It will help you schedule in timely weed and pest animal control and enable you to learn from any failures.

Councils and some community groups are very keen to see a more formal quantitative approach, but few have the skills, resources or practical methods to undertake monitoring, so it is hardly ever carried out. This factsheet outlines the options for monitoring newly planted native forest. Natural regeneration is increasingly being promoted for large scale establishment of native forest and some insights into monitoring of natural regeneration are also provided.

Building resilient new native forest with expected impacts of climate change

Internationally, there is growing evidence that climate change is causing changes to weather patterns, including increasing temperatures and changing rainfall patterns. The expansion of forest resources is a major means of countering climate change, concurrent with reductions in emissions, but there is major concern at the effects of increasing drought, increased fire risks and in some cases forest dieback.

This factsheet looks at the predicted changes for our climate and how this is likely to impact existing forest and the establishment of new native forest in New Zealand. Then it considers measures required to make our native forest more resilient, including planting in drier regions, preparing for more frequent and severe wildfires, and protecting native forest against pests and diseases.

Management of plantations

Many native tree species show excellent potential for plantation management to produce timber. Woodlots of key native timber trees will give optimum growth as part of single or mixed-species plantations – if they are established on sites that suit the ecological characteristics of their species and they are managed appropriately. Those planting native trees for multiple reasons are establishing a resource where future generations have the option to manage for extraction of high-quality, high-value specialty timber from appropriate sites.

Sustainable harvesting plans can be designed to ensure that the non-timber values of planted native forest will be preserved using continuous cover forestry principles. i.e., only a small proportion of the stand is harvested at a time to leave the high forest structure and associated environmental values intact.

Acknowledgements

Critical to the success of this project has been the project partners including Cassie's Farm, Pāmu Farms, Te Kohaka o Tuhaitara Trust, Mahurangi Action Inc, Longbush Ecological Trust, Scion, AUT, regional councils and the Northland Tōtara Working Group.

Training videos and workshops for best-practice restoration

PROJECT STATUS: Final year

Introduction

The Department of Conservation's Community Fund is partially funding this project to provide training videos and contribute to workshops and other events promoting best-practice restoration of indigenous ecosystems by planting and natural regeneration. The project is in collaboration with community groups, iwi and landowners, Department of Conservation, regional, district and city councils, NZ Farm Forestry Association, The Tindall Foundation, The Project Crimson Trust and Trees That Count, research providers, and regional staff of the One-Billion-Trees Programme.

Video series

This project is on track to complete a minimum of 18 videos. Videos and footage completed to date and available on the TTT website include:

1. **Case study: Cassie's Farm** - Establishing native forest from scratch
2. **Case study: Woodside** - Black beech managed as continuous cover forestry
3. **Form-pruning tōtara** - for timber production on private land
4. **Freestyle silviculture** - in naturally regenerating tōtara forests on private land
5. **Harvesting tōtara** – trialing small-scale, low-impact methods
6. **Planting techniques** - How to plant native seedlings at scale

7. **Transitional forestry** - native forest regeneration under wilding pines
8. **Planting and managing natives** – forestry for multiple purpose
9. **Ring-barking tōtara** - forests managed for timber production
10. **Riparian restoration** - over 24 years of planting the Awahou Stream, Rotorua
11. **Pukemokemoke: the hill standing alone** – restoration and ecology of native forest
12. **Reducing the cost of raising natives** – Restore Native Nursery - grades, plant quality...

Videos underway and planned include:

1. **Maintenance of plantings** – brush weed control, spraying, cutting, hand releasing...
2. **Nurse crops** – concept, shrub species, establishment, interplanting tree species...
3. **Seed islands** – concept, regeneration, case studies – Waikereru, Tuhaitara biota nodes
4. **Right tree, right place** – matching tree species' ecological requirements to planting sites...
5. **Preparation for Continuous Cover Forestry** – tracks and pre planting planning
6. **Measuring success** – introduction and benefits of monitoring planted natives
7. **Monitoring methods** – walk through and plot based methods
8. **Data processing** – guide for user data entry, automated data processing and results

As videos are completed, they are made available on the Tāne's Tree Trust website

<https://www.tanestrees.org.nz/resources/videos/>.

Workshops, conferences and field-based events

Workshops, both online and as on-site field-based presentations, over the last 12 months have included:

- Field based workshops with Auckland Council staff, rangers and contractors at Tōtara Park, south Auckland, and Hosking Reserve, north Auckland
- Climate Change Commission – hosted Commissioner Simon Upton and staff from Wellington and Dunedin to demonstration planting areas at Cassie's Farm
- Waikato River Authority – hosted Funding Manager Michelle Hodges and team at Cassie's Farm to view planted natives
- Ministry for the Environment and Department of Conservation workshops on exploring the potential of a 'biodiversity credit system' in Aotearoa New Zealand
- Farm Open Day – Cassie's Farm, March 2023 – 70 attendees to view best practice planting and management of native forestry

- November 2022 – Profile and launch of Toolkit project at the O Tātou Ngāhere Conference and TTT AGM, Te Papa, Wellington (1000 attendees including policy makers, forestry and farming sectors, NGOs, etc)
- November 2022 and June 2023 – Promoting TTT projects and latest information on establishing and managing native forestry at the National Fieldays, Mystery Creek
- Attended and contributed to online Te Puna Waiora o Nukutaurua Fresh water project workshop, Mahia Peninsula
- Puniu River Care – hosted Shannon Te Huia, CEO, and two of his team from Te Puniu River Care group at Cassie’s farm July 2023
- NZ Farm Forestry Association field trip, July 2023 – inspection of 35 ha of planted forest across Cassie's Farm, and guided field visit to Restore Native Nursery by owner Adam Thompson - 30+ attendees from Waikato and BOP branches with TTT trustees.

Accelerating landscape scale restoration of native forest

PROJECT STATUS: First year of a 3-year project

Introduction

Trees That Count (TTC) in collaboration with Tāne’s Tree Trust (TTT) have initiated a project to establish a network of demonstration planting areas nationwide, with seed islands as a method to accelerate restoration of native forest on a large scale.

A work plan has been completed and circulated to the TTC and TTT teams, and to supporters Z Energy, for review and feedback. It covered the challenges of establishing native forest at landscape scale and the concept of a seed island approach to complement other methods of large-scale restoration of native forest.

The project aims to set up a network of demonstration areas across representative sites throughout New Zealand, including targeting marginal erosion-prone hill country, in collaboration with stakeholders and other potential partners such as landowners, iwi, community landcare groups, NGOs and local authorities. The proposed methodology includes selection of planting site demonstration areas, planting design and layout, species selection, treatment options, maintenance requirements and monitoring.

Selection of sites

A number of sites in several regions have been identified including Waikato, Bay of Plenty, Tairāwhiti, Hawke’s Bay, Taranaki, Manawatu, north Canterbury, Otago and Southland. Preliminary work has included initial planning, planting the first seed islands, and monitoring. Many sites are marginal pastoral hill country which landowners are keen to retire from farming and establish native forest at scale.

There are a number of other sites that will be considered with selection based on collaboration with local landowners and managers, interest in extending the range of sites, and to broaden the approach to new methods for establishing native forest. These include the potential for seed islands in restoring native forest where wilding conifers are managed, and conversion of recently logged exotic forest to native.

Fieldwork

The first seed island site was planted during Matariki on a prominent pa site at Rangioru, near Te Puke in the Bay of Plenty, which had been fenced to exclude grazing. It was planted by the local iwi and landowners, and the Bay Conservation Alliance team in mid July 2023 to provide a corridor for kokako to traverse farmland between native forest remnants. Over 500 native trees and shrubs were planted. Tree guards decorated by the local school children were placed around most seedlings and all had a mulch of wool dags to protect from weeds and moisture loss. Eight 10 m diameter plots were established in late July after the planting as a baseline monitoring assessment.



Setting up monitoring plots in the seed island planted at Matariki by iwi, local community and landowners on a high-profile pa site recently retired from grazing, inland of Rangioru, Bay of Plenty.

Seed islands were also planted on two coastal backdune forest sites at Kawhia, west coast, Waikato by the local community and Tainui Kawhia Incorporated in mid-late June 2023. Ten monitoring plots were established at each site. Seed islands will be remeasured 12 months after planting for survival and early growth.

Over the last 10+ years Te Kohaka o Tuhaitara Trust has been establishing biota nodes or seed islands in the Tuhaitara Coastal Park in north Canterbury, with a long term aim of transitioning pine forest to permanent native forest. Sampling to assess performance of planted natives across a range in ages and species mixtures, and plot sizes, was carried out by Mike Bergin in May 2023.

Site inspections to scope possible 2024 seed island demonstration areas are underway in 40 ha of retired hill country that is part of a kiwi reserve in inland Taranaki and at Mangarara Station in southern Hawke's Bay, where 10 ha of erosion-prone hill country is to be retired from grazing.

Monitoring native planting programmes

PROJECT STATUS: Completed

Introduction

Tāne's Tree Trust in collaboration with Trees That Count have developed a monitoring system that involves:

- Recording planting site information including species planted, plant spacing, location of planting site on a map, etc;
- Undertaking regular inspections particularly in the first few months after planting to record any issues that may be reducing early survival and growth
- Taking a photographic record of the development of natives on the planting site; and
- Assessing early survival and growth with the option of a subjective walk-through method or a more robust quantitative plot-based method for larger plantings.

Monitoring early survival and growth of plantings will provide valuable insights into what is working or not. It will help with scheduling timely weed and pest animal control, and help participants learn from any failures. It also provides the opportunity for those planting to provide feedback to funders and supporters on the success of their planting programmes and investment.



Monitoring plots established across a recently planted, retired steep hill country marginal pastoral site on a Pāmu Farms station, southern Hawke's Bay.

Field based methods

Work over the past 12 months has focused on continual improvements to the two field-based sampling methods:

1. **BASIC walk-through method** – a subjective method to estimate overall performance from a walk-through, sufficient for small-scale plantings that can be easily carried out by the landowner or planter.
2. **ADVANCED rapid plot-based quantitative method** – a quantify survival and growth by species using a network of rapid survival plots recommended for those involved in large-scale planting.

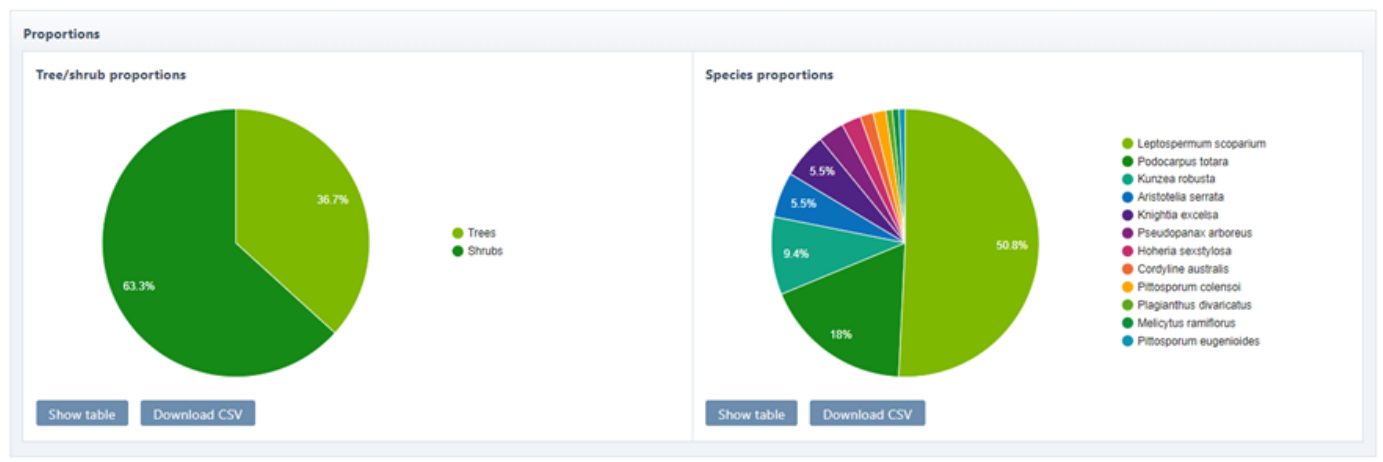
This has included running a number of online and field-based monitoring workshops to demonstrate the sampling methods, auditing monitoring work undertaken, and initiating a series of short videos on monitoring.

Data processing system

The main focus over the past 12 months has been on refining and widely testing the data entry, processing, storage and results system for users including:

- Entering field data directly online including photographs and any comments; and
- Automatically generating a project results page with summary tables and graphs.

An example of one demonstration site performance is provided for the Waikato (Te Miro) demonstration area, Cassie's Farm. This includes a summary of the proportion of trees and shrubs planted at that site and by species.



Proportion of shrubs and trees and by species planted at the Cassie's Farm demonstration area, Waikato.

At Cassie's Farm demonstration site, several assessments have been undertaken including a baseline measurement soon after planting, and then remeasurement of the network of plots 1 and 2 years after planting. Results for mean survival, height and plant vigour, and for incidence of injurious agencies are generated by summary tables and as shown below in graphs.



A comparison of mean survival, height, and plant vigour by species and overall plant damage for native shrubs and trees planted at the Cassie's Farm demonstration area, Waikato.

Project partners

In addition to support from The Tindall Foundation and Trees That Count, key project partners include Pāmu Farms, Tasman Environmental Trust and Auckland Council.

Collaboration with Trees That Count



Trees That Count (TTC) is part of The Project Crimson Trust. TTC's vision is to help New Zealanders to plant millions of native trees across the country to ameliorate climate change and restore and enhance our environment. Planters are encouraged to register their planting projects to add their trees to the count of native trees planted each year as a measure of the positive impact of the work underway to improve the environment. TTC is bringing together business, community and the public to help plant more native trees by providing support via the TTC Marketplace.

Tāne's Tree Trust continues to partner with Trees That Count in providing technical support including best establishment and management practices for planting native forest, as well as growth, yield and carbon modelling based on the TTT Indigenous Plantation Database. The TTT Carbon Calculator for Planted Native Forests can also be accessed from the TTC website. Ongoing collaboration has seen the launch of an online system on the TTC website for a community-based rapid monitoring system of early survival and growth of planted natives to quantify the success of plantings.

Check out the Trees That Count website <http://www.treesthatcount.co.nz/> for more details and for registering your planted native trees and shrubs.

Collaboration with Pāmu Farms



Pāmu Farms (Landcorp) are partners in several Tāne's Tree Trust projects and provide additional co-funding to expand applied research across their stations from Northland to Southland. Collaborative projects include:

- Setting up demonstration planting sites on a minimum of eight Pāmu blocks to evaluate lower cost establishment and management practices.
- Monitoring of their operational native planting programmes using the Trees That Count field methods of establishing rapid survival plots and the data processing system under development by TTT and TTC.

- Evaluating use of herbicide as a large scale overspray to control vigorous brush weeds in the establishment of tōtara by planting and natural regeneration.
 - Recent work with others in evaluating the role of native ecosystems integrated within their working stations including quantifying the wider ecosystem benefits.
 - Providing latest best-practice guidelines on establishment and management of native forest to their forestry managers.
 - Silviculture and continuous cover extraction harvesting of naturally regenerating tōtara from Pāmu Farms stations in Northland with the Northland Tōtara Working Group.
-

O Tātou Ngāhere (Our Forest) national conference

Background

O Tātou Ngāhere - Our Forest was launched in 2021 as a dynamic communications campaign focussed on the economic, environmental and socio-cultural benefits of native forests, as well as ensuring they have a significant role in New Zealand's national forest strategy. The project is a collaboration between Pure Advantage and the foresters and scientists of Tāne's Tree Trust, who champion the valuable role our native species can play in the future of forestry in Aotearoa New Zealand.

An overarching goal of the campaign is to influence a mindset shift from a perception of native forests being an unproductive land-use, to where they are seen as a valuable use of land that every landowner integrates into their best practice land management.

O Tātou Ngāhere - Our Forest is being promoted to a wide range of target audiences with the aim to give native forestation a higher profile, as well as debunk misinformation and make a stronger case for planting more native trees. Link to O Tātou Ngāhere <https://pureadvantage.org/o-tatou-ngahere/>

O Tātou Ngāhere national conference

A major focus over 2022 was organising the national conference – *Regenerating our landscape with native forest*, a partnership between Tāne's Tree Trust and Pure Advantage. The conference, held at Te Papa in Wellington in October 2022, had an attendance of more than 1000. By some margin this was the largest forestry conference ever held in New Zealand. The participants were highly cosmopolitan, including ministers of the crown, industry leaders, iwi, scientists, farmers, members of the public, environmentalists, and secondary and tertiary students.

The two-day programme focused on weaving more native forest back into our working lands. In the 23 years since the first conference held by Tāne's Tree Trust, the main objectives of the trust continue, albeit with some shifts in priorities. One theme in particular has attained a degree of urgency – the climate crisis. The interaction between climate change and our forests dominated the discussions. It was central to the addresses by two ministers, the Climate Change Commission and various other speakers. There were two

international speakers and some international attendees who attended online, with a few making the trip to New Zealand.

For more information including conference presentations visit <https://www.otatoungahereconference.org.nz/>

TRANSITIONING EXOTIC FOREST TO NATIVE

PROJECT STATUS: Started.

This is a large, 5-year, \$1.08 million project finishing in 2027. The Ministry for Primary Industries is committing \$885,000 towards it through the Sustainable Food and Fibre Futures fund.

This project will research the topic of transitioning unharvested exotic forest to native forest, and freely disseminate the results and subsequent management prescriptions/recommendations to all stakeholders (e.g., landowners, forest owners, forest managers, policymakers and regulators).

INTRODUCTION AND BACKGROUND

The advent of permanent forestry and carbon farming under the Emissions Trading Scheme (ETS) has sparked debate on the potential to manage transitions from exotic to native forest. The recent cyclones to hit New Zealand have also focused attention on how to transition large tracts of exotic plantation on highly erodible or environmentally sensitive sites (e.g., Tairāwhiti) where alternative forest management options to conventional clear-fell harvesting are more appropriate. There is also a potential option for areas afflicted with wilding conifers to transition to native forest. Recently, extensive pine planting programmes have been established with support from Te Uru Rākau and have been incentivised by the ETS. Irrespective of any changes that might occur to the definition of permanent forest in the NZ ETS, permanent exotic forestry is already a major land use across New Zealand and we urgently need this research to guide its management. This research is urgently needed to both inform forest establishment and management practices, as well as relevant policy settings and regulation, to ensure that successful transitions to native forest do indeed occur.



Natural senescence of pines and native understory growth within a 47-year-old Pinus radiata stand in the Coromandel. The site is close to native seed sources and only has pig and possum browsing but no goat or deer pressure.

This project will:

- Investigate existing data sets of native understory development and forest characteristics within existing plantation forests to better understand these forests and necessary management.
- Undertake bioclimatic surveys to determine which conditions at the regional and local scale will support a successful exotic to native forest transition.
- Undertake a regional canopy density survey to determine the effect of canopy density on native understory vegetation development.
- Establish trials to inform and refine management practices.
- Model the dynamics of transitional forest for a range of contexts and management objectives (e.g., growth, successional change).
- Where possible, investigate species other than radiata pine, including polycultures, for transitional forestry.
- Ultimately, provide recommendations for best-practice transitional forestry.



A PSP plot within a 33-year-old Pinus radiata stand, coastal southern Tairāwhiti .

PROGRESS TO DATE

This workstream assessing existing LUCAS data from participating forestry landowners has been analysed and a draft report submitted. It is intended to publish the results from this work in a scientific journal. Overall, the analysis found that under current common plantation forestry management, a change in management is required to allow these stands to transition to native forest. The level of intervention will be site specific and could involve a range of activities such as pest control (weed, browser and predator), establishment of missing native seed sources, and canopy manipulation. The concurrent bioclimatic and canopy density surveys and transition trials will further inform where particular intervention is required.

The national bioclimatic surveys will be complete by the end of 2023 and the canopy density surveys will be completed 2024. The first transition trial has been set up in Whangapoua Forest in collaboration with Summit Forests. Planting and natural regeneration success will be monitored in conjunction with canopy manipulation and pig fencing. Further trial sites are being investigated around the country for establishment in 2024-2025.

Principal workstream researchers for this programme are Dr Adam Forbes (Forbes Ecology Ltd), Mark Kimberely (Environmental Statistics Ltd), Michael Bergin (Environmental Restoration Ltd), and Meg Graeme (Natural Solutions – Marine & Terrestrial Ecologists Ltd) who is also managing the programme for Tāne's Tree Trust.



Establishing fenced plots to exclude pigs, Coromandel trial site.



Laying out a planted plot, Coromandel trial site.

CONTINUOUS COVER FORESTRY PROJECT

Close-to-Nature, Continuous Cover Forestry Business Models

The Forestry and Wood Processing Industry Transformation Plan (ITP) identified that accelerating the uptake of continuous cover forestry (CCF), in its various forms, is a priority under action 7.2 in the final ITP. This decision reflects broad support for CCF from diverse public and private sector stakeholders who recognise the need for alternative forestry models and the potential environmental benefits of CCF.

Tāne's Tree Trust is pleased to partner with The Connective, Ngā Pou a Tāne, and Scion to deliver an MPI funded project on business models for CCF in Aotearoa, New Zealand.

This is a small project, due for completion within a year, and intended to provide a solid foundation to inform the further strategic development of CCF in this country.

The project aims to deliver:

1. Identification of international CCF business models relevant to the New Zealand situation, and the types of policies and market characteristics that enable them
2. Deeper understanding of New Zealand's opportunities for CCF, including systemic challenges and enablers at a policy and market level
3. Recommendations for policy and market support to enable CCF business cases in New Zealand
4. Identification of high-potential CCF models* and complementary business models for New Zealand

5. Action-orientated network of CCF practitioners, industry, Māori, researchers and investors committed to promote CCF going forward

* CCF Business models for New Zealand are to include the following:

- Mixed-forest models (exotic-exotic, native-exotic, and native-native)
- Productive alternative exotic
- Forestry with native species with and without potential wood production
- Existing pine forests particularly as a lead into CCF



There are European examples of transitioning plantation forests to irregular forest structures with “patient silviculture” and close to nature forest management principles.

Tāne’s Tree Trust has helped the project partners to coordinate and run a series of six online wananga (workshops) on the CCF. These have included high-profile international and local experts, as speakers and as invited participants. This workshop series was extremely successful with over 70 invited participants – many attending all sessions. This has provided a robust base for the project and created a network of stakeholders on the topic.

Following further analysis and work, the project will produce a final report for wide dissemination and to inform further work and policy on this important topic.

For more information and contacts for any of these projects, please contact the TTT office - office@tanestrees.org.nz

ACKNOWLEDGEMENTS

Tāne's Tree Trust would like to thank all those who we collaborate with for ongoing funding and support for another successful year across our range of projects and initiatives.

Project funders include:

- The Tindall Foundation
- Te Uru Rakau One Billion Trees Programme
- Ministry for Primary Industries' Sustainable Management Fund
- Department of Conservation Community Fund
- Pāmu Farms
- Auckland Regional Council
- Tasman Environmental Trust

Project partners and collaborators include:

- Pure Advantage
- Te Kohaka o Tuhaitara Trust
- NZ Farm Forestry Association
- Trees That Count
- AUT
- Scion
- Waikato Regional Council
- Christchurch City Council
- Northland Regional Council
- Coastal Restoration Trust of New Zealand

APPENDIX 1 - FINANCIAL REPORTS

AUDITORS REPORT

TO THE TRUSTEES OF THE TANE'S TREE TRUST FOR THE YEAR ENDED 31 March 2023

I have audited the attached financial statements for The Tane's Tree Trust. The financial and service performance statements provide information about the past financial performance and activities of the Trust and its financial position as at 31 March 2023. This information is stated in accordance with the accounting policies set out with these statements.

Auditor's responsibilities

It is my responsibility to express an independent opinion for the financial and service performance statements presented by the Trust and report my opinion.

Basis of Opinion

An audit includes examining, on a test basis, evidence relevant to the amounts and disclosures in the financial and service performance statements. It also includes assessing:


- The significant estimates and judgement made by the Trust in the preparation of the financial statements; and
- Whether the accounting policies are appropriate to the circumstances, consistently applied and adequately disclosed.

I conducted an audit in accordance with generally accepted auditing standards in New Zealand, except that my work was limited as explained below. I planned and performed my audit so as to obtain all the information and explanations which I considered necessary. I obtained sufficient evidence to give a reasonable assurance that the financial statements are free from material misstatements, whether caused by fraud or error. In forming my opinion, I also evaluated the overall adequacy of the presentation of information in the financial statements.

Other than in my capacity as Auditor, I have no relationship with or interest in the Trust.

In my opinion, the financial and service performance statements fairly reflect the results of the activities and the financial position of the Trust as at 31 March 2023.

My audit report was completed on 28 September 2023 and my unqualified opinion is expressed as at that date.


Graham Haines ACCM, DipMgtSt
Haines and Associates
Hamilton



**TANE'S TREE TRUST
STATEMENT OF FINANCIAL PERFORMANCE
FOR THE YEAR ENDED 31 MARCH 2023**

| | 2023 | 2022 |
|--|--------------------|-------------------|
| Operating Revenue | | |
| Sustainable farming fund | 56,283 | 43,103 |
| SFF Futures | 69,700 | - |
| Tindall Project | 321,000 | 326,400 |
| Project Co-Funding | 11,260 | 21,625 |
| TUR - Te Uru Rakau | 37,204 | 105,892 |
| Publications | 503 | - |
| Other Grants and Sponsorship | 81,564 | 39,396 |
| Joint Projects Grants and Sponsorships | 17,036 | - |
| Subscriptions | 10,552 | 9,867 |
| Donations received | 12,981 | 40,224 |
| Interest received | 2,389 | 244 |
| Conference Sponsorship | 82,650 | - |
| Conference Fees | 106,841 | - |
| Other income | - | 14,046 |
| Plus Income Received in Advance from Last Year | 186,168 | 94,520 |
| Less Income Received in Advance for Next Year | (254,361) | (186,168) |
| | <u>741,770</u> | <u>509,149</u> |
| Expenses | | |
| Administration | 24,319 | 10,180 |
| Advertising & Promotion | 9,253 | 1,202 |
| Audit fees | 875 | 875 |
| Bank Fees | 17 | 19 |
| Contractors and consultants TTT projects | 578,914 | 458,623 |
| Depreciation | 438 | 870 |
| Donations | - | 5,000 |
| Executive officer | 24,490 | 12,450 |
| General expenses | 625 | 60 |
| Insurance | 1,349 | 1,273 |
| Intern Expenses | - | 10,198 |
| Meeting Travel/Accommodation | 5,340 | 791 |
| Newsletter | 1,129 | 447 |
| Printing, Postage and Stationery | 13,016 | 4,186 |
| Rent | 1,700 | 1,200 |
| Seminars and Conferences | 182,663 | 833 |
| Subscriptions | 241 | 301 |
| Tele/Video Conferencing | 479 | - |
| Website & internet | 6,998 | 1,301 |
| | <u>851,846</u> | <u>509,809</u> |
| Nett Surplus (Deficit) For Year | (110,076) | (660) |
| Less Transfer of Donations to Research Funds | 12,981 | 40,224 |
| Operating Surplus (Deficit) For Year | (\$123,057) | (\$40,884) |

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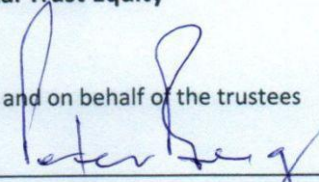
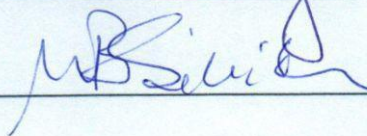
**TANE'S TREE TRUST
STATEMENT OF MOVEMENTS IN EQUITY
FOR THE YEAR ENDED 31 MARCH 2023**

| | 2023 | 2022 |
|-------------------------------|-----------------|------------------|
| TRUST EQUITY | | |
| Balance at beginning of year | 145,301 | 186,185 |
| Net surplus (deficit) | (123,057) | (40,884) |
| Balance at end of year | \$22,244 | \$145,301 |
| RESEARCH FUND | | |
| Balance at beginning of year | 70,305 | 30,081 |
| Add Donations Received | 12,981 | 40,224 |
| Balance at end of year | \$83,286 | \$70,305 |

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**TANE'S TREE TRUST
STATEMENT OF FINANCIAL POSITION
AS AT 31 MARCH 2023**

| | 2023 | 2022 |
|--|------------------|------------------|
| Current Assets | | |
| Bank Star Transaction | 145,798 | 198,416 |
| Bank Funding Account | 41,857 | 18,540 |
| Bank Call Investment Account | 254,361 | 186,168 |
| Accounts Receivable | 55,583 | 34,343 |
| GST | 8,753 | 2,571 |
| Petty Cash | 309 | 78 |
| | 506,661 | 440,116 |
| Non Current Assets | | |
| Fixed assets (as per schedule) | 493 | 931 |
| Total Assets | 507,154 | 441,047 |
| Current Liabilities | | |
| Accounts payable | 147,263 | 39,273 |
| Income Received in Advance | 254,361 | 186,168 |
| | 401,624 | 225,441 |
| Total Net Funds Employed | \$105,530 | \$215,606 |
| Represented By: | | |
| Trust Equity | | |
| General funds | 22,244 | 145,301 |
| Research funds | 83,286 | 70,305 |
| Total Trust Equity | \$105,530 | \$215,606 |
| For and on behalf of the trustees | | |
|  _____ Chairman | 29/9/23 | Date |
|  _____ Treasurer | 29/9/23 | Date |
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