



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

ANNUAL REPORT

2022



Photos: Michael Bergin - "Silvicultural trials show that well managed reverting native forest also has enhanced biodiversity values. In this case the paired plots above show the effect of thinning and livestock exclusion on understory development in totara on Northland farmland".

**To be presented at the Annual General Meeting
Wednesday 26th October 2022 4.30pm
at Mac's Brew Bar, Wellington**

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AGENDA OF THE 2022 ANNUAL GENERAL MEETING

1. Welcome from Chairman Peter Berg
2. Apologies
3. Minutes of 2021 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 - October 2022

Events of the last few days have caused me to consider further just what trees and forests really mean to people. The event I particularly refer to is the passing of Queen Elizabeth II. A few years ago, I had the good fortune to meet and talk to her Majesty (and also Prince Phillip and Princess Anne) at an event in Buckingham Palace to mark the launch of the Queen's Commonwealth Canopy. The QCC is an endeavour to get all Commonwealth Countries more focused on opportunities for restoring and protecting their natural forests and commenced as a Jubilee Project with the Commonwealth Forestry Assn one of the oversight parties. At the launch Her Majesty asked me "Why do people plant trees?" I reflected on the question for a moment – the obvious answer is simply that trees are such important providers of so many things we need, particularly wood fibre and timber that for many of us survival would be much more difficult without them. But there is more to it than that, many people simply plant trees because they like them and the vision, peace and tranquillity that they create in their presence and across the landscape. For these people, and there are lots of them, simple planting guidance and encouragement is all that is required, and the outcomes can be quite remarkable. A while ago I was on a farm where a young man (still at college) had persuaded his father to fence off and allow him to plant up a gully and valley bottom wetlands. Over more than a decade he raised, planted and cared for his native seedlings and 20 years on the area has been identified by Council as a Significant Natural Area and is now formally protected.

I sometimes feel that the earnest debate around what tree to plant and where, whether it should be exotic or natural, whether there is too much of one species, whether it is eco-sourced and so on is absolutely confusing and discouraging to those who would love to have a go. I know that for every site there is more than one species which will grow well and provide the outcomes being sought and it is also clear that despite our very best efforts the likelihood of recreating the past is not fully achievable. And many people do not fully appreciate 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, nevertheless even these need to be leavened with recognition that other outcomes are an inevitable outcome 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. It was therefore heartening to recently see Climate Change Commission Chairman Rod Carr speaking about equivalence being embedded in the Emissions Trading Scheme (ETS) and cautioning that the idea of plant and pollute is not in our national interests. His contention is that, in the coming years and on a global stage, offsets are unlikely to continue to be accepted and businesses that continue to rely on these may find themselves out-competed by others who have made technological advances and changes to supply chains. But even while noting that we cannot plant our way out of this problem it is acknowledged that other reasons to plant and manage forests remain robust.

As an organisation we have tried to remain a balanced contributor to this position, 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.

Last year I commented upon the O Tātou Ngahere (Our Forests) programme developed and run in conjunction with Pure Advantage and presented via webisodes, videos and other media very widely; subsequently a higher level of participation and a large number of new initiatives in support of native forests and influenced by that programme appeared and can be expected to continue. Very shortly we and Pure Advantage are hosting the next development of O Tātou Ngahere, a two-day national conference at Te Papa Tongarewa in Wellington at which new information around productivity, new management models, information sheets and how-to videos will be launched. Many of these developments are detailed in this report so I won't expand upon them here.

I have also noted on other occasions that our ability to participate/lead in this way 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 are undoubtedly as great as they have ever been.

Last year we completed the third stage of the *"Our forests, our future"* (referred to as OFOF) project and commenced an ambitious programme to reach out to the broad forestry community – *"Normalising Native Forestry"* (NNF). Our aim is to weave native forestry into discussions and strategies for forestry more broadly and across all landscapes.

Already support for this project has enabled us accessing/leveraging other support and resulted in additional projects being undertaken (also outlined later in this report) and is adding to our databases significantly. 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 funding 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 fairly comprehensive account of where we have been engaged most recently.

TRUSTEES

The trustees are Ian Brown, Ian Brennan, Peter Berg, David Bergin, Paul Quinlan, Robert McGowan, Warwick Silvester, Jon Dronfield, Gerard Horgan and Jacqui Aimers - and most recently we have been fortunate to have been able to add Wayne O'Keefe; widely acknowledged for his ecological and native forest restoration work. Meanwhile Peter Berg, Paul Quinlan and Jon Dronfield retired by rotation, and all being willing to attend the Trust for another term they have all been reappointed.

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

NETWORK GROUP

The number of members/participants on our network group is reported on by the CEO, I simply note that events like O Tātou Ngahere have been instrumental in attracting a number of new members, while our face-book page and website has 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 Amy, we have an executive team par excellence - 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

Elsewhere in this report significant projects and funding support are 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.

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

2021-2022 has been another busy but also very productive year for the Trust with programmes like the O Tātou Ngahere conference, workshops, publications, etc, all getting lots of coverage. Our team have 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

2021/22 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 conference starts tomorrow, which is the accumulation of many months of work to bring together numerous experts to discuss [Regenerating our Landscape with Native Forest](#). A big thank you to the team who have been working tirelessly.

Subscriptions have been sent out for the 2022/23 year, and the annual subscription remains at \$45.00. There are currently 389 members, which is fabulous growth in our membership again this year. We have 228 paid members to date for the 2022/23 year, which continues the trend of good membership renewal.

Amy Spitzer has continued to be an integral part of our office, moving into the role as Office Manager this year. She has also been our main conference convenor, and has done an amazing job. Thank you Amy for all your hard work.

Please contact either Amy or me 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

Another year and another funding round completed successfully. We have entered a new programme entitled Normalising Native Forestry (NNF) which is a logical extension of OFOF (Our Forests Our Future). Again, a bid to Tindall Foundation has provided base funding for a three-year programme of work. It is impossible to over stress how important this base funding is for us. The previous OFOF three years showed that our base funding was used, both directly and as in-kind, to amplify the base \$540k to a massive \$2.4 million, all but 4% of which was applied directly to Trust projects. A similar scenario has been played out this past year with NNF funding being applied to other grants which at least doubled our operating capital. We continue to be congratulated for keeping our overheads down to what seems to other big research operators as at a miniscule level.

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 and look at results on our website.

Our executive team of Mel as CEO and Amy as Office Manager do a quite spectacular job in keeping us in order financially and administratively and it is a joy for all of us to see Mel take over, with relish, the role of CEO. We could not wish for a better team at the helm.

The latest financial report can be found at Appendix 1.

Warwick Silvester - *Treasurer*

PROJECT UPDATES

NORMALISING NATIVE FORESTRY (NNF)

PROJECT STATUS: Year 1 completed

INTRODUCTION

The first year of the Normalising Native Forestry Programme has been completed. This has been supported by The Tindall Foundation and managed by Tāne's Tree Trust (TTT). The aim of this 3-year research programme is to continue developing and providing the urgently needed tools, resources, and advice to support native forestation at scale in Aotearoa.



BACKGROUND

There is currently unprecedented interest in establishing native forest from farming and forestry sectors, Māori, public and investors. This has been spurred on by Trees That Count, the Billion Trees Programme, and the Climate Change Commission promoting more permanent native forest.

This new programme builds on previous work of the Our Forest Our Future programme but with a new direction, particularly the urgent need for science-based information and technical advice for establishing native forest at scale to address climate change and environmental degradation.

This programme focuses on working with Nature, demonstrating managed regeneration to cost-effectively establish native forest at scale, and promoting nature-based native forestry. The project explores the drivers and barriers to landowners establishing native forest, novel approaches such as the role of fast-growing exotics, monitoring, and innovative methods to reduce cost of establishment. We need to better demonstrate the economic, environmental and cultural benefits of native forests, and help develop incentive systems. And we are overhauling our databases, to provide a more user-friendly interface, and refine our science-based growth and carbon estimates.

The Normalising Native Forestry Programme has six new workstreams. Work completed in the first year is summarised. Note that these workstreams will continue for the next 2 years.

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 by 2035. 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. Projects underway include:

- **Managed regeneration** – Demonstrating concepts of assisted regeneration on marginal hill country as cost-effective methods including planting seed islands, and integrating other factors important in establishment of natives such as pest animal control.
- **Demonstration planting sites** – Continuing existing trials comparing planting practices and new treatments for establishment of native species at scale.
- **Integrating natives into lowlands** - Planting within intensively farmed lowland landscapes as corridors, stepping stones, shelterbelts, riparian zones, and enhancement of remnants.

- **New technologies and treatments** – Investigating various technologies to establish native forest at scale such as direct seeding and drone deployment with potential partners, planting low-cost small planting stock, and comparing various planting densities.
- **Monitoring success** – Developing a practical, science-based field monitoring system to quantify the success of planting and regeneration programmes, including aerial mapping.
- **Videos and factsheets** – Completing a series of factsheets and videos on best practice establishment, management and monitoring.



2. Promoting Nature-based indigenous forestry in Aotearoa

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 will include:

- **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 Totara 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 totara 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.

Highlights of this year’s accomplishments include:

- Associate membership of PRO SILVA, an international organisation promoting close to nature forestry practices.
- O Tātou Ngahere campaign.
- Small-scale low-impact, low volume tōtara harvest trial at the Pāmu Farms Kapiro block. An article on this was published in the NZIF Journal of Forestry.

- Initiated work to outline the potential to sustainably manage beech forests on private land.
- Provision of advice to landowners interested in the management of planted and naturally regenerated tōtara and other native forest species.
- Publication of the Northland Tōtara Working Group Newsletter 2022.
- Publication of A Practical Guide to the Management of Tōtara on Private Land.

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

Tāne's Tree Trust have 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 include:

- **TTT database development** – Setting up a new database system for all growth data including the Tāne's Tree Trust plantation database, NTWG totara data, natural regeneration data and any other growth data from existing and future TTT projects.
- **National survey** – Initiating a nationwide survey of planted native stands including remeasurement of existing PSPs and growth plots, and establishing plots in new stands to develop species-based national and regional growth and carbon models.
- **Processing monitoring data** – With co-funding from collaborators, developing a monitoring system with data entry, storage, and processing functions - as part of our growth databases.
- **Interactive database access** – Developing the new TTT growth database into an integrated, user-friendly system to allow user access to growth data summaries by species and region.
- **TTT reference database** – Setting up a reference database of published and unpublished literature relevant to NZ on planted and managed regenerating native forest.
- **Peer-review publications** – Publishing academic and forestry sector journal papers based on our database and toolkit to underpin growth and carbon modelling and calculators.



The Tāne's Tree Trust native plantation database comprises 15,000 native tree and shrubs (including over 60 different species) located in over 100 stands nationwide.

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. Projects underway include:

- **Drivers and barriers** – Investigating the drivers and barriers for landowners establishing and managing native forest as a viable and more economic land use compared to pastoral farming or exotic production forestry on marginal land.
- **Valuing tools for NTVs** – Continue to provide advice on practicality and testing of any proposed assessment tools for valuing non-timber values (NTVs) to help determine stakeholder priorities for forest restoration and management.
- **Incentive scheme support and advocacy** – Continuing to provide technical support and advocating for development of an incentives system, based on biodiversity credits or payment for ecosystem services. This includes participation in workshops with government policymakers, along with other stakeholders.
- **Economics calculator** – Refining the economics calculator as part of the TTT toolkit for planted native forestry.
- **TTT is part of a new multi-agency project aligned with this workstream**, which is led by Dr Clint Cameron, and involves collaboration with Pamu Farms and other organisations. The aim is to develop an ecosystem quality and ecosystem service valuation framework, specific to NZ, which provides a means for assessing the economic benefits derived from improving the condition of ecosystems harbouring indigenous biodiversity on private land.

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. This needs urgent research work. Projects underway and proposed:

- **Existing data** – Locate and interrogate the national carbon plot monitoring network (LUCAS) for both exotic plantation forest and native forest to provide insights into transition from pines to permanent native forest.
- **Survey existing pine/natives** – Undertake surveys of existing pine plantations and understorey development to provide data on effectiveness of fast-growing exotic species as a tool for establishing permanent native forest.
- **Exotic to native transition trials** – Investigate methods for conversion of exotics to native and feasibility of exotic nurse for establishing permanent native forest.
- **Transitioning from clearfell exotics** – Develop guidelines on converting clear-felled radiata to native forest at small and larger scales, in support of the increasing interest including by Maori landowners.
- **Novel Ecosystems** – Scope research projects/trials into the topic of managing highly modified forests comprising a mix of native and exotic species, including problem weed species, and the concept of Novel Ecosystems.

Highlights of this year's progress include:

- Successful bid for a large, funded project on transitional forestry (see project outline further below).



Dense regeneration of native podocarps and ferns under a canopy of wilding maritime pines in Northland. It is important to understand the factors that affect natural succession under exotic species.

6. Collaboratively building capability

A holistic, multi-agency approach is required for native forest to be successfully established at scale. Herbivory, bird and seed predation, and vigorous weeds need to be tackled. We must work together and develop more capability in establishing and managing native forests. Projects underway include:

- **Collaboration with NGOs and communities** – Maintaining the close relationship with Trees That Count and developing stronger links with other NGO and community initiatives involved in promoting native forest restoration, exploring opportunities for joint demonstration trials including planting, natural regeneration, and control of pest animals and bird predators.
- **Engagement with forestry sector** – Fostering ongoing collaboration with forestry sector policy, researchers and industry entities including School of Forestry, DOC, MfE, Scion, NZ Farm Forestry Association, NZ Institute of Forestry (NZIF), TUR, etc. One of our trustees, Dr Jacqui Aimers, has been elected to the NZIF Council, which provides a greater voice for indigenous forestry in the forestry sector.
- **Education and training** – Fostering and supporting interest from forestry schools, Māori groups and kura, and other educational providers with Nature-based forestry training opportunities, e.g., support for Ngāti Whakauē's Te Rangihakahaka Centre for Science and Technology in the development and delivery of an educational programme on native forests.
- **Technology transfer** – Ongoing workshops, field trips, videos, factsheets, online publications and presentations, and social media communications linking in with industry organisations and other NGOs where appropriate, to boost outreach.
- **TTT advisory roles** – Exploring the concept of TTT regional advisors jointly with regional councils and TUR for native forestry extension work.

For more information on the Normalising Native Forestry Programme contact:

- TTT Office office@tanestrees.org.nz
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RE-MEASUREMENT OF FARM TŌTARA PROJECT

PROJECT STATUS: Nearly completed.

This TTT project is co-funded by Te Uru Rākau. The project involved the remeasurement of the tōtara silviculture trial plots established by the Northland Tōtara Working Group since 2007. Data from 50 Permanent Sample Plots (PSPs) has yielded valuable information on growth rates, carbon sequestration, and management prescriptions for timber production and indigenous biodiversity management, associated with native forestry and native trees on farms.



Left Image: An unthinned tōtara pole-stand (control plot) in a fenced-off forest (i.e., no grazing).

Right Image: The adjacent thinned plot showing significant understory development 5 years after thinning.

PROGRESS TO DATE

A report of the project results has already been posted on the Tane's Tree Trust website:

https://www.tanestrees.org.nz/site/assets/files/1234/results_of_the_2020_remeasurement_of_totara_psp.pdf

This information will assist Te Uru Rākau in administering the sustainability requirements of the Forests Act and it will help landowners and forest managers better plan and manage planted and naturally regenerated tōtara forests, including accounting for carbon sequestration, and refining silvicultural best practice (such as thinning regimes).

Contacts for this project

- Mel Ruffell, TTT CEO office@tanestrees.org.nz
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A PRACTICAL GUIDE TO THE MANAGEMENT OF TŌTARA ON PRIVATE LAND

PROJECT STATUS: Completed.

This TTT project was co-funded by Te Uru Rākau. It provides a comprehensive web-based manual, complemented with short instructional videos on the management of tōtara forests throughout New Zealand.

It is free-to-use and download, providing the latest information on planning, planting, establishment, silviculture (e.g., pruning and thinning), harvesting, legal processes, management and protection of tōtara forests on private land.

The project outputs can be found here:



<https://www.tanestrees.org.nz/projects/a-practical-guide-to-managing-t-tara-on-private-land/>

Contacts for this project

- Mel Ruffell, TTT CEO office@tanestrees.org.nz

TĀNE'S TREE TRUST PLANTED NATIVE FORESTRY TOOLKIT

PROJECT STATUS: Final stage

This project that has been running for over 4 years is nearly completed. The project is 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. It aims to provide a free comprehensive on-line toolkit from planning to implementation for planting native forestry to meet multiple objectives from maintaining and improving environmental values through to sustainable production.

CALCULATORS FOR PLANTED NATIVE FORESTS

Four calculators have been developed for those planting and managing native trees to meet multiple objectives from environmental restoration to sustainable production. This includes the option of continuous cover forestry to provide a sustainable supply of specialty timber from appropriate sites planted with natives. 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.



The Tāne's Tree Trust Toolkit of calculators for planted native forests can be accessed from the Tāne's Tree Trust website

1. Economics calculator

Most effort in this project over the last 12 months has been the development of an economics calculator aimed at assisting users who are wanting to develop a business plan for establishing native forestry for whatever purposes to determine realistic income streams. The development of this calculator has taken substantial time and resources to provide users with an easy method for calculating the costs and revenue of establishing and managing native forests from small scale for individual landowners to large scale corporate planters or forestry sector investors. The aim has been to cover the wide range of multiple objectives from the costs and benefits of conservation planting to developing a business plan for establishing and managing native forestry as a long-term specialty timber resource.

Calculating carbon is a key component of the economics calculator. Users are provided with three options to select for calculating the value of carbon sequestration based on the Ministry of Primary Industries' Look Up tables, the Tāne's Tree Trust carbon calculator for planted native forest (using the TTT carbon calculator within this toolkit), or entering user generated estimates for carbon sequestration based on their own measurements.

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.

2. Planting and budgeting calculator

This calculator allows you to calculate the number of plants you will require for your restoration project, and the costs of the project. The calculator can be used for any restoration project and by anyone who wants to

do planting. Users can access a menu that they can easily follow to enter their data or use default values by clicking a “Next” button to work through the steps.

These steps include:

- **Area of planting** – a mapping feature allows users to identify the site, which will automatically generate the planting area of the polygon.
- **Plant spacing** – enter the average plant spacing or stems per hectare.
- **Shrubs/trees** – users can select proportion of shrubs to trees to be planted or use default options.
- **Species planted** – over 2500 native species are loaded for users to select their list of species to be planted.
- **Proportions of species** – users can select percentage number of plants by species.
- **Seedling costs** – default values are indicated but users can enter their own nursery quotes for seedlings.
- **Site preparation, planting, consumable, weed control, fencing, and other costs** – users can enter in their own separate costs per activity or use default values.
- **Silvicultural costs** – for those interested in pruning and thinning their planted stand in the medium to longer term. Users can enter in estimated costs over their selected timeframes.

Once these steps have been considered and data entry completed, of which not all are mandatory, then the user simply presses 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, long with a total figure for planting their site. A per hectare cost can also be generated.

3. Growth and yield calculator

This calculator allows you to estimate the growth and yield of a planted native forest at various ages since planting. Species-specific growth and yield models have been used to develop this calculator for major native species represented in the Tāne’s Tree Trust Indigenous Plantation Database. These models provide realistic estimates of growth and yield for planted native forests, for landowners and managers evaluating land-use options.

Trees and shrubs were measured in plots sited within representative internal areas of each stand to reduce any forest edge effects. Temporary non-bounded inventory plots were used in shrub stands. Growth curves were fitted to the data for both tree height and diameter data, and published carbon equations used to estimate the carbon based on wood density for each species to obtain stem biomass and other equations then used to estimate carbon in branches, foliage and roots and then converted to CO₂ equivalents.

The calculator allows users to account for site quality by specifying the site as Poor, Average or Good. Alternatively, growth curves can be calibrated or scaled for a particular stand using a stand measurement provided by the user. Currently, the calculator assumes an annual mortality of 0.6% for all tree species, and 3% for shrub species.

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.

4. Carbon calculator

To determine the potential of a species for carbon sequestration, tree measurements and models for predicting carbon sequestration from these measurements are required. Tāne’s Tree Trust has obtained growth data from native New Zealand tree plantations throughout the country, which cover a wide range of commonly planted native shrub and tree species established for 10-100 years. Tree measurements have

been used to develop growth and carbon models to determine typical carbon sequestration rates of planted New Zealand native tree and shrub species.

This calculator allows users to work out how much carbon a 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.

This calculator provides users with three options to select the type of calculation by pressing one of three buttons. These are:

- 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?

Depending on the option selected by the user, the calculator requires users to enter data on carbon emissions, age of stand, planting mix of trees vs shrubs, number of stems per hectare, and for those with their own measurements, age when stands were measured and survival since planting. A results page is generated with an estimate for trees to be planted for offsetting, or estimated expected tonnes of CO₂ that will be sequestered. A graph showing carbon sequestration over time separately for shrubs and trees based on user entered data is also displayed.

OTHER CALCULATORS AND APPLICATIONS

As part of the toolkit, we are also working on other calculators and apps for planted native forests that can be accessed by multiple devices that are under development and will be available over the next 1-2 years. These include:

- Monitoring system for newly planted native projects in collaboration with Trees That Count and other project partners (refer to separate update below).
- A searchable Reference Database for planted and managed regenerating native forest.
- Links to best-practice establishment and management guidelines.

ESTABLISHING SEED ISLANDS, WAIKERERU ECOSANCTUARY, TAIRAWHITI

PROJECT STATUS: New

INTRODUCTION

Tane's Tree Trust is part of a team working with the Longbush Ecological Trust to demonstrate how to speed up succession of kānuka scrub into a diverse native forest in the Tairāwhiti region. This project is in collaboration with landowners Jeremy and Dame Anne Salmond and other research providers and practitioners. It is aimed at tackling the expected impacts of climate change, biodiversity losses and restoration of waterways within steep marginal pastoral hill country typical of Tairāwhiti. 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. Other components managed by other researchers and practitioners include:

- Survey and mapping of the landforms to provide a context for monitoring natural regeneration and establishment of a network of seed islands;
- Establishing a network of permanent plots to monitor natural regeneration, including a comprehensive botanical survey;
- Carrying out pest animal (both browsers and bird predators) and selective weed control as necessary to support the regeneration; and
- Sharing the findings of this work with the wider community.



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

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 Tane's Tree Trust Factsheet 2022 – *How to establish 'seed islands' of natives*, which will soon be on our website.

WORK TO DATE

Twenty seed islands have been established in the first year focusing on two categories of sites:

1. Canopy gap – open grass site with surrounding edge kanuka.
2. Partial shade gap – a light covering of scattered kanuka within plot.

While consideration was given to cutting gaps, this site already has a wide range of natural gap sizes to set up and test the concept of seed islands by planting a range of species.

Gap size was governed by the natural openings in the kanuka-dominated shrubland, with 15-50 seedlings (a mixture of tree and shrub species) planted randomly in each seed island to provide a diverse local seed source to supplement the kanuka. The planting site at Waikeruru Ecosanctuary has been registered as a Trees That Count planting site and seed island locations mapped and baseline measurements completed in May 2022.

FUNDING AND NEXT STEPS

The project is funded by the Lotteries Board with support from owners Anne and Jeremy Salmond, Trees That Count, research associates from Manaaki Whenua, NZ Landcare Trust, and Waimata River Restoration Landcare Group. Nursery seedlings were supplied by the Native Garden Nursery at Matawhero and funded by Trees That Count.

The second year will see a further 20 seed island locations identified and planted with a minimum of 50 selected tree and shrub species.

ADAPTIVE MANAGEMENT OF COASTAL FORESTRY BUFFERS

PROJECT STATUS: Completed and technical articles online

BACKGROUND

Sand dune exotic forests typically have a sacrificial exotic forest buffer zone providing critical salt and wind shelter to production stands landward.

This project is focused on the upper North Island as a pilot study exploring practical options to transition failing exotic buffers to resilient permanent buffers comprising indigenous coastal forest species, based on an adaptive management approach. It involved a review of existing experience, field surveys and planting trials in collaboration with the forest industry, iwi, landowners, councils and communities in development of preliminary guidelines.

The indigenous buffers will assist FSC-accredited forestry companies meet their Representative Sample Areas and various biodiversity and other requirements through enhancement of biodiversity, ecosystem, amenity and natural capital values. Indigenous coastal forest buffers will provide more sustainable and effective protection to the production forests with application to other productive land uses on our coasts and in the face of expected impacts of climate change.



A diagrammatic representation of a native coastal forest buffer established to replace the sacrificial exotic forest buffer, many of which are failing, with an exotic production forest sheltered landward.



A planted 'seed island' under a thinning overstorey of pines aimed to provide a long-term seed source of key native shrub and tree species including both wind and bird dispersed seed to encourage natural regeneration.

FINAL OUTPUTS

This Preliminary Technical Guideline series covers:

- [Section One - Introduction](#) (PDF, 2.79 MB) - The biophysical functioning of dunes, the importance of dune vegetation, and the value of transitioning exotic duneland buffers to native coastal forest;
- [Section Two - Planting Natives in Coastal Pine Buffers](#) (PDF, 2.62 MB) - Results from field planting trials exploring plant survival on open dunes, in gaps within pine buffers and under pine buffer canopy;
- [Section Three - Role of Natural Regeneration in Transitioning Coastal Exotic Buffers to Native Forest](#) (PDF, 3.6 MB) - Results from surveys of coastal forest remnants, past plantings and natural regeneration within pine buffers;
- [Section Four - Climate Change](#) (PDF, 3.91 MB) - How climate change will affect current forest transitioning planning and future management; and
- [Section Five - Summary](#) (PDF, 8.55 MB) - The outcomes from the Coastal Buffers project.

For further information contact:

- TTT CEO: office@tanestrees.org.nz

COST-EFFECTIVE PLANTING AND REVERSION SCENARIOS FOR ESTABLISHING NATIVE FORESTS - FACTSHEETS

PROJECT STATUS: Final year

INTRODUCTION

Work has continued over the 2022 year to complete and add to a factsheet series for the Billion Trees Programme aimed at providing 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.

The overall objectives of this project are to:

1. Promote reduced-cost, large-scale establishment scenarios for native forest; and
2. Demonstrate proof of concept by profiling low-cost establishment scenarios in collaboration with project partners, including native plant nurseries and planters/landowners.

Eighteen factsheets are in various stages of development targeted at landowners, iwi and community groups interested in establishing permanent native forest for multiple purposes.

THE FIRST FACTSHEETS

The first nine factsheets have been completed and links will soon be available on the Tane's Tree Trust website. Critical to the success of this project has been the project partners including Cassie's Farm, Pamu Farms, Te Kohaka o Tuhaitara Trust, Mahurangi Action Inc, Longbush Ecological Trust, Scion, AUT regional councils and the Northland Tōtara Working Group. A brief summary of the first factsheets is provided.

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.

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. It 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 in the future of inbreeding depression in forest plantings. Ecosourcing should be included in the planning stages of all native plantings.

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.

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.

Natural regeneration of native forests

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.

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.

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 create 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.

FURTHER FACTSHEETS

The second tranche of factsheets based on results of demonstration areas have been completed with reviewers' comments from TUR, and other project partners and representatives of potential users being considered currently.

Links to all factsheets will be available on the Tane's Tree Trust website in early 2023.

The remaining factsheets cover the following topics:

- Why plant natives.
- Right species right place.
- Seed collection for native trees and shrubs.
- Selecting the right stock.
- Maintenance of planted natives.
- Establishing logged exotic forest with natives.
- Monitoring success of planted and regenerating natives.
- Building resilient new native forest with expected impacts of climate change.
- Management of plantations.

Tāne's Tree Trust
RESTORING NATIVE FOREST FOR THE FUTURE

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.

Tāne's Tree Trust
RESTORING NATIVE FOREST FOR THE FUTURE

Establishing Native Forests
 TĀNE'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.

Tāne's Tree Trust
RESTORING NATIVE FOREST FOR THE FUTURE

Establishing Native Forests
 ONE BILLION TREES FACTSHEET SERIES

Ecosourcing of native species for planting
 FACTSHEET NO. 6, 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.

Tāne's Tree Trust
RESTORING NATIVE FOREST FOR THE FUTURE

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 to a common in many regions in New Zealand such as this natural regenerating tātahi-dominated 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 \(OBT\) programme](https://www.onebilliontrees.govt.nz/onebilliontrees) - 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.

TRAINING VIDEOS AND WORKSHOPS FOR BEST-PRACTICE RESTORATION

PROJECT STATUS: Current

INTRODUCTION

The Department of Conservation's Community Fund is partially funding this project to provide training videos and contribute to workshops 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.

PROGRESS TO DATE

This project is on track to complete 18 videos and over the second year, several further videos have been completed and others under way.

Videos and footage completed during this period includes:

- Harvesting tōtara – trialling small-scale, low-impact methods - video completed and available online.
- Collecting growth data by PSP, Gudex - case study.
- Holt Forest Trust preparation for shooting PSP video - case study.
- Tracks and pre-planting planning.
- Monitoring – introduction and benefits – narration drafted.
- Walk through method – narration drafted.
- Plot-based method – narration drafted – preliminary video produced for project partner workshop.
- Online data processing and results – narration drafted.

The focus of the next videos in the final year of the project is on 'how to' topics including:

- Nursery raised seedlings – grades, containers vs bare root, seedling quality, size, root systems, etc.
- Maintenance of plantings – brush weed control, spraying, cutting, hand releasing, etc.
- Nurse crops – concept, shrub species, establishment, interplanting tree species, etc.
- Seed islands – concept, regeneration, case studies – Waikereru, Tuhaitara biota nodes.
- Right tree, right place – matching tree species ecological requirements to planting sites, etc.
- Planting pattern and density – high, medium and low density, canopy cover, timing for interplanting, etc.

As videos are completed these are being made available on the Tāne's Tree Trust website.

Workshops, both online and as on-site field-based presentations - across demonstration planting sites and case studies in collaboration with councils, community groups, iwi and landowners - were carried out in Auckland, Waikato, Tairāwhiti and Greater Wellington regions and include:

- Online workshop including video on monitoring native planting sites for Auckland Council.
- On site workshop with Longbush Ecological Trust, Gisborne - scoping out seed island concept with landowners, Waikereru Ecosanctuary trustees, native plant nurseries, Trees That Count.

- On site workshop with landowners and predator free land care group representatives, Waiuku, south Auckland.
 - Online zoom with Regional Arborists and Ecological Manager and team at Auckland Council – TTT best practice planting and management of natives for multiple purposes.
 - Presentation to TTC and Aorangi Restoration Trust WaiP2K forum meeting at Carterton as part of the Tonganui landowner planting programme in south Wairarapa.
 - Advice to project partner Pamu Farms Cheltenham Stations, Manawatu, on establishment of multi-row multi-species buffers and scoping potential case study for meeting requirements of boundary screens and shelterbelts to meet compliance for organic farming.
 - Online workshops to the Auckland Council and contract arborists on best planting and management practices for native forestry in urban and peri-urban areas.
-

MONITORING NATIVE PLANTING PROGRAMMES

PROJECT STATUS: Current

INTRODUCTION

Tane'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.
- 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 to 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 recent planting retired steep hill country marginal pastoral site on a Pamu Farms station, southern Hawkes 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** – quantify survival and growth by species using a network of rapid survival plots recommended for those involved in large scale planting.

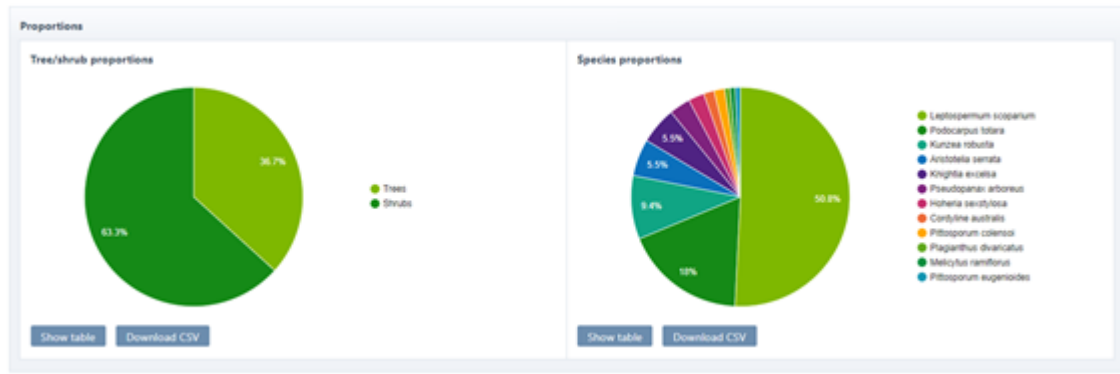
This has included running a number of online and field-based monitoring workshops to demonstrate the sampling methods, auditing monitoring work undertaken, and initiating a series of short videos on monitoring.

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.
- 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 the 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 Pamu 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 PAMU FARMS



Pamu Farms (Landcorp) are partners in several Tāne's Tree Trust projects and providing additional cofunding to expand applied research across their stations from Northland to Southland.

Collaborative projects include:

- Setting up demonstration planting sites on a minimum of eight Pamu 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 Pamu Farms stations in Northland with the Northland Tōtara Working Group.

O TĀTOU NGAHERE (OUR FOREST) NATIONAL CONFERENCE

BACKGROUND

O Tātou Ngahere - 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 Ngahere - 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 Ngahere <https://pureadvantage.org/o-tatou-ngahere/>

O TĀTOU NGAHERE NATIONAL CONFERENCE

A major focus over 2022 has been the organising of a national conference – *Regenerating our landscape with native forest*. This continues the partnership between Tāne's Tree Trust and Pure Advantage taking O Tātou Ngahere to an important next level to produce a conference that builds on the successful programme of work behind the campaign.

The two-day conference programme aims to focus Aotearoa on weaving more native forest back into our working lands. Speakers are some of the world's leading thinkers, practitioners and experts on climate

change and native forest restoration. The conference has multiple supporters such as Trees That Count who are working to build a movement mobilising all New Zealanders to help regenerate the whenua via an innovative digital marketplace to connect tree funders and planters.



TRANSITIONING EXOTIC FOREST TO NATIVE

PROJECT STATUS: Started.

This is a large, 5-year, \$1.08 million project. 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 exotic forest to native forest, and freely disseminate the results, including 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 case for using fast growing exotic trees (e.g., *Pinus* or *Eucalyptus*) as the primary vehicle for rapid early carbon storage is garnering much interest among landowners interested in permanent forestry options. In other circumstances, large tracts of exotic plantation on highly erodible or environmentally sensitive sites (e.g., Tairāwhiti) will need alternative forest management options to conventional clear-fell harvesting. Likewise, effective management options need to be explored for areas afflicted with wilding conifers where a transition to native forest is conceivable.

Moreover, extensive pine planting programs 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 NZ and we urgently need this research to guide its management. This research is also urgently needed to both inform relevant policy settings and regulation on this matter, and to inform, and shape, forest establishment and management practices, to ensure that successful transitions to native forest does indeed occur.

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.
- Define how to describe and assess effective management (thresholds, levels of intervention) of exotic to native forest transitions.
- 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).
- Investigate species other than radiata pine, including polycultures, for transitional forestry.
- Ultimately, provide recommendations for best-practice transitional forestry.

Dr Adam Forbes (Forbes Ecology Ltd.) will be conducting much of this work, along with Meg Graeme (Natural Solutions – Marine & Terrestrial Ecologists Ltd. Ltd.), who is also managing the programme for Tāne's Tree Trust.

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
- Pamu Farms
- Auckland Regional Council
- Tasman Environmental Trust

Project partners and collaborators include:

- Pure Advantage
- Pamu Farms
- 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 2022

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 2022. 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 2022.

My audit report was completed on 23 June 2022 and my unqualified opinion is expressed as at that date.



Graham Haines ACCM, DipMgtSt



TANE'S TREE TRUST
STATEMENT OF FINANCIAL PERFORMANCE
FOR THE YEAR ENDED 31 MARCH 2022

	2022	2021
Operating Revenue		
Sustainable farming fund	43,103	136,997
Tindall Project	326,400	160,000
Project Co-Funding	21,625	16,067
TUR - Te Uru Rakau	105,892	129,954
TIP Project	-	5,200
Other Grants	39,396	20,679
Subscriptions	9,867	7,122
Donations received	40,224	5,068
Interest received	244	85
Other income	14,046	2,558
Plus Income Received in Advance from Last Year	94,520	107,656
Less Income Received in Advance for Next Year	(186,168)	(94,520)
	<u>509,149</u>	<u>496,866</u>
Expenses		
Accountancy	0	165
Administration	10,180	8,750
Advertising & Promotion	1,202	25,000
Audit fees	875	800
Bank Fees	19	-
Contractors and consultants TTT projects	458,623	340,492
Depreciation	870	488
Donations	5,000	5,000
Executive officer	12,450	10,500
General expenses	60	106
Insurance	1,273	1,165
Intern Expenses	10,198	4,975
Newsletter	447	795
Office Expenses	-	23
Postage	731	1,049
Printing and stationery	3,455	2,586
Rent	1,200	1,200
Seminars and Conferences	833	22
Subscriptions	301	141
Telephones and tolls	-	319
Trust Meeting Expenses	791	970
Website & internet	1,301	2,309
	<u>509,809</u>	<u>406,855</u>
Nett Surplus (Deficit) For Year	(660)	90,011
Less Transfer of Donations to Research Funds	40,224	5,068
Operating Surplus (Deficit) For Year	(\$40,884)	\$84,943





**TANE'S TREE TRUST
STATEMENT OF MOVEMENTS IN EQUITY
FOR THE YEAR ENDED 31 MARCH 2022**

	2022	2021
TRUST EQUITY		
Balance at beginning of year	186,185	101,242
Net surplus (deficit)	(40,884)	84,943
Balance at end of year	<u>\$145,301</u>	<u>\$186,185</u>
RESEARCH FUND		
Balance at beginning of year	30,081	25,013
Add Donations Received	40,224	5,068
Balance at end of year	<u>\$70,305</u>	<u>\$30,081</u>



**TANE'S TREE TRUST
STATEMENT OF FINANCIAL POSITION
AS AT 31 MARCH 2022**

	2022	2021
Current Assets		
Bank Star Transaction	198,416	188,167
Bank Funding Account	18,540	18,495
Bank Call Investment Account	186,168	94,542
Bank Term Deposits	-	-
Accounts Receivable	34,343	109,655
GST	2,571	-
Petty Cash	78	78
	<u>440,116</u>	<u>410,937</u>
Non Current Assets		
Fixed assets (as per schedule)	931	1,801
Total Assets	<u>441,047</u>	<u>412,738</u>
Current Liabilities		
Accounts payable	39,273	100,279
GST	-	1,673
Income Received in Advance	186,168	94,520
	<u>225,441</u>	<u>196,472</u>
Total Net Funds Employed	<u>\$215,606</u>	<u>\$216,266</u>
Represented By:		
Trust Equity		
General funds	145,301	186,185
Research funds	70,305	30,081
Total Trust Equity	<u>\$215,606</u>	<u>\$216,266</u>
For and on behalf of the trustees		
	Chairman	<u>28/7/22</u> Date
	Treasurer	<u>28/7/22</u> Date

