

Registered charity no. (England & Wales) 1103202



1

2023/24

Foreword

John Leigh Pemberton, Chair of Trustees



It is with great pleasure that we present to you the annual report of Future Trees Trust. This year has been another incredibly busy one for our organisation, and we are thrilled to share the highlights of our progress and the impact we have delivered.

We would like to take this opportunity to thank our small team of staff and board members for their incredible efforts over the past year. The achievements and impact of the work they do are set out later in this report.

We would also like to take this opportunity to thank all our partners, donors and corporate sponsors who together provide us with such valuable support and ensure that we continue to make progress against out aims and objectives. Our new strategic partnership with the National Trust is a great example of how organisations can come together to help further their own objectives and collectively amplify the impact they deliver. In the National Trust, we have a very supportive partner who has provided us with a base for our operations, offices and land that will be the focus of activities over the next ten years and we have very ambitious plans for the future.

We would also like to take this opportunity to thank all our partners, donors and corporate sponsors who together provide us with such valuable support and ensure that we continue to make progress against out aims and objectives The work of Future Trees Trust is quite rightly beginning to get the recognition it deserves and has been highlighted in many industry publications. The National Wood Strategy published in 2023 highlights the challenges the sector faces and identifies actions required to deliver the many aspirational targets in terms of sustainable forestry. In particular the strategy points to the lack of significant investment in the genetic improvement of broadleaved species.

'There has also been a lack of significant investment in the genetic improvement of broadleaved species. The Future Trees Trust, along with its supporters, is the only organisation currently working on the improvement of broadleaved trees for timber production. The current level of funding is relatively small in comparison to the scale of planned afforestation' (TNWS 2023).

As interest in our work continues to increase both inside and outside the forestry and woodland sector, we are witnessing significant increases across all our communications channels, and with this in mind we will be reviewing all our communication materials going forward. Our priority will be refreshing the FTT brand and website and the production of communication materials for a number of very different stakeholders.

We approach the year ahead with renewed optimism and look forward to working with existing and new partners, helping find solutions to the challenges we all face and welcoming the many new opportunities to collaborate.

Sincerely,

John Legit Ruberton

CEO Update

John McLaughlin

I think you will all agree that, based on the evidence in this report, Future Trees Trust continues to make a vital and important contribution to the forestry and woodland sector.

This year we said goodbye to one of our employees, Joe Beesley. Joe will be missed greatly as in his relatively short time with the organisation he made a tremendous impact and was a very trusted and valued member of the team. He has moved to Forest Research and we wish him every success in his future career and would like to take this opportunity to thank him for the contribution he made to Future Trees Trust.

Ollie Stock (Forestry Technician), Ruaridh Phillips (Patsy Wood Scholar) and Sarah Wild (Researcher) joined the FTT team in 2023, and under the expert guidance of Dr Jo Clark have played a vital role in many projects throughout the year.

The team have had an exceptionally busy year and I cannot fully convey how impressed I have been with their efforts throughout the year. A number of important projects such as Supersizing Broadleaves, several Seed Sourcing projects, and the final year of the Living Ash Project has meant that our researchers have clocked up thousands of miles and spent long periods of time away from their families but their commitment to this work never falters.

As always we rely heavily on the support of our many donors, partners and corporate sponsors to be able to deliver all these projects. A special mention to Paul Millican at Auditel who provided the Trust with the first ever sponsored vehicle, as this has proved to be absolutely invaluable and has meant that all the work we do is much more accessible and reduces the physical demands on our staff.

3



Some of the highlights of the year include

- Over 13,000 trees planted in trials as part of the Supersizing Broadleaves project
- Identification of 79 plus trees of beech, over 40 hornbeam and numerous other minor species
- Grafting over 5,000 tolerant ash trees for the Living Ash Project
- The registering of the first Tested seed orchards for oak in the UK
- Reinvigorating our cherry breeding work
- Continued support for the Patsy Wood Scholar
- Supporting two PhD students at University of Reading and Trinity College, Dublin.

In addition to the progress being made against our 10-year strategy, we have also made significant progress in terms of infrastructure and future resilience

- We will be adopting the new CIO identity in April 24
- New offices will be located at the National Trust Buscot and Coleshill Estate
- We have identified a number of highly influential people who have agreed to become Vice Patrons and promote the work that we do.

We are really excited about the future and the key role Future Trees Trust can play in delivering significant improvements across the sector and we look forward to keeping our supporters informed of our developments over the coming months.

A New Strategic Partnership with the National Trust



We are excited to launch a new partnership with the National Trust which will help to deliver the ambitious strategic plans for both organisations. The partnership comes at a time when Future Trees Trust converts to a charitable incorporated organisation (CIO). A major factor in this partnership is the long-term lease of a 21ha site in Uffington, south Oxfordshire, to create a new research woodland on what is currently known locally as Craven Field. Already, we have planted the first research trees here: a sycamore and a silver birch progeny trial.

We will also be planting new research trials and seed orchards arising from our work, as projects progress. This winter, we will be planting a blackthorn seedling seed orchard, and a grafted clonal oak orchard for Quercus petraea.

The tree breeding research programmes will give The National Trust direct access to broadleaved trees fit for the future to use across their estates and as part of their ambitions to establish 20 million trees by 2030. This will ensure the trees planted will have the adaptive capacity to cope with a changing climate.

The partnership will also mean the relocation of Future Trees Trust Head Office to the Buscot and Coleshill Estate, committing both organisations



to a long-term partnership which will supply seed of many broadleaved species for woodland resilience in the future.

This is a great opportunity for Future Trees Trust. For the first time in our history we will be taking direct control of land, which will really help deliver our 10-year strategy. Working with such a renowned organisation as the National Trust will mean that awareness of the work we do and the importance to the sector will be greatly increased. We also look forward to helping the National Trust to deliver on their ambitious tree planting targets and welcome the opportunity to co-locate our headquarters with the team at the Buscot and Coleshill Estate.



4

Fundraising and Finances

Sustainable long-term funding for Future Trees Trust is as always a key aspiration for the Charity. Income for 23/24 was £534,353 which represents a significant increase on £185,190 for 22/23. This is mainly due to income from new Governments grant for seed sourcing and tree production innovation, which have funded our Supersizing Broadleaves project, our Minor Species and cherry seed sourcing grants, and the final year of the Living Ash Project. Total research income for the year was £377k and income from donors and sponsors totaled £156,000.

Spending for the year totaled £502,706 (£233,902 22/23) of which £156,000 (26%) was spent on core operating costs, a slight increase from 22/23.

Looking forward we hope to have the opportunity to help deliver more projects. Fundraising is always a challenge, particularly in today's economic arena. However, we have built up excellent relationships with our incredibly supportive foundations and trusts and are hopeful that our ambitious plans will continue to be supported.

Outreach and Comms

The trust has continued to make significant strides in communication and outreach, bolstering our objective to raise awareness of what we do. Through innovative campaigns, engaging content, and strategic partnerships, we have amplified our message and reached even more individuals than before.

Our 'Choose Improved' campaign calls on foresters to use improved planting stock where timber is an objective and we continue to promote the nurseries that are actively sharing their availability of improved stock. In the past year we have also announced a record number of projects to improve sourcing and establishing trees including Supersizing Broadleaves and three Seed Sourcing Grant (SSG) projects, covering seven different species.

This year we launched an online shop selling books associated with woodland management, including the best practice guide Birch Woodland Management Handbook, by Rick

Worrell, commissioned by Scottish Forestry, Forestry England and Future Trees Trust. Oak: fine timber in 100 years. Technical Guide to growing high-quality oak within a century by Jean Lemaire, the Technical Secretary for IDF's national oak working group, translated by Bede Howell. The translated book from the French embodies their very careful, considered and well recorded experiments over a period of thirty years seeking to shorten the rotation for fine oak from some 180 years to 100 years. Both books have been well received. By leveraging various platforms and channels, from social media to speaking at conferences, we have fostered connections and sparked conversations that have resulted in an increased



Income 2023/2024

In 2022/23, our income was £534,354 as illustrated below.



awareness of the charity. These efforts have not only expanded our reach but have also drawn increased focus and appreciation of what we are trying to do.

Strategic Aims and Progress

We were excited to launch our new ten-year strategy in 2022. It has been a very useful guide in planning our activities. As with all strategies we have had to prioritise certain activities, allow for new activities to be included and some existing activities to be put on hold.

Increased Research

 Four progeny trials for sycamore (Oxfordshire, Yorkshire, Kent and Herefordshire) and five progeny trials for silver birch (Oxfordshire, Perthshire, Scottish Borders, Edinburgh and Nottinghamshire) were planted in 2023. First year assessments have been carried out and the trials beaten up.



Increased Resilience

Made progress in identifying and grafting plus trees for downy birch (Betula pubescens). We plan to identify additional plus trees and carry out flow cytometry to ensure new and existing plus trees are correctly identified. A genetically diverse seed orchard of pure downy birch will be a significant step forward.

Seventy nine plus trees have been identified for beech, and 44 for hornbeam. We are reviewing the benefits of of including common alder next year.

• We will be establishing a beech clonal seed orchard and blackthorn seedling seed orchard at our new research woodland, Craven Field in Oxfordshire, and if we can secure funding will be looking to add a hornbeam clonal seed orchard following on from our plus tree selection work.

 Genotyping of all our plus tress is in progress. Eamonn Cooper is working on oak, and we have received funding through the seed sourcing grant to work on wild cherry. Sweet chestnut has been completed and we are planning for this work to be carried out on silver birch and sycamore in the future.



All our seed orchards are composed of many unrelated individuals meaning that the seed arising from them is very genetically diverse, helping to build genetic diversity, and thus resilience, in to future plantings

• We have completed all the work identified as part of the Living Ash Project, with over 5,000 trees with tolerance to ash dieback grafted this year which will be planted in archive sites over the next two years.

Increased Outreach

• The new Future Trees Trust brand is in development and will be appearing in 2024, together with a new website.

• We will have 24 gualified or tested seed orchards for major species (sessile oak, pedunculate oak, sycamore, sweet chestnut, wild cherry, downy birch, silver birch) including the first ever Tested seed for oak.

• Our reciprocal work with nurseries, whereby they promote our work and in turn they are listed as a trusted source of our material, has meant that a much greater number are approaching us to find out more about how we work and how they can source improved material.

• We continue to work on large projects with many diverse partners from nurseries, universities and government agencies.

• Our social media and online presence continues to grow. We are confident that our new branding and information material will see this continue its upward curve.

• All of our research is readily available to those interested in it. Our new website and communication materials will mean that it is more easily accessible than ever.



This trial has been thinned to Quercus petraea and will produced the first tested sessile oak seed for the UK.



We continue to sponsor two PhD students at Reading University and Trinity College Dublin. This year as part of our partnership with the National Trust we have recruited a Patsy Wood scholar who has had the opportunity to work with both organisations.

The Patsy Wood Trust Legacy Fund

The Patsy Wood Trust endowed Future Trees Trust in 2017 to help us grow and develop. We used part of this endowment to support young researchers through doctoral studies and created the Patsy Wood Scholarship for young foresters seeking their first employment. Both these endeavours have proved to be popular and we are delighted to be able to support so many people in the career goals.

Ryan McClory is studying Drivers of Oak Masting at Reading University

Oaks produce acorns via a reproductive phenomenon known as masting, wherein acorn crops are highly synchronous across great distances, yet show large variability among years. Good acorn crops, known as mast years, flood ecosystems with a sudden abundance of resources for consumers and influence flora and fauna across trophic levels, whereas during poor acorn production years seed predators are starved of a food resource. Due to the recalcitrant nature of acorns, they can't be stored for long periods of time, and land managers may struggle to source enough acorns for planting projects after a lean year, increasing their reliance on foreign, sometimes maladapted, imports to meet seed demand.

A better understanding of oak masting is needed to prevent shortages of acorns for planting projects and maintain oaks flagship role in British Broadleaf Woodland. This PhD research has worked across five studies: to explore mechanisms to better predict acorn production at the individual level (study 1) and nationally using weather cues (study



2), determine the role of pollen limitation and pollen source at driving mast years (study 3), explored how elevated CO2 at the BIFoR Free Air Carbon Exchange (FACE) site influenced acorn production (Study 4), and compared direct seeding and transplanting as forest regeneration techniques via a collaborative EU COST action study (study 5). Two papers have already been accepted for publication and are forming part of my doctoral thesis to be completed by the end of May 2024.



Eamonn Cooper is studying Genetic Characterisation of oak for Breeding and **Conservation at Trinity College, Dublin**

Thanks to the funding from Future Trees Trust, I have been able to investigate the genetic components of oak plus trees in the UK and Ireland. Plus trees are selected by foresters and researchers for their ideal characteristics for timber production, and they play a crucial role in tree improvement, which involves selective breeding to produce high-quality saplings for afforestation and timber production.

My work involves genetically analysing the selected plus trees and their progeny. As there are two species of oak native to the British Isles, my goal is to determine the species identity of each tree, identify any hybrids present, and quantify the genetic diversity within the collection. This is essential as diversity within the tree improvement process will increase the potential for disease resistance and adaptability to climate change.

The Pasty Wood Scholars

2021-2023: Peter Borrowman

Two years ago, I was fortunate enough to be employed as the Patsy Wood Scholar (PWS): a trainee assistant forestry management position run through the Future Trees Trust in collaboration with William Hamer (Forestry Consultant) and the Royal Forestry Society.

I have been most fortunate to be working under William, with such an experienced forester to act as a mentor not only in forestry, but also in the requirements and challenges of managing a business. I have also worked with FTT researchers in



In the upcoming growing season of 2024, I plan to visit ancient oak forests across the UK to incorporate local variation into our understanding of the plus tree cohort. Additionally, I hope to investigate the genetic components underlying the traits associated with oak plus tree.



several areas, including climbing of oak plus trees for grafting, searching for tolerant ash trees and stands indicating signs of significant resistance to Chalara and sorting sycamore seeds for a future progeny trial. The work of FTT in identifying, sourcing and ultimately supplying superior broadleaved seed should not be underestimated for the industry.

With the culmination of my time as the PWS, I took up a position as an assistant forest manager with English Woodlands Forestry in December 2023. This is an exciting prospect, not only from a personal career perspective, but also to showcase all of my skills and knowledge which I have learnt from the PWS.

I would like to express my gratitude to first and foremost William Hamer, who has been an incredible mentor for the past two years. I have learnt an astonishing amount, and his influence will remain firmly rooted in my future career in forestry. I would also like to say thanks to everyone at the Future Trees Trust, particularly Dr Jo Clark, for being so welcoming and providing an excellent framework to enter the forestry sector.

Meet this year's scholar: Ruaridh Phillips

My time working as this year's PWS so far has been enjoyable. I've learned a lot during this winter season and met many interesting situations and challenges that will no doubt be invaluable in my future forestry career. Being from the Scottish Highlands, I didn't have much experience working in a broadleaf forestry context, so my tree ID has been vastly improved, as has my appreciation for lowland silviculture and tree establishment.

During the winter season I helped plant two Supersizing Broadleaves trials - planting birch, oak and sycamore of various provenances and stock types, along with carrying out beat-up work on birch and sycamore progeny trials throughout the North of England and Scotland. This has given me an insight into the function and potential of tree breeding programmes.

The Living Ash project has been the highlight of my time working for FTT so far. Several weeks were spent visiting heavily infected woodlands throughout Derbyshire and Yorkshire where I collected scions with a pole pruner and the occasional help of tree climbers. After this whistlestop adventure, it was especially good to see the same scions then being grafted at NAIB-East Malling Research in Kent, before they are planted at the National Archive of Tolerant Ash.

Assisting my colleague Ollie with the Seed Sourcing Grant project has also been really

interesting - seeing us visit ancient woodlands throughout the South in search of beech and hornbeam. Thanks to him I am now eternally on the lookout for plus trees!

It has been great being part of this small and dedicated team of researchers - and I'm looking forward to continuing the PWS with the National Trust at Buscot and Coleshill Estate.





This year was our last full year of the second phase of the Living Ash Project: Securing **Tolerant Material for Seed Production** Purposes, and as such was a busy year. This has been a large, across agency research project with several dedicated partners. Forest Research assessed six mass screening trials established in 2013, and the three progeny trials established in 2016 as part of LAP1. Future Trees Trust also assessed many research trials that constituted our breeding programme before the arrival of Ash Dieback, and we also visited all the estates GB wide where we selected our original ash plus trees in the 1990s. We identified a further 790 trees with tolerance to ash dieback and grafted over 5.000 ramets for inclusion in the National Archive of Tolerant Material in Hampshire, and also additional grafts for a new, second archive site located in Scotland.

Forest Research also completed work on controlled inoculations to test our tolerance selections via two methods: one was direct inoculation through infected wood inserted in to the main stem of young grafted clones, and the second method was through a spore suspension placed on leaves, a more natural infection mechanism. Both inoculations worked, with clones being identified as tolerant and susceptible





performing as expected. In addition to this, they tried to isolate the fungus (Hymenoscyphus fraxineus) from wood samples taken from trees with healed lesions, and were unable to detect the pathogen, an indication that the tree is somehow combating the disease. These trees are of particular interest to the project as we know they have come in to contact with ash dieback, but are not only surviving, they are growing well and putting on increment.

While grafting tolerant trees works well, it is more desirable to have this valuable material on its own roots, as infection could occur through the rootstock. Royal Botanic Gardens, Kew tried various different cutting techniques (timing of taking cuttings, hormone treatment, age of material) but were unable to get cuttings to root except in the very youngest of seedlings (1 - 2 years old). Therefore, we grafted our tolerant selections again. Cracking this one would be a great leap forward, but propagating ash reliably from cuttings remains elusive, as it does for oak too.

We will also be testing these selections through liquid chromatography mass spectroscopy which can identify individual chemicals that are associated with tolerance. Fera will be undertaking this work during summer 2024.

Seed Sourcing Grant: Minor Species – Ollie Stock

I was brought on board last May to deliver the Seed Sourcing Grant project awarded to us in 2022. I've had a great start to life at FTT and am proud of the achievements made so far. Our SSG: Minor Species work has a few central aims. First, to find up to 100 beech plus trees and create a qualified beech seed orchard, the first of its kind in the UK. Second, to find up to 100 hornbeam plus trees with a view to emulating the work with beech in the future, once we have sourced additional funding, and, while out and about, record any other plus trees of minor species. Finally, to plant a blackthorn seedling seed orchard at our new research woodland, Craven Field.

Last year's work on the SSG project was a success, with 79 beech and 44 hornbeam plus trees located as well as a handful of plus trees of field maple, wild service, Norway maple and wild cherry. Beech plus tree selection has taken me to all corners of the country. The Chiltern Hills and the Cotswolds, two areas famed for their beech woodlands, were good places to start. I also ventured up to Cumbria, North Wales, Norfolk, and Devon, amongst others.

We were successful in collecting graftwood from 28 beech trees in England in January 2024. We worked with a group of tree climbers who collected scions for grafting onto beech rootstocks. This material has been grafted and we are waiting for the buds to burst to assess the success of this work.

This year we were also awarded more funding through the Seed Sourcing Grant to bring together disparate resources of, and continue work on, wild cherry. This will involve searching for new cherry plus trees in region of provenance 30 (the western areas of the UK, not including Scotland).

We are always looking for new places to search for plus trees, if you have any ideas for any of the species mentioned here, please send me an email at oliver.stock@futuretrees.org.



Map to show beech and hornbeam plus trees. Beech plus trees - green, hornbeam plus trees orange.



Twenty five years of Research the first tested broadleaved seed

Twenty five years ago, a newly graduated doctor (of forestry) from Oxford, and now one of our Trustees. Dr Jason Hubert, embarked on an ambitious programme of plus tree selection for our two native species of oak: Quercus robur and Quercus petraea. Jason selected over 300 plus trees throughout the UK and Ireland, including some superb Q. petraea from France and Q. robur from the Netherlands. Acorns were duly collected from some of these trees and eight progeny trials were established in 2003 to test the genetic worth of each half sibling family. Over the next twenty years these trials were assessed many times for growth and form, and phenological observations (timing of budburst) were also undertaken.

Last year, a small Seed Sourcing Grant administered by the Forestry Commission enabled two of these trials to be culled to a single species, and placed on the register of Forest Reproductive Materials (FRM). As such these two orchards form the first *Tested* orchards of any broadleaved species in the UK. The rouging has been quite intense (about a 40% cull) and the trees need time to respond and increase their crowns. A second







within family rogue will take place in another five years or so to remove the poorer (1) families and (2) trees within families which will increase the genetic gain from the orchard.

This is a big jump forward for Future Trees Trust and we are really delighted to see the final outcome of this long term project. The orchards should start producing small quantities of acorns over the next few years which will increase with time as the trees grow.

TPIF: Supersizing Broadleaves

Supersizing Broadleaves is a new project, which aims to study how three broadleaved species can be established most effectively in new woodland plantations. The project is using geneticallydiverse seed selected for high growth potential and excellent stem form from Future Trees Trust breeding programmes, and will explore the effect of different nursery protocols and silvicultural interventions compared to standard practices. By selecting the best trees, it should be possible to grow higher quality timber in terms of form and vigour. However, genetics only accounts for a small amount of variation in growing timber. Variation occurs at every step of the tree production process whether this is selecting the biggest acorns, growing trees in cells rather than bare rooted and thus reducing root damage, or having a more sheltered or fertile site. All influence how well a tree gets established. This project seeks to investigate some of these variables to help trees get established more quickly, and therefore reduce the need for weed control.

Supersizing Broadleaves aims to study how three broadleaved species can be established most effectively in new woodland plantations



This winter, we established three full factorial trials at three variable sites in central England and measured all trees' planting height. We will be reassessing all trees next winter. In addition to this, we have produced four monographs (for silver birch, pedunculate oak, wild cherry and sycamore) which you can download from our website: www.futuretrees.org/species-monographs.

This project is funded through the Tree Production Innovation Fund administered by the Forestry Commission and concludes in March 2025. Additional funding will enable us to revisit the trials after three years, carefully dig up a sub sample of each stock type and correlate seedling performance to root architecture and the effect of nursery techniques on tree production.



Our Plans for 2024-2025

Our plans for 24/25 include continuing projects that have already started but also starting a number of new projects with some different species. We will also moving into our new base on the Buscot and Coleshill estate and look forward to strengthening our partnership with the National Trust. We are also hoping to recruit a few additional trustees who will bring additional skills to the organisation.

We look forward to buildings on all our existing relationships and forging new partnerships in the coming year.

- Measure year 1 of Supersizing broadleaves
- Graft oak to complete two clonal seed orchards for oak at Whitfield estate (Quercus petraea) and in the National Forest (Quercus robur)
- Commence planting a seed orchard for sessile oak at Craven Field
- Plant a source identified seed orchard of blackthorn
- Measure nine progeny trials of silver birch and sycamore for year 2 data
- Climb another 25+ beech trees for our Seed Sourcing project on minor species
- Fingerprint all our cherry plus trees and ascertain S allele status which governs incompatibility in cherry; graft additional cherry plus trees
- Identify more downy birch plus trees
- Carry out flow cytometry on all birch plus trees to confirm silver or downy birch identify.







Partnerships and Supporters

We work with many of the principal stakeholders in the forestry sector. In addition to our long-term partnerships with Defra, the Forestry Commission, Scottish Forestry and Forest Research, we have formed working partnerships with:

Forestry England

Host a number of our new and upcoming trials.

Berry Global

Provided all the canes for the vole guards for Supersizing Broadleaves.



Forestry England

Tubex

Provided all the vole guards to protect the Supersizing Broadleaves trials.



Partner in our Seed Sourcing Grant project, funded by the Forestry Commission.



TUBEX"

Action Oak

Research, fundraising and communications support to help protect the iconic oak tree.











National Trust

Host our new research woodland, and office space.

Earth Trust

Hosting a number of our trials and orchards.



National

Trust

Vastern Timber

Corporate sponsor of our sycamore programme.

Tilhill Forestry Corporate sponsor of our core costs.



Vastern

Cheviot Trees

Specialist growers who raise trees for all our research projects, and a Trustee of FTT.



Trees Please Corporate sponsor of our core costs.



Brian D Newman

Sponsoring our silver birch breeding programme.



Future Trees Trust The Sheep Yard, Buscot and Coleshill Estate, Coleshill, Oxon, SN6 7PT 07896 834518 • info@futuretrees.org • www.futuretrees.org

