Ort

Interim Report for the Nineveh Trust following grant award of £5,000

What has gone well and why

2021 has been an exciting and challenging year. After the previous award of a transformational grant from the **Patsy Wood Trust** enabled us to create two full-time roles **– Dr Jo Clark** as our Head of Research and **Dr Joe Beesley** as our Researcher, we also now operate out of an office at the Harwell Innovation Centre in Oxfordshire.

The transition to a charity employing three people has enabled us to undertake much more tree improvement work, to consolidate the work we've already done and to establish the foundations for a wider scope of work as we develop further. We have also employed a communications and marketing consultant, **Georgina Thomas**, who works for us 2 days a month to help with our outreach and social media. Georgina has been instrumental in helping transform our charity. With her help, in May 2021 we hosted our first online Annual Supporters' Day in the form of a webinar. The event was introduced by Sir William Worsley, Chair of the Forestry Commission, and focussed on the young people Future Trees Trust are supporting in the sector.

The event was well attended by an active audience with interests across different aspects of forestry and woodland and there was plenty of detailed discussion. A recording of the event can be found on our website.

Working with the **Royal Forestry Society**, the Patsy Wood Trust grant also enabled us to create an annual student placement. Our second Patsy Wood Trust scholar, **James Cryer**, completed his placement with William Hamer, an independent forestry consultant based in the Chilterns, and has moved to Tilhill in Scotland to further his forestry management knowledge by working with conifers.

His final report on his year as the Patsy Wood Scholar can be read on our website [My year as Patsy Wood Scholar 2020-2021: A review by James Cryer]

We are delighted to welcome the third Patsy Wood Scholar **Peter Borrowman** who started in November 2021, also with William Hamer. The role has been expanded to two years to give Peter the opportunity to apply the skills he learns in the first year to the tasks of forestry management in the second. We're looking forward to working with Peter on the critical role of forest genetic resources in tree improvement, seed sourcing and resilient woodlands.

Summary of our Key Achievements

- In 2020/21 we undertook research totalling **£166,500** slightly down on last year's figure due to the impact of Covid restrictions.
- Our second annual **Patsy Wood Trust scholar** completed his scholarship year and found full time employment, and we recruited our third scholar.
- We continue to support two PhD studies into oak timber defects and acorn production.
- We secured a major new corporate partner – **Vastern Timber** will support our sycamore projects with a £15,000 grant over three years. Vastern featured our work as an episode in their "**Wood for the Trees**" YouTube films.
- In collaboration with partners and funded by Defra, we created the **UK Forest Genetic Resources** platform – an invaluable resource for researchers worldwide.
- We planted our first **demonstration plots** to showcase our work.
- We collected seed from sycamore and birch plus trees to enable progeny testing.

We are also funding a student to undertake our oak masting PhD study, supported by the **Patsy Wood Trust** grant, the **D.G. Albright Charitable Trust** and the **A.L.A Green Charitable Trust**. This study aims to find the answers to the key questions about oak trees' tendency to produce abundant quantities of acorns only very irregularly. **Ryan McClory** is making great progress with the study at Reading University.

UK Forest Genetic Resources metadata website
Earlier this year, in partnership with Forest Research, UK Centre for Ecology and Hydrology, Royal Botanic Gardens Kew, and the Woodland Trust, we launched an online platform of Forest Genetic Resources in the UK. This invaluable research resource is publicly available and free to access. It will allow individuals, institutions and charities to share data, facilitate research and foster collaboration as our woodlands face new challenges from climate change and novel diseases and pests. You can visit the website at www.ukfgr.org

Planting our first demonstration plots
This year we broke ground on a new project several years in the making. At four sites across the country, we are planting demonstration plots to show how seed from our orchards compares to material collected from seed stands. Each site will have lines of sycamore, silver birch and wild cherry from these different seed sources to visibly show the positive effects of tree improvement. In December we planted one site with Forestry England in Kent, and another in Herefordshire with the Duchy of Cornwall. In the new year we will plant the remaining two sites with Forestry England in Nottinghamshire and with a private estate in Perthshire. We hope that in several years' time forestry groups can visit the plots to see the differences for themselves!

Planting the first demo plot

Collecting seed from a birch plus tree

Seed collection for progeny trials
Our demonstration plots are going to show how improved seed performs alongside seed stand material, but at FTT we are committed to going even further. By experimentally testing the form and growth of the plus trees in our seed orchards, we can further improve the quality of the seed produced. One of the best ways to do this is to establish experimental plots know as progeny trials and assess them over many years. Seed is collected from each plus tree and raised into progeny that are planted out in large trials replicated across the UK. By studying how the progeny perform at different sites, we can tease apart the genetic and environmental contributions to the fine form and growth of the parent plus tree.

During autumn 2021 we collected seed for two series of these trials testing sycamore and silver birch which will be planted in winter 2022/23. The trials will start to give important data after 5 years and be complete after 15, at which point they can be genetically thinned to produce additional seed orchards.

Expanding our oak grafted seed orchards
Over the last few years, we have been establishing four seed orchards of oak to improve the supply of high-quality British acorns for productive planting. These orchards are made up of grafted trees and the scions are taken from individuals across the UK with outstanding timber traits. Three are of sessile oak (*Quercus petraea*) in Herefordshire, Shropshire and Co. Down, and one of pedunculate oak (*Q. robur*) in Derbyshire.

This autumn, we were awarded a grant from the Tree Production Innovation Fund (TPIF), operated by the Forestry Commission, to continue this important work. The funding will allow us to graft 1,200 more trees in January 2022 with scions collected from mature oaks in the Forest of Dean and Herefordshire, and from two

archive sites. The successful grafts will be planted out the following winter and will almost complete all these orchards. We are expecting the first acorns to be produced in 5 – 10 years' time.

What didn't go so well

In January 2021 we were expecting to climb oak plus trees for the next phase of our grafted seed orchards, but this was cancelled due to COVID. We are able to reattempt this work in the new year thanks to the TPIF grant described above. We also intended to plant out grafts of oak and chestnut made the previous January but, rather tragically, there was an outbreak of chestnut blight at the nursery. All the trees were tested for the fungus and, although no blight was found, all the chestnut had to be destroyed to prevent any chance of disease spread. As oak and chestnut are related, it is possible, but very rare, for oak to be a host of chestnut blight. Thankfully, as all the oak trees tested negative, we were allowed to plant them at our orchards.

It is a tough time for chestnut. When we monitored our chestnut seed orchard and clonal archive during the summer, it was apparent that many trees were struggling and some mortality was present. Samples were sent to Forest Research pathologists for testing and a relatively new pathogen, first reported in the UK in 2019, was identified: *Gnomoniopsis.* This fungus can attack the fruit of chestnut – an essential product of seed orchards. In conjunction with Forest Research, we have submitted a proposal to Defra to further study this disease and better understand its implications to our breeding programme.

The year ahead

As a charity dedicated to providing improved seed to industry, we recognise the impact that pests and pathogens are having on many of our tree species, such as with chestnut. Future Trees Trust is a key partner in the **Living Ash Project** which we continue to lead, funded by Defra. We aim to bring together trees tolerant to ash dieback to ensure we keep this species as a timber species for forestry.

Future Trees Trust is also a member of the **Action Oak** partnership, the cross-sector initiative to research the many diseases threatening our oak trees.

While recognising that tree health is of paramount importance, we will continue our tree improvement work to deliver better seed to industry which will result in trees with better form and vigour. An important aspect of this work is to ensure that the populations we put together as seed production units are genetically diverse, as genetic diversity is the key to combating new pests and diseases.

We now have grafted seed orchards of phenotypically superior trees for sycamore, birch and cherry. These orchards produced more than two million improved seeds in 2019! Although an amazing achievement, we still have a long way to go. It is seed from these orchards that we are showcasing in our demo plots.

The sycamore and birch seed collected this autumn is currently being stratified and we will raise plants in spring 2022, to plant seven progeny trials throughout the UK and Ireland next winter – a massive undertaking for us. We will also be planting the oak grafts from our TPIF grant which will almost complete this long-term piece of work.

Our CEO and fundraiser, Tim Rowland, left Future Trees Trust after more than 10 years in the role. We are very grateful to Tim for all the work he has done in raising the profile of the charity. We have exciting plans to significantly increase the scope and depth of our work as the only UK charity dedicated to improving broadleaved trees by conventional selective breeding to deliver vital environmental, economic and wellbeing benefits for current and future generations. We will be able to share more details about this with you in the New Year and very much look forward to implementing these with our new Chief Executive in place.

Partnership working

We work in partnership with many of forestry's key stakeholders on projects to improve the quality of planting stock:-

WOODLAND TRUST

Partners in the Sustainable Seed Source Project to assess the current seed demand and availability for lesser used species and identifying possible new seed stands for species deemed to be important timber sources in the future.

The National Tree Improvement Strategy unites all those with an interest in tree improvement, both conifers and broadleaves, to identify solutions to the issues of tree improvement.

Partners in the UK Forest Genetic Resources project - developing collaboration to promote awareness and understanding of UK Forest Genetic Resources for the conservation and sustainable use of trees and woodlands in the UK, and also partners in the Living Ash Project.

New corporate partner **Vastern Timber** are supporting our work in creating new, expanded sycamore progeny trials at various locations across the UK. Operating one of the largest sawmills in the UK, Vastern Timber specialise in cutting and manufacturing native-grown timber. We are delighted to be working with them.

Partners in creating student scholarships with funding from the Patsy Wood Trust, to ensure the next generation of young foresters can carry our work forward.

Hosting our PhD study "Enhanced acorn production to regenerate native oak woodlands in the UK" – a study to determine the factors behind the production of acorns and why, in some years, there are few while in others acorns are abundant.

Vastern Timber – "Wood for the Trees" film

Our new corporate supporter Vastern Timber featured our work in one of their series of YouTube films "Wood for the Trees". In the film, our Head of Research **Jo Clark** explains the importance of our work in terms of creating a viable hardwood timber resource for the nation. We're delighted that Vastern are show-casing our work in this way. You can watch the film here – www.youtube.com/watch?v=oSpYGGPHjR4

Conclusion

The scale and range of the projects we are undertaking has grown significantly this year – we have committed more funds than ever before to tree breeding and ongoing research for the year ahead. We continue to work with young people to bring the importance of Forest Genetic Resources to the wider forest industry.

We are extremely grateful to all our funders and supporters for their generous and ongoing support which enables us to carry out research, support young people and ensure a vibrant resilient forested landscape for many years to come.

Joanna Clark

Jo Clark

Head of Research, Future Trees Trust
March 2022