Woodland Heritage

2018

Action Oak
Species & Climate Change
News from "Down Under"
Canada Experience
The Wood Awards

WOODLAND HERITAGE
for the future of British woods

Patron HRH The Prince of Wales

Contents

www.woodlandheritage.org.uk

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What did trees and wood ever do for us?

by Lewis Scott

Trees are the largest plants growing on earth. As the charity's dear friend and most generous benefactor, Sydney Draper, would say: "Without trees there would be no life on earth, as we know it."

The world's great forests help to regulate the climate, and these and future forests have an increasingly important role to play in locking up excess carbon dioxide. We know that street trees in towns and cities help to clean the air and have an important cooling effect in urban centres, as well as having beneficial effects on the mental and physical health of those living and working in these areas. Well placed and well managed forests can help to mitigate against environmental disasters, be it by slowing the flow of water after heavy rains in upland Britain and so helping to reduce the risk of flooding, or through the action of mangroves in protecting coastal communities from storm surges. And wherever they are to be found, trees and forests provide essential habitat for countless animals, birds, insects and other organisms that are vital components of the ecosystems in which they exist.

There is a fundamental and primeval relationship between trees and human beings. We have climbed them and found safety in their boughs. We have made weapons of wood to hunt and feed ourselves. We have cooked on wood fires. We have fashioned ploughs to till the fields, tables and chairs, doors and windows, beams and rafters, all from wood. Our relationship with trees echoes down through the ages, from time immemorial. Human kind owes a huge debt to trees, a debt that is only set to increase.

The Future is Wood (and Cellulose)

All my life my instinct has been for well-considered and gradual change, for evolution and not revolution. Now, when it comes to our choice of materials, I believe we need revolution. We should find alternatives to plastics which are polluting our oceans and infiltrating and corrupting our food chains. Why not? Don't we all have canvas or hessian shopping bags at home? Why wrap all our food in plastic? Look at the wood veneer food packaging used by Charlie Bighams.

Wooden packaging (Poplar veneer)

"Wood is Good":
Trees happily design out most waste naturally if we let them, by consuming only sunlight, soil, nutrients and water. The production of steel is highly energy intensive, producing and disposing of UPVC is a toxic nightmare, plastics are poisoning and clogging up our oceans, concrete can give off 140kg CO_2 per cubic metre, whereas trees convert CO_2 into oxygen as they grow, locking up carbon and purifying the very air that we breathe. Wood should be the material of choice for the future, it being renewable and environmentally friendly ... from food packaging to skyscrapers, wood is coming of age.

A technique for crushing wood to a fifth of its natural thickness has resulted in a material strong enough to hold up skyscrapers and tough enough to stop a speeding bullet.

Scientists say that the "densified" wood has superior properties to steel and metal alloys. It is also light and cheap enough to be forged into a form of body armour. Its most important use, however, is likely to be in building the cities of the future. Wood has obvious virtues for construction: it does not cost much, does not weigh much and does no harm to the environment unlike some other materials.

Wooden skyscrapers have begun to spring up, including an 18-storey dormitory in Vancouver, Canada, a planned high-rise that would be the tallest building in Stockholm, and a 300m tower proposed as an addition to the Barbican complex in London. The design for the Barbican is the first

Image courtesy of PLP Architecture

300m tower proposed as an addition to the Barbican complex in London

in a series of timber skyscrapers with funding from the UK's Engineering and Physical Sciences Research Council. The conceptual proposals currently being developed would create over 1,000 new residential units in a one million sq ft mixed-use tower and mid-rise terraces site in central London, integrated within the Barbican.

Yet wood's usefulness to architects has to some extent traditionally been limited by its cellular structure, which has limited its strength.

Researchers led by Jianwei Song at the University of Maryland made it three times denser but 12 times stronger by getting rid of the holes. The first step involves treating wood with caustic soda and sodium sulphite, much as a paper manufacturer might. This banishes much of the lignin and hemicelluloses that make up a lot of its bulk. The wooden blocks are then compressed at 100°C, flattening their pores and raising their density from 0.43g per cubic centimetre to 1.3.

In theory this should treble or quadruple strength, but something about the treatment allowed the scientists to increase it by far more. Writing in the journal Nature, they said that it was also eight times tougher and 30 times more resistant to scratching.

Wood based materials have amazing properties for both heat and sound insulation, but the main constituent of wood is cellulose fibres (making paper), now cellulose can revolutionise materials technology.

A group of researchers at Chalmers University of Technology have managed to print and dry three-dimensional objects made entirely by cellulose for the first time with the help of a 3D-bioprinter. They also added carbon nanotubes to create electrically conductive material. The effect is that cellulose and other raw material based on wood will be able to compete with fossil-based plastics and metals in the on-going additive manufacturing revolution, which started with the introduction of the 3D-printer.

Photo: Peter Widing

The tiny chair made of cellulose is a demonstrational object printed using the 3-D bioprinter at Chalmers University of Technology

These developments based on wood and its cellulose are exciting. Time will tell what all this will mean for our sector and the wood chain, but if the increase in demand for wood is to grow, so must our response if we are to avoid the mistakes of the past. Now more than ever, Woodland Heritage and our allies have an important job to do, and it really keeps coming back to the central idea that we were founded on nearly 25 years ago:

GROW TREES – USE WOOD

Nobody puts it better than our Patron:

The Prince of Wales has previously told how he designed his Highgrove garden for children and is encouraging his grandson Prince George to take up horticulture as a hobby.

"You just never know, do you, what people are going to be interested in; but the most important thing is I've got him planting a tree or two here," he told Gardeners' Question Time presenter Eric Robson in 2016.

"So we've planted it together and shovelled in the earth. Because that's the way, I think, when you're very small.

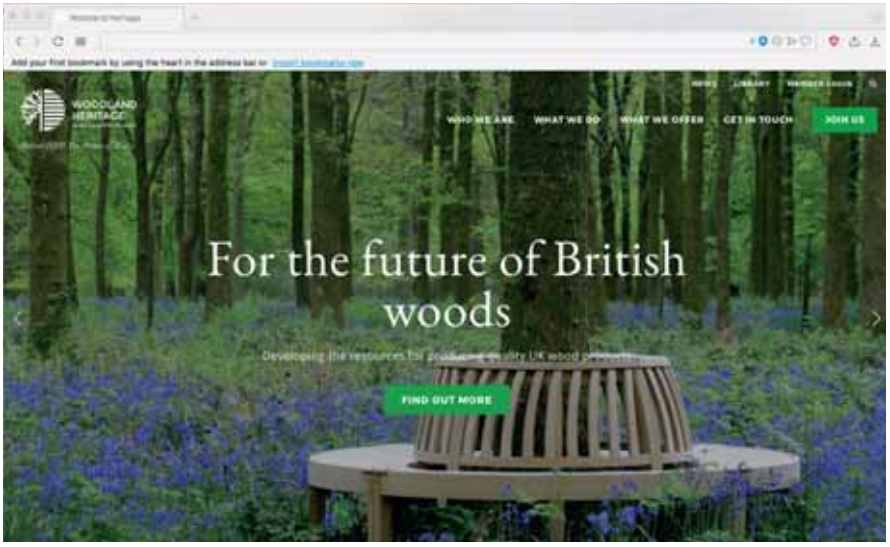
"And then you see, each time they come you say do you see how much the tree has grown? And you hope that they take an interest."

Facelift for woodlandheritage.org!

by Guy Corbett-Marshall

Woodland Heritage has made great progress as a charity over the last few years, although one area that had not kept pace with the ever-changing world has been the charity's website.

A decade-and-more-old and with around 30% of all visits to it over the last year coming from mobiles and tablets for which the site was not designed, the trustees felt that this spring was the time for a significant upgrade in style and performance.



This improvement for Woodland Heritage has been planned for Whitney Sawmills too, the website for which still referred to Will Bullough's business, nearly two years after he sold it to W H Timber Limited, the charity's trading arm.

At the time of writing, both sites were being redeveloped by Surrey-based designers Alex Campbell-Hart and Louise Dunckley (Incandescent Design) with www.woodlandheritage.org due to go live in early June and whitneysawmills.co.uk planned to be ready by the end of June.

Subscription rates are changing

Normally when the words 'rates are changing' are used, the only change that one can then expect to read about is an increase. But with Woodland Heritage's personal subscription rates, the new terms starting from 1st July 2018 are more like investments: some are going down as well as up!

In order to offer monthly payment as an ongoing option, subscriptions are changing as follows:

Type of membership	Current rate	Rate from 1st July 2018
Individual	£30pa	£36pa (or £3pm)
Joint or family	£50pa	£48pa (or £4pm)
Student	£15pa	£18pa (or £1.50pm)

All members paying by standing order are asked to contact their banks before their next payments are due, but will be receiving an individual reminder at the appropriate time anyway.

The other subscription rate to be reduced is for the Life Membership category, where for £250 (previously £300), anyone over the age of 65 can apply to be a Life Member of Woodland Heritage.

Rates and categories for corporate supporters are changing too and all current business members will be receiving a letter this summer from Woodland Heritage about the new scheme.

For more information, please e-mail **enquiries@woodlandheritage.org.uk** or phone **01428-652159**.

Professor Jo Bradwell

Winner of the 2018 Peter Savill Award

The Peter Savill Award

For a significant contribution to British Forestry

THE PRIZE

Each year Woodland Heritage awards a prize to recognise the contribution of an individual who has significantly benefited British forestry.

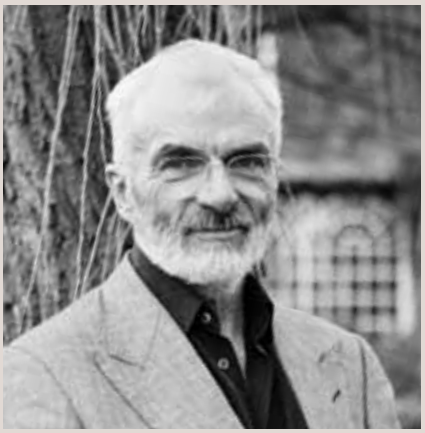
CRITERIA

The contribution to forestry made by the selected individual must be in sympathy with the objectives of Woodland Heritage, and in one of the following areas of forestry: silviculture; research; wood processing; marketing; education.

Normally the prize will focus on a contribution to one of the above with an emphasis on Britain, broadleaves and lowland forestry, although not exclusively so.

Woodland Heritage is delighted to announce that the winner of this year's Peter Savill Award is Professor Jo Bradwell, an immunologist by profession, but whose support for innovation in science and research for the benefit of trees and forestry over the last five years has no parallel in the UK.

Professor Jo Bradwell studied medicine at the University of Birmingham and graduated in 1968, subsequently becoming a lecturer in the Department of Medicine then senior lecturer and professor in the Department of Immunology. He founded the Binding Site, a University spin-out company in 1983, which first developed diagnostic products for immune-deficiency and autoimmunity then a range of important novel cancer tests. The company has continued to grow and expand for 30 years and has won the Queens Award for Enterprise: International Trade three times, and the Queens Award for Enterprise: Innovation once.



Thanks to a transformational gift of £15 million in 2013 from Prof Bradwell, a new Institute for Forest Research (www.birmingham.ac.uk/research/activity/bifor/index.aspx) has been established by the University of Birmingham to study the impact of climate and environmental change on woodlands, and the resilience of trees to pests and diseases.

The gift of £15 million, which was donated by Professor Jo Bradwell and his wife Dr Barbara Scott, is one of the largest gifts to a UK university, and has enabled the University of Birmingham to establish a unique world leading centre and to be bold and ambitious in its research intentions to understand how forests react to the combined threats of climate change and invasive pests and diseases.

In addition to on-campus laboratories, the Institute has created 'FACE', the Free Atmosphere Carbon Enrichment facility, in Staffordshire, enabling scientists to take measurements from deep within the soil to above the tree canopy. Autonomous sensors and instrumented trees allow scientists to take measurements continuously and remotely, over timescales ranging from seconds to decades.

Forests are critical components of global carbon, nutrient and water cycles, influencing the thermal balance of the planet directly and indirectly, and are home to more than half of all known species. Forests deliver direct economic, environmental and social benefits, ranging from fuel and

The Arboretum at Ranton Abbey, part of the Norbury Park Estate

building materials, to the sense of well-being associated with a walk in the woods. More subtly, forests also deliver services that underpin the production of food, clean water, and the breakdown of waste products. As human populations have expanded, increasing pressures have been placed on forests, with the 20th century witnessing the steepest rise in rates of deforestation.

The dynamic response of forests to combinations of climate change and pests and diseases are only partially understood, because there have been too few experiments on established unmanaged (wild) forests of sufficient scientific depth and duration.

As Professor Jo Bradwell explained: "The UK has the lowest woodland cover of any large European country because of deforestation over the centuries. What little we have remaining is now under serious threat from climate change and imported tree diseases. The new forestry institute will increase our understanding of these challenges in order to help planners, owners and foresters maintain and improve the health of our woods."

Lewis Scott, co-founder of Woodland Heritage, said: "We are delighted to announce that Professor Jo Bradwell is to be the recipient of the Peter Savill Award 2018, in recognition of the unique contribution that he has made to the world of forestry both in the UK and internationally, and in such a short period of time. Members of Woodland Heritage will have the chance to witness not just the amazing facilities at 'FACE' at this year's Field Weekend, but also the working, woodland estate at Norbury Park, including how over one hundred different species are faring in a unique test of which trees might be most suitable to grow in the UK in the future."

Past winners

2017 Gary Battell
2016 Dr Joan Webber
2015 Bede Howell
2014 Felix Dennis
2013 Miles Barne
2012 Dr Christine Cahalan
2011 Keith Rawling
2010 Will Bullough and Gavin Munro
2009 John McHardy
2008 Andy Poore
2007 Susan Bell OBE

Action Oak

Protecting our Oak trees

by Guy Corbett-Marshall

Almost a decade of fundraising, led by our late-Chairman, Peter Goodwin, to help advance knowledge of Acute Oak Decline has enabled Woodland Heritage to be seen as a significant force for good, when it comes to tackling pests and diseases affecting arguably our most popular species of tree.

This standing was reinforced by the Charity being involved from the very start in a new initiative to protect our Oak trees called Action Oak. Conceived just prior to Peter's untimely death and with his full blessing, Action Oak is a unique approach to species protection; rather than tackling threats one-by-one, the risks to Oak have been assessed as a whole at the outset, and an entire programme of work will be created to make progress on multiple fronts simultaneously.

The programme of work will include landowner liaison, funding of research, the use of both professional and citizen science networks to gather data, and the winning of financial and other support from organisations and the public. The overall aims are to better understand the threats to the Oak, to create ways to manage them better for the future and to set in place long-term monitoring programmes.

Many organisations have joined the Action Oak initiative already, some of which are part of the central Steering Committee. As well as Woodland Heritage, other charities that are part of the Steering Committee include Woodland Trust, Kew and National Trust, with Defra, Forestry Commission and Forest Research from the Public Sector, along with the three devolved administrations in Scotland, Wales and Northern Ireland; the other organisation in the Steering Committee is the Duchy of Cornwall.

The collective drive to establish Action Oak was driven by head and by heart, after all, Oak trees are part of our cultural and natural heritage. From Henry VIII's ships, to the carved timbers in the Houses of Parliament, to furniture in our homes, over the centuries Oak trees have been part of our lives.

Photo: Stephen Taber

Our favourite childhood stories, such as Robin Hood, feature an Oak tree and indeed, thousands of people visit the Major Oak in Sherwood Forest each year; thousands more frequenting a Royal Oak pub, named after the future King Charles II, who is reputed to have hidden in the Boscabel Oak when fleeing from the Roundheads.

Across the UK from the Atlantic Oakwoods of our western shores to the New Forest, to city parks, Oak is one of our most common and loved broadleaved trees. Oak trees enhance landscapes, support wildlife, provide playgrounds for children, and offer shade and relaxation for city dwellers and workers.

Oak trees make up 16% of our broadleaved woodland, representing about 120.8 million individual trees, with a single tree capable of playing host to 284 species of insects and 324 species of lichen, as well as providing food for birds and mammals.

Over 49,000 ancient, venerable and notable Oak trees have been recorded in the Ancient Tree Inventory and the UK has more ancient Oaks than all other European countries combined; for those that are not destined for great age, forest Oaks have the highest commercial value of any common, UK hardwood species, as well as high social and environmental value.

Guy Corbett-Marshall (WH) and Chris Dennis (Animal and Plant Health Agency) promoting Action Oak at the Chelsea Flower Show

Unfortunately, environmental pressures such as climate change, pollution and drought, can make our Oak trees more vulnerable to pests and diseases, including Acute Oak Decline (AOD), Oak Processionary Moth, root-attacking species of honey fungus and powdery mildews, as well as threats not yet in the UK but which could yet arrive such as Xylella. Together, these are threatening the future of our Oak trees.

Over the last five years, Action Oak members have invested over £10 million in research into pests and diseases, including a substantial outlay by Defra and partners managing the Oak Processionary Moth outbreak in the London area, and nearly £2m injected by Woodland Heritage into an ongoing Government-backed research programme into Acute Oak Decline.

Recognising that everyone can help to protect our Oak trees and that collectively we need to do more, Action Oak was conceived in early 2017 and then previewed initially in the House of Lords in October 2017 at a high-level meeting convened by Lord Gardiner of Kimble, Parliamentary Under-Secretary-of State for Rural Affairs and Biosecurity.

The momentum gained at that gathering brought forward funds from Defra, Forestry Commission and Woodland Trust to enable a part-time Project Officer to be appointed. Sarah Jeffery became a member of Woodland Heritage staff in April, with our Charity also being the Treasurer for the initiative.

Geraint Richards (right) with Lord Gardiner and Joanna Lumley at the Chelsea Flower Show

A full, public launch took place at Chelsea Flower Show in May, with Action Oak having a stand in the Discovery Zone of the Grand Pavilion, its creation led by the Animal and Plant Health Agency and with timber and logs supplied for its construction by Whitney Sawmills. The stand attracted visits by Prime Minister The Right Honourable Theresa May MP, The Rt Hon Michael Gove MP, Secretary of State for the Environment, Food and Rural Affairs and Lord Gardiner. These special guests all received Action Oak badges, commissioned by Woodland Heritage and funded by the Liveries Wood Group.

As well as the launch of Action Oak itself at Chelsea, 'Celebrating our Oaks', a special award run in conjunction with the International Garden Photographer of the Year competition was set in motion, with a closing date of 30 September for entries (www.igpoty.com).

We have a responsibility to protect our iconic Oak trees for future generations, which is why Action Oak was created. For it to be a success and to improve protection of our Oak trees, we need support including more partners and extra funding, sponsorship, time, expertise and contacts.

If you have any of those vital things to give and would like to support Action Oak, please visit the website www.actionoak.org to find out more, contact info@actionaok.org, or make a £5 donation by texting OAKS18 £5 to 70070 (funds will go to Woodland Heritage on behalf of Action Oak).

ActionOak
PROTECTING OUR OAK TREES

More than a sawmill!

by Guy Corbett-Marshall

As ten years and a total of twenty Woodland to Workshop courses have hopefully demonstrated, Woodland Heritage's involvement with Whitney Sawmills has always been about more than the wonderful timber that the mill has consistently produced.

Almost two years into running Whitney Sawmills, the steady flow of customers' vehicles leaving the mill with their orders satisfactorily fulfilled has been supplemented by a small, but gently increasing number of minibuses full of students, who have been to the mill to learn more about how it works and what its role is within the timber supply chain.

Thanks to an introduction by Woodland Heritage's Trustee, Geraint Richards, Head Forester for the Duchy of Cornwall, the Prince's Trust's 'Get into Woodlands' scheme has visited Whitney Sawmills on two occasions.

In some respects, the group's visit might hail the arrival of spring, but this year's cohort were most unlucky to have booked a visit on the very day that the much talked-about 'Beast from the East' arrived. So, not surprisingly, a small, but very hardy band of young people arrived on March 1 to learn about the mill and for braving the trip to very rural Herefordshire in such weather conditions, they truly deserved credit; the mill was snowed in and closed the next day!

The Prince's Trust 'Get into' programme is designed for young people aged from 16 up to 30 and can give them the experience and training they need to move into a job.

Aimed at young people not in work, education or training and living in the UK, the 'Get into' programme gives the chance to gain work experience and receive training in a specific sector with a particular focus on employability skills, helping participants move into a job after the course.

With so much woodland and associated infrastructure in Herefordshire, it's an ideal county within which to run the 'Get into Woodlands' programme giving participants time training on the job and gaining valuable work experience in their chosen sector, one element of that experience being to see a working sawmill.

From those being introduced to the world of timber via the 'Get into' programme, Whitney Sawmills was delighted to welcome for the first time this year the University of Cumbria's National School of Forestry Study Tour.

Each year the School takes one group of students to Scotland and one to 'Southern' England with the intention of giving them a snapshot of something different from what is on their doorstep in the Lake District and the Scottish Borders. This year's 'southern' tour was a little different from previous years' featuring something of a tour de force on hardwood silviculture and utilisation. To this

National School of Forestry students examining Oak logs

Dermot Doyne illustrating how to look for shake in a log

Dermot Doyne discussing preparation of the log for milling

end, the group visited not only the forests of Wyre, Mersey and Dean, but also Maelor Nursery and the historic parkland of Moccas Park, as well as coming to Whitney to see a working hardwood sawmill.

The under-graduates of the National School of Forestry will hopefully all move into careers in the sector, whilst most of the visiting students on Harper Adams University's Forest Harvesting, Marketing and Timber Utilisation module have tended to be working in forestry or related professions already, with the rest as full-time MSc students hopefully fully intending to use what they absorbed at Whitney Sawmills to broaden their learning. Back for a second year, the feedback to-date has been how impressed the students have been with the opportunity to see 'inside' the whole supply chain of hardwoods.

Examining the storage needs of sawn Sycamore

As well as looking to welcome other parties from the worlds of further and higher education to Whitney Sawmills (and indeed any group seeking to understand more about how sawmills are the vital link between growers and users), Woodland Heritage has created a talk about its own work, as well as the work of Whitney Sawmills, which can be given to groups around the country, but of particular interest in Herefordshire, where the mill is based. The first audience to receive the talk was Leominster Civic Society, with a welter of questions following the presentation.

As a reminder, the video 'Growing and Using our Woodland Heritage' which is largely based at Whitney Sawmills during the running of one of the Woodland to Workshop courses is always available to view at https://vimeo.com/118825403.

STOP PRESS!

Timber from Whitney Sawmills was used to create the Gold Medal winning Action Oak stand at the Chelsea Flower Show in May. As well as the senior political figures who visited the stand, it also welcomed a number of well-known personalities including Joanna Lumley and Alan Titchmarsh.

Woodland to Workshop course achieves two milestones

by Guy Corbett-Marshall

A twentieth running, ten years after it began, saw Woodland Heritage's ever-popular 'Woodland to Workshop' course achieve two landmarks in May. Based as ever in Herefordshire at Whitney Sawmills and woods, along with the Duchy estate's woodlands, the next target that beckons could be as near as this September, when the total number of attendees is due to top the 250-mark.

"We always thought that the simple idea of a course that connected timber growers with wood users had a market and it's wonderful to see that a decade later, the demand is still there from both ends of the timber supply chain", said Lewis Scott, Co-Founder and Trustee of Woodland Heritage. "Feedback from those attending remains consistently high and the waiting list to attend still remains, although we're always keen to hear from people who'd like to attend, of course!"

The next Woodland to Workshop course is due to take place in late-September 2018. For more information, please e-mail enquiries@woodlandheritage.org.uk or phone 01428-652159.

David Smyth

Winner of the 2017 Prince of Wales Award

The tutors on the Woodland to Workshop course were all greatly impressed by David's very evident appetite for learning and his contributions to the course. In 2018, David has undertaken some overseas travel, including visiting Australia, where I put David in touch with the wonderful Rowan Reid who himself has written an article in this year's journal. David spent a couple of days with Rowan at his farm. When I saw Rowan recently he spoke about David in glowing terms and this only confirmed, in my mind, David's selection as the 2017 recipient of The Prince of Wales Award. At Woodland Heritage we are very excited about David's future and look forward to articles from him in future journals. Well done indeed, David; a worthy recipient. **Geraint Richards**

from woodland to workshop

My interest in timber was first ignited at the age of six, when I discovered woodturning. I really got going at 11, when I started selling my wares at craft fairs and shows, then, as I got older and gained experience, I started selling in shops and galleries in and around the Yorkshire region.

Through this period of learning to work with timber and, importantly, how to make a profit from it, I began purchasing felled trees and having them custom milled at a local sawmill and selling the timber I didn't need to fellow woodworkers I'd met through the local club. Finding some success at this, I decided to extend my scope to the surrounding woodworking clubs in the region, gaining contacts and experience as I went, and it wasn't long before I had a fully-fledged business

supplying firms and furniture makers, and realising how much I had to learn!

Eager to learn more about the wood chain I attended the May 2017 'from Woodland to Workshop' course to increase my knowledge to help develop and grow my woodworking and timber business. Smyth Timber Supplies is now delivering green Oak for construction, sawn timber milled in-house and dried to customer specifications, as well as stocking rare and unusual timbers that no one else does, whether it be huge four foot wide planks, exquisite Oak burrs, or feature planks for table and bar tops.

Our Tutors were most impressed with this interesting young man who was determined and keen to develop a serious wood business in Yorkshire. It was a welcome ambition and great to hear of someone thinking big – David always has something special to get excited about!

Towards the end of 2017 we were delighted to hear that David had acquired a TimberKing sawmill and his business has been making great strides. We congratulate him on his award and wish him the success he deserves.

The Royal Forestry Society Sylva Trophy 2017 Winner

Peter Goodwin

The renowned timber furniture manufacturer and one of the founders of Woodland Heritage, Peter Goodwin, has been posthumously awarded the Sylva Trophy for his outstanding contribution to forestry by the Royal Forestry Society (RFS).

The Trophy was presented to Peter's widow Sally at the 2017 Excellence in Forestry Awards at Grimsthorpe Castle by Sir Jack Whitaker, immediate past President of the RFS.

Accepting the award, Sally said how delighted the family was to receive the award, describing it as like winning the Olympics of forestry. Peter had received the Royal Forestry Society's Gold Medal for distinguished services to forestry in 2010.

At the age of 18, Peter joined the family firm of Titchmarsh and Goodwin in Ipswich manufacturing fine period furniture.

After his father's death, he and his half-brother ran the company for many years. Peter scoured the country for timbers suited to its manufacture – no tree of any value escaped his discerning eye. He knew where the best Oak grew, where Yew and Walnut flourished, where burr could be found and fruit woods purchased. He bought a sawmill at Witnesham to convert and season his purchases.

In 1994 Peter and fellow furniture manufacturer, Lewis Scott, established the charity Woodland Heritage to connect the growers of timber with all those who used it, from makers of fine furniture to makers of hurdles.

Peter was a member of the Royal Forestry Society's East Anglia Division and an energetic chairman of the division for some time. For a decade he served on the RFS Council. When Acute Oak Decline was recognised Peter raised over £2 million to help Forest Research employ Dr Sandra Denman and her team of dedicated scientists.

Photo: Les Starling

Sally Goodwin with the Sylva Trophy presented posthumously to Peter Goodwin

He was described by one forester as "the beating heart of forestry".

The Sylva Trophy was donated to the RFS by Patrick Evelyn, a direct descendent of John Evelyn, author of the seminal 17th century *'Sylva or a Discourse of Forest-trees and the propagation of Timber'.* It is presented annually to recognise a person or organisation who in the opinion of the RFS has made an outstanding contribution to forestry in its broadest sense.

RFS ROYAL FORESTRY SOCIETY

INSPIRING PASSION AND EXCELLENCE IN WOODLAND MANAGEMENT

Something special for someone special

by Lewis Scott

When Peter passed on I immediately determined to find something very special to present to Sally. It could not be something that you could just go out and buy, it had to be created, it had to be unique and it had to be a "one-off". It also had to be synonymous with the Peter Goodwin we all knew and loved.

Then, I had a really silly idea. On further thought, I nearly dismissed the idea as just not technically possible. Nonetheless, I decided to ring Richard Chapman, a craftsman that Peter always referred to as "My Wood Turner", and said "you know Peter always sported a "Tilley Hat" ... turn one in Oak ? There was an understandable pause, until Richard said "Well Lewis I've never done anything like that ... but, I'll give it a try" (he left unspoken "because it's Peter").

Richard let it be known to a few local landowners that he was looking for some Green Oak for a piece to commemorate Peter and, as if by magic, a nice log turned up in his yard, no note and no invoice.

My confidence in the genius of Peter's Wood Turner was of course fully rewarded, as you can see for yourself. My photography does not do it justice and to say the piece is tactile is a huge understatement.

Richard Chapman, Lewis Scott and Sally Goodwin

Forestry skills gaps identified

Simon Lloyd, Chief Executive, Royal Forestry Society

In 2017 Woodland Heritage supported the production of the Forestry Skills Study, a report commissioned to identify gaps in the supply of skills across the forestry sector in England and Wales. Woodland Heritage joined a consortium led by the Royal Forestry Society (RFS), Forestry Commission England, Cumbria University and the Scottish Forestry Trust. The report was presented to the Forestry Skills Forum in December with recommendations to develop a cross sector action plan that builds stronger links with schools, universities, colleges and training providers and employers in England and Wales.

The forestry sector is experiencing growth in demand for home grown timber and wood fuel, and a significant increase in the numbers of trees planted is anticipated in the coming years. Forestry offers excellent career opportunities at all levels. If it is to thrive, the sector needs to work together to ensure it attracts and retains talent, and skills gaps are addressed. The report provides the evidence base and impetus to make this happen

The study, carried out by RDI Associates, comes at a time when the sector has seen the numbers of people directly employed in England and Wales rise from 10,000 in 2010 to 13,000 in 2016. Forestry is characterised by a high proportion of independent sole traders operating at all levels in the supply chain. This presents a challenge for the analysis of data about sector trends. RDI Associates' principle source of information was structured interviews with forest sector employers, contractors, education institutions and forestry charities.

Photo: RFS Moulton College 2017

RFS Future Foresters Technology Day

Photo: RDI Associates

More young chainsaw operators are needed

Employers are more confident about the availability and suitability of staff than they were previously, but there are significant shortfalls in some key professional and technical skills, says the report. Employers are particularly concerned about:

- The availability and skills of machine operators, particularly in lowland England. Employers need operators who are more technically competent and able to work in more demanding situations and point to the Scandinavian forest technician role which is responsible for a wider range of supervisory tasks.
- The availability of chain saw operators, especially those able to fell larger hardwoods. This is an area where the report identifies an ageing workforce as the underlying reason for scarcity of skills.

- The supply of competent tree planters, especially in Wales. This has not been a problem in recent years when so little woodland creation has taken place but it will be vital if rates are ever to reach government targets.
- The practical and business skills of graduate recruits. Employers report graduates lack practical skills in key areas such as forest mensuration, forest soils and GIS mapping, and lack of "business ready" skills, a common complaint not specific to forestry. There is also some evidence that employers are recruiting from other academic disciplines (e.g. Geography) to find employees with broader generic business skills and are then training them on the job. This in part reflects clients' expectations that forestry consultants can advise on a broader range of land management issues beyond the forest gate.

Some of the problems identified in the report are historic - the result of a period of low timber prices which resulted in a lack of investment in people and training. The report finds no evidence to support a widely held perception that the work force is ageing. Instead it points to new recruits coming into the sector as activity picks up, but a shortage in mid-career professionals. This means that as more experienced foresters reach retirement there is a shortage of those who have the wider professional abilities or technical skills to replace them.

Other areas of concern include:

- The absence of forestry-related teaching in the national curriculum at GCSE level, especially given its importance to the environment, economy and society.
- The decline in the number of students enrolling in forestry degree courses in England and Wales although some universities report higher enrolment in the 2017/18 cohort. There are currently five Higher Education Institutions offering forestry degrees in England and Wales.
- The lack of focus on forestry related skills training in Further Education colleges, which has a strong arboriculture focus.
- A lack of female and BME recruits to the industry. The report finds just 7% of forestry employees are female.

Photo: RDI Associates

Skilled machine operators are in demand

Photo: RFS Moulton College 2017

RFS Future Foresters Technology Day

The good news is that the forestry sector is already in action seeking to address many of these gaps. Examples include:

- The creation of the forestry careers website, hosted by the RFS, providing anybody with an interest in pursuing a career in forestry with information on the full range of qualifications, further and higher education courses, and the range of jobs available.
- The development and launch of the Forest Operative apprenticeship which will take on average two years and covers the skills and knowledge to maintain and harvest forests and woodlands.
- A pilot project led by the Sylva Foundation to engage secondary school Geography teachers in integrating forestry into the curriculum.
- The development and launch of forestry soils and GIS mapping skills courses by the RFS, addressing specific professional skills gaps identified in the report.

These are relatively recent initiatives and as yet are not fully visible from employers' perspectives, or are not being communicated effectively or pursued with sufficient intensity. A Forestry Skills Action Plan is now being developed and will be launched later this year. This will propose specific actions to ensure that the sector continues to take well targeted and coordinated initiatives to address the sector's skills issues and ensure it is well placed to grow and thrive.

www.rfs.org.uk

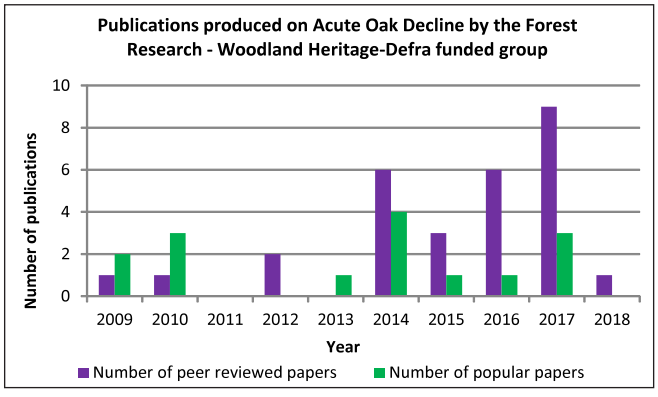
Acute Oak Decline update

by Forest Research

It is almost a year since Peter Goodwin passed away, and I know how delighted he would be to see such positive progress made on understanding the causes and management of Oak Declines, as well as the blossoming of all the students and post-docs that Peter worked so hard to support. We thank all of Woodland Heritage, and the charities that contribute so generously to the Acute Oak Decline (AOD) Appeal.

We are now world leading in understanding AOD, and getting ever closer to sustainable solutions to the problem. There is absolutely no doubt that this is due to the unfailing support that Woodland Heritage, through the AOD Appeal and the kind help with field work that many members have given us. We are of course also very grateful for the significant support we receive from Defra and the Forestry Commission, so this really is a public-private partnership success story.

Over the course of AOD research, Woodland Heritage support has given us flexibility to respond rapidly to new research frontiers in AOD, as they emerge. This was a key message I emphasised at the launch of the Woodland Heritage Film 'Save our Oak'. The film launch took place in London at the Godfrey Mitchell theatre at One Great George Street, London, on 30 November 2017. The film can be seen here: *www.youtube.com/watch?v=Ajyg9KYBwVA*. Geraint Richards was a masterful master of ceremonies, linking the sections of the programme together seamlessly, with entertaining stories – such as the acquisition of his 'Tilley hat' (which I secretly admire very much!). Lord Gardiner of Kimble, Parliamentary Under Secretary of State for Rural Affairs and Biosecurity, addressed the meeting voicing his concern about the diminishing health and resilience of native Oak trees in Britain, but expressed great enthusiasm, and commitment to research on Oak health, which he has backed by DEFRA investing half a million pounds into research on Oak genetics and establishment of Oak health monitoring systems.



In 2017 we had a number of significant highlights. Nine peer-reviewed scientific papers and three popular publications were published (see chart), bringing the total number of scientific papers we have published since the onset of our AOD research in 2009 to 29, and popular papers to 15. A number of the papers were published in 'high impact factor' journals, for example see at the end of this report, ISME journal (doi: 10.1038/ismej.2017.170), which is a measure of wide scientific readership and stringent, rigorous, peer review. Some of the papers introduced novel, difficult scientific concepts. For example: the commonly accepted test of pathogenicity for primary disease causing micro-organisms (called Koch's Postulates), is, we believe, inappropriate for understanding and proving tissue necrosis caused by polymicrobial communities, in secondary decline diseases. This idea may still be challenged by some members of the scientific community, and more work is required to bring it to complete acceptance.

Another highlight for us is the continued support we receive from various Woodland Heritage members and the charity. I thank you one and all, without your support we could not deliver what we do. I would like to thank Gary Battell particularly for his support in the field. Gary helps facilitate access to many study sites and wherever possible accompanies us on site. These visits were so important to Peter, and Gary did so much to make sure those field days were very memorable, capturing both scientific and social moments on camera, clearly and sensitively. Of course, I am also incredibly grateful for the unfailing financial support we receive. Of special mention is the Monument Trust, which has given the AOD Appeal another substantial sum for our research, for which I gratefully thank Stewart Grimshaw and the Monument Trustees. Further special mention and enormous appreciation goes to the John Paul Getty Trust, for its very generous and steadfast support.

This year we are just giving you 'News Bites' on research progress – a flavour of what we are doing, rather than new results. Next year we will prepare our usual more detailed research update booklet. We bring news from the team at UWE (University of the West of England) where Dr Carrie Brady has just returned from maternity leave, having had her second son, Nathan. Carrie will be picking up the reins of investigating the interaction between bacterial species associated with AOD. Carrie is also a supervisor of Woodland Heritage funded PhD student Viky Bueno-Gonzalez. A second Nathan, Nathan Brown, is no stranger to Woodland Heritage. He tells of the work done in collaboration with Elena Vanguelova and her team at Forest Research on seeking correlations between environmental factors and the occurrence of AOD. They have some exciting findings with practical management implications, so read on. The team at Bangor University has grown. The latest recruit, Andy Griffiths, began his Woodland Heritage funded PhD on a stem disease of young Oak not yet known in the UK. We are keen to find out the cause of the problem and ensure that it does not spread. Snippets of their news are given below, which I hope you will find interesting and useful in tracking the development of the research. I wish you all a happy summer and an enjoyable productive year ahead, and once again thank you for all the help you have given to me and my team.

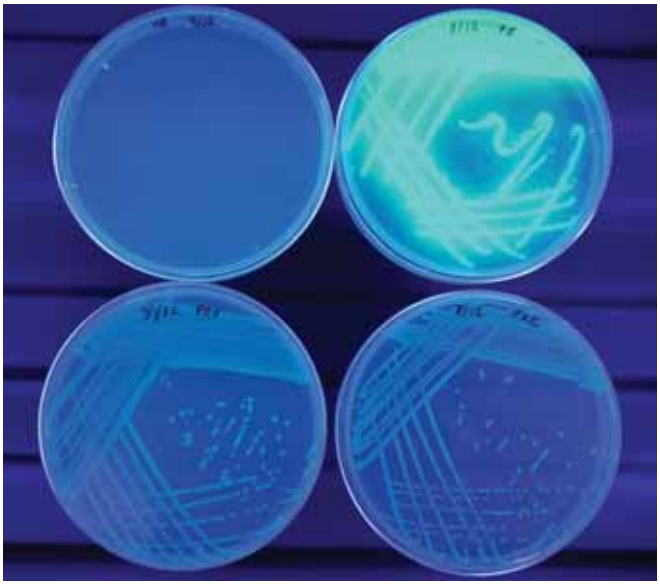
Sandra Denman, Forest Research

The University of the West of England Team: Carrie Brady, Victoria Bueno-Gonzalez and Dawn Arnold

Status of the description of the novel *Pseudomonas* species associated with the AOD

Multiple novel bacterial species isolated from Oak trees

API 50 CH strips for the analysis of the fermentation of different carbon sources by the AOD associated bacteria. This is one of the physiological tests that has been performed to aid the description of the novel genus and species of bacteria associated with AOD



Fluorescence test under ultraviolet light. Some pseudomonad bacterial strains associated with AOD secrete a pigment that makes them fluoresce under UV light (top right petri dish)

affected by AOD have been described in recent years. Interestingly, the microbial communities associated with AOD are still yielding novel bacterial species. At the University of the West of England (UWE), bacterial strains isolated from several AOD affected parks and woodlands have been identified as belonging to the family Pseudomonadaceae and are being studied further. Tests aimed at determining differences between the strains'

PhD student Victoria Bueno-Gonzalez. Victoria is carrying out the research towards the novel bacterial species description, under the supervision of Prof. Dawn Arnold, Dr Carrie Brady, Dr Sandra Denman and Dr Joel Allainguillaume

DNA, morphology and physiology have been performed in order to collect the pertinent data that will allow us to describe a new genus and several novel species of pseudomonads, associated with AOD.
Victoria Bueno-Gonzalez (PhD student), UWE

Bacterial interactions in AOD

I will be continuing with my project on investigating the interactions between bacterial species associated with AOD. The relationship between the three most frequently isolated bacteria from symptomatic Oak, *Gibbsiella quercinecans*, *Brenneria goodwinii* and *Rahnella victoriana*, will be examined both in laboratory tests on synthetic media and in plants (Oak twigs and logs), using a range of approaches. The interaction between the three species will be observed at the cellular level using fluorescently-labelled strains inoculated into Oak tissue. Fitness assays are being performed to determine the contribution of each species to future generations and to determine which species have competitive advantages. The effects of diversity and evolution between populations of the three species will be determined by growth assays in microcosms.
Carrie Brady Post-Doctoral Research Fellow, UWE

Katy Reed

Forest Research Entomology Team: Katy Reed, Emma Bonham and Daegan Inward

Dendrochronological study of trees with AOD

After submitting my PhD on the role of the two spotted Oak buprestid *Agrilus biguttatus* in AOD, Woodland Heritage has awarded a grant that will enable me to continue my work. Over the next year, I will carry out a dendrochronological study on AOD trees, looking at historical annual growth as measured from tree cores. Trees at all stages of AOD decline will be examined. The aims are:

1. to look for evidence of predisposition, or reduced growth, before the onset of AOD symptoms;
2. to determine the impact of AOD on the recent growth of affected trees; and
3. to look at the influence of *A. biguttatus* infestation on tree growth.

The work will be based on evidence from a preliminary study carried out in 2014. The work is now well underway. Two study sites and 100 study trees have been selected, and cores have been cut from these trees. I am currently preparing the cores for high-resolution scanning and measurement of the annual rings.

Understanding how trees are predisposed to AOD may have important implications for management of the syndrome, while understanding how the colonisation of the beetle affects the growth of trees may shed light on its

Emma Bonham

role in the decline of AOD trees. I am very grateful to Woodland Heritage for funding this important work.
Katy Reed Post-Doctoral Researcher (Forest Research)

Source of AOD bacterial inoculum

I am now in the second year of a Woodland Heritage funded PhD to investigate the mechanisms by which two of the 'AOD (Acute Oak Decline) bacteria' *Gibbsiella quercinecans* and *Brenneria goodwinii* may transfer between host trees. Field work over the last year was spent at several sites in Suffolk where the focus was on Oak vegetation, rainwater and insects as these are all potential sources or pathways for the bacteria to be moved to new hosts. A busy time is now being spent in the lab processing the samples. This involves extracting the DNA and then using a PCR (Polymerase Chain Reaction) molecular technique to see if the bacteria are present or not. The year ahead brings more field sampling and continued analysis of the 2017 samples. This work has been presented at a student symposium and the Forest Research seminar.
Emma Bonham (PhD student, Harper Adams University)

Forest Research and Rothamsted Research: Spatial Epidemiology and Abiotic Predisposition Factors Associated with AOD

Environmental predisposition factors associated with AOD at a landscape scale

Surveys for AOD across England and Wales were used to investigate how environmental factors influenced the distribution of affected sites. These analyses also used the many sightings reported to Forest Research by landowners and managers. Results show that the presence of AOD is significantly more likely to occur in low lying areas, those with lower rainfall and where it is warmer, with annual temperature accumulation (day degrees above 11.5°C) above a threshold of 400. Deposition data also indicated that AOD occurrence correlated with high levels of nitrogen deposition and low sulphur deposition. AOD affected sites occurred more often on clay soils, but significant trends with soil type were not detected in the analysis. Investigation of soils may require detailed field data and further investigations are planned at site and tree level. This spatial study reemphasises the importance of predisposition factors in the Oak decline syndrome. Thus, to understand the occurrence of Oak decline it is necessary to not only investigate the impact of biotic agents and their interactions, but rather to consider the whole system beginning with the links to environmental factors.
Nathan Brown (Rothamsted Research) and Elena Vanguelova (Forest Research)

The Bangor University Team: Andy Griffiths, Mallory Diggens, Martin Broberg, James Doonan and James McDonald

Investigation of a new disease on young plantation Oak

A new disease affecting young Oak trees on a woodland plantation in Shropshire has recently been identified. The aim of this research project is to develop an understanding of the causative organisms involved in the serious and aggressive bark canker disease on young plantation Oak. Symptoms of the disease include superficial and deeper bark cracks often developing in to significant lesions that penetrate deep in to the sapwood of the trees. As the disease develops, cankers form on the stem similar to those caused by fungal pathogens and the multiple lesions contribute to the girdling of the tree leading to a rapid death within four to five years from the first appearance of symptoms. To develop a better understanding of the problem, a broad-scope approach is being taken to identify contributing microorganisms and the mechanism of infection. A combination of classical microbiological techniques including culturing of pathogens and infectivity studies will be combined with cutting-edge molecular techniques in order to develop a full picture of contributing factors to the development of the disease and to evaluate the potential of its spread.
Andrew Griffiths (PhD Student), Bangor University

Andrew Griffiths

Armillaria gallica saprophyte or pathogen – a maverick fungus?

I am in the third year of my PhD which aims to identify the ecology of *Armillaria* and their role in Oak declines in the UK. I am busy developing a rapid diagnostic technique that can be used in the laboratory which will help us identify the different species of *Armillaria* accurately. First results are indicating that *A. gallica* on Oak in the UK may be a complex made up of more than one species. I still need to do more work on this though.

In a 70 year old Oak plantation I sampled a number of visually healthy trees as well as some trees with symptoms of basal stem collar bleeding. Trees in each category showed signs of *Armillaria* infection because they had the black bootlaces of the fungus (rhizomorphs) penetrating the buttress roots. I isolated *Armillaria* from the samples and now I have extracted the DNA. From the DNA I hope to find out if there are virulence genes in the isolates, and later I will extract RNA where I hope to find differentially expressed virulence genes between saprophyte infections compared with pathogenic infections.

Mallory Diggens (PhD Student), Bangor University

Photo: Gary Battell

Mallory Diggens

The dendrochronological perspective on Oak decline

Dendrochronology and isotope analyses

Tree ring width and stable isotopes in symptomatic and asymptomatic trees at affected sites are measured to define differences between impacted and disease-free trees in terms of their long term growth and functioning. The research focussed on the use of tree ring methodologies to define predisposition to decline, and to identify what happens to tree growth and functioning as decline sets in.

Tree ring growth histories can be used to identify predisposition to decline syndromes. Investigating the underlying growth histories of symptomatic and externally asymptomatic trees reveals a pattern whereby trees with visible disease symptoms in recent years have generally displayed lower than average growth throughout their lives. This suggests an environmental and possibly genetic predisposition to the decline syndromes.

Changes in the wood that pre-date externally visible symptoms can be apportioned to the different parts of the tree ring. The changes in early wood and late wood growth in symptomatic trees predate the recorded appearance of external symptoms such that a decline in total, or particularly early wood, ring width might be used to identify susceptibility prior to the onset of externally visible symptoms.

Mary Gagen, Principal Investigator, Swansea University

Data analysis and vanishing 'gold dust'

I would describe myself as a molecular biologist but I would happily add that I am a data analyst. To explain, my research involves studying the causes of Oak decline. I collect samples from tree bark, and then processing these involves a few weeks of intense laboratory work. This produces the material I want – DNA and RNA. DNA sequencing will then tell me what organisms are present on

James Doonan

and within the tree bark – mostly bacteria and fungi but also algae, viruses and archaea. However, the 'gold dust' of molecular biology is RNA. Outside of biological research RNA is not a term often used, mention DNA and people will nod, mention RNA and a vagueness descends, perhaps a long-ago recollection from high school biology. However, RNA describes what is happening. That is what I want to know, DNA will say what is there – but most often we want to know what is happening. RNA is 'gold dust' as it is very hard to get, or more accurately it can be got but rapidly disappears. It is a very unstable molecule and lasts only five minutes before degrading. It is, however, hugely informative – for my research it will tell me what each organism is doing, is it in harmony with the tree and simply harvesting sunlight, or is it destroying the tree and ingesting the bark? However, to get that information I must instantly freeze each sample in liquid nitrogen, go back to the lab, and remove the RNA from the tree bark without the temperature going more that -80°C. This process can take weeks and can be immensely frustrating as despite the best efforts of everyone the RNA often randomly disappears.

With modern technology we have the ability to harvest RNA successfully and turn this into physical information on a grand scale. To understand the resultant data biologists now need computational power, deep learning, parallel computing and other such infiltrations from computing technology jargon as much as they need a microscope. Therefore, analysing biological data to extract key information requires a different skill set than even a decade ago. The vast amount of information contained within RNA gives unprecedented insights into the hidden world, and lets us know many things, including – are they destroying our Oak trees?

James Doonan Post-Doctoral Researcher (Bangor University)

Integrated multi-omic analysis of host-microbiota interactions in Acute Oak Decline. Microbiome 6:21 DOI 10.1186/s40168-018-0408-5

Martin was a Woodland Heritage funded post-doctoral student with a two year contract that ended in May 2017. Below we summarise some of the results his work produced in the scientific paper in the title above. The study was about using the latest molecular techniques to investigate the host and microbial interactions in Acute Oak Decline (AOD) lesions on Pedunculate Oak (*Q. robur*). See Microbiome 6:21 DOI 10.1186/s40168-018-0408-5.

The key findings of the work are:

- That previous results obtained regarding the composition of bacterial components of AOD lesions are confirmed, and that bacteria are the cause of the tissue necrosis but this study strongly emphasised the major role that *Brenneria goodwinii* plays in tissue degradation.
- Details about some of the mechanisms of pathogenicity and host responses were elucidated but further testing is required to establish how genes are 'switched on'.
- A key finding of the study was that two Gram Positive bacterial species not yet cultured or identified, in the families: *Carnobacteria* and *Clostridioides* were present in the AOD lesions. These bacteria are expected to have substantial roles in the tissue degradation. These bacteria have not yet been isolated, named or identified properly, and their role has yet to be determined.
- This work has given us a glimpse into how the trees combat the disease, with a barrage of reactive oxygen species and osmotic stress, and the bacteria seem to survive this quite well.

The techniques we used were modern, advanced and quite novel, particularly the proteomics, not previously used on trees, and an important advancement into tree science in that sense.

An important next step for us will be to try to isolate, identify and test the Gram positive bacterial indicated in this study, and to determine the full mechanism of action in lesion formation.

Martin Broberg (funded by WH 04/15 – 04/17)

Other highlights

ISME publication ISME journal (doi: 10.1038/ismej.2017.170) Sandra, James and team published a paper in which compelling proof of bacterial necrosis of the Oak tissues in AOD was provided. This is a significant step forward in understanding the cause of the stem bleeds and tissue rot, although it is not the complete story and there is still more to do; and it is a small step forward in understanding the whole complex AOD and Oak decline syndromes. Furthermore, it is a wider contribution to science as it offers a template for solving complex causes of complex tree diseases at the pathogen level. We would like to thank all those who have given us so much help and support to achieve this work, and thank you all for your ongoing interest and support.

www.forestry.gov.uk/forestresearch

Local action tackling a national (and local?) problem

by Guy Corbett-Marshall

Woodland Heritage received an e-mail in early April the like of which is always a pleasure to receive. The author was Geoff Ralph, Acting Chair of the Monitoring Group and volunteer member of Sherrardspark Wood Wardens Society in Welwyn Garden City, who went on to say: "The Wood Wardens carry out much of the management of Sherrardspark Wood SSSI, Welwyn Garden City under the direction of Welwyn Hatfield Borough Council. We are shortly hoping to send you a donation towards the research effort to arrest Acute Oak Decline (Death), our monies being generated from income derived from deliveries of firewood to the local community.

Our specific interest in this research is the fact that our 75-hectare wood has many mature Sessile Oaks up to 250 years old. From the SSSI citation: 'The acid soils support an extensive ancient semi-natural Sessile Oak/Hornbeam *Quercus petraea/Carpinus betulus* woodland. A significant part of this wood is dominated by mature Sessile Oak high forest, a habitat now rare throughout lowland England.'"

Very modestly, the extent of the Wood Wardens' work (and which is so well illustrated in their website www.sherrardsparkwoodwardens.org.uk) was recognised in an e-mail received two days later from Mrs Chris James, Landscape & Ecology Officer at the Council, who said: "It is a wonderful nature reserve and the Wood Wardens have devoted thousands of hours over 50 years to looking after it – in partnership with the council. They are an extraordinarily committed, able and enthusiastic group without whose support very little of the proactive management that has taken place during the last 10-15 years could have been achieved."

When I had the great pleasure to visit the wood in May, all that had been written was wonderful to witness at first hand, although tinged with some concern that several of the mighty Oaks on-site displayed both exit holes and stem lesions. Whether the trees have AOD or not is to be confirmed later this summer, but whatever the case, we hope that a productive and positive relationship has now been forged with the Wood Wardens, especially when they wrote: 'we wish you every success in the fight to save all our Oaks.'

Oliver Waring, Tree Officer, Welwyn Hatfield Borough Council; Geoff Ralph, Acting Chair of the Monitoring Group, Sherrardspark Wood Wardens Society; Chris James, Landscape & Ecology Officer, Welwyn Hatfield Borough Council

Defra Minister sees 120-year Oak cycle in 120 minutes

by Guy Corbett-Marshall

As part of Grown in Britain Week, Parliamentary Under Secretary of State for Rural Affairs and Biosecurity, Lord Gardiner of Kimble, saw the entire Oak cycle demonstrated on a single Suffolk estate in just two hours. A process that normally takes over a century from the planting of a seedling to the making of fine, British wood products was brought to life at the Sotterley Estate, courtesy of forestry manager, Miles Barne, and the team at Sutton Timber, based at Sotterley Sawmills.

The visit started by looking at two young Oak compartments near the start of the cycle, aged four and twenty-four years. The new French system of silviculture designed to reduce the length of an Oak rotation was demonstrated, with the four-year old compartment shared with an experimental crop of Wild Service to provide stand diversity. In the twenty-four-year-old compartment, Oak 'winners' were pointed out, their canopies soon to be 'halo-thinned'.

In growing Oaks, success is never a 'given' especially with an increasing threat from pests and diseases as was demonstrated to Lord Gardiner by Woodland Heritage Chairman of Trustees, Lewis Scott, who pointed out the D-shaped exit holes of the Agrilus beetle on an Oak infected with Acute Oak Decline.

Lord Gardiner said: "I am immensely proud of our majestic Oak, our national tree. My visit to the Sotterley Estate has given me a new understanding and admiration for the precise care and expertise it takes to grow Oak to be tall, proud and healthy, ready to be turned in to beautiful wood products like the ones I saw today."

"But from pests to disease, our Oak trees face a range of significant threats. This is why it is vital we work together; government, woodland owners and industry, to do all we can to protect Oak in the environment by maintaining the highest biosecurity standards, undertaking surveillance and acting quickly if threats arrive."

To complete the silvicultural cycle, Miles Barne and forestry agent, Andrew Falcon, showed Lord Gardiner sixty 'gun-barrel-straight' Oak logs that had been grown on the estate for 170 years and which had been felled recently and were then presented for sale.

At Sotterley Sawmills, Ben Sutton explained the range of products that Sutton Timber supplies, including boards of a range of thicknesses, as well as a wide selection of flooring products. In the on-site machine shop, Tom Jones (machinist and cabinet-maker), Philip Read (joiner and cabinet-maker) and Nick Shore (wood turner) demonstrated the wealth of uses for high quality timber that had created a variety of fine furniture and treen on display.

"Woodland Heritage is in the midst of investing some £2m into research into Acute Oak Decline, whilst also supporting activity throughout the timber supply chain that helps growers and users to benefit from this essential part of the UK economy", said Lewis Scott. "To have had the chance in such a short time to show all of these important parts of our charity's work to Lord Gardiner was a wonderful opportunity and we are most grateful to Miles Barne and Ben Sutton for helping to make this visit happen".

Photo: Stephen Taber

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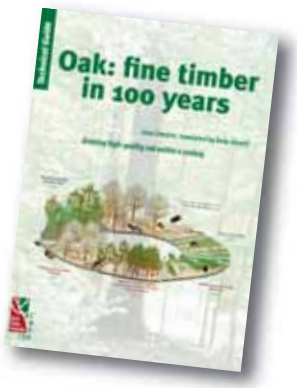
"Oak: fine timber in 100 years"

by Jean Lemaire. Translated by Bede Howell OBE MICFor

This book, which was translated by Bede Howell from the original French publication, continues to arouse much enthusiasm and interest.

It is the outcome of over 30 years research, which has demonstrated that Oak can be grown on a much shorter rotation than was previously practised.

Miles Barne presents Lord Gardiner with a copy of the book



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Free growth in Oak

by Gary Kerr and Rob Coventry, Forest Research

Can we grow Oak to 60 cm DBH in less than 100 years in Britain? This was the fascinating question that was examined (and answered!) during a meeting organised by Woodland Heritage and Forest Research on 19 April 2018 in Devauden, southeast Wales.

It was a beautiful, sunny day and the meeting was attended by 100 people all of whom were keen to find out the answer to the question! Everyone who had been lucky enough to secure a ticket to this sell-out event had been promised a day of silvicultural revelry and excellence and this is, hopefully, what we delivered. The day started with a field visit to the Forest Research long-term experiment at Crumblands Plantation, roughly four miles north of Devauden. After lunch there were presentations on the results of the experiment and contributions by Geraint Richards MVO MICFor (Head Forester for the Duchy of Cornwall), Graham Taylor MBE MICFor (Pryor and Rickett Silviculture) and Professor Julian Evans OBE BSc PhD DSc FICFor, to place the results from the experiment into the wider context of Oak woodlands in Britain.

The aim of the experiment at Crumblands is to study the application of free growth silviculture to Oak, which raises the question: what is free growth silviculture? Free growth silviculture aims to maximise the diameter increment of 60-70 trees per hectare by giving their crowns conditions of 'free growth' by removing competing trees. It is best described as having three parts:

The group learning about free growth silviculture

- **Selecting** – 60-70 trees per hectare are selected early on in the life of the stand that have good form and vigour, usually when top height is between 10-12 m. [Figure 1]
- **Thinning** – the selected trees are then thinned every 3-5 years to remove all competing trees in a halo around the crown of the tree. [Figure 2]
- **Pruning** – this is carried out as required on the free growth trees to ensure that epicormic branches do not survive and become a problem later in the life of the trees.

Interest in maximum rate of diameter growth of Oak had been stimulated by observations of very fast diameter growth of Oak trees that had been isolated by very heavy fellings during the Second World War. This had led Forestry Commission scientists to design the concept of 'free growth' to test whether similarly fast diameter growth of Oak could be achieved in productive woodlands.

Figure 1 Young Oak before free growth treatment in one of the experiments

Figure 2 An aerial view of Crumblands taken in 1974

The experiment at Crumblands was established in 1951 in a 20 year-old crop of Oak planted at a density of 13,400 trees per hectare grown from locally collected seed. Forest Research has maintained the experiment since 1951; the last thinning was in 1988 when the crowns of the selected free growth trees came into contact with each other. A great strength of the experiment is that it has assessed the application of free growth starting in 1953, 1964 and 1974 and compares this with more traditional crown thinning.

Interest in the speed of diameter growth of Oak trees is not restricted to foresters in Britain. In 2010 Jean Lemaire, the Technical Secretary of the Institut pour la Développment Forestier (IDF) in France published his book *'Oak: fine timber in 100 years'* and this was subsequently translated into English by Bede Howell with support from Woodland Heritage. The main message of the book is that quality Oak trees can be grown on a rotation of less than 100 years if 70 well-formed dominant trees (per hectare) are identified early in the rotation and 'active silviculture' is applied. These results were of so much interest that the late Peter Goodwin and Miles Barne led a party of interested foresters from Britain and Ireland to see Lemaire's work in November 2015. Readers will also note a striking similarity with the work at Crumblands and it is no coincidence that Jean Lemaire visited the experiment in 1996.

In the village hall waiting for the answer to the question: can we grow Oak to 60 cm DBH in less than 100 years in Britain?

The main results from the Crumblands free growth experiment are shown in Table 1 and answer the question: can we grow Oak to 60 cm DBH in less than 100 years in Britain? The answer is YES! Table 1 shows that trees that had free growth applied in 1964 will achieve a mean DBH of 60 cm in 2018 – probably just as Woodland Heritage members read this article! The table also shows that the other free growth treatments will achieve the same result in 2020 (Free growth started in 1953) and 2034 (Free growth started in 1974). It's also clear that the crown thinning treatment has performed well and will achieve a mean diameter of 60 cm in 107 years. These results are quite amazing and show just how quickly Oak can grow in Britain if treated in the right way. They are also a triumph of long-term research carried out by Forest Research.

Table 1: Results of the free growth treatments at Crumblands on diameter growth

Treatment	Projected age when Diameter = 60 cm	Date
Crown thinning	107	2038
Free Growth 1953	89	2020
Free Growth 1964	87	2018
Free Growth 1974	103	2034

Now that we have this evidence that we can grow Oak much more quickly than in traditional silviculture, a question arises over whether free growth should be used more widely. To answer this we have to weigh-up the benefits and possible risks. The main benefits are the faster growth of Oak and the appealing stand structure created by free growth, which were observed during the field visit [Figure 3]. The risks are potentially significant because the selection of the final crop trees is very early and this is essentially 'putting all your eggs in one basket', which no financial adviser should suggest! This early

Figure 3 The stand structure at Crumblands in late 2016

Gary Kerr explaining the experiment on free growth at Crumblands

Attendees at the free growth event waiting for the coaches for the journey back to Devauden

selection means that you could select the wrong tree, although there's not much evidence for this at Crumblands but they had 10,000+ trees to select from! In addition, there are other potential problems from grey squirrels as well as other types of damage and the problems of epicormics [Figure 4]. Balancing these risks and benefits means that, for Oak, crown thinning may be the better option. However, for other fast growing broadleaves that do not produce epicormics, maybe free growth is a good option.

Figure 4 Effects of a lightning strike on a free growth tree in 2008

This was a great day and we would like to thank everyone who attended the event for making it such a memorable occasion. In addition, we would like to thank the funders (Woodland Heritage, Forestry Commission Scotland and the Forestry Commission) and the landowner, Natural Resources Wales for supporting our work.

The full results for the experiment at Crumblands will be published in the July edition of the *Quarterly Journal of Forestry*.

Best use of British Timber Award

Celebration of Craftsmanship & Design 2017

Celebration of Craftsmanship & Design has become the largest selling exhibition of high quality bespoke furniture in the country. The exceptional examples of unique craftsmanship and design attract visitors and exhibitors from around the world. Jason Heap, the exhibition Director and organiser, himself a fine designer and maker, is a committed advocate of using responsibly sourced timber and is personally passionate about using local timbers whenever possible. As such it is always a pleasure to understand a little more about the timber that has been used in particular projects.

Woodland Heritage is proud to continue our support for this exhibition by sponsoring the Best Use of British Timber Award to promote the use of British wood as a renewable natural resource. It is by funding such projects, study bursaries, research, education, spreading the word and co-operating with like-minded initiatives that we seek to help.

Woodland Heritage Best Use of British Timber Award 2017.

A prize of £500 is awarded to the winning exhibit which demonstrates the provenance and use of locally sourced timber to maximise the economic and environmental value of trees and promote wood as a renewable natural resource with consideration given to craftsmanship and design. There is also an award for a Highly Commended exhibit.

With over 70 of the finest craftsmen under one roof and around 300 exhibits, this is an ideal opportunity to find a stunning addition for your home, or commission a unique piece, which could become an antique of the future. There are also several artisans from other disciplines, such as jewellery and ceramics, whose work beautifully complements the furniture.

Winner

George Johnson

Expanding Dining Table

www.johnsonfurniture.co.uk

Expanding Dining Table made from British Brown Oak with a fantastic example of Brown Oak Burr veneer by George Johnson. Rotating the table top causes the six segments that make up the top to move apart causing the expansion leaves to rise up from the centre and be unfolded to increase the surface area of the table top.

Judges' Comment

"One of the best pieces of furniture that both the judges felt they had ever seen and certainly the most elegant solution of the expanding circular table challenge. A triumph of

Cut sections of the Burr

design, engineering, craftsmanship and selection of materials with an excellent write-up of the maker's discovery of the all-important Brown Oak burr veneer. The base combines both elegantly and functionally with the top solving, so well, the stability, looks and space-for-the-knees problems."

Highly Commended

Jan Waterston

'Velo' Chair in British Ash

www.janwaterston.co.uk

Designed in response to modern bicycle design, the Velo Chair's components seamlessly change form and encapsulate the user. The bicycle is an object which the user can feel a seamless relationship to and subsequently the road. This relationship between body and object is echoed in bicycle design with tubes flowing seamlessly into one another, constantly changing shape, to improve function and aesthetic.

The complex free form lamination creates a strong yet flexible backrest and the user should sit right back in the seat, gaining enough support to have straight posture. The design's construction utilises CNC technology and merges it with hand craft. Important to note that there is still an incredible amount of hand crafted work in this piece.

Judges' Comment

"A brilliant combination of a traditional slightly 'Windsor' base with a state of the art laminated back rail. Beautifully made partly by hand and partly by CNC machinery. A clever design which makes use of the properties of Ash. The sculptural look almost conceals its comfort and flexibility and the steam bent back rail flexes slightly to adjust to the small of the back. Very comfortable – the sitter feels as if on a bicycle".

Jason Heap is to be congratulated on his exhibition now in its 24th year and which is recognised as the UK's largest annual exhibition of contemporary designer maker furniture.

Woodland Heritage are pleased to be returning in 2018 and will continue to encourage more craftspeople to source and use timber grown in Britain at this unique event which will run from 18-27 August 2018 at Thirlestaine Long Gallery in Cheltenham.

Celebration of Craftsmanship & Design

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Tree species suitable for a changing climate

by Scott McG. Wilson, Bill Mason, Peter Savill and Richard Jinks

Much thought is being given to tree species that might be used in Britain as climate change proceeds and in light of threats posed by recently introduced pests and diseases. Extending the suite of species grown under continuous cover and short rotation silvicultural systems is also important, as the existing choice of principal forestry species is too narrow.

In a series of articles in the *Quarterly Journal of Forestry* we have been considering how various candidate alternative species might perform in Britain. Earlier papers dealt with coniferous species, but during 2017 and 2018 we turned our attention to alternative hardwoods. Major groups of species covered include (a) noble hardwood alternatives to Ash, (b) *Nothofagus* (Southern Beech) species, (c) non-native Oaks, (d) non-native Alders and (e) Poplar and Aspen species. This article presents a summary of these papers. The full versions are becoming available from the Royal Forestry Society website (www.rfs.org.uk/learning/forestry-knowledge-hub/species-profile-project).

Literature review informing these papers was part-sponsored by Woodland Heritage and the Royal Forestry Society, for which the authors are grateful.

Noble hardwoods

(Published in July 2017 – QJF 111(3):166-182)

This paper considers a selection of alternative hardwood species from North America and western Eurasia that may be suitable substitutes for Ash in British forestry, given impacts of Chalara die-back (*Hymenoscyphus fraxineus*). The species included are primarily suitable for fertile sites under temperate climates in lowland Britain, producing valuable timbers for furniture making, musical instruments, sports goods and veneers.

The range of hardwood species appropriate as substitutes for Ash in upland woods is more restricted.

The principal species groups considered are:

- Maples and Planes (*Acer* spp. and *Platanus* spp.)
- Hickories (*Carya* spp.)
- Wingnuts (*Pterocarya* spp.)
- Hop-Hornbeams (*Ostrya* spp.)
- Sweetgum (*Liquidambar styraciflua*)
- Tulip Tree (*Liriodendron tulipifera*)

Most species considered (e.g. Maples, Hickories, Hop-Hornbeam, Sweetgum and Tulip Tree) derive from mixed hardwood forests of eastern North America. The track record of species from this region, when planted in Britain, has been less distinguished than those from western North America. Only one species included,

Sweetgum – Stourhead Western Estate, Wiltshire

Oregon or Bigleaf Maple (*Acer macrophyllum*), comes from that region, where conifers dominate. Other species considered originate from western Eurasia (Norway Maple, Planes and Wingnuts). Few of the species considered (e.g. Norway Maple, London Plane and Tulip Tree), have previously been tried on any scale in Britain. Others have been restricted to arboreta and tree collections, usually as single specimens. Hence, further systematic plot-scale trials would be desirable before they should be considered for wider forestry use. Cold hardiness and frost tolerance are limiting factors for deployment of many of these species in Britain, with only Bigleaf Maple having significant relevance for upland sites. Some species (notably Wingnuts) raise concerns over potential for invasive regeneration.

Many of the species considered (e.g. Maples, Hickories, Wingnuts, Sweetgum, Tulip Tree) can produce valuable hardwood timbers suitable for decorative carpentry, furniture and sports goods applications, equivalent to those of Ash. Following experimental trials, their optimum deployment would be in mixed hardwood plantations on fertile, lowland sites, closely managed for amenity and quality timber. As many are medium or shade-tolerant, they will be suitable for the application of continuous-cover silviculture. They should not be deployed in or near existing native woodland habitats until regeneration dynamics are better understood.

Nothofagus spp.

(Published in Jan. 2018 - QJF 112(1):30-43)

Southern Beeches (*Nothofagus* spp.) are a group of about 40 species originating from the southern hemisphere (e.g. Chile, Argentina, New Zealand, Australia, New Guinea). Several were trialled in Britain during the 20th century and two (Rauli – *Nothofagus alpina* synonym *N. procera*; and Roble – *Nothofagus obliqua*) attracted considerable interest in the 1970s as fast-growing broadleaves. Unfortunately, plots of both species suffered serious damage during the exceptionally cold winters in the early 1980s, resulting in a general loss of interest. However, the advent of climatic warming, combined with better understanding of the influence of provenance upon performance of both Rauli and Roble, meant that it was opportune to review the potential of Southern Beech species for British forestry.

Our paper concentrated upon five *Nothofagus* species, primarily Rauli and Roble, but also examining results obtained with Nirre (*N. antarctica*), Lenga (*N. pumilio*)

Young Hickory – Forest of Dean

and Coigue (*N. dombeyi*). Overall Rauli was the most promising of these species, having good growth rate and stem form as well as acceptable timber properties. A major finding was that provenances of Rauli obtained from higher elevations within the southern part of the natural range in the Andes appeared to have superior cold hardiness to the more northerly provenances widely used in operational plantings in the 20th century. For Roble, careful provenance selection was again important, but its poorer stem form meant that Rauli would be preferred except on drier sites in eastern Britain. Unfortunately, plots of both Rauli and Roble have recently been killed by outbreaks of *Phytophthora pseudosyringae*, suggesting that future planting of these species should be undertaken with care, until understanding of this pathogen has improved. Both Nirre and Lenga have given some evidence of greater cold hardiness than Rauli and Roble, indicating that these two species might find a role in diversification of upland conifer forests, although their poor stem form was a drawback. The performance of Coigue was disappointing and this species did not appear to have much promise for British forestry.

Hungarian Oak – Bedgebury Pinetum, Kent

Non-native Oaks

(In press - expected publication QJF April 2018)

This paper considers Oak species introduced from the Mediterranean region and eastern North America that are potentially suitable for British forestry, particularly in drier lowland areas of southern England and the Midlands. Although there are several hundred Oak species, most are too warmth-demanding for Britain under predicted climates.

Oak species considered in the paper are:

- Red Oak (*Quercus rubra*) from eastern North America
- Turkey Oak (*Q. cerris*) and Hungarian or Italian Oak (*Q. frainetto*) from the eastern Mediterranean
- Downy or Pubescent Oak (*Q. pubescens*) from the central Mediterranean and France
- Holm Oak (*Q. ilex*) and Algerian/Mirbeck's Oak (*Q. canariensis*) from the western Mediterranean.

There is briefer treatment of Pyrenean Oak (*Q. pyrenaica*) from the western Mediterranean, Pin Oak (*Q. palustris*) and Scarlet Oak (*Q. coccinea*) from eastern North America.

Only Red Oak has any substantial record in Britain. Trials established during the mid-20th century indicated that it can outperform British native Oaks (*Q. robur* and *Q. petraea*) on drier, less fertile sites (e.g. over Midland sandstones), and also has some potential on upland sites. There is a limited British record with Turkey Oak and Holm Oak as specimen/landscape trees, particularly in southern England. Other Oaks have not been widely grown in Britain, although Pubescent Oak has been cultivated in northern and western France. These species are susceptible to *Phytophthora* infections, and some may carry invasiveness/hybridisation risks. They should not be used to replace native Oaks where the latter are growing well, but may be useful in establishing or retaining Oak woodland on sites which are (or become) too dry for native Oaks. These might include lowland heathlands in southern/central England currently carrying Corsican Pine, Sweet Chestnut or Beech. Timbers are generally inferior to native Oaks, but can be suitable for carpentry and woodfuel.

Non-native Alders

(In prep. - expected publication QJF July 2018)

This paper deals with non-native Alder species from Continental Europe and western North America potentially relevant to British forestry. Alder species often fulfil pioneer roles, assisted by their fixation of atmospheric nitrogen through action of *Frankia* root nodules. They naturally colonise mineral surfaces exposed by glacial, avalanche or flood activity and can form part of successional development onto abandoned farmland.

Alder species considered are:

- Grey Alder (*Alnus incana*) from central/northern Europe
- Italian Alder (*A. cordata*) from southern Europe
- Red Alder (*A. rubra*) from the Pacific Northwest
- Green Alder (*A. viridis*) from montane Europe

Sitka Alder (formerly *A. sinuata*) from the Pacific Northwest is now considered to be a sub-species of the Green Alder (*A. viridis* ssp. *sinuata*). This species, together with Red Alder, grows in association with Sitka Spruce and Douglas Fir in Pacific Northwest forests.

These Alder species have been trialled in Britain and deployed to varying extents in afforestation, particularly on former industrial and extractive sites, and in some cases upland sites. They are generally considerably less demanding of growing conditions than native British Black/Common Alder (*A. glutinosa*) and less strongly

Italian Alder – John F Kennedy Arboretum, Co. Wexford

associated with fertile alluvial sites. Relative performance of these species has varied considerably between trial sites. Their susceptibility to frost damage, mainly in spring and autumn, can lead to reduced productivity and early decline. Some non-native Alders can display invasiveness/hybridisation risks. Their future role in British forestry might be for afforestation on demanding lowland sites (e.g. Grey and Italian Alders) and nursing upland conifers (e.g. Red and Green Alders). Some timber may be harvested, with short-rotation biomass the principle output.

Poplars and Aspens

(In prep. - expected publication QJF Oct. 2018)

About 35 *Populus* species are native to the Northern Hemisphere. Many hybridise freely, making identification difficult. There are two native British species: Aspen (*Populus tremula*) and Black Poplar (*P. nigra* ssp. *betulifolia*). A range of introduced Poplars (including hybrid clones) are used in Britain and Europe for production of lightweight timbers for match-making, box manufacture, pallets, and most recently for woodfuel biomass. Many introduced and hybrid Poplars are near their climatic limits in Britain, where they must be confined to sheltered, lowland sites on moist, fertile, aerated soils, with a water table within 1–1.5 m of the surface.

By contrast, Hybrid Aspen (*Populus* × *wettsteinii*) is a hardy cross between native Aspen and the North American Trembling Aspen (*P. tremuloides*). The first plantations were established in Sweden and Finland in the 1950s. It will tolerate lower pHs than some other Poplars and is reportedly more damage- and disease-resistant than either parent species. Small trials have been growing for some years in Britain. Hybrid Aspen is one of the fastest-growing hardwoods in Northern Europe, suitable for the production of pulp- and energy-wood.

Hybrid Poplars are the fastest-growing temperate broadleaved trees overall. Clones capable of producing up to 26 m^3/ha/yr on 30-40 year rotations are propagated vegetatively from cuttings. Some introduced Belgian clones showed considerable promise in the mid-1990s and were planted quite widely, but within ten years all succumbed to leaf rusts (mostly *Melampsora*) and are now rarely planted. None is guaranteed to remain disease-free, though when grown in clonal or species mixtures, *Melampsora* attacks can be minimised.

The major application of Hybrid Poplars is likely to be in initial afforestation for timber and woodfuel biomass, carbon sequestration, soil conservation and flood regulation. Wood of most Poplars is the best of all temperate timbers for peeling into thick veneers. It is soft, light coloured, and of low but variable density. It is usually white and free of taints and smells, and therefore valuable for use in contact with food (e.g. vegetable crates).

Summary

The alternative hardwood species discussed here have varied levels of previous silvicultural experience in Britain. Some (e.g. Norway Maple, Red Oak, Rauli and Roble, Red Alder and Hybrid Poplars) have been studied in species and provenance trials, and previously deployed in small-scale plantations. These are potentially suitable for future forestry deployment on suitable sites, taking into account limitations posed by climatic tolerances, pest and disease susceptibilities and regulatory requirements at the time. By contrast, many noble hardwood alternatives to Ash, and the less common non-native Oaks and Alders, have previously been restricted to arboreta and forest gardens. We have a lower degree of confidence as to how those might perform in operational forestry under current British climatic conditions. The logical next step here should be inclusion in systematic species and silvicultural trials. Some species discussed appear primarily suitable for initial afforestation on challenging sites (e.g. dry or compacted soils, industrial reclamations etc.), including for short-rotation biomass. Others may prove suitable for selective incorporation into mixed hardwood forestry trials, substituting for conventional choices (e.g. Pine, Oak, Ash, Chestnut), now challenged by climate, pests or diseases. Caution should be exercised over potential for these species to impact on native woodland or other habitats by cross-pollination or invasive colonisation. Licensing requirements may apply in some instances for deployment of non-native species.

Our Field Weekend 2017

Hampshire and Berkshire Borders

Thursday June 15 (morning): Gaze Burvill, East Tisted, Hampshire

by Caroline Burvill

The first gathering of last June's Field Weekend was at the Hampshire base of outdoor furniture maker Gaze Burvill, with a presentation of a film made for Woodland Heritage about Acute Oak Decline in the company's Flint Barn. This was followed by another short film funded by Woodland Heritage and produced in collaboration with Grown in Britain, an independent 'not for profit' organisation that supports our woods and forests and assures the products they produce through a unique and highly regarded licensing scheme.

A tour of the workshop followed, led by WH Trustee Simon Burvill. It is an impressive blend of digital technology and the old skills. Kiln-dried Oak enters the shed and continues to air on racks. Once sawn to size, certain pieces are then taken to a dedicated area to be steam bent by specialist Richard Johnston. It doesn't matter how many times you see solid Oak 65mm thick bending like liquorice, it still seems conjured by the

enchanter's powers – though Richard seems like a very normal chap! Once secured in their formers, the bends are slowly dried in a kiln.

Moving to the next stage, we were mesmerised by the precision of the five-axis CNC machine, expertly mastered by operator Joe Baker.

Finally we moved into the assembly area, where the craftsmen tailor the joints and finish the pieces. Gaze Burvill has a successul apprentice scheme, with usually two apprentices working their way through their training, often staying with the company thereafter. One of the most experienced craftmen, Ben Peters, joined in 1998 as a 16-year old and is still there, 20 years on!

Editor's note: Congratulations to Gaze Burvill who received Best Trade Stand Award at RHS Chelsea Flower Show 2018.

Thursday June 15 (afternoon):

Rotherfield Park Gardens, East Tisted, Hampshire

Our afternoon visit was a mere stone's throw from the workshops of Gaze Burvill and with that we set off across the fields to Rotherfield Park where we were welcomed by Sir James and Lady Scott. Our leisurely stroll through the beautiful grounds began with a sharp march to the top of an artificial hill, part of a landform by the renowned landscape architect Kim Wilkie, which adds a modern dimension to this quintessential English parkland.

The gardens, which cover about twelve acres and are Grade II listed by English Heritage, have been tended by six generations of Scotts (and their wives!) since 1808 and include an acre of immaculate walled garden, within which the vegetables are planted according to phases of the moon. There are glasshouses, including a dedicated Peach and Apricot house, and a vinery. Other features include a new arboretum, a ha-ha, the remains of an ice house, a Lime avenue, Yew topiary, orchards and a new 'Willow cathedral'.

The new Willow Cathedral

Our afternoon visit ended with a welcome cup of tea in the walled garden where Simon Burvill, WH Trustee, presented our hosts with a fine Richard Chapman turned vessel.

Simon Burvill presents our hosts with a fine Richard Chapman turned vessel

A rare species of Oak in the new Arboretum

Friday June 16: Herriard Park Estate

by Susan Bell

In the ownership of a single family, in some cases indirectly via marriage, for no fewer than 800 years, this great Estate has the longest recorded history of any that Woodland Heritage has ever visited.

The current owner, John Jervoise, whose direct family line has been its proud owner for 400 years, was there to welcome us and join us for much of the day. He acknowledged the privilege of owning such extensive and beautiful woods but emphasised the need to balance the responsibility of their care and maintenance with the need to make them pay. The overall Estate covers some 2,000 acres, about half of which is woodland, with a Repton-designed park that encompasses some of that woodland.

Graham Taylor thanks John Jervoise for our visit to Herriard Estate

In the sad absence of our former Chairman Peter Goodwin, Woodland Heritage Trustee Graham Taylor took charge of the day. Extolling the benefits of long-term continuity of forestry management, he pointed out that estates such as this were ideal examples of best practice over many years reflecting the ups and downs of forestry's fortunes and markets. Continuity was still the order of the day in more recent times. There have been only two forestry consultants working with the owners to manage the woodlands over the past 50 years. William Hamer, who kindly took us round, has been advising the Estate for 25 years and, before him, Walter Start was in charge.

This was a forestry-rich day which included no fewer than 11 stops, each generating WH's usual lively debate stimulated further by questions posed by William Hamer. A selection of interesting themes emerged.

Significantly our first stop exemplified a step change in the planting and management of the woodlands following major changes in the demands of the markets for timber. We were looking on one side of the track at a small deer-fenced stand of Hazel coppice. On the other side the coppice had been replaced by Spruce and Oak. Historically coppice had played a dominant economic role both for farm and estate use and as well as a sizeable annual coppice sale in nearby Basingstoke that was held until the end of the First World War. With demand for products such as Hazel hurdles, crates, pea and bean sticks all declining, the question now posed was what to do with the remaining 200 acres of coppice on the Estate, only a small proportion of which was in active management. The area we were looking at is now harvested mechanically and chipped for wood-fuel. This provided good habitat and was productive without being costly.

The big question this led to was "What, if anything, is the future for coppice?" The Wessex Coppice Group, with the support of the Prince of Wales, had significant success for a while but eventually demonstrated the difficulties of marketing the product at an acceptable return. Future efforts would need to be greater and more sustained. However, as both Geraint Richards and Lewis Scott pointed out, "cellulose is a game-changer" and its use in all sorts of sustainable manufacture and products could well bring about a turn-around in the fortunes of coppice. Using it simply for wood-fuel could well turn out to be a real waste of a valuable asset.

As for the conifers that had been planted on semi-natural habitat on the Estate, William Hamer told us of the original battles that his predecessor had had with the Forestry Commission to establish these plantations. The fight will continue as they are proving profitable and stable. William said there was plenty of Ancient Semi-Natural Woodland on the Estate and as much as possible of this would be maintained but, where sites had already been converted, conifers would be retained "to keep the financial wheels turning".

Our next questions focused on management for improving the quality of Oak and the characteristics of Sessile and

Pedunculate Oak. We were looking at a plantation of predominantly Sessile planted in 1945 in a mix with Pine and Spruce, which had mostly been taken out. It was considered a pity that the conifer had been removed all at once and that an understorey, possibly of Hornbeam or Thuya, combined with more pruning would have aided the quality of the Oak. The Future Trees Trust (FTT) was working hard to improve the seed stock but it would be 25 years or more before their efforts would come to fruition. More money had been secured by FTT to look at all registered seed stands and it was recognised that more were needed as 'mast years' were unpredictable with a long time between each.

We were truly delighted that for the first time Professor Julian Evans, past President of the ICF, was able to join us on our Field Weekend although he stressed he was a long-term supporter. At this point he said that a major review of forest research was due and a bid should be made for research into identifying better trees and managing these. Roger Venables added that the straightness of the trees was excellent and that, with new techniques, epicormic growth was no longer the problem it used to be to sawmilling.

Turning to the difference between the two Oak types, the main issue was the very different conditions for growth required by each: Pedunculate grows best on lowland clay-ey sites whilst Sessile prefers upland well-drained acid soils. Being more tolerant of conditions, with climate change, Bede Howell thought that Sessile might survive where Pedunculate failed, thinking long-term. Evidence showed little hybridisation between the two as they flower at different times.

Peter Savill, Geraint Richards and Julian Evans

Woodland as landscape emerged as a topic at a number of points during the day. Repton had designed wide rides through woodland for carriage drives for the enjoyment of the woods as well as the more managed parkland. However, "fiddling about with edges by planting hardwoods to soften the landscape" was not considered important in the commercial areas of conifers unlike in the landscaped area of the Park.

Although some mature trees may be taken, a number will be kept for 'veteran trees' in the future. However it was the potential loss of the Larch that was the immediate concern and perceived as "catastrophic". So re-structuring was already underway to reduce the risk of disease and establish a more diverse woodland. Now that the market for Red Cedar is picking up, as well as its usefulness on the estate, this will be included plus Douglas Fir. Other suggestions were invited. Red Cedar was considered a good choice, Bede pointing out that it was useful for shelving as it exudes insect repellent, and it is also more tolerant of chalk than Corsican Pine. Julian Evans, as author of *'God's Trees – Cedar of Lebanon'* thought that it too would be a good choice. Tom Christian recommended the Himalayan Cedar as it gets away faster and was less prone to Sirococcus blight than the Lebanon.

Next we discussed the risks attached to planting unusual species. A 1912 planting of Red Oak (from acorns collected on honeymoon!) had produced some good trees but they were failing to find a market. Ideal for internal joinery and furniture, the problem is the continuity of supply. Julian Evans thought there were probably several thousand hectares of Red Oak in the public forests but not in large blocks. Small volumes of timber are a serious problem as the market demands large areas of the same species. In trials the Forestry Commission had found Red Oak to be not externally durable added to which Grey Squirrels love them. Nevertheless, these small areas of uncommon trees may prove very valuable in a changing climate and with new pests and diseases now rampant. Interestingly WH member Dan Stover grew up with Red Oak in the United States where they still sell and export the timber and, ironically, the squirrels don't touch them – possibly because of lower densities.

A final lively discussion before lunch resulted from an invitation for suggestions for new and interesting species for an arboretum style planting. These ranged from Julian

continued on page 42

Field Day Snapshots

Gathering outside the house at Rotherfield Park

John Jackson receives the 2016 Prince of Wales Award

William Hamer, our guide

Simon Burvill

Dr Sandra Denman

Ed Clark

Peter Whiteman

The fine Oak at Kintbury Holt

Amanda and Robert Stevens with Susan Bell

Woodland Heritage members

Tackling the landform hill at Rotherfield Park

Demonstration by Alex Moir – The Cleft Wood Company

Graham Taylor

Yew hedges at Rotherfield

Lady Scott

Evans' 'football team of 12 species for climate change' to Tom Christian's list of several hundred species. Tom also suggested re-planting those species already there and thriving and then diversifying having first cleared the space of rhododendron.

During lunch the Peter Savill Award was handed by Peter himself to Gary Battell, and Geraint Richards passed on a message from our Patron, the Prince of Wales, of his great personal sadness at hearing of the death of Peter Goodwin. Geraint added that Peter had also been a great hero of his and was a legend in forestry. A sentiment shared by all present.

The Prince of Wales Award for the outstanding Woodland to Workshop student of 2016 was given to John Jackson (see p40) and 'WH Grandee' Roger Venables was given an 80th Birthday present in the form of a beautiful turned vessel by Richard Chapman.

Geraint was the highest bidder in the second auction of the Tilley hat (donated in honour of Peter who was never without his Tilley) by the Canadian firm.

Ominously, the afternoon commenced at Gypsy's Grave, apparently commemorating the complex story of the suicide of a gypsy on what had been Herriard Common before its enclosure in 1777. Appropriately the topic at the next stop was the question of what best to do with two dead trees in a stand of Sessile Oak. Sandra Denman thought that the cause might be *Armillaria* and advised checking nearby trees. She described work on it being carried out at Forest Research and by a WH-funded student at Bangor University. She recommended cutting

Peter Savill presenting the Peter Savill Award 2017 to Gary Battell

Veteran Beech

the trees, keeping them in one place and pulling and tipping the stumps to prevent root spread.

After a number of stops covering management of species mixes, the importance of patience and selective thinning and conversion to continuous cover, we reached a vast and extraordinary veteran Beech. Was it, as William Hamer believed, a 'bundle plant' (i.e. a number of trees planted together mainly for the benefit of animals, that had then grown together and been pollarded or coppiced)? Bede warned against standing under it on a stormy night but believed it to have been pollarded to its present shape, a view shared by Gary Battell. Simon Burvill favoured the 'bundle' theory. Whatever, it was a magnificent specimen and there was agreement that Beech was an under-valued timber and pollarding should be brought back into 'fashion'.

Our final stop brought us to a stand of Douglas Fir that had been high-pruned by Land Girls in the Second World War. They were beautiful trees but unfortunately there was no natural regeneration – perhaps in protest at the slave labour employed to grow them!

William was very warmly thanked for all his phenomenally hard work in preparing for our visit as well as his tireless guidance throughout the day.

Saturday June 17: Kintbury Holt

by Ed Clark

It would not be a Woodland Heritage field weekend without a chance to see some exceptional quality Oak, and we certainly got this at Kintbury Holt.

Our day, kindly hosted by the Stevens family, began with glorious sunshine. We were greeted by Robert Stevens who runs a dairy herd on the farm, alongside some arable. Kintbury Holt was originally tenanted by his father, David, who purchased the farm when the opportunity arose. Forestry was not a major concern to begin with, but the property includes 52ha of woodland, almost all of which is Oak, so in 1991 they engaged William Hamer as their Forestry Agent. William commented that this was amongst the most economically performing woodland estates under his management. When he first arrived, he was given a guiding principle by David Stevens, which was that "we must put back at least as good as we take". This echoes the ethos of Woodland Heritage and is a recurring theme at our field weekends.

We set off across a maize field, and into Masons Copse, to see 4.4ha of pre-1900 Oak that was approaching maturity. The Oak is generally managed on a 120 year rotation, with group felling and restocking being the method of regeneration, so this stand was about ready for felling. There was discussion about Oak being a light demanding species, and broad agreement that the coupes should be of a sufficient size to give plenty of light to the replanting, with about 0.4ha being the minimum. William commented that he often tries to fell areas adjacent to previous felling coupes to increase the amount of sidelight reaching the replanting. The last felling generated 4,100 Hft of Oak and Ash, which sold for £6/Hft through and through, so the quality is certainly there.

Adjacent replanting was at 3m spacing, and had been undertaken earlier in the year purely with Oak trees raised from Kintbury Holt acorns. We considered the provenance of planting stock in general terms, and whether Oak from other sources should be mixed in to give better resilience to tree health issues or future climatic changes. William countered that the quality of the Oak grown from local seed speaks for itself, and therefore he would keep using what he knows to be such high quality genetic material.

A Wild Service tree had been retained in the centre of the felled area, and we paused to consider it as a species

A Wild Service tree had been retained in the centre of the felled area, and we paused to consider it as a species as it is frequently found as a minor component of ancient semi-natural woodlands in England and Wales. As far as markets for the timber are concerned, in the past it has been used for turnery, lace bobbins, furniture in Germany, and sold for marquetry in France for around £25/Hft. Perhaps most importantly, no-one in attendance had ever noticed squirrel damage on Wild Service.

Across the road in Tinkers Copse we saw Oak planted at 3m spacing in 1999, which had been cleaned and pruned in 2016. William explained the importance of giving time to let the tree decide which stem will be the leader when pruning. Bede Howell verified this with an anecdote about tracing the wandering pith on old church benches, and suggested that after a first thinning, final crop trees (or 'winners') should be selected at roughly 11m spacing. We also discussed the merits of treeshelters, and whether or not they should be removed, the consensus being that Oak will break free on its own, but some other species might benefit from having them removed, Wild Cherry in particular.

The discussion turned to spacing, with mixed opinions and some suggesting that the trees should have been planted more densely. We agreed that spacing can have an impact, but that the importance of this is reduced if the management is appropriate; with respacing, pruning and

thinning undertaken in a timely and judicious fashion. The problem with many woodland plantings which have been led by the minimum requirements of a grant scheme is that often the necessary management is not followed through, and thus the end result is disappointing. This was not the case here however.

We crossed the road and entered Hightrees Copse, to see a mid-rotation stand of Oak approaching a further thinning. This gave a good example of how several foresters would mark their thinnings differently, but ultimately reach a similar result.

Further into the wood we entered the registered seed stand, which covers 7.5ha. The trees were of incredible quality, very tall stems with a horizontal branch angle giving small knots in the timber. Acorns are collected whenever the mast is sufficient to justify doing so, and they are sold to Alba Trees for growing on and sale to the wider market, as well as for use on the estate.

We paused to admire one particularly fine Oak tree, which we estimated had a 36' first length of stem, with a volume approaching 200 hoppus feet. When discussions turned to value, the best offer was £8/Hft through and through, which seemed a fairly strong price, but William remarked that he would need £15/Hft before he started his chainsaw! We returned to the farm for lunch, firmly in the knowledge that the quality of Kintbury Holt Oak had not been overstated. Some of us may be on the lookout for this provenance when the planting season comes around!

Oak seed stand

After lunch we saw a demonstration of Oak clefting by Alex Moir of The Cleft Wood Company (www.cleftwood.com). His business produces hand-cleft fencing of exceptional quality, with a variety of specifications of pale fencing, post and rail, and gates, as well as bespoke work. He secures a proportion of his annual requirement of 150-200 tonnes of Oak from Kintbury Holt, and is pleased with the quality of the material. The requirements are exacting, as good clefting Oak must be straight and clean, with no tolerance of twist, large knots or bends. However, it can be worth between £2.50/Hft and £4.00/Hft, so it is a market worthy of consideration for smaller second lengths that might otherwise be put on the firewood pile.

The afternoon comprised visits to two farm woodland plantings, Cpt 9 established in 1993, and Cpt 8 in 1992. Both sites had been planted at 3m spacing, and predominantly with Oak, Ash and Wild Cherry. The first stand had performed poorly, with provenance of planting stock cited as a probable contributing factor. General agreement was that the stand would produce a crop of firewood and then the site would provide a blank canvas for a different crop. Graham Taylor suggested an alternative market, with some of the Ash just approaching a suitable size for hurley butts which might improve the return. The second site had been planted with different provenances of stock, and had performed much better. The improvement in apical dominance and straightness was clear to all, and with careful management this stand could go on to produce a valuable timber crop. The take-home message reinforced the point made in the morning: that good quality trees can be grown at what some considered 'wide' spacing, but the importance of selecting the right planting stock, and doing the necessary management in a timely fashion should not be overlooked. Closer spacing can give greater choice over timing of interventions, but with this benefit comes an increased cost of establishment – each owner or manager must make up their own mind about what best suits their situation.

We returned to the farm and assembled to thank our hosts, so concluding another fascinating Woodland Heritage Field Weekend. Sincere thanks are due to all who assisted in organising and coordinating the visits.

Visit to Peter Freebody & Co, Boatbuilders of the Thames

Wednesday 19 September 2018

Please join Woodland Heritage for a half-day visit to Peter Freebody & Co., Boatbuilders of the Thames for over 300 years. We will visit the workshops of this long-established firm specialising in the construction, repair and restoration of traditional river craft including the iconic Slipper and Riva Launches. Our visit will follow the progress made by one of the workshop's most important raw materials – wood – from its arrival in the yard, through the hands of the team of skilled craftsmen, to the exquisite finished article.

Places are limited so please book early to avoid disappointment.

Cost: £15 per person – enquiries@woodlandheritage.org.uk

www.peterfreebody.com

WH adds power at Elwy

by Adrian Farey

Elwy Working Woods was set up in 2009 by three people living within a few miles of each other, with almost adjoining woodlands. The plantations, all mixed conifer and broadleaf, were planted by the three of us between ten and 30 years ago and amount to over 100 acres.

Erecting the workshop frame

Initially our aim was simply to pool our resources to buy an alpine tractor and forwarding trailer, something that would cope with our hillsides and enable us to extract our thinnings without too much sweat. Somebody advised us that if we were a co-operative we could access a particular grant available at the time. As we had in any case worked together for many years it seemed a logical thing to do, so with the help of the Welsh Co-operative Society we were duly formed, with articles of association, and became a proper company limited by guarantee.

This was a bit of a 'lightbulb' moment for me as I immediately began to consider the advantages of sharing

Inside the workshop

resources and at the same time encouraging others, particularly the next generation, to get involved with woodland management and traditional skills. As a saw miller with a growing business I had a particular interest in stimulating an increase in the use of timber as I seemed to have produced, as all sawmills do, quite a surplus of sawn timber over the years and didn't have time or expertise to get into manufacturing anything smaller or more intricate than a log shed. Traditional timber frame buildings is our main business and I thought it would be useful if there were local lads who could do all the finishing; floors, doors, windows, stairs etc from our own home grown timber, while at the same time developing their own products and ideas.

I read somewhere that if you want to attract a particular creature into your garden you need only provide its preferred habitat and one day it would arrive. With this in mind we set about building a beautiful workshop. A timber frame barn with plenty of light and space, a full range of machinery, wood burning stove, kitchen and crucially, a big stack of speakers for party use when the week's work is done.

A bandsaw

Having taken over the management of some neighbouring woodlands and developed a relationship with local estates and contractors, we had access to a large amount of different timbers, the means to extract, and the sawmill to turn it into useable material. We just needed more end users; carpenters, joiners and cabinet makers, to turn this amazing stuff into saleable products. If we don't address this particular part of the timber business then all our best efforts, the thinning high pruning, squirrel and deer control will be for nothing. I hate to think that when I'm dead and gone my woodlands will eventually look like so many other woodlands round here, neglected and unmanaged, while the only wood available to buy is that poor excuse for timber, tannalised Sitka Spruce, spectacularly unsuitable for most uses except turning into pulp.

The construction of the barn was itself, or so it seemed to me, something of a miracle; we started with some trepidation, not knowing if we would be able to afford to finish it. Had it not been a co-operative project we would not have benefitted from the enthusiasm and skill of the membership who put such a lot of their time towards making it useable; fitting the roof and floor, the cladding – internal and external – the doors and windows to name the most obvious and important bits of work.

The Generator!

However, last year we had to admit that financially we'd bitten off more than we could chew with regard to the power supply; we had a lovely workshop with an impressive array of three phase machinery loaned and donated by some of our members, but no power other than a tired and cantankerous single phase generator. We calculated that we needed 100kva just to start the Wadkin four side planer-thicknesser and nobody had one of these cluttering up their garden shed so we had to do some thinking!

One of our members had done some work for James Walmesley who knew a bit about EWW and what we were trying to achieve, so on hearing of our predicament, he suggested we get in touch with Woodland Heritage to see if it could help. With his encouragement we applied for and got a grant towards a £10,000 improvement project which included improving access, reroofing our timber drying shed and running our first course; a women only timber framing course during which we would build our new composting toilet block.

To cut this long story short, we finally tracked down a suitable generator and a qualified electrician to wire up the workshop for single and three phase, there being no mains supply within four hundred yards of the place. Not all the machines are running smoothly yet; the big 4-side planer still needs a bit of work but the smaller planer and bandsaw are constantly in use and have attracted more people to the place knowing that they can process the timber they buy. Our membership has increased by 10% since we flicked the switch !

We had a great week building our toilet frame with half a dozen exceptionally keen women and we now have the poshest composting toilet for miles, though I can't claim it's actually in use yet, and the workshop has hosted several small festivals and innumerable parties. That rare and elusive creature, the young entrepreneur, has somehow found his way home.

https://en-gb.facebook.com/elwyworkingwoods/

Happy Birthday, Sir!

by Guy Corbett-Marshall

Woodland Heritage has had the privilege for many years now to have HRH The Prince of Wales as its Patron; to have been selected from the many thousands of good causes that could have received this honour has always been something that the charity has treasured.

To coincide with the 70th Birthday of The Prince of Wales and with the gracious permission of The Queen, a Reception was held on 22 May 2018 in the gardens of Buckingham Palace to celebrate the work of His Royal Highness's Patronages, Charities and Military affiliations and others involved in public service.

At the beginning of the event a group photograph was taken of His Royal Highness with representatives from his Patronages, Charities and Military affiliations. Reflecting Lewis Scott's status as Co-Founder of Woodland Heritage, the charity chose him to be in the photograph, as he most certainly met the criteria of being 'someone who has made what you consider to be a particularly special contribution to the work of your organisation' as the invitation was phrased.

Shortly after going to press, Woodland Heritage was due to attend another special event to celebrate The Prince of Wales's 70th Birthday and his love for the countryside at the Royal Cornwall Show, which was created to bring together HRH's countryside, environmental, farming and rural community charities.

The feature activity in the main arena had been planned as The Prince's Countryside Parade on Thursday 7 June, providing an opportunity to showcase and celebrate the breadth of HRH's charities and patronages including Woodland Heritage. The pageant was expected to involve livestock, floats and people, with the Band of Her Majesty's Royal Marines accompanying it.

The Prince's Countryside Fund, The Royal Cornwall Show and The HPower Group had been working towards delivering a fitting occasion, the HPower Group having been responsible for delivering Her Majesty The Queen's 90th Birthday Celebrations and The Diamond Jubilee Pageant and many other major State and Government occasions.

(L-R) Simon Burvill, Graham Taylor, Lewis Scott, Guy Corbett-Marshall and Tom Christian at The Prince of Wales's 70th Birthday Patronage Reception in the Gardens at Buckingham Palace

New WH Student Ambassador

by Sarah Ellis

WH has grown its links with forestry students at Bangor University by appointing Sarah Ellis in this new role.

"It has been a great privilege working with WH; I have gained experience in communication, event organising, public speaking and article writing since taking on this role.

I am currently in my second year, studying an MFor Forestry undergraduate degree at Bangor University. My areas of interest within the forestry sector include: agroforestry, afforestation, ecosystem services and sustainable forest management to name a few."

Photo: Thomas Morrissey, 2017

As part of her ambassador role Sarah has arranged under the supervision of James Walmsley and Shaun Evans; a symposium that was held at Bangor University on 22 March 2018. The topic was 'Woodland Management: Past, Present & Future – Heritage, Practice & Sustainability'. The event, open to students and members of the public, resulted in a good turnout of 30+ people. The guest speakers included: Professor Ian Rotherham, who is a professor of Environmental Geography at Sheffield Hallam University and authority on the history, ecology and management of ancient woodlands. Our other speaker was Graham Taylor, director of Pryor & Rickett Silviculture.

The link between WH and Bangor University, will develop the future generation's approach to sustainable forest practices by looking at producing high quality timber, whilst having consideration for wildlife and environmental sustainability.

Bangor University

by Sarah Ellis

Bangor University is based in North West Wales. This is the base for the Bangor Forestry Student Association (BFSA), who have been getting up to a lot this academic year.

Photo: Danny Moffat, 2017

BFSA planting specimen trees in Treborth arboretum for future generations

What have BFSA been up to this academic year?

Semester 1, 2017 activities:

- Tree planting of native broadleaf species in North Wales and specimen trees to an arboretum
- Removal of Cherry Laurel (*Prunus laurocerasus*) from a National Trust property
- Greenwood working at Moelyci Farm
- Tree identification practice
- Talks held by students on international opportunities; local, independent woodland managers and various professional organisations
- Attending conferences held by RFS, ICF, CONFOR, FTT and a select few to IFSA conferences abroad

Students going international

During the summer of 2017, George Dennison and Tom Henson (BSc Forestry, year 3), attended the International Forestry Students Association (IFSA) Annual Symposium (IFSS) in South Africa. Meeting other forestry students from around the world and exchanging knowledge of how other countries work.

Photo: Jordan Harris, 2017

Paul Golding using a traditional pole lathe under the supervision of Mike Bithell

Other international travellers from Bangor University include:

- Spencer Reagan (BSc Forestry, year 2), who attended COP23 in Bonn, Germany in November 2017
- Bocheng Zhang (BSc Forestry, year 2), attended the UNEA-3 in Nairobi, Kenya in December 2017
- George Dennison and Maxwell Battison attended the FAO "Halting Deforestation Conference and youth training day" held in Rome, Italy during February 2018
- There will also be 6 students taking part in the "Forest Versatility" Woodland Games held in the Czech Republic
- Maxwell Battison, Paul Golding, Ellinor Dobbie and George Dennison will be attending this year's Northern European Regional Meeting in Slovakia focused on "Large scale disturbances"
- Sam Cameron, Chris Andrews, George Dennison and Ellinor Dobbie will be attending this year's IFSS 2018 held in Mexico, where these four BFSA members will be learning about Latin American forestry

Photo: George Dennison, 2018

George Dennison left and Maxwell Battison at the FAO headquarters in Rome at the Halting Deforestation Conference in February 2018

New IFSA (International Forestry Student Association) Representatives from Bangor University

- George Dennison has been elected as the "Northern European Regional Representative"
- Ellinor Dobie has been elected to be the "Head of Cultural Competencies Sub-commission"

The foresters of the future are on the rise!

This September 2017 Bangor University has had 22 new undergraduate students, register for BSc Forestry / BSc Conservation with Forestry; which is twice as many students that registered the previous year. There has also been 22 full time and 55 part-time postgraduate students, registered on various forestry related degrees.

Photo: Mark Rayment, 2017

New forestry students to Bangor University on welcome week at Gwydyr forest

BFSA 2017 Achievement

BFSA students attended the Royal Forestry Society, Future Foresters Technology day in October 2017, and won £4000 worth of specialist Haglof mensuration equipment (as shown below) which will benefit future foresters learning.

Photo: Christopher Andrews

(From left) Jemima Letts, Fiona Andrews, Peter Gardener, Ellinor Dobie, Sarah Ellis, Maxwell Battison, George Dennison, Ben Petch and Christopher Andrews

Students that attend Bangor University, who take part in BFSA and IFSA activities; are setting themselves up for an extraordinary array of possibilities worldwide from the opportunities available to them. These students are the future of forestry practices and worth looking out for as future employees.

B.F.S.A

www.facebook.com/groups/2223783770/
forestry@undebbangor.com

Experiences from the International Forestry Students' Symposium

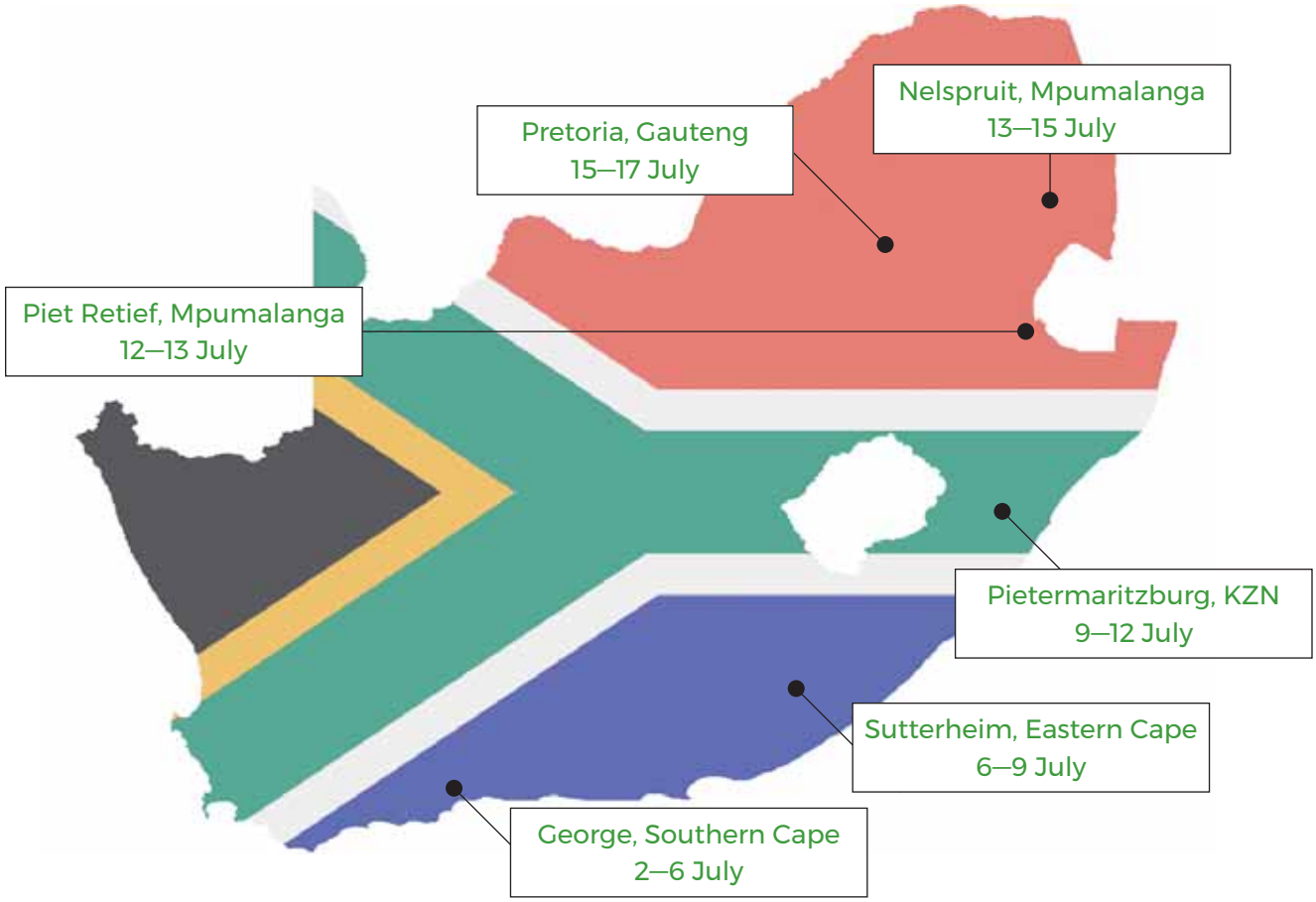
by George Dennison (N Europe Regional Representative)

The International Forestry Students' Symposium 2017 (IFSS) was held in South Africa. Boasting a huge diversity in biomes, forestry practices and management issues, it was the ideal location for an insightful and engaging meeting.

The IFSS is the annual event of the International Forestry Students' Association; organised by students, for students. During July two Bangor University students, George Dennison and Tom Henson represented the UK by attending the 15 day symposium as members of the Bangor Forestry Student Association. The symposium hosted 121 students, representing over 30 countries from all corners of the globe, all with varied views and experiences of the forestry practices found within their respective countries. The map of South Africa shows the locations in which various issues were discussed.

The tour began in George, Southern Cape, with an extravagant opening ceremony of native music and dancing, followed by four full days of workshops and discussion groups. Areas of interest included questioning the issues, areas of development and actions around the role of youth in global forest landscapes. Students are digital natives: having been raised with social media platforms allows us to reach thousands of prospective forestry students and increase interdisciplinary involvement within our sector. This is something which all companies and organisations are only just realising and must prioritise to encourage innovation and development.

Large ungulates are present within South Africa. In the Kruger National



Managing forest along with water security and wildfire is a major constraint. Travelling to viewpoints allowed us to witness the full influence of these

Park alone there are 110,000 Impala *(Aepyceros melampus)*. However, baboons *(Papio ursinus)* were the main mammal pests within the northern parts of the country. Browsing and uprooting saplings are the major ways in which thousands of hectares are destroyed each year. Ongoing research by zoologists has uncovered that this is a learned behaviour and thus is not witnessed in all troops. Despite this, no solutions have yet been found. The photo to the right shows the rate of growth witnessed: this Eucalyptus stand is only four years of age.

A day was spent at the Steve Biko Centre in Grinsber. Gaining an understanding of South Africa's past, present and future through following Biko's story was inspiring. Despite continued prejudices, steps are being made towards equality which was wonderful to witness.

Due to the climatic conditions witnessed within the country rotations are short. Within Eucalyptus spp. plantations, selective breeding programmes have reduced rotations to ten years. Further breeding through hybridisation predicts reductions to five years. An important note is that South Africa does not ban GM crops, it is however due to the FSC certification that companies choose not to plant

GM tree species. We visited the company Mondi, to understand the resources required to deal with the huge volume of fires experienced during the drier months within the country. Specialised equipment and training is required to deal with the intense and large scale burns so pooling resources between companies and communities is essential. Mondi emphasised this, with their policy of attending fires up to 6km away from their own property.

Thanks must be given to the organising committee and sponsors for hosting such an incredible event.

george.dennison.ifsa@gmail.com

A group photo taken on the penultimate day of the IFSS 2017

Two Woodland Heritage Trustees recognised in Queen's Birthday Honours for services to forestry

by Guy Corbett-Marshall

Two Woodland Heritage trustees, Graham Taylor and Geraint Richards, were recognised for their outstanding contributions to forestry in the 2017 Queen's Birthday Honours. Graham was awarded an MBE for service to forestry, whilst Geraint was awarded the MVO (Member of The Royal Victorian Order). Between the two of them they have been Trustees of Woodland Heritage for over eighteen years.

Graham and Geraint have carved out very successful careers in forestry. Graham is director of the leading forestry consultancy Pryor and Rickett Silviculture, whilst Geraint is Head Forester for the Duchy of Cornwall.

Since they both graduated from Bangor University, they have not only excelled in their 'day jobs', but have also notched up a huge range of other achievements, working tirelessly on a range of important initiatives, including Woodland Heritage, Future Trees Trust, European Squirrel Initiative, UK Squirrel Accord and, more recently, they have been key figures in helping to set up the National Tree Improvement Strategy.

Throughout this time, they have also maintained close links with their alma mater, Bangor University, including hosting regular forest visits, giving guest lectures in Bangor and, most importantly, inspiring numerous forestry@bangor students, many of whom have also gone on to attend Woodland Heritage's Woodland to Workshop course for which Graham and Geraint are two of the tutors.

Lewis Scott, Co-Founder of Woodland Heritage commented, "Woodland Heritage was very proud to learn of this deserved recognition for Graham and Geraint, marking the great success they have achieved in their careers. Our charity is blessed to have such driving forces in the forestry industry as both advisors to our charity and as volunteers, ready to roll their sleeves up and help lead events such as our annual Field Weekend, at which our members learn so much. They also enable our charity to get involved in important initiatives individually, with Graham taking a leading role in the recent 'Realising the Value of your Hardwoods' film and Geraint giving us the chance to bring our longstanding work on AOD to the collective benefit of ongoing tree health work in the UK."

Photo: Luke David Taylor

Geraint Richards MVO

Photo: Luke David Taylor

Graham Taylor MBE

A fabulous farewell gift

by Susan Bell OBE (former Trustee)

During my years of Woodland Heritage trusteeship, I have witnessed the wood-turned masterpieces created by Richard Chapman being given as 'Thank You" presents to our generous Field Weekend hosts and others. Little did I know that I too was to be overwhelmed by such a generous gift on my retirement from the Board of Trustees. Handling one of these treasures is a real treat and a cause for wonderment – how could such a beautiful, large hunk of Sycamore be so finely hollowed out to be almost translucent? I feel honoured and delighted to be its humble recipient.

I am also told that the piece has a remarkable history. It was apparently turned from a piece of Ripple Sycamore that our former much-loved chairman, Peter Goodwin, in his inimitable style 'discovered' and passed into the hands of master craftsman Richard Chapman. The timber had come from Burnham Thorpe Parsonage, Norfolk. Admiral Lord Nelson's father was Rector there and it is where Nelson was born in 1758 and spent the first twelve years of his life before going to sea.

Receiving the farewell gift from Chairman of Trustees and Co-Founder of Woodland Heritage, Lewis Scott

In 1788 Nelson and his wife settled at his childhood home at the Parsonage whilst 'in reserve' and on half pay during which time he badgered the Admiralty to give him a command – not an easy matter in peacetime. The Admiralty eventually recalled Nelson and gave him command of the 64-gun *HMS Agamemnon* in January 1793.

The rest, as they say, is history!

WH Chairman Peter Goodwin and I first met when I was Chief Executive of the National Forest Company. We were in total agreement that amongst the many virtues of growing trees was the wonderful timber that they produce for a myriad of uses. We also agreed on the importance of good provenance and management. These are the bedrock objects of Woodland Heritage but also of The National Forest. One of the aims of creating the Forest was to establish a sound woodland economy in the area as well as transforming its landscape and social wellbeing. I was, therefore, delighted when, on my retirement from The Forest, he asked if I would accept an invitation to join Woodland Heritage's Board of Trustees.

After ten years on the Board I am bidding my fellow Trustees a fond farewell. It has been a great time with a huge amount achieved. Fortunately for me, because of Sydney Draper's generous bequest to Woodland Heritage, I am able to stay in touch as a Director of Whitney Sawmill, which the Charity has acquired as WH Timber Ltd., in my home county of Herefordshire. We hope to exemplify in practice all that both Woodland Heritage and I personally, believe in – growing and processing quality British trees for their beauty and utility.

Stunning addition to popular trail in Dunkeld unveiled

by Guy Corbett-Marshall

A memorial bench with a twist was unveiled last year on the banks of the River Tay at Dunkeld to remember Sydney Draper, a former forester to the World Bank who died in July 2015 aged 90.

The new bench in the grounds of Dunkeld House Hotel was commissioned by Woodland Heritage to commemorate Mr Draper, a long-standing supporter of the charity. It was carefully crafted to appear as though it is twisted and made of several different sections of timber, whereas it was actually crafted from a single piece of native Oak by local artist Nigel Ross.

Mr Ross's creations may be found throughout the UK, from London's Canary Wharf to the Ness Islands in Inverness.

It was through Mr Draper's generous support of Woodland Heritage that the charity was able to support the renovation of Dunkeld's 'Big Tree Trail' in partnership with the National Tree Collections of Scotland and the Perth & Kinross Countryside Trust. Woodland Heritage Trustees felt it was a fitting memorial to Mr Draper to commission the new piece by Nigel Ross to sit on the banks of the Tay at Dunkeld.

Tom Christian, a Trustee of Woodland Heritage, said: "Sydney loved Dunkeld and returned here on his 90th birthday to plant a commemorative tree. Environmental education was very important to him, which is why he made his generous gift to help support the costs of a new tree trail here at Dunkeld, to tell visitors the amazing stories of the trees around us, the landscape they sit in, and how vital trees and healthy forests are to life on earth.

We are enormously grateful to Sydney, and to Dunkeld House Hotel and Land Rover Experience Scotland for their help in making this fitting memorial possible".

Visitors to Dunkeld will now be able to sit and rest a while, courtesy of Sydney Draper, as they enjoy the idyllic riverside walks by the Tay.

Wild Service tree silviculture better understood after German tour

by Guy Corbett-Marshall

A Woodland Heritage funded tour of some of the finest sites in Germany for Wild Service tree has boosted UK-forestry knowledge of this potential alternative hardwood species. Planned and co-ordinated by forestry consultant, Christopher Guest, other attendees were Nick Marsh, a National Trust employee whose recent Masters dissertation was focused on Wild Service, and Miles Barne, who is undertaking silvicultural trials on Wild Service in woodland on the Sotterley Estate in Suffolk.

Classed as a medium priority species in the Sustainable Seed Source Project's report of 2015, Wild Service is recognised as having future timber potential, but its uptake is low in the UK with its form and productivity failing to match what has been achieved over the centuries in countries such as Germany and France.

"The three days spent in Germany (with a brief visit to France too) sought to boost the group's knowledge of the potential for Wild Service in the UK, whilst at the same time being realistic about the risks of growing this much-overlooked species," said group leader, Christopher Guest. "Thankfully, in areas such as North Frankonia in Bavaria, when the risks are overcome, the rewards can be amazing with some of the most expensive veneer logs ever sold coming from the Wild Service grown in that region."

Whilst Oak is the main species in the University Forest District, Sailershausen, Wild Service contributes substantially to economic revenue attracting many study groups wanting to learn more about its silviculture. The Woodland Heritage funded group tackled topics such as seed collection, seeds versus suckers, planting (whether as patterns, pure or mixtures and densities), artificial or natural pruning, tending, thinning, diseases, markets and target diameters, all helping to understand how the finest Wild Service trees can reach 33m in 110 years. Genetic quality was also of major importance to the group, especially when considering the potential for sourcing for planting trials.

"The principal management aim in the Sotterley woodland is the production of fine quality Oak timber," said woodland manager, Miles Barne. "The estate's interest in Wild Service results from an awareness that the principal hardwood species grown in Britain have recently become more vulnerable to diseases, some devastating, for example, Elm and Ash. Oaks at Sotterley already suffer from Acute Oak Decline and another mystery disease as yet unidentified. It therefore seems prudent to hedge the estate's bets in a very small way by experimenting with minor species. The Estate has started with Wild Service by establishing simple trial plots to test how the species will grow in mixture with Oak and also pure. It is hoped that more sophisticated trials can be established in time including, for example, a comparison of provenances and perhaps varied mixtures as seen at Sailershausen."

As well as the visit to Sailershausen, the study tour also visited Lillientahl-Freiburg to view and discuss a provenance trial established in 1979 and to learn from the successes achieved and challenges presented in this experiment. The third visit was to forests in Saarland and Lorraine where natural regeneration of Wild Service has been occurring for many decades in principally mixed Oak and Hornbeam stands. The continuous cover management strategy in both of these regions is strictly focused on the production of premium quality timber.

Group photo at Wild Service provenance trial – Ihringen

Wild Service Study Tour Notes
(19-23 May 2017)

by Christopher Guest and Nick Marsh

Day 1

Forestry research complex, Lilientahl, Kaiserstuhl, Ihringen, Freiburg, Baden Würtemberg
Led by: Manuel Karopka
Participants: Miles Barne, Christopher Guest and Nick Marsh
Site type: Significant Loess deposits. Annual average precipitation 615mm. 2013 and 2015 ca. 350mm

Stop 1

- Wild Service clonal orchard for federal state of Baden Würtemberg (genetic material only from Baden Wuertemberg)
- 57 specimens planted?
- Established 15 April 1996. Beating-up 2007 and 2009

(Guest, 2017)

One of the better quality trees in the Wild Service clonal orchard established at Lilientahl in 1996

- Established using saplings 60-150cm tall
- Spacing 5m x 5m
- A few specimens are showing good form however the majority of stems have poor form and have coarse branching
- No pruning has been carried out as it is a clonal orchard

Stop 2

- Wild Service provenance trial established in autumn 1979
- Established using 1u1s
- Spacing 2.5m x 1.0m
- Trial layout – bands, minimum 3 rows, maximum 7 depending on lengths of lines
- 250 saplings planted per provenance
- 8 provenances planted from Germany, Luxembourg, France, and Czech Republic
- Large variations amongst provenances regarding growth performance and stem quality
- Best provenances (in terms of stem quality and growth performance) originate from northern Bavaria in Germany and western Lorraine in France
- Stands have been cleaned
- Potential future trees marked. In the process of removing crown competitors

(Guest, 2017)

"Sailershausen" – one of the best performing provenances in the Wild Service provenance trial at Lilientahl. Age 38 years

- Manuel Karopka happy to help supply genetic material should a provenance trial be established in Britain
- Cuttings taken for grafting are viable for between 1-3 days
- Winter best for grafting process – no later than March
- 10-20% success with Wild Service grafting stock
- Important to take new growth (up to one year) and not old (take material from the top of the parent trees crown)
- Manuel Karopka stated that budding should be tried

Day 2

Forests of Blieskastel (Saarland), Germany and Sargeminnes (Lorraine), France
Led by: Georg Josef Wilhelm
Participants: Miles Barne, Christopher Guest and Nick Marsh
Site type: Altitude 200-400m. Annual average precipitation 850mm. Middle red sandstone, upper red sandstone and chalk

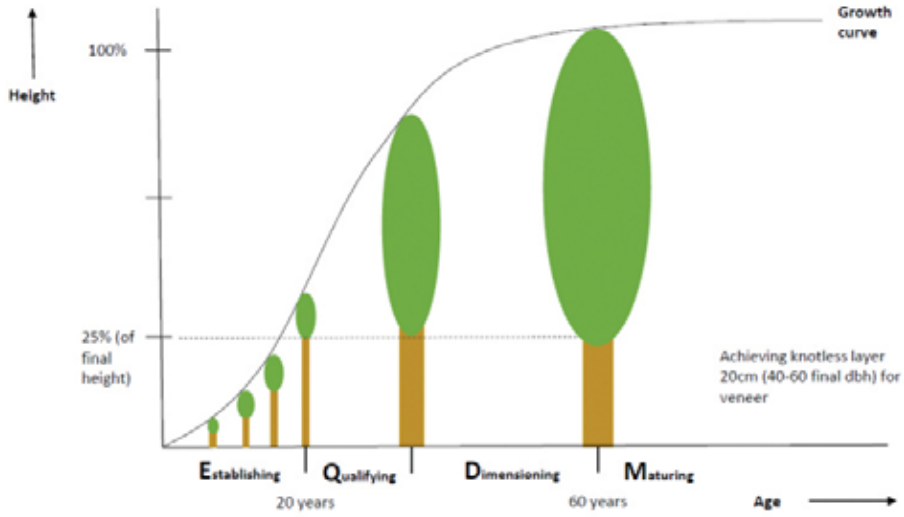
Stop 1

- State forests of Saarland and Rhineland-Palatinate are managed according to QD silvicultural strategy
- Q stands for qualifying and D stands for dimensioning
- First, trees qualify for quality through natural pruning
- Secondly, pre-selected trees are selectively thinned to allow maximum diameter growth
- Thinning usually commences when natural pruning has reached 25% of expected final tree height
- Number of selected future trees can be as low as 40 – 50/ha. Specifically 5 - 8 Wild Service future trees/ha is more than sufficient
- When looking up in the canopy, the crown of a crop tree should be surrounded by an unbroken ring of sky The idea is that this will ensure optimal crown development, thereby utilising the full growth potential of the best trees
- Formative pruning at 2-3m removing side and ascending branches (to reduce chandelier habit) and remove forks (Wild Service prunes well (pruning cuts callus over well). High pruning if necessary especially to remove dead branches which can allow bacteria to enter tree and affect timber quality
- The QD concept is considered very suitable for Wild Service
- Georg Josef considers that Wild Service is generally poorer in quality in Saarland (and overall in Germany) due to over exploitation (possibly 2nd Word War)
- Many Wild Service have spiral grain and other quality defects
- Suggested that French Wild Service is far superior in quality
- Wild Service trees are mainly found in mixed forest of light demanding species, typically Oak, Hornbeam and Field Maple, and less frequently Beech
- Concerns regarding planting of pure Wild Service stands due to risks of rusts and fire blight. Member of the family Rosaceae. Important to allow distance between Wild Service plantings to reduce risk of rust and fire blight
- Pure stands of Wild Service never found in the wild – defence mechanism
- Wild Service has its niche in the area on heavier soils where Beech is less competitive
- Georg Wilhelm suggested that when growing Wild Service in a nursery there is stark differentiation in height growth between seedlings. As little as 30% vigorous. The remainder should be culled
- When restocking, Georg Wilhelm recommends planting a maximum of 10-20 groups of 3-4 Wild Service saplings per hectare to minimise risk of fire blight and other disease associated with Rosaceae. These Wild Service to be nursed by Hornbeam, Hazel or Field Maple

(Guest, 2017)

Well thinned Wild Service tree. Typical for QD strategy – the crown of a crop tree is surrounded by an unbroken ring of sky

Q-D system for Wild Service tree (S. torminalis) veneer quality



With acknowledgement to Georg Josef Wilhelm, adapted by Nick Marsh

Stages

E – establishment: planting seeds or suckers
Planting of 50-100 stems per ha in clumps of 2-4 WST with 15 Hornbeams
Focus on 5-8 WST per ha as final crop trees (10% of area)
Removing forks after 2-3 years to improve form
Self-pruning and removal of dead branches
Working to achieve a 25% of final height clear bole (5-6m)

Q – qualifying: high competition, selecting emerging quality trees (form, growth, branchiness, crown balance)
Self-pruning to maintain bole height and formative pruning to keep crown at desired height
Avoid overtopping – girdle or snapping stems
Aim for 20 target trees per ha.

D – dimensioning: developing girth
Maintain permanent crown base of 25% of final height, removing branches
Distance of 12m between target trees
Removing competing trees for crown release every 4-7 years to increase diameter increment (now 100% increase in girth each year)

M – maturing: height slowing, harvest shade tolerant trees – Beech and Hornbeam

- Maintain min. distance of 10-12m between final target trees
- Apomixis is a problem with Wild Service – seeds not germinating and poor genetic quality
- For seedlings, plant thinly and transplant after two years. Do not undercut roots of WST or sever tap roots as this can severely restrict growth

Stop 2

- Example of light requirements and competitiveness of Wild Service against mature Oak and Beech
- No match for Beech but can grow into and above Oak crowns

Stop 3

- Predominantly mixed Oak, Hornbeam and Wild Service stands
- Formerly managed as coppice with standards
- Soils too heavy for Beech to be competitive
- Wild Service natural regeneration present (mainly vegetative)

Day 3

University Forest District of Sailershausen, Hassfuhrt, Frankonia, North Bavaria
Led by: Hans Stark
Participants: Miles Barne, Christopher Guest and Nick Marsh
Site type: Parent material limestone covered by calcareous soils. Annual average precipitation 650mm

Stop 1

- Sailershausen Forest Estate (2,200 ha) – owned by the University of Würzburg
- Oak is the main species on which economic value lies,

(Guest, 2017)

High quality semi-mature Wild Service at the Forest District of Sailerhausen

however Wild Service also contributes substantially to the economic revenue
- Wild Service tree is found mainly on calcareous sites; WST tap roots can penetrate through chalk 5-15cm
- Tallest Wild Service in Germany found here
- Wild Service natural regeneration present (mainly vegetative but from seed also found)
- The forest district has ca. 1,500 Wild Service trees with a dbh >30 cm
- These are clearly marked and numbered to avoid mistakes during forest operations and to allow for regular inventory updates and improved growth and harvesting evaluation
- Crown competitors removed in order to maximise diameter increment
- Fire blight or rusts have never been an issue on Wild Service at Sailershausen
- High quality Wild Service timber is sold at auction and sells at an average price of €600/m^3, with top prices up to €14,500/m^3 achieved
- Wild Service buyers in the last few years also buying "coloured" sawlogs
- A scattering of extremely well-formed semi-mature Field Maple was observed
- Hans Stark happy to supply Wild Service and Field Maple seeds when next mast year occurs (Field Maple possibly next year)
- Small-leaved Lime registered seed stands observed

Stop 2

- The proportion of Wild Service is being increased at the district through plantings on afforestation and restocking sites
- The management objective is to produce high-quality Wild Service timber, while Hornbeam and Field Maple act as 'serving' or nurse species
- In 2004 a mixed stand of Wild Service tree and Hornbeam was planted
- Wild Service saplings used not from Sailershausen, however they are showing good form
- Planting pattern: band/line mixture (three lines of Wild Service and one line of Hornbeam)
- Spacing 2m x 1m
- Cleaned/respaced in 2014. Further cleaning/respacing operation planned for 2019/20

Stop 3

- In 2008 a one hectare mixed stand of Wild Service and Hornbeam was planted with occasional scattered groups of Field Maple and True Service on the forest margins

(Marsh, 2017)

Stop 3 - Band/line mixture of Wild Service and Hornbeam established in 2008 on woodland fringe

- Planting pattern: band/line mixture (two lines of Wild Service and one line of Hornbeam)
- Spacing 2m x 1m
- Seedlings used from seed collected at Sailershausen
- €5,000/ha afforestation grant received
- Fructification already taking place

Produced by Christopher Guest and Nick Marsh

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The Wood Awards

by Francesca Gregson

The winners of the Wood Awards 2017 were announced in November at a ceremony held at Carpenters' Hall, hosted by Johanna Agerman Ross, Founder of Disegno magazine and Curator of Twentieth Century and Contemporary Furniture and Product Design at the V&A.

The Wood Awards is the UK's premier competition for excellence in architecture and product design in the world's only naturally sustainable material. The Awards aim to recognise, encourage and promote outstanding design, craftsmanship and installation using wood.

Interiors

Coastal House, Devon by 6a architects was awarded the Arnold Laver Gold Award, the winner of winners, as well as being the Interiors category winner. The house is an early-twentieth century family home with extensive views of the sea. It has been transformed by stripping it back to its stone walls and completely reconfiguring internally. Tapered Oak verticals are used as supports throughout, including primary drawing room columns, external veranda posts and the stair spindles.

Commercial & Leisure

The judges selected Rievaulx Abbey Visitor Centre & Museum by Simpson & Brown as the Commercial & Leisure winner. The aim of the project was to upgrade the museum building to meet modern curatorial standards, encourage visitors into the ruins, and improve facilities.

Education & Public Sector

Maggie's Oldham by dRMM was chosen as the Education & Public Sector winner. Built in the grounds of NHS cancer hospitals, Maggie's Centres offer free practical and emotional support for people affected by cancer. Maggie's Oldham is the first permanent building constructed from sustainable tulipwood cross-laminated timber.

Private

The winner of the Private category was Hampshire Passivhaus, a self-built home on the south coast by Ruth Butler Architects. The judges were impressed by the design, craftsmanship and attention to detail.

Small Project

Feilden Fowles Studio was selected as this year's Small Project winner. The timber frame structure clad with corrugated Onduline sheets, can be dismantled and re-erected when the lease comes to an end.

Structural Award

The Smile by Alison Brooks Architects was awarded this year's Structural Award, chosen from all the buildings shortlisted in each category. Conceived as a habitable arc, The Smile was a 3.5m high, 4.5m wide and 34m long curved timber tube built for the London Design Festival 2016.

Bespoke

The winner of the Bespoke category was Time and Texture by Eleanor Lakelin which forms part of 'A Landscape of Objects', a site-specific exhibition set in the gardens of Forde Abbey. The three hollowed vessels on rusted plinths and four solid forms show how natural elements erode and work away at materials.

Production Made

The Narin Chair by David Irwin for Case Furniture won the Production Made category. Case wanted to change preconceptions of what a folding chair is; a piece of furniture you would be proud to have on display rather than an emergency chair.

Student Designer

Within the Student Designer category there were two cash prizes; £1,000 for Winner and £500 for People's Choice.

Winner – Rustic Stool 1.0 by Mark Laban

The People's Choice Award – Hex Drinks Cabinet by Damian Robinson

The category winner was Rustic Stool 1.0 by Central Saint Martin's student Mark Laban. The judges praised this interesting new typology that creates a new aesthetic.

The People's Choice Award was given to Hex Drinks Cabinet by Damian Robinson of Williams and Cleal.

The Wood Awards 2018 shortlist will be announced in July.

For more information

info@woodawards.com
www.woodawards.com

Goodwood Estate

by Darren Norris, Goodwood Forestry Manager

The Duke of Richmond and Gordon family have been in residence at Goodwood for 300 years and in that time have created a quintessential estate situated in the South Downs in West Sussex that comprises 4,860 hectares of organic farm and woodland.

Within the estate there is Goodwood House and park, horse racing, a motor circuit with an airfield and a hotel. There are two golf courses, the Kennels sporting members club and the ten-bedroom secluded accommodation called Hound Lodge. The estate is internationally known for the car events of Festival of Speed and Revival which draw in over 300,000 people annually.

The majority of the 726 hectares of woodland is on thin chalky Downland, ideal for growing Beech which is the major crop along with Western Red Cedar and Douglas Fir. A further 800 hectares is on long-term loan to the Forestry Commission. The majority of the plantations were replanted during the 1950s and 60s as a great deal of timber was sold to make money for the estate during that period. Much of the current woodland is thus at best middle aged.

The low land is predominantly Sweet Chestnut and Hazel coppice with Oak standards. Naturally regenerated Ash comprises a good proportion of the tree cover which is currently being devastated by Ash dieback that has spread throughout the estate in the last four years. A robust plan to remove infected trees along roadsides and in public areas has seen the removal of many trees and these have been replaced with Beech, Hornbeam and Oak plus small leafed Lime and some Service trees to add diversity and habitat.

Goodwood park has some good examples of ancient, stag-headed Sweet Chestnut and Oaks and a collection of Cedars of Lebanon, the originals planted in 1760s and many more in the following two centuries. Recently, in conjunction with the Royal Botanic Garden Edinburgh, a further 50 have been planted from seed gathered in the Lebanon for conservation. It is hoped that these will dominate the skyline for centuries to come.

The reason Goodwood Estate wanted to join and support Woodland Heritage came from the invitation to the seminar on "Saving our Oak" back in November 2017. It put into perspective how much work was going into understanding and combating tree diseases and the Estate felt that it should be involved, even in a small way, to help. The information generated by Woodland Heritage will be vital to the preservation of the landscape of the future.

Image courtesy of Goodwood Estate

Living Ash Project

Finding Ash trees tolerant to Ash Dieback

by Jo Clark

News about Ash dieback has gone rather quiet in the media with newer threats on the horizon such as *Xylella* (which attacks a number of woody hosts, most notably for British forestry, Oak and Cherry species but also Elm and Plane), Chestnut Blight, Emerald Ash Borer and the ongoing suite of problems affecting Oak trees. However, research on Ash dieback continues, and this coming winter will see the establishment of an archive of putatively tolerant trees on the public forest estate in Hampshire.

Ash dieback is caused by a non-native fungal pathogen – *Hymenoscyphus fraxineus* – which was confirmed in the UK in 2012, although recent research has shown it to be present in Britain at least eight years prior to this[1]. The disease originates from East Asia, where it co-exists with native Ash species e.g. *Fraxinus mandshurica*, but it is highly virulent on European Ash species *Fraxinus excelsior* and Narrow Leaved Ash – *F. angustifolia*, although somewhat less virulent on the Manna Ash, *F. ornus*. However, unlike Elm, a few clones of which were introduced by the Romans as vine props, Ash is genetically diverse. It is this genetic diversity which gives us hope that Ash will survive and remain a viable option as a timber species in the future.

In 2013 Defra awarded funding to a consortium of researchers to identify trees tolerant to Ash dieback. Led by Earth Trust, the Living Ash Project is visually screening 40,000 trees that were already in research trials and seed orchards prior to the arrival of Ash dieback to identify those individuals that show tolerance. We have also been using citizen science to engage the public to monitor trees in the wider environment. During summer 2017, when it is easier to spot signs of dieback, we visited over 75 estates where Ash is an important component of the woodlands. These estates contributed Ash trees of superior phenotype to the Future Trees Trust's breeding programme in the 1990s. Even through the original selected tree may be

Ash crowns showing various degrees of dieback

infected, other trees in these top quality stands could yield tolerant individuals, important if we are to keep Ash as a timber species.

We also visited woodlands identified through citizen science and by woodland managers and FC tree health officers. Norfolk Wildlife Trust and the Woodland Trust were particularly helpful in this regard, as Ash dieback was already severely impacting woodlands in Norfolk and Suffolk. Besides East Anglia, the area most badly impacted by Ash dieback at present is Yorkshire – somewhat of a surprise as Ash dieback was only really first noticed to any extent in 2016. A year later, and the inroads the disease has made were startling although perhaps less surprising given the abundance of Ash in Yorkshire, and its role as the prime species in hedgerows and along transport corridors.

Having identified putatively tolerant trees during summer 2017, we collected graftwood from 412 of these trees in January 2018 which was sent under licence from FERA to East Malling Research in Kent. Because of the ban on moving or planting Ash, no nursery is raising Ash plants for rootstocks, so we had to have these contract grown. Ideally a rootstock should be a two-year-old plant of pencil thickness to maximise successful grafting. However, our

Collecting Ash graftwood in January 2018 at Ashwellthorpe Wood, courtesy of Norfolk Wildlife Trust

rootstocks were only one year old, and so were rather skinny. This meant that the scion material also had to be skinny to enable the grafters to match up the cambium of rootstock and scion. This resulted in very small grafts, but these will have the best possible care, and be well looked after in glasshouses to maximise growth.

Researchers in Denmark also identified a correlation between early senescence (leaf fall) and tolerance. We have assessed many thousands of trees for both timing of budburst and senescence and scored them for infection and found the same correlation. This offers a mechanism for selecting which trees to retain if early intervention is desired before the effects of Ash dieback are apparent.

Another element of the Living Ash Project is to assess the level of heritance of tolerance which offers hope of breeding tolerant trees. Forest Research established three progeny trials in 2015 in areas of high infection. These have been assessed twice now and show varying degrees of

Grafts of putatively tolerant Ash trees at East Malling Research

tolerance. A couple more years are needed for impacts of the disease to be felt across the whole trial (rather than potentially patchy by chance) before we can calculate reasonably accurately how tolerant these families are. Forest Research are also developing tissue culture techniques for Ash, so that any tolerant trees identified can be bulked up for use in future research or reforestation purposes.

Finally, a brief word about Emerald Ash Borer (EAB). This is a very beautiful Agrilus beetle native in Asia as is the Ash dieback pathogen. It has caused enormous damage in the eastern United States, killing many millions of trees. Currently found just west of Moscow, it is working its way westwards at approximately 20km a year – assuming it doesn't catch a ride on a freight train. Researchers at the University of Exeter are working on metabolites of Ash that make the timber less palatable to the beetle. The archive material of Chalara tolerant Ash will be made available to other researchers.

Although funding for the Living Ash Project ends later this year, project partners will continue to monitor the archive to quantify the degree of tolerance in selections, remove less tolerant individuals and add to the archive numbers as better trees are identified as nature continues to screen Ash across the country. It will be many years yet before we have seed available for reforestation purposes.

1 Wylder et al. 2018. Evidence from mortality dating of Fraxinus excelsior *indicates Ash dieback (*Hymenoscyphus fraxineus*) was active in England from 2004-3005. Forestry 00: 1-10.*

The Association of Pole-Lathe Turners and Greenwood Workers

by Harry Rogers, Secretary, APTGW

The 2017 Bodger's Ball was held in Shropshire, over the weekend of 13 - 14 May. This Ball was along the lines of the early meet-ups as it was held in a very remote rural location between Shrewsbury and Telford, with greater numbers of people bringing their pole lathes to enjoy some informal turning, to share skills and knowledge, and to meet with old friends and make new ones.

There was a superb range of high quality craft demonstrations, and for the second year running we ran very well attended pre-Ball workshops in a wide range of activities, including bowl turning, spoon carving, basketry, saw sharpening, tool making and leathercraft.

There was a huge turnout for the Craft Competitions, and the standard was, as always, very high. Members of the Association each have the opportunity to vote on the craft competition entries, so the winners really are being assessed by a very wide judging panel! The competitions are a great opportunity to showcase some of the best craft in the country, and the support of Woodland Heritage is a key part of this.

The Woodland Heritage Award for Best in Show (£100) went to Sue Holden for an exquisite oblong covered bowl, with an ingenious wedge closing mechanism, and a finely wrought carry handle. Breaking with tradition, this is the second year that the Best in Show winning item has not been an armchair. Sue pushed the boundaries with her imaginative design and superb skill, and she was a very justified winner, amongst strong competition.

Photo: Jon Warwicker

Sue Holden with her carved lidded bowl

The Woodland Heritage Award for Best Newcomer (£200) which had been held over from 2017, was awarded to Yoav Elkayam. Yoav was introduced to green wood working in 2013 while travelling around the UK. He took bowl turning and tool forging courses, and he attended the biggest spoon carving gathering – Spoonfest. Meeting some of the best craftsmen, and learning from them, made him really want to take his skills and approach to the craft to the next level, and he took the bold step of making it his full-time occupation.

Photo: Yoav Elkayam

Nested bowl set by Yoav Elkayam

He has converted a van to act as home and workspace, and he travels between friends and craftspeople on his travels. More photos can be seen on his Instagram account.

The Association of Pole-Lathe Turners and Green Wood Workers has more than a thousand members worldwide, and membership continues to grow year on year.

The Woodland Heritage awards are seen as very prestigious, and at the Bodger's Ball prize giving ceremony, APTGW chairman, Jon Warwicker, gave special thanks to Woodland Heritage for helping to promote these woodland crafts.

The 2018 Bodger's Ball was held at the Weald and Downland Museum, Singleton, near Chichester, over the weekend of 12-13 May 2018 and will be reported in our 2019 Journal.

For the latest information see: **www.bodgers.org.uk**

A year in Canada's forests

by Nick Hill

I landed in Ontario in May 2016 with a summer of funded forestry placements ahead of me, courtesy of the Prince of Wales Forest Leadership Award. Three months of hiking moose trails in Algonquin Provincial Park and tracing the impacts of Emerald Ash Borer across Ottawa City left me wanting more. As autumn approached I drove across Canada to Vancouver Island, where I spent the winter working in the coastal, temperate rainforest. Here are a few observations from my year in the Canadian forestry industry.

Canoe tripping across the landscape in which the vessel evolved

Transitional open space in an abandoned beaver pond, Algonquin Provincial Park

Occasionally a British forester will say to me, 'it must be totally different over there!' Whilst indeed I came across differences in the day-to-day detail, the overarching principles of sustainable forestry management span the Atlantic. My work in Algonquin Provincial Park was in many ways similar to what I now do here in the New Forest, UK. For example, I taped off buffers around sensitive habitats and worked seasonally adjusted programmes designed to accommodate recreational park users. However it was the description of these factors that was somewhat exotic. Algonquin Provincial Park's tourists are primarily wilderness equipped, multi-day canoe trippers as opposed to the New Forest's dog walkers and pub-hopping cycle groups. Its priority habitats include black bear dens, wood turtle breeding areas and beaver ponds rather than badger sets, bat roosts and newt ponds. But as we take baby steps towards expanding our woodlands and reintroducing once abundant forest dwelling species back here in the UK, perhaps some of these differences may also begin to fade.

An undeniable contrast between UK and Canadian forestry is that of scale. My first entire day of driving through a single, continuous forest in Ontario blew me away. Such scale poses certain operational challenges which require solutions quite novel to a British Forester. To reduce travel time, it is common across Canada to

White Pine (Pinus strobus) grown under a shelterwood system and skidded in pole lengths in Algonquin Provincial Park, Ontario

work shifts of one to three weeks from remote forest camps. In Ontario camp trailers migrate across the forest with annual work programmes, whilst isolated reaches of coastal British Columbia are worked via floating bunk houses. At the end of an evening spent at the camp fire in one such outpost, inspired by the sense of isolation in the vast forested landscape of Algonquin Provincial Park, I mustered my most mighty howl under a full moon. I had hoped to provoke a response from a pack of wolves that we had seen traces of earlier that day. At the end of a baited silence however a local colleague remarked that I had produced a perfect impersonation of a somewhat more diminutive coyote pup. Not quite the retort I had hoped for.

Living and working within complete ecosystems, alongside top predators, was a humbling and inspiring thrill. As the months rolled by, my frame of mind adapted from a jittery hyperawareness into excited engagement with my surroundings as I moved about the forest. Though never taken lightly, the sight of a fresh cougar print, a twitching salmon carcass discarded by a feasting bear, a pile of wolf scat, or occasionally a fleeting glimpse of the magnificent beasts themselves were fascinating insights into the intricate web of species relationships. Adaptions to working around such animals were more 'awareness and avoidance' than 'disturbance and response.' In weekly health and safety meetings with Strategic Natural Resource Consultants, on Vancouver Island, the progression of bear hibernation or recent wildlife sightings were regular discussion points. When in the forest covering ground on foot, any periods of intrinsic calm brought about by the rhythm of walking were abruptly broken by anticipatory howls of "HEY BEAR!" Though perhaps a rather alien and intimidating thought for a British forester, the few encounters I had with large mammals in Canada's forests are some of the most vivid and precious memories of my time there.

A final comparison that really warrants far more than these closing remarks is that of Canada's deep and complex woodland culture. It is only in relatively recent decades that commercial forestry practices have arrived in the landscape of much of Canada. Indeed whilst working on Vancouver Island I found myself on the frontier of expanding clear-fell blocks, forging out into old-growth Douglas Fir and Western Red Cedar. Whilst such cutting of primary forest is now the exception rather than the norm, it is true that the area of old-growth forest in Canada and the unique ecological properties it delivers, dwindles further each year. It would however be misleading to suggest that such old-growth forests were completely

A vacant black bear den in the hollow stem of a Western Red Cedar, Port McNeill, British Columbia

Surveying veteran and old-growth trees for retention in the Great Bear Rainforest, British Columbia

Old Growth Western Red Cedar, Port Renfrew, British Columbia

untouched by man before the first arrivals of saw, winch and timber truck. Prior to contact by Europeans, the Pacific coast of British Columbia had one of the highest population densities in Canada. Evidence of diverse and holistic use of forest products persists in the homes, cultures and landscapes of many First Nations communities today. I was privileged to play a small part in protecting the 'culturally modified trees' that I came across within proposed cut-blocks in coastal British Columbia. A common example was long, vertical scars left on mature Western Red Cedar from stripped bark, from which fibres are traditionally woven into fabrics, matting, ropes and netting. As the governing of rural Canada modernises, political power is slowly returning to long since suppressed First Nations communities. The introduction of the Great Bear Rainforest Act (2016), with its strengthened legislative powers assigned to local First Nations communities, and greater protection of the areas precious and unique ecology, seems a big leap in the right direction of what a truly sustainable forestry industry might look like in this wonderful part of the world.

A dancer's outfit at Ottawa Pow Wow, including bones, feathers, claws and leather of forest dwelling creatures

EDITOR'S NOTE

We first met Nick when he attended one of our three-day 'from Woodland to Workshop' courses in 2015. Amongst our usual wonderful blend of high calibre participants from all sorts of 'woody' walks of life the tutors quickly concluded that Nick was to be the one to receive the annual The Prince of Wales Award. He impressed us enormously and it was particularly pleasing to hear about his valuable and diverse experiences in Ontario's forestry industry, courtesy of the Prince of Wales Forest Leadership Award, and his following work in British Columbia. Now back in the UK, Nick is engaged on a two year programme as a Trainee Forester with the Forestry Commission in the New Forest where he will develop a broad range of vocational experience and benefit from supplementary formal training, but without having to be on the alert for bears, wolves or cougars!

Music: Forests: Art: Ideas

Timber festival takes root in the National Forest

by Carol Rowntree Jones

The National Forest is home to a brand new festival this year, one that should be close to the heart of many Woodland Heritage readers.

'Timber' is the creation of the National Forest Company (NFC) in partnership with Wild Rumpus, award-winning producers of the Just So Festival. The ethos behind the not-for-profit festival is to bring the transformative impact of forests to life, through the inspiration of the National Forest. Working with artists, musicians, scientists and thinkers, the festival programme will explore what woodlands mean to people, as businesses as well as places for play, relaxation and creativity.

Feanedock, near Ashby de la Zouch, the site chosen for the festival, is owned by the NFC, and is ideal for telling the story of the Forest. NFC Chief Executive John Everitt explained more: "In creating a new festival, we wanted to explore ways truly to celebrate the scale of what has been achieved over the last 25 years in creating the National Forest, and to place this work in a narrative of what trees mean to people, how forests can transform places, how a forest can be part and parcel of people's everyday experience and landscape.

"The National Forest was born out of an idea to bring multi-purpose forestry near to where people live and work. The central part of the Forest's 200 square miles covers the Midlands coal field and urgent regeneration was needed to help repair a derelict landscape after the closure of the pits. This vital regeneration and transformation has been led – very successfully – through the planting of trees, eight and a half million to date.

"We wanted to find a celebratory way to communicate this, which would be thought-provoking, fun, physical, poetic, to bring the Forest to life for those who live here and for those curious to come and find out more – and enjoy themselves!"

As well as music headliners Jane Weaver and This Is The Kit (the vibe is very much BBC Radio 6 music), the programme features keynote speaker Stuart Maconie and Robert Macfarlane, author of the enchanting, best-selling book *The Lost Words*. In a Wilderness Tracks session, Macfarlane will reveal the six nature-related songs that have made it onto the wilderness soundtrack of his life.

Photo: Andrew Allcock

Families will have fun in the woods at Timber

Photo: Teneight

Performance staging will be built amongst the glades

Photo: Jacqui Rock

Photo: 2020VISION/Ben Hall

Timber will celebrate the National Forest's vision of multi-purpose forestry in fun and thought-provoking ways

'Timber' also sees the world premiere of *Seek, Find, Speak*, the outdoor theatre companion that will bring *The Lost Words* to life through the form of a forest theatre-trail for all ages, led by a charm of goldfinch performers. It will feature stunning 3D installations of Jackie Morris's golden illustrations and sound recordings of the spell poems from some of Britain's famous voices of all ages and accents, including inspiring athletes, naturalists, actors, poets, musicians and scientists.

The festival has a unique relationship with Making Woods Work, and Wild Rumpus is running a Woodland Culture blog on how to build events that make the most of woodland spaces: covering issues such as programming, health and safety, sustainability, choice of site and marketing (see www.timberfestival.org.uk/woodland-culture-blog/). Local woodland owners and National Forest communities involved with woodlands have already been responding to the blog posts, illustrating a wider engagement with 'Timber' than the event itself, always an aim of the whole enterprise.

Picture: Jackie Morris

Timber will host the world premiere of Seek, Find, Speak, the theatre companion piece to Robert Macfarlane and Jackie Morris's enchanting book The Lost Words.

During the festival, there will be an opportunity to pitch ideas for a new woodland-based social enterprise or expansion of a current one in a Make Your Local Wood Work session, with prizes ranging from cash investment to help make the idea happen, to structured support from industry experts.

'Should money grow on trees?' Festival attendees can take part in a debate on the role of money and funding of woodlands with panellists Charles Robinson, Head of Forestry at the NFC, Darren Moorcroft, Director of Estate and Woodland Outreach at The Woodland Trust, and Gabriel Hemery, Chief Executive and co-founder of Sylva Foundation. Evening Charcoal Sessions will bring those working in woodlands together with writers, artists, academics, politicians and scientists to discuss live issues and new ways of living and working in forests.

Craft ale, long table feasts, farmers' market stalls and food trucks are all part of the weekend, plus a vibrant programme of health and well-being activities and wild play for the young at heart.

Day and weekend tickets are available:
see **timberfestival.org.uk** for more information and ticket sales.

Timber will demonstrate extraordinary ways to experience our woodlands this summer – don't miss it!

Timber is supported by Arts Council England; Forest Holidays; James Latham; Reabrook Ltd; Ecotricity; Making Local Woods Work; North West Leicestershire District Council

The need for timber trees and professional management in new planting projects

by Chris Yarrow

Nowadays woodland management and silviculture often feature as after-thoughts in the case of new tree planting in Britain. Is this because the initiators are too engrossed in raising funds, getting consents and persuading politicians? Is it because, in these days of multi-purpose forestry, nobody is prepared to agree a suitable mix of benefits? Or is that no-one can guarantee funding to care for and administer the resulting woodlands?

For the past four decades public debate about trees and woodlands has been dominated by environmental aspects, and commercial afforestation, especially of productive conifers, has dropped off markedly. It is easy to promote a simple message such as "exotics bad; natives good", just as many were swayed by the message "Make America great again." The implication of such simplistic slogans on British forestry is that timber production and planting the most appropriate trees for the site are lost in the clamour of thinking that we are saving the environment by simply increasing woodland cover. Work in established plantations has often overturned original long-term objectives by felling trees, irrespective of commercial or aesthetic merit, purely because they are considered to be alien. Under pressure from naturalist and other pressure groups, "Plantations on Ancient Woodland Sites Restoration" is now official policy.

"Very little communication with the public currently deals with woodland management, compared with, for example, coverage of tree-planting events." Perhaps the multiplicity of forestry organisations in this country means that the profession and industry fail to come together to speak with one voice, and the well-funded environmental groups are better organised at influencing Government on matters of forest policy. As Roger Richardson argued last year, as an organisation we tend to "preach to the converted" and we have only ourselves to blame if the public ignores us.

Although tending trees for timber goes on for several decades, UK grants for tree-planting have far outweighed support for management, and we are all familiar with neglected plantations direly in need of thinning, pest control, or access for harvesting. It is no surprise, therefore, that over forty percent of English woods are neglected. Production of good timber is the result of long-term skilled application of good silviculture. With a lifetime's experience as a chartered forester I know only too well how under-appreciated are the skills of my profession compared with almost any other. Who among us has not seen inappropriate, or downright amateur prescriptions, handed out by untrained advisers or those with another agenda?

The recent announcement of the creation of a new Northern Forest will be welcomed by many. It is proposed to plant, over a 25-year period, 62,000 acres between Liverpool and Hull, incorporating five community forests, at a cost of £500 million, starting in Bolton this March. Apparently, the project will be overseen by The Woodland Trust and the Community Forest Trust. The Government has pledged £5.7 million, but it is anticipated that most of the funding will come from charities. Among the stated objectives of landscape, conservation and flood control , there is no mention of timber production. With eighty percent of our timber needs met by imports, should we not, post-Brexit, be looking to increase our self-sufficiency in any new large-scale afforestation? I do not argue that timber production is always a profitable venture, but the inclusion of a nurse crop in a multiple-use management regime can assist establishment, as well as offset early costs. This will be especially true in planting up often-inhospitable Pennine sites, and Britain's foresters can claim unparalleled expertise in this field. The increasing demand for biofuel and plastic substitutes is reason alone to include exposure-tolerant conifer nurse species. By doing so a

Chris Yarrow marking a thinning timber

Squirrelled Oak, with unpruned tree behind

whole raft of benefits would accrue, not least of which would be better-formed broadleaves, if these are the long-term objective. On suitable locations a catch-crop of Christmas trees can offset establishment costs, as well as provide an attraction for visits and associated purchases and the like. At Wilderness Wood we sell some 2,500 trees each Christmas, and our source for a number of years was an area we re-established after the 1987 Great Storm. I do not posit that our 63-acre venture would be applicable to all conditions, but elements of its management would fit into some areas within easy access to population centres.

The source of plants is of considerable concern if we wish to obtain useable timber. The Forestry Commission set up Registered Seed Stands many years ago complemented by the BIHIP in 1991, rebranded as the Future Trees Trust, in order to improve the planting stock of trees planted in the UK. Who of us has not had to inspect or manage a stand where the seed source must have been sweepings off a road or a parkland tree? One such 1960 stand in Wilderness Wood had Beech so badly forked that there was hardly a tree worth retaining, and in the interests of good silviculture, the stand became principally the Pine with which it had been planted. Let us hope that, among the laudable aims of genetic diversity and local provenance, tree form is now to be given adequate status. It seems inconceivable that bodies, including Natural Resources Wales under its "Acorns Antics" programme, are encouraging schoolchildren to collect mast for replanting local forests and woodlands, irrespective of tree quality. (Natural Resources Wales, 2017). Would any farmer let a runt ram loose in his herd of prize ewes just because it was "local?"

No reasonable person can suggest that timber trees of good form are in any way incompatible with all the other benefits that a multiple-use wood can offer, unless they crave impenetrable thickets of overgrown scrub. Sadly, there is no shortage of such woods for them to seek out and enjoy from the edges! Surely it is time that groups such as Woodland Heritage and Future Trees Trust were actively involved in the planning stages of all new planting initiatives of any size. In this way our successors will have worthwhile trees, as well as a protected landscape.

Refs.

Hemery, G.(Undated) *Reviving a wood culture in the UK* in: *The State of the UK's Forests, Woods and Trees*, Woodland Trust.

Natural Resources Wales (Newsletter, 28/11/2017) *Acorn Antics Achievement*

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Yarrow, C. (2015) *Thirty Years in Wilderness Wood*. Troubador

The Worshipful Company of Turners
2018 events

The Worshipful Company of Turners holds its turning competitions every two years. They attract entries from turners of all ages and skills. There should be a competition for you, whatever your interest or proficiency.

View, Love, Buy

An outstanding show of art and craftsmanship for one day only on Tuesday November 27. All the competition entries and winners will be on show along with a curated display of works by members of the:

- Register of Professional Turners
- Association of Woodturners of Great Britain
- Society of Ornamental Turners
- Association of Pole Lathe Turners and Greenwood Workers

Many of these works will also be for sale during the one day that View, Love, Buy is open. Tickets are free and can be ordered in advance to guarantee entry to the show.

www.turnersco.com/view-love-buy-2018/

2018 Competitions: Are you a woodturner?

The competitions are the largest in Europe and attract a wide range of entries from amateur and professional UK woodturners.

The twelve competitions are organised by the Turners' Company with the Association of Woodturners of Great Britain, the Society of Ornamental Turners, and the Association of Pole Lathe Turners and Greenwood Workers. Judging is on Monday November 26.

www.turnersco.com/turning-competitions-2018/

The Turners' Company
Skinners' Hall, 8 Dowgate Hill,
London EC4R 2SP
www.turnersco.com
clerk@turnersco.com
020 7236 3605

Garthwaite Travel Bursaries

Since 1994, through the inspiration of our late Patron, Peter Garthwaite OBE, we have supported foresters of all ages to travel to many countries to study aspects of forestry, or wood processing outside the UK. Some twenty-one years on, many of these individuals remain in touch and are still putting their experiences to good use. Previous countries visited include the USA, Holland, Germany, Switzerland, Finland, Sweden, France, Croatia, Ireland, Latvia, Czech Republic, Greece, Denmark, Italy, Austria, Japan and Canada.

The Trustees of Woodland Heritage continue to invite applications for bursaries to study an aspect of forestry or wood processing outside the UK.

Eligibility

Applicants must either be forestry practitioners in the UK, or intending to become so after completing a forestry education. Preference will be given to those whose interests are in the production of high quality timber. Applications for support on compulsory tours (e.g. as part of a University group) will not be considered, nor will retrospective applications.

Applications

Should be sent to Lewis Scott and should contain details of the proposed travel including costs and a brief (one page maximum) CV. Applicants should also ask one independent referee to write separately and in confidence to Lewis Scott in support of their application.

Successful applicants will be expected to produce a short article/report with photographs on their travel for publication in the Woodland Heritage Journal and/or website.

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COURSES IN CONTINUOUS COVER FOREST MANAGEMENT

IRREGULAR SILVICULTURE IN THE LOWLANDS: TRANSFORMATION IN PRACTICE

Marking is a difficult skill to learn, particularly within an unfamiliar discipline such as Irregular Silviculture. These Courses provide an in-depth introduction to the theory and practical application of irregular silviculture in coniferous and broadleaved stands with the emphasis on lowland forests.

The Courses incorporate a marking exercise in which the trainees, in groups of two, undertake the marking decision process for themselves within a one hectare stand under transformation and interact with two experienced practitioners. On the completion of the marking exercise, the trees selected for removal by each group are inputted into a spreadsheet which provides a detailed summary of the silvicultural and economic consequences of the each marking. These data can be compared between the groups and with the marking of the local manager.

The two day course incorporates site visits in irregular coniferous and broadleaved stands and looks in detail at the silviculture of transformation and the monitoring of stand structure and performance.

The Courses are based on the Stourhead (Western) Estate, Stourton, near Mere, and the Rushmore Estate on the Wiltshire/Dorset border. The Courses are designed for 14 trainees and will be led by Andy Poore and David Pengelly, both leading exponents of Continuous Cover Forest Management.

WOODLAND HERITAGE

Woodland Heritage will be offering some bursaries on a case-by-case basis.
Members of Confor could consider applying for assistance to their Education & Provident Fund (www.confor.org.uk/resources/education-provident-fund).

For further information see the Courses section on www.selectfor.com or contact David Pengelly at david@selectfor.com

Irregular Silviculture in the lowlands

by Duncan Winton and Adam Thorogood

Thanks to generous bursary support from Woodland Heritage, both Duncan Winton and Adam Thorogood were able to attend a two day course on "Irregular Silviculture in the lowlands" run by SelectFor at the Stourhead estate in Wiltshire in May 2017.

The history, development and practical application of irregular silviculture is a vast topic. We covered such a huge amount over two days at Stourhead that it is impossible to cover everything in this article. Andy Poore and David Pengelly did a great job at streamlining what could have been an overwhelming amount of information and delivered an introduction to the subject that was a brilliant foundation for us to begin integrating irregular forestry principles into our own work.

The first day of the course began with a firm grounding in the principles of transforming and managing irregular forests with a particular focus on conifer stands. However, it was not until we got out into the forest at Stourhead that we really began to understand what it is all about. With the history and principles still buzzing in our heads we were given handouts with data relating to the Stourhead 'marteloscope.' A marteloscope – from the French *marteller* "to mark" in a forest – is a one hectare research plot where every tree is numbered, mapped and measured.

Andy Poore explaining how Hazel understorey is working to suppress bramble at Half Hide Wood on the Rushmore estate

It was here that we spent our afternoon putting into practice the techniques and skills that we had been introduced to during the morning by marking the stand for the next harvest.

We separated into groups of two or three for the marking exercise and spread out across the site. We worked systematically through the mixed stand of Douglas Fir, Norway Spruce and Japanese Larch marking with tape and then noting on a map and recording the number of the trees we would remove.

Some of the guiding principles we were advised to follow on the task were as follows:

1. Aim to remove the biggest trees. (This maximises profit and reduces felling costs)
2. Remove very poor trees (major defects, low vigour etc.)
3. With small and medium trees, if in any doubt leave it
4. Leave a proportion of good seed bearing trees, those of landscape or biodiversity value and minor secondary species
5. Come last to low value (category c) trees needed to achieve the overall removal target

Andy and David were on hand to help and advise but generally we were left to make our own decisions. At first it took some time to get to grips with the task. There seems to be an instinct to mark in favour of the better trees, but we were forced to combat this urge and, instead, think less about spacing and more about the overall timber volume within the stand. As Andy had mentioned in the morning, clumpiness is good and there is no presumption to remove a good tree early just because it is close to another tree.

The final session of the afternoon was spent back in the classroom with David giving a presentation on harvesting and marketing in irregular stands. He explained the importance of establishing permanent and good quality extraction racks and rides within an irregular stand. We looked also at how to plan interventions – particularly in shelterwood stands – so that we avoid marooning timber behind regeneration that we don't want to disturb. In terms of marketing, the thrust of David's presentation was that we should seek never to undervalue the timber that we

An example from Luckham's Mead on the Cranborne Estate of a waiting room of pole stage growth

A mixed stand of both conifer and broadleaves at Chase Wood on the Rushmore Estate

have. That as forest managers we should seek to know our markets and customers, including niche markets where available, so that we can maximise the return from the trees that are harvested. Obviously this makes sense financially but also shows respect to the timber and to the trees that we have taken.

The second day we began again in the class room looking at data collection and how it is used in irregular stands. The sheer volume of data that is routinely collected from research stands and marteloscopes is impressive. Andy was able to demonstrate in an unambiguous way, how productive various stands are. Additionally it is possible, through regular and thorough data collection and analysis, to see how different species are performing in relation to others and to what extent they are contributing to the overall performance of a stand. Having access to data like this helps to inform practical economic decisions on matters such as when to plan the next felling intervention and what the target diameter for different species is. Andy also introduced us to a streamlined version of the marteloscope that has been developed particularly with British woodlands in mind as part of the Irregular Silviculture Network, a UK group set up in parallel to the French Association Futaie Irreguliere (AFI).

The focus of the second day was the management of irregular broadleaf woodlands. The key to this, we discovered, is the index between crown cover and diameter increment. Stand structure needs to be manipulated at the right stage of growth in order to allow for optimum crown development. If the trees are released too late, it can take a while for the crown to develop and this depends on species as to how well the trees deal with side competition.
A species such as Ash for example can take a long time to respond to release if it has been crowded early on.
Sycamore at the Cranborne estate had not responded well to release, having been suppressed from 30 to 60 years, opening up at pole stage, the crowns responded much quicker. The Beech on the other hand had responded much better to long term closure. At Cranborne, standing under some very impressive Beech and Sycamore specimens, we saw a great example of the "waiting room." There are some great terms within Irregular Silviculture: "sprinters", "stems with a future" but the "waiting room" was one of our favourites. This is where pole stage trees cluster in the understory waiting for the canopy to open above them, at which point the sprinters are recruited up into the canopy.

Another factor in broadleaf CCF is that most species, excluding Beech, need a low basal area in order to promote regeneration in the understory. Reducing basal area too much has the negative effect of increasing the levels of bramble. This can be controlled by maintaining a shrub layer with species such as Hazel, Birch or even Sycamore in order to control the understory. This is then cut at the same time as the canopy, creating niches for regeneration of the canopy species. This we saw taking place at Rushmore where we visited a stand of Ash with a Hazel understory. Converted from the old coppice with standards system, the Hazel understory was doing a good job at maintaining low bramble levels when this was cut during extraction of the largest Ash, Oak had been planted in the gaps. Andy talked a lot about "loss of control," when the canopy is opened up too much and understory bramble growth suppresses regeneration, like many things in irregular silviculture, managing basal area is all about balance and data gathering is the key to maintaining that optimum balance.

The course was inspirational and has helped us both to begin working with the principles of irregular forest management in our own forestry work in the South West and Wales. Thank you to Andy and David for organising such a great mixture of the theoretical and the practical and also to the Woodland Heritage bursaries which enabled us to participate in the course.

Woodland Cruck Barn

Part 2 - "The Raising....."

by Ken Hume, Executive Trustee, The Oxfordshire Woodland Group

Following the article published in Woodland Heritage 2017 re building A Woodland Cruck Barn (Hume, 2017) work has proceeded over the past year at a steady pace with the cruck frame completed and the frame raised during leaf fall in November 2017.

The framing team worked one to two days per week generally trying to avoid inclement weather so that timber joints were kept dry to help avoid swelling and tightening of joints. It has taken about 18 months to make the framing floor, sills, three cruck frames and two long wall frames. After raising the crucks the roof wallplates, ridge, purlins, windbraces and rafters were framed in position. A three man team working full time could have achieved all this in four to six months.

The most important lesson learned during the framing process was the importance of the dedication and cohesion of the overall team. This was ably demonstrated during the frame raising.

The woodland site was carefully protected during construction to minimise the impact of disturbance or damage to the woodland flora and so the timing of bringing vehicles onto areas where blue bells are prolific was an important consideration.

Andrew Jarvis used his SWB 1958 Land Rover, fitted with a winch, to raise the cruck frames which combined with the rigging skills of Joe Currie ensured a slow safe raising of each cruck frame.

Once raised each cruck frame had to be rapidly stabilised by the application of temporary bracing to the sidewalls. On each side of the cruck frame being raised a two man team was present comprising Mark Griffin and Herbert Russell on one side and Ken Hume and Jeremy Hunter on the other. This ensured that the potential for three degrees of movement was carefully controlled. The whole process took a day starting at 09:00hrs and completed by 16:00hrs.

The OWG applied for a further grant from The Postcode Local Trust to buy an Ifor Williams trailer and a Woodland Mills mobile saw. This was approved in November 2018 with the trailer being delivered in February and the sawmill in May 2018.

Originally we intended making over 5,000 Cedar or Larch shingles to cover the roof by traditional hand splitting however we have had to face up to various practical and scheduling constraints and so we have now decided that we will most probably make these on the mobile saw. If we make these by hand then we would need to find a good number of volunteers to help produce same or contract this out to a shingle supplier. There are also issues associated with splitting, stacking and seasoning shingles which has required us to fit a temporary tarpaulin roof which will remain in place for upwards of six months before the shingles can be fitted (Wilbur, 1992).

In May 2018 the project will move forward to making, lath, roof shingles, plank cladding and internal joists and floor planks. This will be followed by 2nd fix joinery including doors, shutters and window frames.

The cruck barn project has attracted the attention of Henry Russell OBE *(left)* who brought his Reading University class of building conservation students to see first hand how new - old buildings are put together. Herbert Russell M.Sc. *(yellow jacket)* is the lead carpenter on the cruck project and he led the visit explaining how crucks are made. Herbert is a graduate of the Woodland Heritage W2W course.

Time to relax and smell the blue bells!

Contact details:
trustees@oxfordshirewoodlandgroup.co.uk
https://twitter.com/OWGGroup

Refs.

HUME, K. F., 2017. A Woodland cruck Barn. *Woodland Heritage*, 2017, 98-99.
WILBUR, C.K., 1992. *Homebuilding and Woodworking in Colonial America*. Old Saybrook, CT. USA : Globe Pequot Press.

Can irregular forests be managed with simple inventory protocols?

The Irregular Silviculture Network (ISN) shows the way

by Jonathan Spazzi

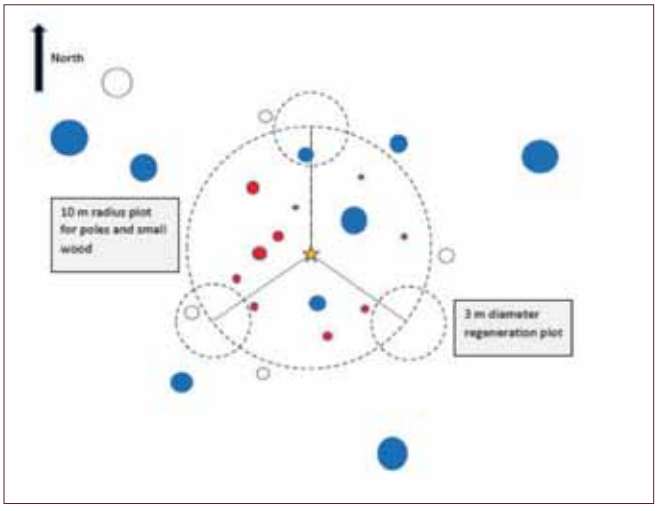
Interest in Irregular Silviculture management in the UK and Ireland has been steadily growing amongst forest owners for its potential application to our young plantations. This approach is particularly attractive as it allows for a sustained yield of quality timber whilst retaining a high level of resilience and key ecosystem services.

Philippe Morgan during ISN inventory in Ireland

Despite much research and wide policy support, Irregular Silviculture application to date is rare. This may be due to its perceived complexity and scarcity of working examples. In particular the lack of a simple transformation template and monitoring protocol with known inventory costs and outputs is considered a major deterrent for forest practitioners.

To address this and other issues, a number of leading Irregular Silviculture practitioners from the UK and Ireland came together in 2016 to form the Irregular Silviculture Network (ISN).

During 2017, ISN launched a new inventory protocol with analytical software to assist foresters in the field with transformation management of plantations into permanent, productive irregular forests. The new ISN protocol has been derived by simplifying the existing AFI research protocol and is based on much of the work carried out by Andy Poore and Richard Deffee as part of a recent MSc thesis at Bangor University. As part of refining the new ISN protocol, a specialist review-training was organised, under Woodland Heritage patronage, on 17 and 18 July 2017 in Wales. It was led by Phillipe Morgan (Selectfor forest manager and ISN chairman) and included



Example of ISN Plot

Joint CCFG UK and Prosilva Ireland joint trip to Poland 2015

Jonathan Spazzi during ISN inventory

Padraig O Tuama (Irregular silviculture specialist with the Irish State Forestry Board, Coillte) and Jonathan Spazzi (Irregular silviculture practitioner and MSc Bangor University student).

The objectives of the meeting were threefold:

- to test and review the new ISN protocol
- to lay foundations for future collaboration between UK and Irish Irregular Silviculture Practitioners
- to trial ISN software as part of a MSc Bangor thesis by Jonathan Spazzi: "Can complex, continuous-cover private forests be managed using simple inventory methodologies? Testing cost-effectiveness of different monitoring protocols to support and guide the practical transformation of small scale plantations to permanent, irregular, productive forests in Ireland"

From this review, it emerged that the ISN protocol offers the practitioner a cost-effective inventory methodology to collect key forest data for stands under CCF transformation. The protocol is based on a permanent plot layout and comes with analytical Excel software. Once the raw data is entered into the software it instantly extrapolates essential information such as tree stocking, natural regeneration, basal area and standing volume, all presented by species and dbh-size classes. This information is essential in order to instruct transformation management to a desired "equilibrium" production structure and to measure the changes since previous interventions for learning. The software also provides extrapolation of economic performance information such as Standing Timber Value/ha and Annual Value increment/ha, by cleverly combining species size classes distribution with stem quality, price size curves and productivity classes. However one of the initial limitations of the ISN protocol is that, in the absence of long term UK irregular forest data, it initially relies on productivity "estimates" and on volume tables in use in continental Europe for irregular forests. Over time, and over successive inventories, it is expected that these estimates will be refined and further validated.

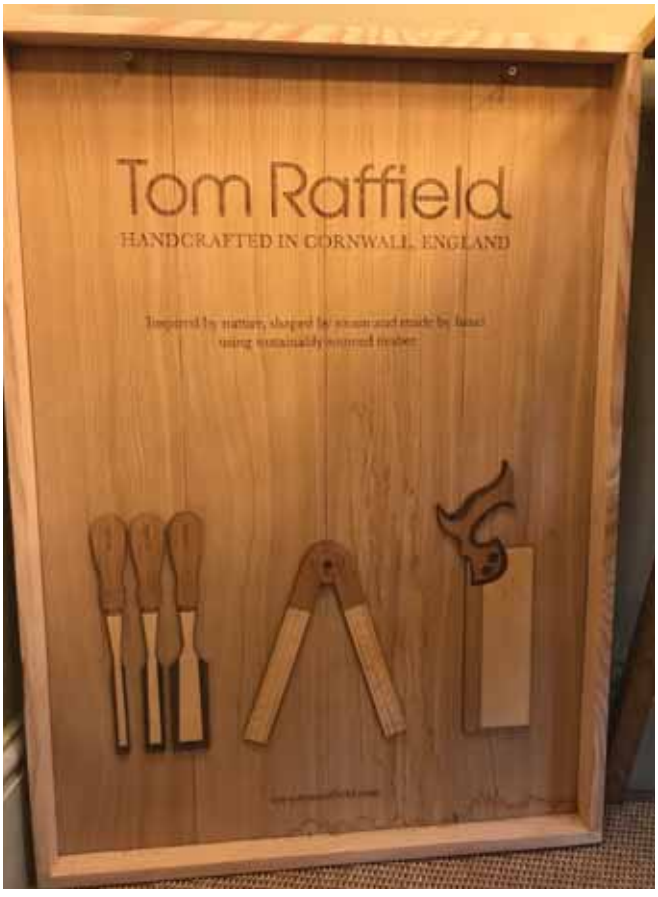
In conclusion the answer to our original question would seem to be "yes": the ISN protocol offers practitioners an example of a clear transformation "roadmap" with a simple and effective inventory protocol and effective analytical software. It provides an invaluable tool to give guidance and instil confidence in owners and managers willing to adopt Irregular Silviculture management.

Tom Raffield

by Geraint Richards, Trustee

In early March I enjoyed the privilege of visiting the young and incredibly gifted Tom Raffield at his workshop in west Cornwall. Tom has recently become a member of Woodland Heritage and I was keen to find out why our charity made such a connection with him.

Tom grew up on Exmoor but studied Design at Falmouth Art College, completing his studies in 2002. It was whilst studying there that Tom discovered steam-bending and 're-invented' this traditional technique, radically changing the way it was used. Rather amusingly, Tom said that his obsession with his new discovery made him virtually unemployable and so he had to set up his own business, in 2008, in order to make and market his steam-bent creations, all of which are designed by Tom and his wife Danielle.



Tom gives me a tour of his workshop

A piece in the making. It looks great and it's not even finished yet!

No 1 Pendant Cluster

After two years, Tom moved to his current home and developed his business within the seven acres of adjoining woodland. Today he employs around 30 people and, as well as selling directly from the company website, he has contracts with John Lewis and Heals. In May, he is taking the bold step of exhibiting at the Royal Horticultural Society's Chelsea Flower Show. Plans are well underway to move the business to another site, which will offer significantly more scope for expansion, including a focus on overseas markets.

Tom joined Woodland Heritage because he wants to forge links with a charity whose objectives are closely tied to his business. Although determined initially to use Cornish timber or otherwise timber sourced from elsewhere in the UK, Tom has had to turn to European markets recently to supply his wood. I explained to Tom that he is not alone in facing this dilemma and it is exactly the reason why Woodland Heritage was established by Peter Goodwin and Lewis Scott. Woodland Heritage's aim is to ensure that in the future there will be a resource of high quality timber in the UK and, alongside that, skills like those which Tom possesses to do amazing things with this wood.

I am so excited about having Tom as a member of our organisation and look forward to working with him on a range of ideas that were generated during our conversation.

Tom Raffield Ltd
Nanskerris, Trevarno, Helston, Cornwall, TR13 0RU
+44 (0)1326 722725
www.tomraffield.com

Helix Drum Pendant, Crib Stool and Bench

Arbour Armchair and May Coffee Table

Growing, milling and using Black Walnut in New Zealand

by Rodney Faulkner

In November 2017 WH Trustee Tom Christian was touring gardens, arboreta and native forests in New Zealand's North Island. Near Gisborne he met Rodney Faulkner, a keen dendrologist, forester and furniture maker, who grows stunning Black Walnut on the family farm. Seeing the obvious interest here for WH members, Tom invited him to produce the article you see below. We are very grateful to Rodney for contributing to our growing appreciation of this great tree.

During the 1960s and 70s the since disbanded New Zealand Forest Service investigated a range of timber species to assess their potential for growing in New Zealand. *Pinus radiata* was then, and still is, the most widely planted forestry species but there was increasing interest in some of the alternatives and *Juglans nigra* was one of several that looked promising.

As a young farmer with an interest in trees and an eye to the future, I was encouraged by a wise old gentleman whom I had known and respected for many years, to plant some Black Walnut as a legacy for my grandchildren. As my first child had recently been born and there were suggestions of more to come, this seemed an appropriate course of action.

Black Walnut chair and table made by the author

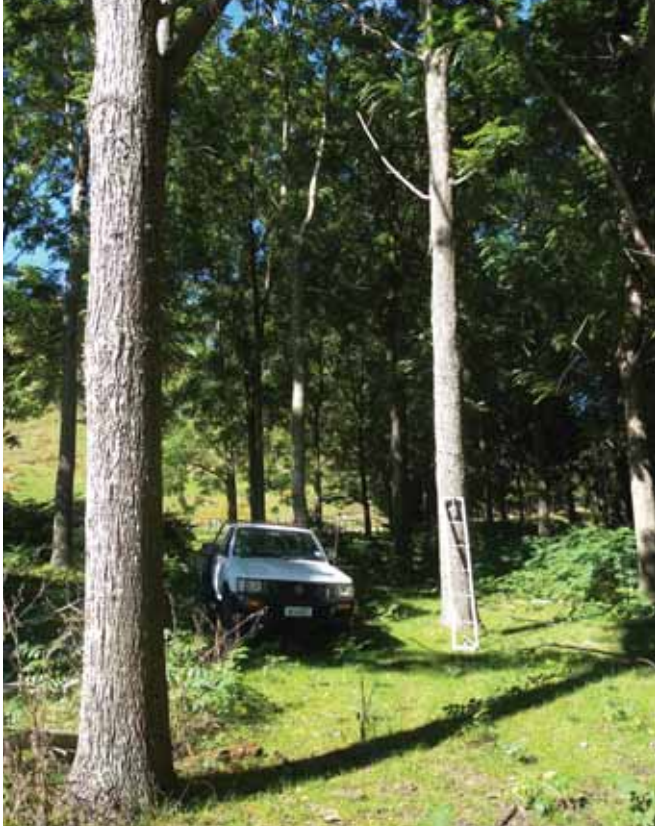
The family farm is on the East coast of the North Island at a latitude similar to that of central Portugal. We receive about 30 inches of rain a year, mostly during winter, and very light frosts but do experience plenty of wind. The river flats where we have grown our Black Walnuts are made up of deep fertile alluvial soil which retains adequate moisture during our frequently dry summers and yet are reasonably free draining during wet weather.

During the 1960s the NZ Forest service imported Black Walnut seed from a wide range of sites in the eastern US and these had been planted in numerous trial plots throughout the North Island. Over the previous 100 years small numbers of Black Walnut trees had been planted, some of which had been well cared for and grown on suitable sites. There was much speculation as to their potential timber value. Several mature trees growing on private land were indeed sold to a speciality timber merchant at a price that seemed to indicate the merit of further plantings. Today, Black Walnut sells for about twelve times the value of Radiata Pine: about NZ$ 4,500 (£2,250) per cubic meter versus about NZ$ 375 (£190) for the Pine.

In the autumn of 1970 I collected seeds from a Black Walnut growing nearby and planted them on a small river terrace the following spring. All germinated and I managed them as a timber block with regular pruning and thinning as required.

I continued with regular plantings and now have several acres of plantations on prime alluvial valley bottom. I have pruned to about 25 ft and aim to gradually thin as required. One distinct advantage of the Black Walnut is that it is not palatable to grazing animals. Even the possum, which seems to devour most plants with relish, will not touch the young growth, neither will cattle or deer which makes this an ideal tree for an agro-forestry regime where one combines trees and livestock.

Shelter from the wind is most important as the young growth is extremely vigorous. If one is aiming to grow tall straight trees that will yield top quality saw-logs any damage to the growing tip will have a detrimental affect on



34 year old Black Walnut trees in the author's plantations

250mmx50mmx2m Black Walnut planks in the author's workshop

the value of the logs. I have used *Pinus radiata* as a shelter-belt to surround the plantations. This gives adequate shelter as the growth rate is slightly faster than the Black Walnut and so protects the growing tip. I prune the shelter trees to about 25 feet and remove them at about age 20 by which time they have reached a profitable size and are no longer needed for shelter. Some epicormic growth can occur at this stage with the extra light.

The method I use to establish a Black Walnut plantation on a suitable site begins by planting the shelter trees surrounding the site. The following autumn I collect green nuts from the best parent tree in the district and cold-moist stratify them for the winter. I spot spray the site to kill the grass and plant the nuts about six feet apart in the spring. As the nuts are free this close planting provides plenty of room for selection later on at minimal cost. Survival is almost 100% and with direct planting there is no damage to the tap root that could occur by transplanting seedlings. I start annual form pruning when the trees reach about ten feet and also remove any trees that are at all deformed or causing overcrowding.

Up to the age of about 15 years there is very little of the chocolate brown heart wood that is so much in demand from the furniture trade so trees were thinned to waste or for firewood. From about 20 years of age this heartwood increases every year. By 35 years I am able to start milling selected trees that require thinning and in doing so produce a useful volume of sound heart wood from trees with a diameter of about 25 inches.

I fell the trees in the autumn and mill the logs on site using a large chain saw with an "Alaskan milling guide". I then stack the milled planks in the shade using plenty of fillets to allow air movement through the stack which is then covered with roofing iron and left for a couple of years to dry. By this time the moisture content is down to about 14% and the timber is ready to be graded and dressed for use in my workshop. I find the timber dresses well, is stable and is easy to steam bend. It takes a very good finish and is sufficiently hard and strong for use in chair making or for table tops without the risk of damage.

I feel that Black Walnut is a species with a great potential when grown on selected sites. I have seen some excellent examples growing in the south of England and as far north as Ontario in Canada as well as here in New Zealand. There do not appear to be any serious pests or diseases that would pose problems in most locations although in some regions of the southern US trees have been affected by "thousand canker disease" which can eventually kill them. We do not have the grey squirrel in New Zealand. Given careful management, with regular pruning and thinning, it is possible to produce small saw logs at a relatively early age from plantation grown trees. As the age of the stand increases, the size and quality of the lumber produced will also increase. I only wish I could see them in 100 years' time!

The beginning of a forestry career

by James Broom

It has been quite the adventure to date and it is great that the journey has been spent with those that also share an enjoyment of trees, woodlands and forestry.

College

Initially I had been aiming to become a tree surgeon, climbing and cutting trees for a living sounded like quite the life. In 2011 I started a Level 3 extended diploma in forestry and arboriculture at Otley College, Suffolk. This lasted two years and gave me a basic understanding of climbing and cutting trees along with an overview of forestry. During my summers and spare time, I found some work thinning farm woodlands and spent a couple of days a week volunteering at my local Forestry Commission (Rendlesham Forest, Suffolk) as a recreation ranger.

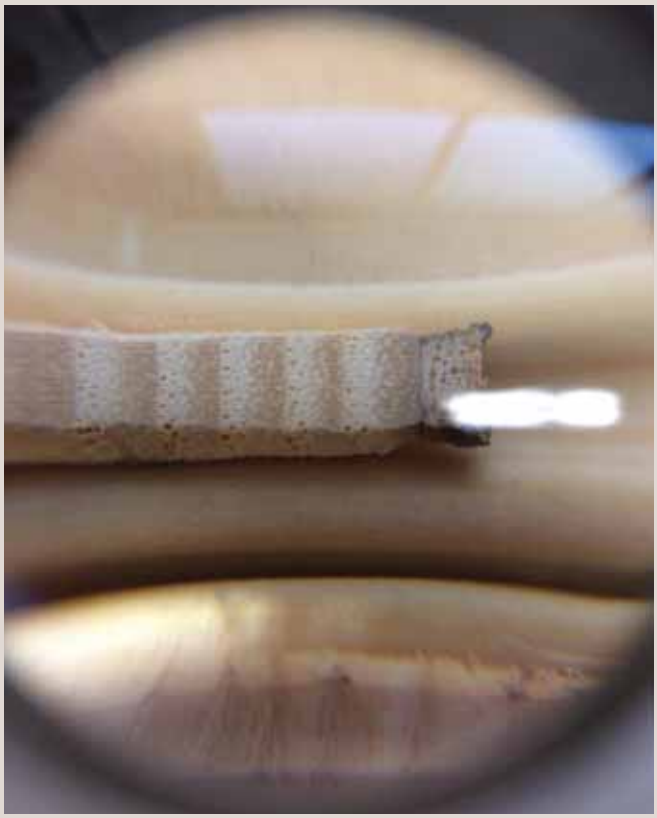
University

After some conversations with my college tutors I decided that studying forestry at university would be the right choice. I ended up choosing the University of Cumbria to study a BSc in Forest Management. From the fields of Suffolk to the hills of the Lake District and an introduction to the Sitka Spruce. I spent four years at university with a placement year working in industry. I spent mine with Lockhart Garratt in Northamptonshire. I would highly recommend any present or future forestry student to undertake a year in the industry. It'll open you up to new possibilities along with giving you a true idea of the industry you wish to enter.

Viking Bursary

During the placement year I was able to think about my dissertation project. I became very aware of the impact of *Hymenoscyphus fraxineus* (Chalara dieback of Ash) and wanted to do something on this. The difficult thing with an undergraduate forestry dissertation is that you have a very limited window to collect data. At some point I had thought that incorporating dendrochronology (the study of tree rings) would be a good idea. I cannot think of a

The first two years at Otley College gaining some practical knowledge



Exploring the impact of Chalara through dendrochronology

better way to create a lot of data from one sample – an entire tree's growth history can be investigated from only one visit to the tree. I was fortunate enough to receive the Royal Forestry Society (RFS) Viking Bursary which helped cover the cost of equipment and mileage to the ten woodlands I sampled from. These woodlands ranged from the Forestry Commission to private estates and the Norfolk and Suffolk Wildlife Trusts.

Prince of Wales Forest Leadership Award

During my final year of university, I eagerly applied to the Prince of Wales Forest Leadership Award run by the Institute of Chartered Foresters and the Canadian Institute of Forestry. The award was set up through Geraint Richards, a Trustee of Woodland Heritage. It is an exchange programme with two Canadian forestry students coming to the UK and two UK students going to Canada for a three month work placement.

I spent three months working in Algonquin Park in Ontario, eastern Canada. Algonquin Park is big, so big that it would cover most of Cambridgeshire, Norfolk and Suffolk. The park is 763,555 ha which could fit around 40 Thetford Forests into it. It is managed by the Algonquin Forestry Authority (AFA), a Crown Agency responsible for sustainable forest management. External contractors are used to harvest the timber with the AFA responsible for overseeing operations.

The principal work I undertook was tree marking. This is a crucial element of work undertaken by the AFA as the park is managed through continuous cover forestry principles and therefore requires skilled tree marking as thinning is not as straightforward. A shelterwood system is implemented in the White Pine *(Pinus strobus)* and Red Pine *(Pinus resinosa)* areas which mimics wildfires (which are now suppressed). A single tree selection system is used in the hardwood areas, where the poorest quality or over diameter trees are removed, and the silviculture system replicates natural processes (by removing timber rather than letting it decay naturally). Due to the scale of the park it is usually easier to camp out during the week within the park. We worked in teams of two to five aiming to individually mark four to five ha a day. It was hot, there were bears and mosquitos, black flies, sand flies, deer flies and horse flies to contend with, but there was a great comradeship with my fellow tree markers. Camping and working in such a park was an awesome experience.

It was fantastic to be working in a healthy forest, beaming with natural regeneration and not decimated by deer browsing as our UK woodlands are. When helping to grade some veneer quality Red Oak *(Quercus rubra)*, White Birch *(Betula papyrifera)* and Sugar Maple *(Acer saccharum)* it struck me how these veneer butts were here by chance (being identified by felling contractors). No pruning or careful management had been required. Rather, there is so much healthy natural forest you can achieve veneer grade quality by chance.

Grading veneer logs with Columbia Forest Products

Now employed

I had secured a full-time job before heading to Canada, helped in part by my placement year and being introduced to my current employer by the late Peter Goodwin, to whom I am grateful.

I am now an assistant forester with New Woods Forestry Ltd based in Norfolk helping to manage over 40 estates across Norfolk and Suffolk. This involves:

- Writing woodland management plans
- Organising contractors to fell and thin woodlands
- Organising replanting
- Designing and planting new woodlands

I am also able to get stuck in practically on smaller operations, occasionally felling trees, planting, high pruning and other forest tending. I am also able to bring some updated ways of undertaking things, such as digitising estate maps and embedding management plan data within these.

There are always new things to learn in forestry and I still have a lot to learn. Thanks to all I have spoken to, observed and learnt from over the last few years.

Home Grown Homes

Welsh timber, Welsh manufacturing, Welsh housing

by Tabitha Binding

Imagine Wales as a high-value forest nation. A Wales with a large and expanding forest area with a dynamic timber processing and manufacturing sector fully integrated with an advanced timber housing industry. The benefits would be huge – a healthy and high-performance built environment, substantial climate change mitigation through low carbon housing and expanded forestry, employment (particularly in rural areas) and an economic win through reduced import dependency.

This dream began in 2016 when Powys County Council (Powys CC) working with a group of local housing associations started to look at the possibility of client led, locally manufactured housing from home-grown timber. Arwain funding through Powys RDP enabled Powys CC to engage Woodknowledge Wales (WKW) to conduct an in-depth feasibility study to assess and map out a strategy to enable this to happen. To engage the sector the Home-Grown Homes Partnership (HGHP) was established. Chaired by Powys CC it consisted of seven Housing Associations, Welsh Local Government Association, Community Housing Cymru and Natural Resources Wales.

L – R Shayne Hembrow, Chair of WKW and Deputy CEO of Wales and West Housing, Tabitha Binding, Project Manager for WKW, Simon Inkson, Head of Housing for Powys CC and Jim McKirdle, Housing Policy Officer for the Welsh Local Government Association

Supported by WKW the HGHP worked on an enabling document that led to Powys adopting a 'Wood Encouragement Policy', a first in the UK, launched in June 2017 at Woodbuild Wales Conference & Expo in Llandrindod Wells, Powys.

The Powys Wood Encouragement Policy seeks to:

- help stimulate sustainable economic development within the timber/wood products industry and encourage development of added value products;
- encourage services to consider the use of wood in the construction and fit-out of council buildings, development and infrastructure (within any grant constraints);
- encourage developers, particularly those creating social and affordable housing to consider the use of wood in the construction and fit-out of homes;
- recognise the benefits that make wood a smart choice for council buildings, development and infrastructure;
- encourage education, best practise, knowledge-transfer and take up of careers in the timber supply chain;
- encourage the use of wood in demonstration projects across Powys;
- demonstrate local and national leadership by adopting this policy

To explore the challenges, engage the industry and encourage ownership, WKW invited selected stakeholders to a series of facilitated workshops. Separating the supply-chain into timber, manufacturing and housing, each group was challenged to unpick the problem from the future perspective!

The premise

It's 2050: 75% of new housing in Wales is built from timber; 75% of timber products are manufactured in Wales; 75% of the timber used is home-grown.

What changed to enable this to happen? What has your sector done to enable this to happen?

The results were encouraging with all participants keen to engage further and drive the dream forward.

Workshop 3 – Can Wales produce the quality and quantity of timber required? Visitors Centre, Coed y Brenin, Dolgellau

The Welsh Government took an interest and at the Royal Welsh Agricultural Show in July 2017, Powys CC, WKW, HGHP representatives and other stakeholders met with the Cabinet Secretary for the Environment and Rural Affairs, Lesley Griffiths, to discuss timber in construction.

Stakeholders meet Lesley Griffiths Cabinet Secretary for the Environment and Rural Affairs in the Coed Cymru, Welsh Timber Pavilion

The Arwain Feasibility study led to a successful bid to the Welsh Government Rural Communities – Rural Development Programme 2014-2020, Co-Operation & Supply Chain Development Scheme, Measure 16.2.

In April 2018, after a lengthy Public Procurement exercise, Powys CC appointed Woodknowledge Wales to lead the delivery of the Home Grown Homes – Timber Supply Chain Study, the ambitious exemplar construction programme to provide stimulus for forest sector development in Wales.

In collaboration with building clients, developers, contractors and the timber supply chain, the exemplar construction programme aims to provide a compelling business case for expansion of timber construction and drive the growth of local off-site manufacturing (OSM) and the use of home-grown timber.

Woodknowledge Wales leads a project delivery consortium, which includes Coed Cymru the Welsh Woodland charity, Cardiff Metropolitan University with its building performance knowledge and TRADA the UK's leading independent authority on the use of timber in construction.

Woodknowledge Wales' role as project lead is to mobilise client demand to provide an impetus for timber construction, local manufacturing and home-grown timber. Working with the consortium to deliver the three objectives of:

- **More and better home-grown timber** – Coed Cymru's role is to help provide creative solutions to the challenges associated with sourcing home-grown timber and providing a stimulus to forest expansion.
- **More and better local manufacturing** – TRADA's role in the project is to support clients in specifying timber, and support the timber manufacturing sector in its commitment to ever increasing efficiency of delivery and quality of outcome.
- **More and better housing** – Cardiff Metropolitan University's role is to support the technical design and delivery of new homes and to provide post-completion performance evaluation in collaboration with the Building Performance Network and harmonised with Welsh Government's Innovative Housing Programme requirements

This ambitious project is set to run until December 2020. Follow the story at **www.woodknowledge.wales**

Woodknowledge Wales completed its second year as an independent member funded alliance in March this year. Its mission is to help turn Wales into a high-value timber economy in a way that improves the natural and built environments and substantially benefits the people of Wales.

"We believe that wood is the key material resource for a more sustainable future and as a consequence, Wales should substantially increase its ambition in afforestation and timber development"

Notes from a native grower and processor from Down Under

by Andrew Hurford

While utilising different species and climatic conditions to the UK, many of the issues for Australian native forest growers and processors appear to be similar.

For four generations, the Hurford family has specialised in the production of high quality Australian hardwood products and for more than 40 years the business has been researching and processing New South Wales North Coast fast grown hardwoods.

Today, Hurford Hardwood is recognised for its willingness to identify trends and stay on the leading edge of change. With five sawmills and three drymills situated in northern coastal NSW and Queensland, we produce a comprehensive range of dry dressed appearance grade timbers. In addition, the family owns and sustainably manages some 10,000 acres (4,047 hectares) of private forested land, including native hardwood plantations.

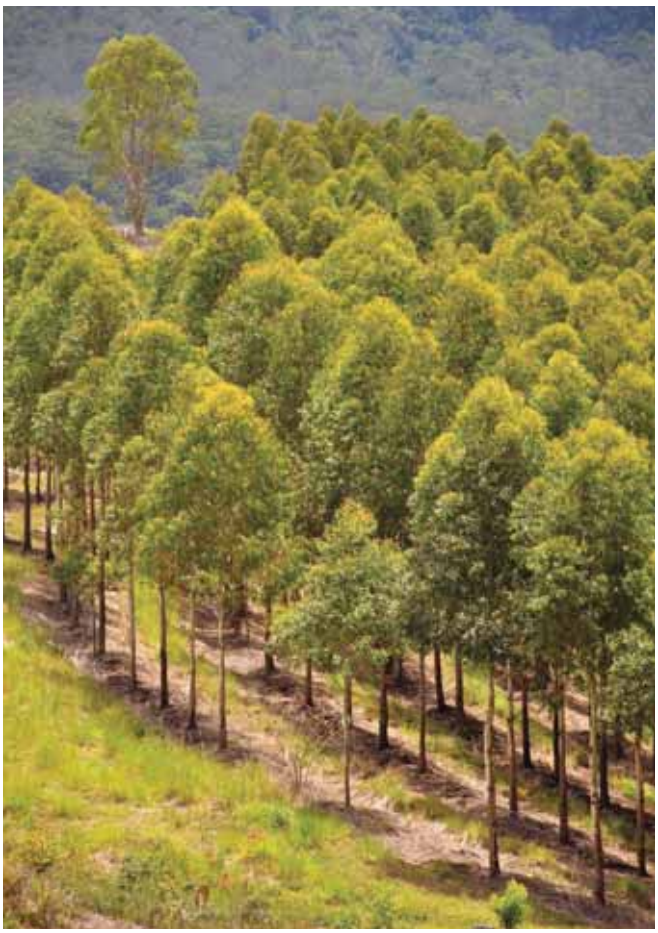
In 1932, Jim Hurford, like many young single men at the time, was stood down by NSW Railways. He began undertaking small building and renovation work and he and his brother became a common sight in North Lismore, riding to work on bicycles with their canvas tool bags on the handlebars and carrying their ladder between them.

By 1952 Jim was well known in the local building trade but was having difficulty with material supplies. So, he purchased a small steam sawmill at Bungalwalbyn outside Lismore and a 1,000-acre timbered property in the same vicinity.

In 1963, the building supply business had grown, and Jim took the opportunity to purchase Brown & Jolly's sawmill at South Lismore together with its "Crown" allocation of 1,430m^3.

Multi-sawing

By 1970, Jim's son, Rob Hurford recognised that their sawmill's viability after the impending cessation of rainforest logging would rely on overcoming problems



associated with processing 40-year-old sawlogs from the NSW Forestry Commission's plantations in Whian Whian State Forest (now Whian Whian State Conservation Area) and other coastal areas. These problems were associated with cutting fast-grown small diameter logs which produce bowed timber due to the inclusion of tension wood.

Experiments were conducted for several months by the CSIRO in Hurfords yard utilising water sprays to reduce the problem but failed and did not produce commercially viable results. Hurfords experimented further using heated water, but unfortunately this proved to be uneconomic.

Rob turned his attention to resolving the problem by utilising a different sawing method. He identified that when cutting with two saws, with each of them removing

the sap, the remaining piece in the centre stayed straight. From 1973, Hurfords has progressively invested in improving multi-sawing techniques.

In the years that followed, the Whian Whian plantation Blackbutt (*Eucalyptus pilularis*) sawlogs became their most highly sought-after resource.

By 1979 the sawmill's annual throughput had reached more than 2,000m^3 logs when the sawmill and hardware premises were destroyed by fire. The family realised that they were too small to operate in the modern market, so purchased a further 6,800m^3 Crown Allocation from a retiring sawmiller.

By the mid-1990s, following the Northern NSW Regional Forest Agreement, Hurfords resource from State Forests was reduced by approximately 50%, royalties were increased by 33% and those forests that Hurfords valued most for their traditional resource were declared national parks.

Necessity breeds invention and Hurfords embarked on an innovative approach. In 1994, Hurfords made the strategic decision to move from their former position of the "local timber manufacturer for the local building industry" to a focus on a broader national market, specialising in high end unique timber products recognising features of durability, strength and appearance.

The family's first step was to invest in expansion by purchasing additional term agreements with the NSW Forestry service from sawmillers exiting the industry. The family rebuilt the South Lismore sawmill, and established a new dry mill at Tuncester. In the ensuing 20 years they have become specialists in a variety of hardwood flooring products and in 2007 commissioned a greenfield state of the art sawmill at Kyogle. The Kyogle sawmill incorporated the latest cutting-edge computer technology and thin kerf high recovery saws and has already been updated in 2017.

Roasted timbers

Hurfords Hardwood has a history of willingness to invest in leading trends. On a trip to Europe, Rob's son-in-law and our CEO, Bob Engwirda, observed thermally modified techniques used to improve durability and stability in timber. He noticed that the treatment darkened the wood, sometimes enhancing the grain, and recognised that if Hurfords could do this with their pale native hardwood timber, it would meet the trend for beautiful dark timber floors in high end projects.

Roasted Cayenne

Hurfords' directors resolved to make the significant investment of capital to purchase a test kiln and after more than three years of conducting research on their native hardwood species, they had perfected the process to an outstanding result and were market ready.

Hurford Hardwood Roasted is a process that uses ultrahigh temperatures to change the molecular structure of the hardwood. The roasting process changes the colour from pale, to a deep dark coffee colour, which penetrates all the way through, eliminating the need to stain floors. Importantly, the process creates an extremely stable, more durable product.

This is just the latest step in a continuing path of constant innovation.

Tree farms and forest management

Ever since Jim Hurford's original forest purchase in the 1950s, three more generations of his family have had a long-term commitment to the forests, communities and economies in which they operate. That original Bungawalbyn land purchase still provides timber to our sawmills through rotational harvesting.

An example of this commitment is an ambitious hardwood reforestation project in the Northern Rivers of NSW. Hurford Forests now own and manage 10,000 acres of native hardwood. These forests continue to produce quality hardwood timber products.

In the mid 1990s there was renewed interest in establishing plantations following a reduced supply of sawlogs due to

2006 – Ailsa age 3, planting trees

Ten years later 13 year old Ailsa measuring her trees

the change in status of former productive State forests to National Parks and State Conservation Areas.

Hurfords began purchasing land for hardwood plantations with the aim of producing high value sawlogs similar to those previously sourced from plantations established by the NSW Forestry Commission in the 1930s and '40s.

We tracked down locally retired foresters from that era and utilised their knowledge to assist in plantation establishment and management.

In 2004 we established our first trial plantation on a 40 ha (100 acre) former dairy farm. We planted three species which we believed would be suitable for the varying soils and topography of the site. We planted Sydney Blue Gum (*Eucalyptus saligna*) on the moist lower flats with heavier soils, Blackbutt (*Eucalyptus pilularis*) on the well-drained undulating hillsides, and Spotted Gum (*Corymbia maculata*) on the steeper stony sites.

With experience gained from this trial establishment we purchased a larger property in the Border Ranges between NSW and Queensland.

In 2005 we prepared parts of the property for planting. Jim Hurford's great grandchildren, including three year old Ailsa, were involved in planting seedlings and early pruning.

In 2017 the dominant trees from this original planting measured 36cm diameter and 36m tall.

Over the years we have planted a range of species to best match the different sites available on the property.

Species have included:

- Spotted Gum (*Corymbia maculata*)
- Red Mahogany (*Eucalyptus resinifera*)
- Sydney Bluegum (*Eucalyptus saligna*)
- Tallowwood (*Eucalyptus microcorys*)
- Ironbark (*Eucalyptus sideroxylan*)
- Blackbutt (*Eucalyptus pilularis*)
- Forest Red Gum (*Eucalyptus tereticornis*) and,
- Brushbox (*Lophostemon confertus*)

We have participated in provenance trials, testing different seeds to determine which are likely to produce the best timber.

Pruning is an important aspect of our plantation management, as it leads to a higher quality end product.

We usually thin very early to remove faulty stems, at approximately two years after planting to allow the remaining trees to grow bigger and faster. After that, we produce a range of products from further thinning harvests at 10-15 years of age, such as small sawlogs and rotary veneer logs, small poles and bioenergy.

After one to two years cattle are introduced to the plantations, providing a medium term supplementary income for the property. The cattle also help control the weeds, reducing management costs and assisting with fire prevention.

Moreover, the Hurfords are eager to demonstrate to other tree farmers the longer-term advantages of site/species selection matching and early pruning and thinning for increased high value yield.

This constitutes an investment in ensuring that the Hurford timber business has a long-term future.

HURFORD hardwood

www.hardwood.com.au

Future Trees Trust

by Tim Rowland, Chief Executive Officer

As a result of our increased profile and reach across the forestry sector, at the invitation of the Forestry Commission, we are working with stakeholders from across the sector on the National Tree Improvement Strategy for both broadleaves and conifers.

We believe that under this strategy, we should be able to access major funding from the Research Councils, DEFRA and others, to ensure that our future woodlands and trees can be as resilient, productive and climate-change adapted as possible. The best chance of succeeding in this is to work closely in partnership with others from across the whole forestry sector with a clear and unambiguous strategic national agenda. This is an ambitious and long-term initiative that will need the engagement of dozens of organisations across the relevant sectors. After a sector-wide stakeholder engagement workshop, significant input from dozens of forestry and ecology experts, we created a Strategy Document, which was launched at our fourth Annual Supporters' Day on 25 May 2017

As the largest organisation in the UK actively engaged in broadleaved tree improvement, it is only natural that Future Trees Trust should sit at the centre of such a strategy. That we were invited to do so by the Forestry Commission is a great testament to our impact, reach and profile across the forestry sector

Our tree breeding work

Our increased fundraising income has enabled us to commit far more funds to vital tree breeding projects, all of which are overseen, coordinated and financially controlled by our part-time Research Coordinator Jo Clark. Our Sweet Chestnut and Oak species groups are particularly active, with many more projects undertaken last year. We are now the principal funder of broadleaved improvement work in the UK and Ireland. A brief summary of our key achievements includes:

Oak

- We have now located five sites for our Oak clonal seed orchards, four in England and one in Ireland, and will be planting out the orchards this winter.
- We employed climbers to visit, assess and collect graft-wood from more of our selected plus trees. Climbers were used to ensure that the highest quality scion material was collected as Oak is a very difficult species to graft successfully and material collected by shooting was found to be inadequate.

Sycamore

- We have undertaken first-year growth assessments at the two progeny trials in Ireland and England to test the offspring of our Sycamore plus trees

Sweet Chestnut

- We have undertaken a DNA study into the genetic diversity of our plus tree collection, providing us with far more information into the original provenance of our collection and confirming the appropriateness of our breeding strategy.
- We are in the process of creating an inventory of all of our plus trees' genetic provenance with respect to plant health and disease issues. This will help us to formulate techniques to safeguard our collection against future pests and diseases.
- We have raised grafted plants for the purpose of 'harvesting' additional grafting material in the future, so that we can create grafted archives and clonal seed orchards.

Walnut

- We have undertaken extensive work singling the stumped Walnuts in our collection at Little Wittenham, the results of which were published in the RFS Quarterly Journal of Forestry.

Short Rotation Forestry study

- We have carried out two-year measurements of 16,000 trees in four Short Rotation Forestry sites at Little Wittenham, Yorkshire, Devon and Lincolnshire.

Environmental Enveloping

- We are working on defining the environmental envelope in which seeds from our orchards may be developed without risk of maladaptation.

Outcomes, measuring our impact and successes

Our most important achievement by far is that, as a direct result of our work promoting our objectives, engaging with stakeholders and

encouraging organisations to become involved, all the main UK forest nurseries are now growing saplings from improved material. In Ireland, the forestry planting grant system insists on the use of improved material whenever it is available. In Scotland, our Birch group is actively lobbying Forestry Commission Scotland to introduce a similar scheme. Although not every customer is yet asking for improved material for woodland planting, the nurseries are supplying it as part of a more technical sales effort and the awareness within the nursery stock industry to try to supply the right trees for forestry is growing annually.

Forestart, the UK's largest tree seed retailer and founder member of Future Trees Trust, will this year, supply around 1,000,000 germinating seeds from Future Trees Trust improved orchard material. It is likely that around 500,000 saleable saplings will be grown from this seed. Five years ago, 250,000 germinating seeds were sold, resulting in around 100,000 saleable plants.

Seed arising from the Sycamore progeny trials (termed breeding seedling orchards) will be classified as 'Tested' under EU forest reproductive material regulations. This is the highest category of improvement possible. All the grafted clonal orchards will produce 'Qualified' seed. This is the second highest category. These clonal orchards will also allow for controlled breeding to raise the seed to Tested status.

The year ahead

This year promises to be another busy year for us. Our work on the sustainable seed source project continues in partnership with Woodland Trust and Forestry Commission England, who have commissioned us to create a report into securing sustainable sources of seed for selected conifer species, the first time we have worked with conifers in our 25-year history.

We will spearhead the emerging National Tree Improvement Strategy, taking a leading role in shaping this important policy-influencing project with the Forestry Commission, Forest Research and the Confederation of Forest Industries.

We also now employ a part-time Assistant, to take on specific projects to support our fundraising and marketing functions. In addition to easing the burden of daily admin, Deborah Scott, our new member of staff, is tasked with:

- Creating a powerful database to manage all our donor reporting and funding applications
- Researching the use of social media in the forestry sector and how we may benefit from using it
- Managing our website content, ensuring it reflects us in the best possible light
- Creating a new suite of promotional material to help raise our profile
- Event-managing our Annual Supporters' Day and Open Management Committee meetings
- Developing our Wills and Legacies fundraising programme

Creation of two new research posts

Following a major award from the Patsy Wood Charitable Trust, in September 2018 we will create two new full-time posts to bolster our research capabilities and to create a succession plan to take our work into the next generation – a Research Coordinator and Research Assistant.

In addition to creating these new posts, the funding will enable us to part-fund two PhD studies into research issues vital to tree improvement and to part-fund sandwich student industrial placements. The grant will significantly extend our research capabilities and ensure that young foresters and researchers are engaged in and can help communicate their work.

This is a transformative award for us, as we'll now be able to manage a greater number of tree improvement projects and get more young people actively involved in our work. Finding funding to support the work itself remains a challenge, but these roles are vital to the growth and development of our charity and to tree-breeding across the UK.

So a very busy year, with even busier times ahead as we make the transition from a totally volunteer-led charity a few years ago to an organisation employing four people with an annual income of over £300,000.

Many thanks to all our members, volunteers and supporters across the United Kingdom and Ireland. We couldn't do it without you.

www.futuretrees.org

Wood-Mizer is working in partnership with Woodland Heritage

We would like to express our thanks and gratitude for the continued support from Wood-Mizer UK for our 'from Woodland to Workshop' courses.

David Brown, who attended our May 2018 course, was supported by a Wood-Mizer UK bursary.

As a self employed farmer and forester, he has over the last 29 years planted and established circa 50 acres broadleaf woodland on his 70 acre farm. His aim is to produce high quality timber using carefully thought out management plans, formative and high pruning and rigorous squirrel control.

David Brown, right, being congratulated on his bursary by Dave Biggs, General Manager, Wood-Mizer UK Ltd

His dedicated work resulted in being selected as the winner of the RFS award for small woodland management in 2015 and the Roger Williams-Ellis challenge cup at the Royal Welsh Show in 2016.

In addition to this he finds the time to construct wooden structures using traditional timber framing techniques and working with local Oak and Larch, as well as studying for the MSc Forestry at Bangor University as a distance learning student.

It is not often that one has the opportunity to meet someone that is so committed.

Obituary

Rodney Helliwell (1940-2018)

Pioneering silviculturist and forest scientist who devised new ways of managing and valuing trees and woodlands in Britain

by Edward Wilson and Philippe Morgan

Rodney Helliwell died peacefully on 23th February 2018 after a long battle with cancer. He was 77 years old. With his passing, the world of tree and woodland conservation in Britain has lost an important champion, someone not afraid to challenge orthodoxy and who promoted innovations rooted in a deep understanding of forest science. His sharp intellect and dedication to scientific methods made him a much sought-after colleague, and an esteemed tree and woodland expert.

Rodney's many contributions embraced the fields of woodland management, arboriculture and conservation. But it is his championing of Continuous Cover Forestry (CCF), a term he was instrumental in defining and promoting, that will stand perhaps as his greatest legacy. Early in his career he identified the need to see woodlands as ecosystems that deliver multiple values and benefits. By maintaining a continuous woodland canopy and avoiding clear-felling, the dominant silvicultural practice in Britain,

Photograph courtesy of Edward Wilson

Rodney leading a session at the CCFG conference on "Understanding daylight in the context of Continuous Cover Forestry", Westonbirt, 2009

he saw an opportunity to manage woodlands in a more sustainable and nature-oriented manner.

A formative experience was in 1959, on a student placement to Sweden, when Rodney worked for one of the few Swedish forest owners who practiced what we now call continuous cover forestry, despite the post-war forestry industry's crushing influence on silvicultural practices in that country. He delighted in recounting that this was the only profitable forest in Sweden and one where the owner always had timber to sell; the coffers were full, the staff were secure in full-time employment and the estate was permanently wooded. To Rodney, this was a simple demonstration of what so often happens when state and corporate institutions uphold practices that work against common sense and refuse to acknowledge what appears to be an obvious truth.

Rodney completed his formal education at University College of North Wales (now Bangor University) (BSc (Hons), 1961; MSc, 1965) and Birmingham Institute of Art and Design (now Birmingham City University) (Dip. Landscape Architecture, 1968). He worked in a variety of technical, planning and research roles between 1961 and 1978, latterly as a senior scientific officer with the Institute of Terrestrial Ecology (ITE), at Merlewood,

Cumbria. In 1978, he took a leap and established his own consultancy practice, which gave him the freedom to pursue a diverse range of advisory, management and research projects. Among several high-profile consultancies, he was terrestrial ecologist to the Channel Tunnel project (1985-1996). This led to innovations in habitat translocation and creation, including the design of vegetation at Samphire Hoe, Dover, established on spoil from the tunnel workings. Although he retired in 2013, Rodney remained active with research and writing. Fittingly, one of his final outputs was a literature review that covered 51 years of themes and papers in *Arboricultural Journal*.

Rodney's skill in combining academic rigour with practicality led to the development of a valuation tool for amenity trees and woodlands, known as the Helliwell System. The basic approach is to allocate points under several criteria, such as tree size, life expectancy and suitability to setting, and then attach a monetary value to the cumulative point score. Rodney published his system in 1967, when he was only 27 years old. It remains the most widely recognised methodology for valuing the visual amenity provided by individual trees and/or woodland in Britain. In many ways, the Helliwell System is a precursor to current work on valuation of natural capital.

Rodney contributed to many national and international conferences throughout his career, where he enjoyed sharing his research, meeting colleagues and engaging in lively discussion. This was certainly the case with his work on CCF, which resulted in him being recognised as a leading proponent among his peers in Europe. It is through this international engagement that he was invited to be a signatory of the Pro Silva founding document, the declaration of Robanov Kot, in Slovenia in 1989, along with other eminent close-to-nature silviculturists including Hans-Jurgen Otto and Brice de Turckheim (both sadly no longer with us).

Inspired by developments in Europe, Rodney played an important role in the formation of the Continuous Cover Forestry Group (CCFG), at Longleat in 1991, and served for four years as the first chairman. Although the group was primarily for foresters to exchange views and experience with CCF, there was always a mission to win more converts to the close-to-nature cause. On this basis, Rodney always said that the group would have a time-limited existence. He believed that once CCF was the default forestry practice in Britain there would be no need for a campaigning organisation. Unfortunately, this has yet to happen and the group is still going strong.

More widely, Rodney was fully engaged with the arboriculture and forestry professions. For several years he was an examiner for the *RFS Professional Diploma in Arboriculture*, and delivered workshops on the Helliwell System for the Arboricultural Association. He also served as a judge for the *RFS Excellence in Forestry Awards* and on the Editorial Board of the *Arboricultural Journal*. He was a prolific author of scientific papers, commentaries and letters to editors. Among several books, *Continuous Cover Forestry* (2002) was a sell-out; a revised edition was published in 2013 with support from Woodland Heritage. In 2009, Rodney proposed a CCFG scientific meeting, again supported by Woodland Heritage, that explored the nature of daylight and how trees interact with light. The conference, *Understanding daylight in the context of Continuous Cover Forestry*, was held at Westonbirt Arboretum. Apart from CCFG, Rodney was active in many organisations, including the Small Woods Association, British Ecological Society and the Royal Society of Biology. He was a Fellow of both the Arboricultural Association and Institute of Chartered Foresters.

Rodney Helliwell was one of the great thinkers and doers in British forestry over the past 50 years. A lover of trees and nature, he will be remembered as a founder of the Pro Silva movement and a father of continuous cover forestry; his legacy is a profound change in management practices that will help shape our future woodland landscape. He is survived by his wife Carole, sons Tristan and Linden, and grandchildren Toby and Saffronrose.

Rodney Helliwell, Silviculturist, Arboriculturist, Ecologist.
Born: 2 April 1940, Halifax, Yorkshire;
Died: 23 February 2018, Wirksworth, Derbyshire.

This appreciation first appeared in the CCFG Newsletter 38, Spring 2018. We thank CCFG for permission to reprint an abridged version in the Woodland Heritage Journal.

Continuous Cover Forestry Group

2018 Events Programme

ProSilva Europe Annual General Meeting 2018, Germany

June 20-23

CCFG Scotland Field Visit to Blelack

Thursday September 13

An opportunity to visit two estates working with CCF systems in Scots Pine as well as some other species, to view the successes, discuss the silvicultural and financial challenges and to consider future options. More information available in due course.

CCFG England Field Visit to Tavistock Woodlands Estates and the Bradford-Hutt system

Thursday September 20

This visit is set in Southwest England and is being hosted by Tavistock Woodlands Estate. The day will give an in-depth look at the Bradford-Hutt system for transforming even-aged stands to continuous cover management.

CCFG Wales Field Visit to Coed Nant yr Eira

Thursday September 27

Phil Morgan will host a visit to Coed Nant yr Eira, a 300-hectare forestry plantation in conversion to continuous cover lying between Llanerfyl and Talerddig in Powys. The transformation was started by Talis Kalnars in the 1990s. Challenging topography and ground conditions have resulted in a mosaic of small coupes in adaptive response to windblow, with ensuing issues of regeneration and light control. Some cleared areas have been re-stocked with an intimate planting pattern to match site types, and several stands are developing more irregular structures.

Field visits are open to members (free), non-members (£15) and students (free). All who are interested in managing woodlands sustainably are strongly encouraged to attend.

Forestry Commission Course – Continuous Cover Forestry in the uplands. Course run by Jens Haufe Clocaenog Forest, near Ruthin

Tuesday 2 & Wednesday October 3 (provisional date tbc)

The Forestry Commission CCF courses provided by Jens Haufe will be available to CCF members again in 2018. The training course will give a general introduction to the principles of CCF. Indoor sessions will cover underlying ecological principles, thinning, stand stability and transformation methods. Clocaenog forest boasts about 2000ha under CCF management and provides the perfect location to experience various stages of transformation from even-aged monoculture to diversely structured CCF systems. The local Forest Manager, who has been instrumental in the transformation of Clocaenog forest to CCF from the beginning, will accompany us on extensive site visits where examples of CCF are shown and discussed. Practical exercises include thinning, site assessment and development of management plans. Spaces are limited so please book early.

For further information contact Mandy Clinch:
administrator@ccfg.org.uk
www.ccfg.org.uk

Editor's note: Woodland Heritage continues to support the CCFG by offering bursaries to its members to attend events at home and overseas. Students and young foresters, in particular, are encouraged to apply for support. Applications are judged on individual merit with preference given to those engaged in forestry, or the production of quality timber. Successful applicants are required to produce an illustrated report for publication by Woodland Heritage and the CCFG.

Book Review

Planting for Honeybees

The Grower's Guide to Creating a Buzz

Review by Susan Bell OBE

Starting to 'think bee'

Honeybees are 'A Good Thing', aren't they? They pollinate plants on which humans, animals, birds and insects depend. They live in complex highly-organised societies. They produce delicious honey. Er ... that's about the extent of most of our knowledge. This delightful, un-preachy book tells us much, much more of the extraordinary lives and talents of these wondrous but much-threatened creatures.

Having thus inspired us it tells us how we can all, wherever we live, play a part in supporting their survival through planting to increase the variety and availability of the forage they need.

Since 2007 the author and her husband have run the sustainable beekeeping business Bermondsey Street Bees, working with charities and businesses to plant honeybee forage in public spaces. However, despite her evident passion for the creatures and concern for the complexity and number of threats to their future survival, Sarah is allergic to their stings and must leave the hands-on hive work to husband Dale.

But she has also established her own bee-friendly garden in Suffolk. It is this joint experience that has been fed into what she insists is a "book of ideas, not a book of instructions". It is not a gardening book but it provides lists of trees and plants that can be grown to provide bees with the pollen and nectar they need.

Amongst the many surprising facts is that honeybees evolved as tree-dwellers and still need to gather the majority of their forage from trees and shrubs rather than from garden flowers or wildflowers. A single Lime tree in flower, for example, provides the same amount of forage as 3,000 sq m (half a football pitch) of wildflower meadow. A list of 'Ten of the Best Trees' to plant for bees is included along with Best Flowers, Best Climbers and Best Shrubs.

Not everyone has the space to plant and grow trees, of course, but advice on bee-friendly planting is given for a whole range of situations ranging from large gardens to roof gardens, living walls and even window boxes. The necessity of seasonal planting is also recognised so winter does not become a forage desert.

Altogether a fascinating read, enjoyably illustrated, that inspires and instructs without ever lecturing.

Sarah Wyndham Lewis
bermondseystreetbees.co.uk
Hardcover: 144 pages
Publisher: Quadrille Publishing, £12
ISBN-10: 1787131467
ISBN-13: 978-1787131460

Bill Hogarth MBE Memorial Apprenticeship Trust (BHMAT)

by Rebecca Oaks

Can it really be fourteen years since we appointed our first two coppice apprentices? Based in the North West of England, BHMAT aims to appoint two apprentices each year, sometimes more or sometimes less. We have fifteen graduates and five more in training at the moment. A further ten trained under the National Apprenticeship Scheme run by Small Woods and two more are in the pipeline.

Inspired by the work of Coppice Merchant, Bill Hogarth MBE, who lived and worked in the southern Lake District, BHMAT was set up by a group of Bill's colleagues who wanted to keep his skills alive. Bill was the last active coppiceman to have been trained by his father in an area that had within living memory supported dozens of coppice workers. They supplied wood for the Staffordshire potteries for crate making, vast quantities for bobbins to be sent to the Lancashire cotton mills and enormous loads of bundled brash for ships' fenders up and down the shipping centres of the NW, to name just a few of the markets.

The challenge for the 21st century coppice worker is to find new markets for coppice products. It is rare to find the big bulk orders of the 20th century, so adding value is key to building a business. Our apprentices are trained and supported to set up their own businesses, spending three years at first closely working with their sponsor business and as they progress developing their own unique blend, often based on the bread and butter products of firewood and charcoal but specialising in a dizzying array of products from hurdles, to furniture, besom brooms, gates and fences, all sorts of garden products. Bulk orders these days may be for fascines for river bank revetment, or birch brush for horse jumps or perhaps the cleft spars for pinning down thatch, equally though it might be interesting branches for a London shop window display.

Coppicing as a form of woodland management has had a chequered history over the past seventy years. In huge demand post war but within twenty years the arrival of plastics saw the markets collapse and many coppice woods converted to either high forest, conifer plantation or at worst grubbed out for agriculture. As an industry we owe thanks to the conservation organisations for they, alarmed by the loss of a habitat that was integral to the survival of many woodland species, reinstated coppicing from the late 1980s onwards.

Our challenge as modern coppicers is reassuring the conservation woodland owners that commercial coppicing is entirely compatible with habitat management and should be financially self-supporting and not a constant drain on the public purse. We are after all often working with hand tools or low tech mechanical aids and focussing on using all the material cut and converting it to high value saleable products rather than mass production of low value produce.

The key barrier to reinstating good value coppice woods is, as I am sure you are all aware, the effects of deer browsing. For high value coppice products even one stray roe deer, wandering through at dawn and taking a bite here and a bite there will reduce the value of that crop dramatically. So fencing is almost inevitably required and has a cost, even if just temporary fences of plastic net held up by posts attached to trees for strength.

Next to this though (and perhaps as important) is allowing enough light into the coppice coups. Hazel coppice cut on a seven to ten year rotation is often grown as 'coppice with standards', a good compromise which allows some timber trees to be grown within the coppice and a woodland 'feel' maintained. It is a fallacy that Hazel grows well in the shade, it will be very suppressed if the standard density is too high. Encouraging the woodland owner to reduce the standards until there is just a 25% canopy cover can be hard to achieve.

Finally we need to get the stocking density right. A coppice that has been allowed to become derelict will have had a good deal of stool mortality and the resulting coppice regrowth is too spaced out to grow tall and straight and importantly to achieve canopy closure within the ideal cycle length. As a habitat the key factor making coppice

Bill Hogarth making besom brooms

unique is the change from strong light to deep shade which creates the correct conditions for many of the coppice species to thrive. If the stocking is too sparse, the time taken to regrow to a point where the deep shade has suppressed the ground flora reduces the value of the crop to the coppice worker if the size of the poles is too large for the product required. This can be rectified by restocking through layering or planting, allowing a shorter cycle length and happy coppice workers!

There has long been a navel gazing argument in the coppice world along the lines of – what are the barriers to a vibrant coppice industry? Lack of suitable woodlands? Lack of coppice workers? Lack of coppice markets?

At BHMAT we have always taken the view that lack of well-trained coppice workers is the major barrier and this is what we have been, in our modest way, addressing. We are perhaps lucky here that there certainly is no shortage of under managed woodlands. Access to them is not always easy but having a Bill Hogarth Coppice Diploma does go a long way to persuading a sceptical woodland owner that his woods are in good hands. As far as markets go we would have thought that we might have reached saturation point by now as successive generations of apprentices graduate and set up businesses but it is a tribute to their entrepreneurial skills and innovation that they each find a new niche and the markets expand to accommodate them all.

Rebecca Oaks is Chair of BHMAT and amongst other things has trained five coppice apprentices, written three books on Coppicing, Greenwood Crafts and (out soon) Charcoal and Biochar, all published by Crowood. She plays an active role in the National Coppice Federation and Coppice Association North West.

www.coppiceapprentice.org.uk

Case Study: Jack Holden

Jack Holden started his apprenticeship in September 2014. He has just graduated having completed his final assessment at the end of November. "I've spent the past three years working in the woods of the south lakes; coppicing the Birch, Oak, and Hazel dense woodlands, as well as developing a specialism in the traditional craft of Cleft Oak with Ian Taylor in Windermere. It's been a whirlwind of learning and progression; just over three years ago I had little chainsaw or woodcraft experience, and the idea of running my own thriving craft business seemed a daydream.
Getting on the BHMAT apprenticeship gave me a unique opportunity to get hands-on experience from day one, as well as funding for all sorts of specialist training courses including timber framing, all of my ground-based chainsaw tickets and the Woodland Heritage 'Woodland to Workshop' course. I now spend my days working in the woods or at my workshop making Cleft Oak gates, fences and furniture, often alongside other BHMAT apprentices, graduates, and sponsors. I'm passionate about high quality, sustainable, local timber products, as well as getting our woodlands back into management. The BHMAT apprenticeship was invaluable in helping me become part of the future of the woodland and woodcraft world. Hopefully one day I'll have an apprentice of my own."
www.mountainoakwoodcraft.com

Jack Holden on a fencing course

The Crumblands Oak Trial in Wales made me do it!

by Rowan Reid, Australian forest scientist and tree grower

In April 2015, I visited Australia for the first time, to attend the joint conference of The Institute of Foresters of Australia and The New Zealand Institute of Forestry. During the post-conference tour we visited the farm and woodlands of Rowan Reid and, like so many other people, I left inspired by what I had seen and heard. Rowan is a thinker and a doer who has, over many years, used his home as the site for trialling his ideas. Rowan and his operation are 'so Woodland Heritage' and I am delighted that he has written an article for our journal this year. I am also excited about the publication of his book, 'Heartwood – the art and science of growing trees for conservation and profit', and can assure you that it will be an enjoyable and informative read.
Geraint Richards MVO MICFor

Before I could change my mind, I sharpened the chainsaw, gathered my protective gear and went down to our 22-year-old plantation of English Oak (*Quercus robur* var. fastigata). It was the day after I'd landed back in Australia after visiting the UK. Using flagging tape, I marked the trees that had to go. Then, I started the chainsaw and cut down some of our perfectly straight young Oak trees that I'd planted myself and had pruned up to 6 metres for timber. It was my visit to the Crumblands Oak Trial in Wales that made me do it! I now knew that our Oak trees were growing too close together.

A few months earlier I had followed Geraint Richards along the country lanes of Wales when he suddenly pulled off into a siding. There was no indication that we'd reached our destination: the 85-year-old Crumblands Oak thinning trial. I'd known of this place for over 20 years, but never knew where it was. I'd read about the trial in G Kerr's 1996 paper in the journal Forestry: "The effect of heavy or 'free growth' thinning on Oak (*Quercus petraea* and Q. *robur*)" (69(4): 303-317). His paper stated that the trial was set up to compare three treatments imposed on a 21-year-old stand of Oak: (a) control, no thinning; (b) light crown thinning, and (c) free growth conditions. The original prescription for "free growth" was that at least one half of the crown widths would be maintained around each of the selected trees. The work continued, almost as planned, for about 25 years.

Kerr presents the growth data up until age 58 years: the widely-spaced trees were 30% larger in diameter than the conventionally "crown-thinned" trees. The wider canopies had increased diameter growth so much that, despite the lower stocking, the thinned plots had produced a higher volume of merchantable wood. Though not mentioned by Kerr, because English Oak is ring porous, the density of the free grown Oak timber would be higher than that produced by the slower growing trees. The catch, as Kerr notes, was that the widely-spaced trees were more susceptible to developing epicormic shoots.

As a young forest scientist, I had purchased a small farm in 1987 with the expressed aim of making forestry, particularly the act of planting, pruning and harvesting trees for timber, attractive to the Australian farming community. Farmers control more than 70% of our land area and have, over the last 200 years, cleared almost all the native vegetation. The impact on biodiversity, soil erosion, water quality and carbon storage has been enormous. Despite the protestations of the green groups, I could see that the greatest conservation issue in Australia is not occurring at the forest blockage, it is at the farm gate.

To explore and promote the potential for forestry to deliver both conservation and profit, I grow more than 50

Measuring basal area around a fine Crumblands Oak

Our Oak plantation before thinning

Photo Cormac Hanrahan

specialty timber species on our farm. Naturally, we have planted many of our native Eucalypts, Acacias, and Casuarinas, but we also grow many northern hemisphere temperate exotics including Poplars, Pines, Coast Redwoods, Black Walnuts and Oaks. Most are grown in mixed species forests which we graze with sheep for income and to control the fire risk.

Silviculturally, my preference has always been to prune for clearwood and thin to promote rapid diameter growth. As an academic at the University of Melbourne, much of my research focused on the relative tolerance of different species to competition. I had plenty of local data to support my preference for thinning my young Pines (*Pinus radiata*) down to about 200 trees per hectare and our Eucalypts to 120 trees per hectare. In both cases, the trees would be relatively free-growing until they approached about 60cm in diameter, after which I could expect to selectively harvest sawlogs.

For the less commonly grown timber species I had to refer to international experience and my own observations. For example, I set up plots in some of the small trial plantations of Coast Redwood in Australia and concluded that they were even more tolerant of competition than Pines (I'd aim for 250 trees per hectare). But, although Oaks are widely grown in our urban parks, there aren't many even aged plantations that could help me determine how hard I needed to thin my English Oak.

The best I could find was a small English Oak plantation near the forestry school in central Victoria that was planted in 1890. After 126 years, the average diameter was just 29.3 cm! It wasn't a site problem; the trees are growing in a well-watered valley and there are other Oaks growing nearby that are well over 70 cm in diameter. It was competition. The stocking rate was 376 stems per hectare and the basal area was 27.2 m^2/ha. The plantation was stagnant. It might have looked pretty but, unless some trees died or were thinned, there would be very little diameter growth on the surviving trees.

I explored the literature further, drew some graphs and concluded that Oaks were much less tolerant of competition than our Eucalypts. An equivalent final stocking for 60 cm diameter trees would be around 70 trees per hectare! That's an average spacing of 12 metres. I'd planted my Oaks at 4m spacing and most of them had grown well. By the time they were 10 years old I'd pruned most of them to more than 5m. By age 15 years, the canopies had recovered enough to suppress the epicormic shoots.

If my data was right, the competition for light would be starting to suppress diameter growth. I would need to thin

the trees. Despite giving the same advice to hundreds of farmers over the years I couldn't bring myself to cut half my beautiful Oak trees to waste. Our 2017 trip to the UK and the USA was booked; I would seek out some evidence, see some forests for myself then make the decision when I got back.

As we walked through the Crumblands trial I identified healthy dominant Oak trees, measured their diameter and then calculated the basal area around them using the point technique (I use my diameter tape as a 2-factor basal area wedge). I had published a paper about the value of understanding the ratio between tree diameter and the basal area of the surrounding forest and regularly used the ratio to help mark plantations for thinning. From the results, I got the sense that a healthy final stocking for 60cm diameter English Oak requires that the basal area of the forest (in m^2/ha) be less than one third of their diameter (in cm) or 20m^2/ha. This translates to a stocking of just 70 trees per hectare. My earlier calculations appeared to be on the mark.

I've worked with farmers and family forest owners across Australia and around the world. It's always the same: it is so hard for a tree grower to cut down perfectly good trees that they have planted and tended for years. In Indonesia, for example, I tried to convince a group of peasant farmers to thin their teak plantations to promote diameter growth. They were convinced that, eventually, every tree would grow into a valuable sawlog. I cut down one tree to show them how the growth rings were getting closer and closer together as the competition increased. I returned a year later and found that, although they had started to prune their trees, few had the courage to thin.

Thinning perfectly good trees requires a confidence that is hard to gather from data alone. I was no different. I need to see a mature forest, measure the distance between the trees. The Crumblands trial provided the example I needed. I hope that my own farm provides the same for our visitors. We all know that trees need space but as a grower myself, I know it is easier said than done.

One of the trees I felled was large enough to mill, although the sapwood was more than 8cm wide. I left the bark on the live edge and soaked the freshly sawn timber in a boron mix to protect the sapwood from Lyctus. The quatersawn boards show off the beautiful medullary rays. I'll make some furniture and small gifts. But most of the thinnings

Thinned Oak on our farm

were too small to mill so I cut them to length and inoculated them with Shiitake mushroom spawn. The waste will provide some firewood; but in Australia the Eucalypts are far superior to Oak for that purpose.

My Crumblands experience reinforces the value of visiting other forests and farms, particularly those outside your own region. In this respect, I think tree growers in Australia and New Zealand have much to offer those in the UK. Forestry is young, our species are diverse and we tend to be less constrained by tradition. We also rely less on government grants that dictate what we should plant and how our forests should be managed. Those who spend their own money get to choose what they want. The result is a diversity of species, planting designs and management that reflects the diversity of the farming community itself. It also drives innovation and we all learn from the successes and the failures of others.

So, if you do get the opportunity, come and visit us 'down under'. In the meantime, you might enjoy reading our tree growing stories. Together, we are an international community of tree growers working to create more productive and sustainable rural landscapes; with trees.

www.agroforestry.net.au

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