

The background of the entire image is a close-up photograph of a tree trunk. The bark is a mottled greenish-brown color, showing signs of weathering and decay. A prominent feature is a circular hole in the bark, located slightly below the center. The hole is dark and appears to be a natural opening or a result of insect activity. The texture of the bark is rough and uneven, with various small pits and cracks visible.

ARCHIVE OF THE TREES

A WOODLAND GUIDE

Edwina fitzPatrick


Fermynwoods Contemporary Art is an educational charity with a focus on environments. They commission visual artists to engage with audiences and the world around us in innovative and meaningful ways, in public spaces across Northamptonshire and online. They work collaboratively to fuse urban culture with the rural landscape and bring rural perspectives into the urban environment. They curate temporary interventions reflecting the performative quality of interdisciplinary art. They infiltrate and subvert the everyday, to find points of resonance and contrast, and create contemplative spaces for audiences.
www.fermynwoods.org

Edwina fitzPatrick's artwork explores mutability and change in the living environment, particularly in spaces in which 'grey' (e.g. architectural); 'green' (e.g. forests) and 'blue' (e.g. rivers) environments intersect. They focus on how humans are affecting the nature, culture and ecology of a place. They also reflect upon how these delicate local balances intersect with complex global issues such as climate change or marine pollution. Edwina uses interactive fieldwork as her working methodology. She completed her collaborative practice-based PhD about sited artwork and climate change in 2014, working with the Forestry Commission. She is the MFA Course Leader at Wimbledon College of Arts, which is part of the University of the Arts, London.
www.edwinafitzpatrick.com
www.archiveofthetrees.co.uk

Heather Ackroyd and Dan Harvey are internationally acclaimed for creating multi-disciplinary works that intersect art, activism, architecture, biology, ecology and history. Referencing memory and time, nature and culture, urban political ecologies, climate breakdown and degradation of the living planet, their time-based practice reveals an intrinsic bias towards process and event. Processes of germination, growth and decay (organic and inorganic), erosion and deposition, feature in artworks that often evolve through extended research in response to people and place, interfacing their profound interest in local ecologies and planetary concerns with socio-political paradigms.
www.ackroydandharvey.com

Forestry England aim to connect everyone with the nation's forests, by creating and caring for our forests for people to enjoy, wildlife to flourish and businesses to grow. Forestry England are part of the Forestry Commission, which was set up in 1919 to expand Britain's forests and woodland after depletion during WW1. To do this, the commission bought large amounts of former agricultural land, eventually becoming the largest land owner in Britain. This land includes Fineshade Wood in Northamptonshire, which has been managed by them since 1922.
www.forestryengland.uk

This project is indebted to Professor Neil Loader and Dr Iain Robertson from Swansea University's Geography Department, who sampled and analysed the tree cores through the **UK Oak Project**. This is an interdisciplinary project investigating the physical and chemical properties of oak tree-rings to advance dendrochronology, dendroclimatology and science-based dating in archaeology.
www.oak-research.co.uk



— This is the tree's bark.

— This is the tree's current cambium layer. It is the thin tissue layer that produces phloem and xylem cells.

'Our connection with trees, with carbon dioxide, the fact that they are fossil fuels that power our energy, our civilisations and our economies, comes round in a perfect circle with The Archive of the Trees images. They form part of the longer term evidence about climate. They are climate data.'

Asher Minns, Director of the Tyndall Centre for Climate Change

2017

Mast year

2016

Mast year

2015

Archive of the trees

The Archive of the Trees project was commissioned by Fermynwoods Contemporary Art in 2018 as part of the Arts Council England funded *The Forest is the Museum* quartet of residencies. It consciously combined scientific data with anecdotal responses to the forest.

Edwina fitzPatrick collaborated with the UK Forestry Commission and Swansea University's Geography Department to take the dendrochronology cores, which were then dried out, scanned and analysed. These were then cross referenced with UK Meteorological Office weather data, news reports and local history archives.



Edwina interviewed 60 people - a combination of foresters, forest residents, local historians and visitors, asking everyone the same questions about their experiences of weather. Their comments were combined with the enlarged images of the tree core scans.

These were presented as waterproofed prints wrapped around eleven of the cored trees to create a trail around Fineshade Wood (shown on following pages), and as two-sided vertical prints in Fermynwoods Contemporary Art's The Arches space. One side was the cored tree's external bark, as though walking through a forest (see left), the other side revealed its interior, with the interview narratives superimposed over the core image (see above).

This is the oak's **sapwood**. It is the outermost living portion of the tree trunk, whilst **heartwood** is the dead older section.

Generally speaking, more annual tree growth means a healthy tree, because it is able to respond to favourable weather and environmental conditions. Only weather conditions of at least four weeks (such as drought) are likely to affect the tree's growth.



This is an annual **growth ring**.
We can calculate annual growth by
the distance between these rings.

2014

2013

Mast year

2012

Seasonality: *Silver Birch* (planted 1975)

At the time of the last Ice Age 14,000 years ago, Britain no longer had any trees. The warming UK climate forced the glaciers to retreat enough for birches, willows and juniper living further south to establish here 12,000 years ago, whilst Britain was still attached to mainland Europe. This burgeoning 'wildwood' (coined by writer Oliver Rackham) eventually led to an explosion around 5000 years ago of diverse plants

and mammals including bears, lynx, and boar adapted to living under or near the tree canopy. Silver birches were wildwood pioneer species with fast early growth, but they are still relatively short-lived in tree terms. This opens up the intriguing thought about which trees died out at the start of the Ice Age and never came back. What is your "dinosaur tree"?

1955 I've more realistic memories of weather when I was older. And that was of cold, waist high snow. We were living in Aberdeen, quite high up, and we used to have to leave a shovel at the back door and dig ourselves out in the morning ... leave the shovel at the gate, and dig ourselves back in again at night. Bruce

1975 There was snow in June in this area. I remember hitting someone's fence as I tried to drive round the corner in the snow. Adrian

1978 We had so much snow that only tractors could get around. We went by tractor to get bread and milk for people in our road. We got more snow in those days. Ann



1978 I remember a hot summer. We actually had summers then, whereas now they seem more sporadic. Joel

2016 Since having a child I've become much more aware of the weather and how we talk about it. If cows are sitting down, might it rain? How can we explain the changing seasons to a toddler? How do children think about the weather? Rachel

2017 Why do we remember summers from our childhood as being really sunny? Maybe it wasn't really like that. It's just that we only remember the good weather. If you had a hot week over the summer as a child it would seem like forever. Gail



2011 had a warm October
with temperatures rising to 27°C°

2010 was the coldest
December since UK weather
records started in 1659.

This is **earlywood** produced
in spring and early summer.

This is **latewood** produced
in mid to late summer.

2011

2010
Mast year

2009

2008

What can trees tell us?

How does a tree grow, given that it has to fashion and refashion itself at every stage of its life? It may grow to be as big as a church, yet must be fully functional from the moment it germinates. As the zoologist Colin Tudge says in *The Secret Life of Trees*, 'To achieve hugeness and yet be self-building – no scaffolding or outside agencies required – and to operate for good measure as an independent living creature through all phases of growth is beyond anything that human engineers have achieved.'

So how does the tree's trunk increase in thickness and still be continuously functional? Xylem is the tree's vascular tissue, moving water and minerals from the roots to the rest of the plant. In trees, it builds another ring of new xylem around itself. Dead xylem becomes heartwood, which acts as the tree's backbone. The newer xylem (the sapwood) serves as the tree's plumbing system, along with phloem.

Dendrochronology (see images on right) exploits the natural "calendar" of tree growth. Taking cores from living trees, it is then possible to match patterns of ring width variability with wood sampled from old buildings or ancient sub-fossil trees preserved in peat bogs. Through this process of 'cross-dating' it is possible to extract information relating to the trees' responses to environmental changes over many centuries or even millennia. It involves examining the chemical composition of the tree rings to obtain a record of past climate. The UK Oak Project studies the oxygen and carbon isotopes preserved within the annual tree rings. These natural chemical markers vary according to the rainfall and temperature experienced by the tree during the summer growing season and are recorded by the tree through photosynthesis and wood formation.


From the wildwood to today

What we call coal and oil today are decayed plants and trees from millions of years before the wildwood. In fact they were trees that lived before the dinosaurs. Asher Minns from Tyndall Centre for Climate Change confirms this. 'The fossil fuels that we burn today are trees from a very long time ago. Ninety percent of carbon dioxide (CO₂) in the atmosphere is caused through burning fossil fuels.'

The CO₂ levels in the air that trees photosynthesise and we breathe, has risen from 280 parts per million, to over 400 parts per million in the last 150 years. The good news is that forests are also carbon sinks, meaning that they lock away CO₂, keeping it permanently out of the air and mitigating against global warming.

Forests are therefore important to us not simply for their cultural value, but because they regulate global climate. There is a carbon budget – currently there is too much CO₂ going into the atmosphere from burning fossil fuels, 10% of which is caused by cutting down trees. The good news is that deforestation is slowing, so there is less CO₂ going in to the air.





If an oak is 900 years old, it took 300 years to grow, 300 years to live and 300 years to die.

The **photosynthesis** process involves the tree taking water (via roots and leaves) and CO₂ (from the air) and sunlight to make glucose and oxygen. **Xylem** and **phloem** then conduct the water and nutrients up to, and from the leaves.

2007

2006
Mast year

2005

2004
Mast year

Oak

How strongly did this tree grow in the year of your birth?

2015

2010

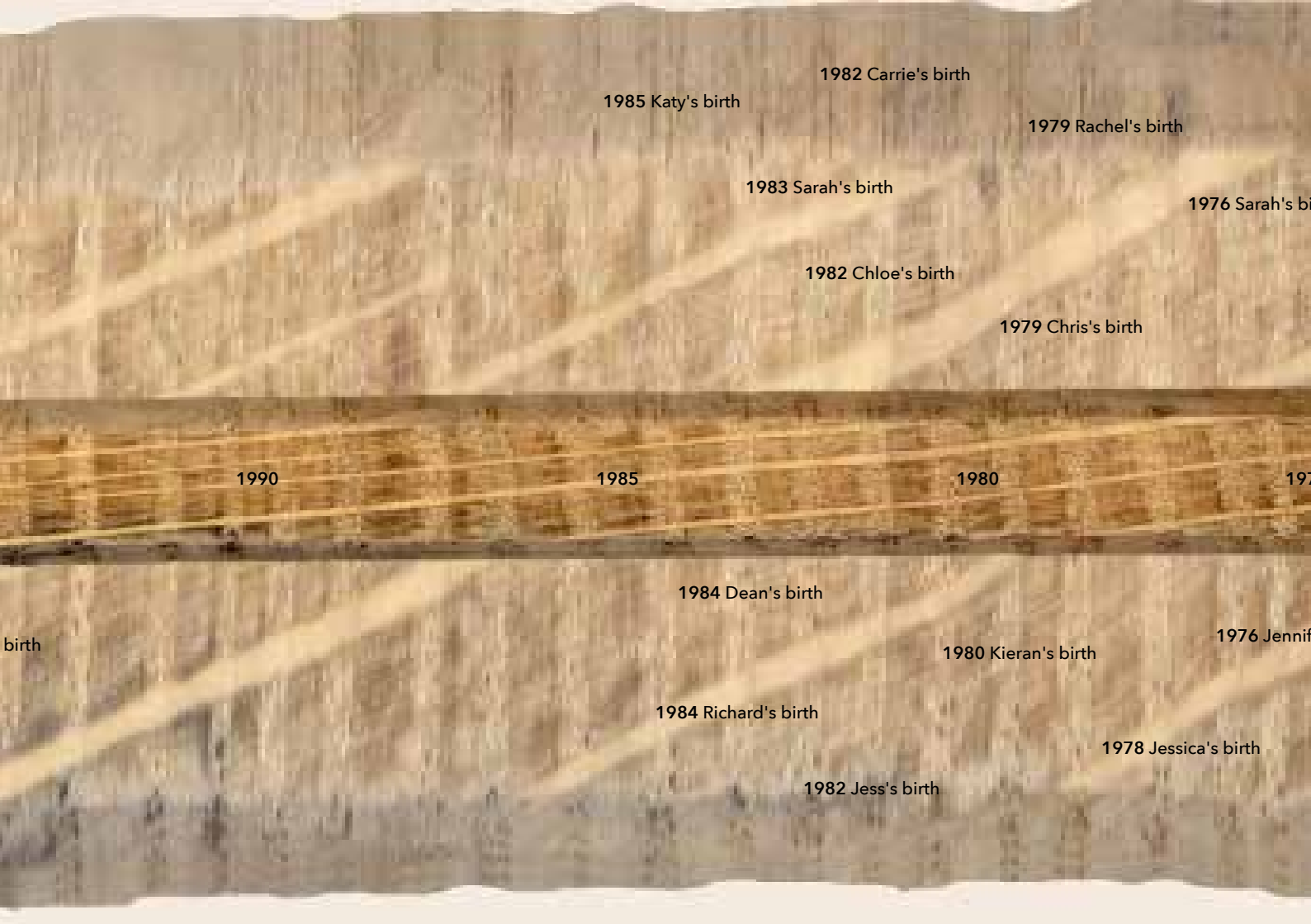
2005

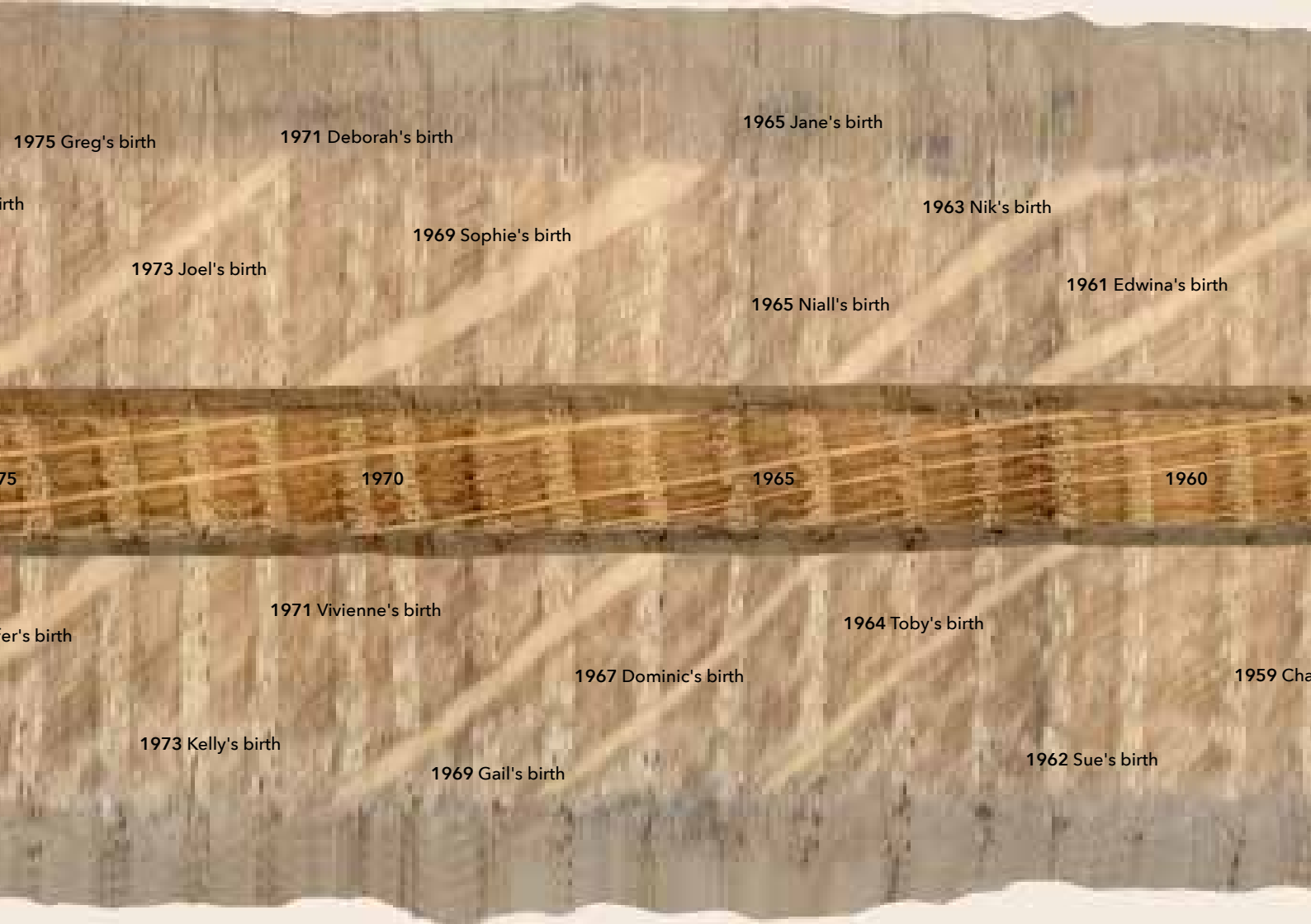
2000

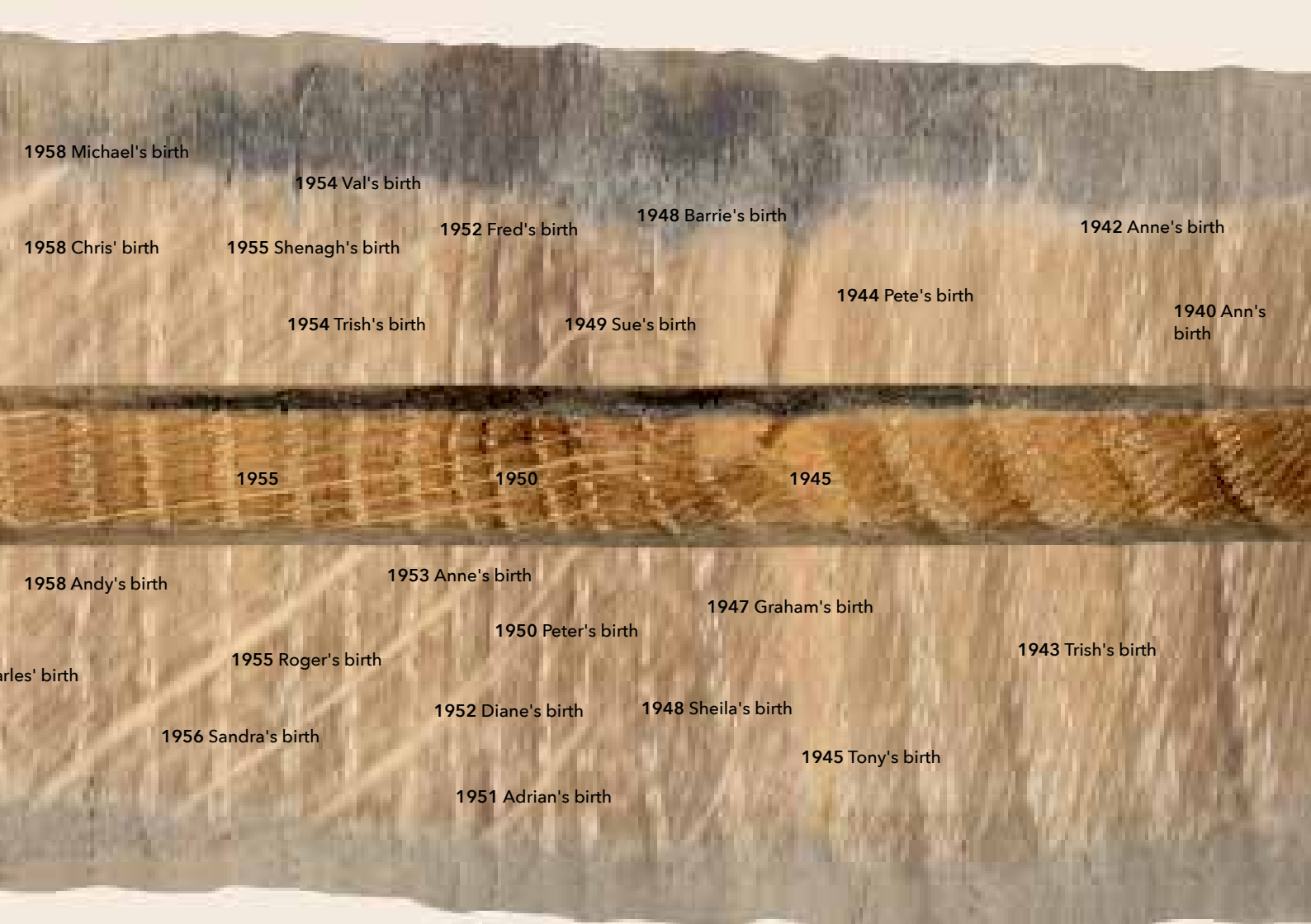
1995

2008 Olivia's birth

1995 Oliver's







Extreme weather: *Oak* (planted/grew circa 1870)

There are around 600 species of quercus (oaks) around the world. The English oak's scientific name is *Quercus Robur*, meaning strength. The oak has become a metaphor for extended time periods, referenced across centuries in human terms, for example Sherwood Forest's Major Oak (Robin Hood) or the Royal Oak (King Charles II). We cannot imagine what something so long-lived might experience. Greenhouse gases

(CO₂ and other climate pollutants) are increasingly disrupting the jet stream, a powerful river of winds that steers UK weather systems. This is causing more frequent summer droughts, floods and wildfires: some of the conditions that we call extreme weather. Large trees (including oaks) are vital in reducing wind speeds and cooling the air as they lose moisture, reflecting the heat upwards from their leaves.

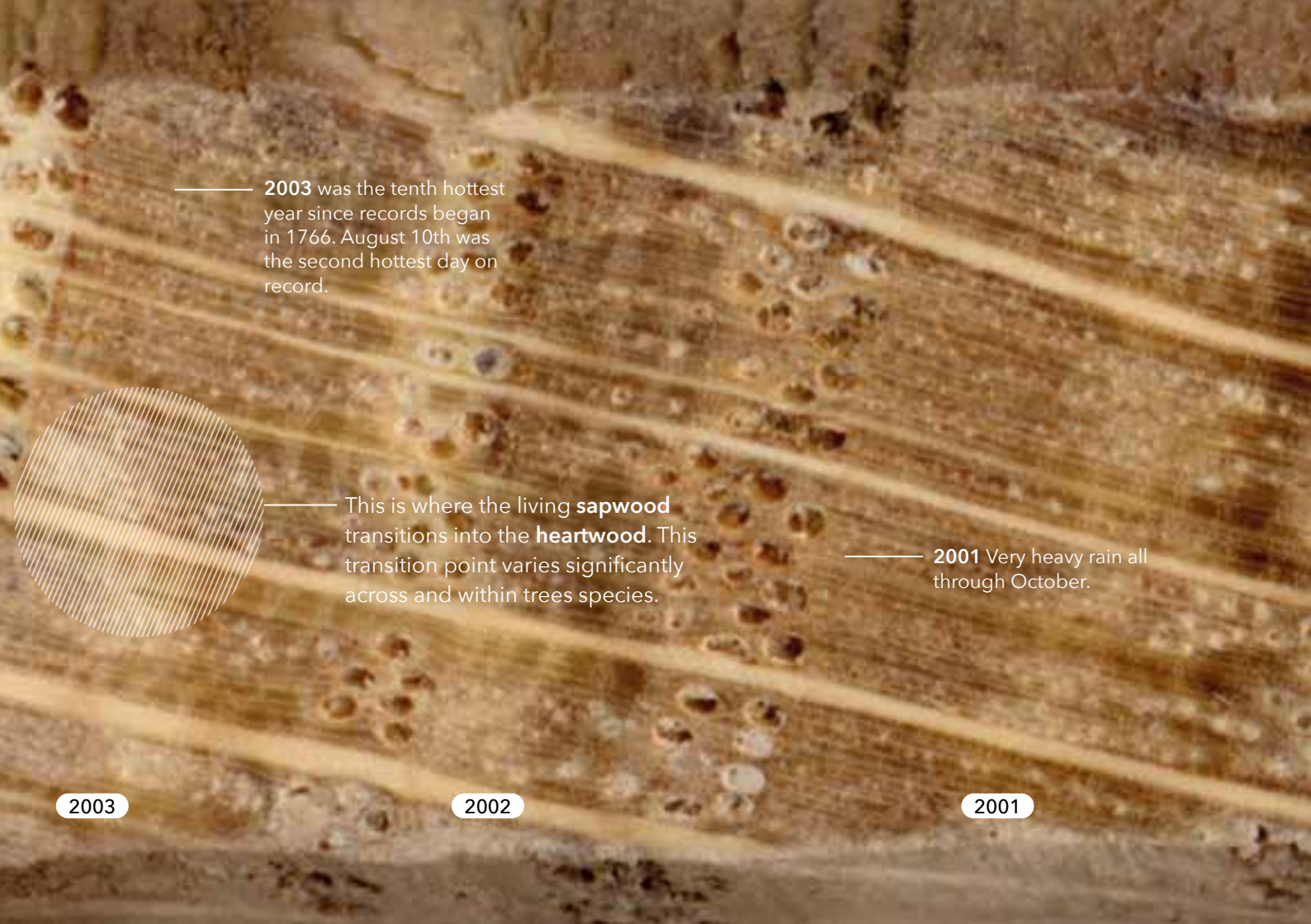
1894 The Midlands were swept by a fierce gale. It uprooted mighty trees that had stood for centuries. An old yew stood in the Hall Yard. It dated back to Norman times when King John stayed in the Hall. The yew tree was cut up by King's Cliffe's wood turners and made into trinkets. Lucy (from King's Cliffe Archive)

1987 I remember walking through a wood after the gales with many of the trees fallen over. They were big trees, so they could have been hundreds of years old. Trish



2007 I'm from middle America and was completely panicked the first time I experienced hail in Northampton. In Illinois, hail in the middle of an otherwise sunny day means conditions are right for a tornado. I saw hail and immediately checked for churning green sky, which is another sign that it's time to take cover. It took me a couple of years to re-write my association with hail, and understand that it's almost the most weather-y that weather gets in this area. It does not escalate to an emergency. Jessica

2017 The most extreme weather I've seen was in Peterborough. There was a massive lightening storm. It was at night and the storm lasted for three hours. It was flashing lightning every 20 or 30 seconds. Richard



2003 was the tenth hottest year since records began in 1766. August 10th was the second hottest day on record.

This is where the living **sapwood** transitions into the **heartwood**. This transition point varies significantly across and within trees species.

2001 Very heavy rain all through October.

2003

2002

2001

Climate change: *Corsican Pine* (planted 1949)

According to the UK Met Office, 15 of the 16 warmest summers since records began have occurred since 2000. The previous hottest summer prior to 2003 was in 1757. Corsican Pines prefer freely draining sandy soil. They require a warm summer climate, tolerating heat, drought and high winds, but are susceptible to frost damage. Is this rise in hot summers affecting the Fineshade trees? With species native to warmer

climates, the heat and lack of water is less likely to cause serious slowing in growth, but we did see some decline in younger trees across different species. This pine's growth was affected by the 1976 drought. In terms of colder winters, all but the Norway Spruce were affected by the very cold winter of 1962-63. See www.tyndall.ac.uk for more info about climate change.

1963 The River Nene froze and there were icebergs in it and you could walk across the river near the bridge. Ann

2009 The concept of predicting barbecue summers is a dangerous one. It raises too many expectations. Nik


1963 I remember the sea freezing – I lived at the seaside. I used to travel to work on a double decker bus at Southend-on-Sea, and I remember seeing the frozen sea and thinking 'wow!' Barrie

2017 How can we explain climate change to a toddler? When and how should we talk about this with our children? Rachel

1998 I know the weather has changed. Once there was spring, summer, autumn, and winter. You knew exactly where you were and you knew what clothes that you should put on. But now you don't. I think this started changing about 20 years ago. Sheila

2018 Weather is what you get, and climate is what you expect, so weather is an accumulation of data. Climate change experts are looking at climate's long-term trends. Asher





15 million tonnes of carbon is stored by UK trees.
An additional 640 million tonnes is sequestered in forest soils.

2000 The wettest
year recorded in
the UK. Spring and
autumn were
particularly soggy.

1998
Exceptionally
mild weather
in January and
February.

2000

1999

1998

Water (too little or too much): *Scots Pine* (planted 1961)

Scots Pines are another wildwood pioneer species that grow well on infertile dry soils. As with all trees, they rely on photosynthesis and transpiration: the tree's internal and external water exchange system. In addition to trees' roots preventing soil erosion, they also mitigate against flooding as they can absorb thousands of litres of storm water. This tree is very different to many other Fineshade Wood trees because

it is almost entirely made up of sapwood (the tree's plumbing). The heartwood dates back to 1969. Despite being one of the youngest trees that was cored, it didn't suffer too badly in the heatwave of 1976. Can you imagine a "leaky" forest? One that is like a river that can't be contained.


1947 We were snowed in for about three weeks. People had cut various paths through the snow, so you had to know exactly where they led to, because if you turned left instead of right, you'd be knocking on a complete stranger's door. They were fine about it as they knew that we were all in the same boat together. Severe winters were the norm. There'd be floods as the snow melted. Colin

1976 I remember a drought, when I was ten. It was very exciting - the river dried up - there were small pools left with fish trying to swim. It was interesting to see such strong variations in weather. Niall



1986 I remember a camping holiday in Cornwall when I was eight and waking up to find that I was floating. I called out to my Mum and she said "Go back to sleep". "But Mum, I'm wet and I'm floating" We packed up the next morning and came home. Rachel

1988 I remember the river flooding because of heavy rainfall at Easter. It flooded all the meadows below King's Cliffe church, down to the mill and the bridge was underwater. It washed away tarmac by Orchard Lane. It took quite a long time for the water to subside. Sue

A close-up photograph of a tree trunk, showing the intricate patterns of its growth rings and medullary rays. The wood has a warm, golden-brown hue. Several thin, light-colored lines (medullary rays) run diagonally across the darker, concentric growth rings. The texture is rough and natural.

— This is one of many **medullary rays**.
They are essential for the conduction
and storage of the water and
minerals around the tree.

1996 One of the lowest
annual rainfalls in the 20th
century - just 918 mm.

1995 Joint lowest
temperature (along
with 1982) of -27°C
on 30 December.

1997

Mast year

1996

1995

Mast year

A culture is no better than its woods: *Ackroyd & Harvey respond*

When is a tree a work of art? Or when is a glass of water an oak tree?

Artist Michael Craig-Martin provocatively asked this when he placed a glass of water on a small bathroom-style glass shelf attached to the gallery wall, with claims that water has been transformed into an oak tree. He deliberately asserts the impossible, de-constructing the work of art to reveal 'the confident faith of the artist in his [sic] capacity to speak and the willing faith of the viewer in accepting what he has to say'.

Barely a decade after Craig-Martin's conceptual sleight-of-hand, artist Joseph Beuys planted a real oak tree and basalt marker to inaugurate the subsequent planting of 7,000 Oaks at the 1982 Documenta international art fair, in Kassel, Germany. Against a background of degraded forests having been ravaged by the effects of WWII, Beuys symbolized the oak tree as an element of regeneration and proposed making the world 'a big forest, making towns and environments "forest-like" ... I start with the most simple looking activity, but it is a most powerful activity; it is planting trees.' Belief in the transformative power of art is integral to Beuys' practice. 'The intention of such a tree-planting event is to point up the transformation of all of life, of society and of the whole ecological system. We will never stop planting'.


When is a forest a social movement?

French author Jean Giono's 'The Man that Planted Trees' (1953) created an unprecedented wave of informal tree planting over the last 50 years. By Beuys' admission, this book inspired him to plant 7,000 Oaks. This short fable beautifully captures both the foreboding sense of man's brutish hand on nature and the redemptive act of planting trees. In 2007 – the same year we arrived in Kassel to collect acorns from Beuys'

original plantings for our open-ended oak growing research project 'Beuys' Acorns', a young German schoolboy (the son of environmental activists who undoubtedly knew of Beuys' work) started a planting revolution. Felix Finkbeiner, tasked with giving a school presentation about a heroic person, delivered a rousing talk on the Nobel Laureate winner Wangari Maathai. It lit a flame of tree-planting in the attending students, caught fire in his home town, and then spread like wild-fire across Germany as school children bid to plant one million trees leading to the formation of 'Plant-for-the-Planet'.

The biologist and activist Wangari Maathai planted over 30 million trees throughout Kenya working with an extended network of tribal women, inspiring people to take charge of their environment, the system that governed them, their lives, and their future. In 2008, the 'Plant-for-the-Planet: Billion Tree' campaign was launched by the United Nations Environment Programme, backed by Maathai and Finkbeiner.

By 2017, over 14 billion trees had been planted across the globe by 55,000 young Climate Ambassadors passing their knowledge on through online academies. In 2019, the project morphed into the 'Trillion Trees' campaign. Beuys suggested that what one believed to constitute "reality" mattered more in terms of human action, social/ political behaviour and personal creativity. His unswerving belief in the power of art seemingly dissolves in the brutal face of climate breakdown and species extinction, yet the mounting scientific evidence is that conservation, restoration and replenishment of forests is profoundly necessary to counteract ecological collapse and create carbon capture. This is where belief in our future lies. In planting trees.



What is your first memory of weather?
What year was this?

Do you see any changes in growth these years?
Is there a difference between the **early** and **latewood**?

1994

1993

1992

Mast year

Pollution: *Beech* (planted 1935)

There is a 600-year-old Beech at Fineshade Wood, called the Centenary Tree. Beeches were one of the last trees to arrive in England after the Ice Age. This tree's core revealed many pores in both its early and latewood, which is a reminder that trees grow through (quite literally) absorbing their surroundings. Polluted air settles onto leaves, and gases caused by burning fossil fuels are absorbed by them. Trees also both filter the

air and reduce pollution levels. Other pollutants can be absorbed by their roots. Dichlorodiphenyltrichloroethane (DDT) was a widely used countryside pesticide for much of the 20th century. It was finally banned in the UK in 1984 because of environmental contamination and negative impact on biodiversity.

1952 The Great Smog of London (5-9 December) involved the normal widespread burning of both domestic and industrial coal, being increased by cold weather conditions. This pollution didn't disperse because there wasn't a wind.

1952 I used to go and stay with my aunts in South London and there was an awful smog in December. It was unsafe to go out of the house. The fog was yellow. Barrie.


1953 The Clean Air Act was passed by UK Parliament. It introduced 'smoke control areas' in key cities, in which only smokeless fuels could be burned.



1948 I was brought up in Cheshire and my first memory is of rain and fog. We were near to Manchester Ship Canal and the River Mersey, which gave off a lot of fog because of the pollution. The Mersey was pink at the time. Trish

1986 The explosion at the Chernobyl nuclear power station in Ukraine, led to radioactive ('acid') rain falling across Europe. The rain contained radioactive caesium 137 and iodine 131, which affected many trees and animals. People from Stornoway reported seeing orange-pink dust at the time.

2017 The sky went orange because of the dust came over from the Sahara. That was weird. Oliver



1987 Hurricane force winds in October. Weatherman, Michael Fish got into trouble for underestimating its strength. Approximately 15 million trees were blown down in one night.

By 1988 this tree was around 120 years old. Oaks grow particularly fast in the first 80-120 years of their lives, and don't even produce acorns until they are at least 25.

1989 The highest wind speeds on record.

1989

Mast year

1988

1987

Introduced species: *Norway Spruce* (planted 1941)

We have become used to the idea of trees "being grown", rather than self-pollinating. Many of our forests had non-native species introduced well before Forestry Commission came into existence. Norway Spruce were introduced to the UK in the 16th century from Scandinavia. They quickly proliferate because they grow very quickly - nearly a metre a year even when immature. Due to their hardiness and adaptability

they have been introduced around the world and thrived. Humans also introduced new tree species millennia ago during the wildwood period. This testing of trees' ability to cope with local conditions was more recently continued by plant hunters bringing living plants and seeds here from around the world. These species are now in many UK woodlands and gardens.

1876 Grey Squirrels (native to North America) were first released in the UK in Henbury Park, Cheshire. Today they significantly outnumber the native Red Squirrel.

1945 During World War II, a considerable amount of native trees were felled for the war effort. Many mature oaks were felled: the government paid £60 per tree. After the war, timber for rebuilding was in short supply. Replanting woodlands with fast growing imported trees, such as Sitka Spruce was a priority.

1978 My first memory of weather is being very hot. My family moved to Kenya when I was six weeks old. Greg



1998 We bought some eucalyptus trees when we first got married and they all died of frost. The ones that we have now have survived for the last twenty years. It's milder than it used to be. Ann

2008 I hear there's a campaign to conserve only native English trees. As an immigrant, I object to this. Jessica

2014 Our ecological Mangalitsa Pig project at Fineshade Wood involved a rare breed of woolly pigs, originally from Hungary. One of the Forestry Beat Managers was interested in using pigs to clear undergrowth using natural grazing to create regeneration. Shenagh



1982 Joint lowest temperature ever recorded in the UK. On 10 January it was -26°C

1981 The Wildlife and Countryside Act was passed to balance forestry activity and conservation.

1982

1981

1980

Biodiversity: *Japanese Cedar* (planted 1960)

The Forestry Commission's early plantations were criticised for their monoculture, but in recent years diverse planting has been echoed by increasingly diverse wildlife. Japanese Cedar's re-introduction in Japan created a habitat for Golden Eagles, which were almost extinct there. All woodlands are vital wildlife habitats, regardless of the trees' age, however, Fineshade's exceptional range of (often rare) species is

likely to be linked to some of its footprint being designated as 'ancient woodland', meaning that trees have been continuously growing there since 1600. Fineshade is part of what remains of what was the much larger Rockingham Forest, dating back to William the Conqueror. See www.fineshade.org.uk

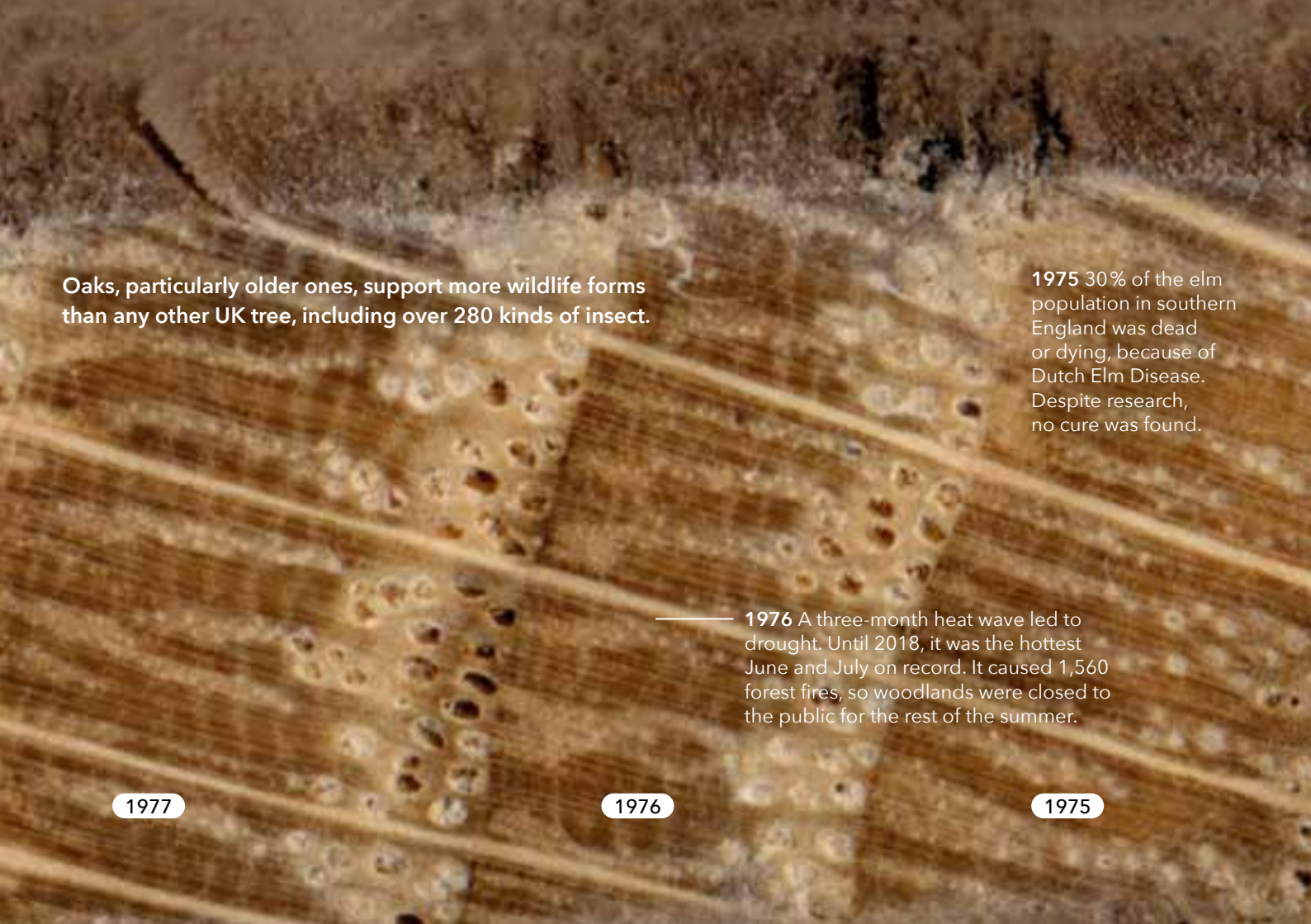
1949 Because we were country people, we'd know the seasons. There's a grass called Sour Grass in summer, which my father introduced me to. It has a maroon and green leaf and grows in grass fields. When you put it on your tongue it makes your mouth water. It slakes your thirst on a hot day. Colin

1980 There are adders here. People used to say "snakes!" as if they were something terrible. We used to take a seat and watch them. They wouldn't harm you if you left them alone. Along the old railway line there's a culvert where the river runs under the railway bank and there's a bridge. You'll get snakes sunning themselves on top of its parapet. But if you walk by, they'll dive three metres below into the water. Sheila



2005 My strongest memory of Fineshade Wood is the Grasshopper Warbler. I was with a group of walkers one summer evening and we could hear grasshoppers and crickets, but it was the bird making this sound. I've seen Willow Warblers and Hedge Warblers but that was very special. Pete

2015 The Mangalitsa Pigs dug up anything in sight to Fineshade. They cleared the Calamagrostis Grass that swamps everything around here, including new saplings. The Forestry Commission started finding baby oaks that hadn't been able to come up through. We worked in square areas for about four years, moving them once the area was clear. Shenagh



Oaks, particularly older ones, support more wildlife forms than any other UK tree, including over 280 kinds of insect.

1975 30% of the elm population in southern England was dead or dying, because of Dutch Elm Disease. Despite research, no cure was found.

1976 A three-month heat wave led to drought. Until 2018, it was the hottest June and July on record. It caused 1,560 forest fires, so woodlands were closed to the public for the rest of the summer.

1977

1976

1975

Land management: *Ash* (planted 1935)

Ash trees are a very demanding species, being cold-hardy yet susceptible to late frost damage. According to farmer and writer John Lewis-Stempel, the felling and management of trees started millennia ago. By 3000 years ago 'the dismantling of the wildwood by Neolithic farmers had begun... then came the Celts with their iron tools... and the Romans turned much of lowland Britain into an imperial bread basket'.

The 1086 Domesday Book (written around the time of Rockingham Forest's inception, in ink made from oak galls), reveals that only 15% of England's land was recorded as being woodland or wooded pasture. Today, the total UK area of woodland is 13%. The rest of Europe averages 38% forests.


1898 Tree felling took place in April, May, and June each year, when the sap was rising. This was done at the behest of the Marquis of Exeter by Geo Coles, who was head woodman with his team ... Two or three men would use the axes with skill. All the undergrowth had to be cleared before cutting and they were all bundled up and sold for pea and bean sticks and firewood. When finished the trees would be sold by auction to the highest bidder. The bark of the trees was peeled off and sold for making leather for tanning. James (via King's Cliffe Archive)

1953 Before felling a tree, we would cut round it with an axe about six feet up from the ground and peel off all the bark. The bark dyed your hands a deep purple. When you finished at the end of the day your hands were dark -you couldn't get it off. Gordon (via King's Cliffe Archive)



2001 When the Foot and Mouth Disease outbreak happened, nobody could come up to Fineshade at all – just us that lived here. With no one here, the Wood went back to its natural state as the Forestry Commission weren't doing any work. There was a sanitising mat at the top of the road by the A43 that we drove through. Shenagh

2011 I'm not used to living on clay. Fineshade Wood shifts between clay and limestone. It's the area's unpromising geology that has left it as woodlands rather than pasture. I've given up on cleaning the mud from my clothes. Niall



Not all trees grow in the same way.
Palm trees grow from the top and have no **cambium** layer (this normally creates the **xylem** and the **phloem** cells).
This means that no matter how tall a palm becomes, its trunk never gets thicker.

1974

1973

Douglas Fir

2015

2010

1996

The cold winter affected the tree's growth.

2005

2000

1995

2001

There was physical damage to the tree,
which created scarring and over-production of resin.

1994

The tree transitions from
sapwood to **heartwood**
this year.



1990

1985

1980

1979

An external factor such as another tree's branch, is likely to have caused this curvature in growth.

1972-1959

The tree grew very slowly after being planted in 1959. The sudden spurt in growth in 1972 may have been the result of tree thinning, which gave the tree space to grow. Alternatively, there may have been an insect infestation or perhaps changes to forest management.

1975

1970

1965

1960

1976-7

The tree grew very little both years, possibly as a result of the 1976's very hot dry summer.

1963

There is damage to the resin ducts, followed by very narrow growth rings. Conifers produce resin to seal wounds. Organisms that try to enter a tree via a wound can be flushed out, or become trapped in the seal and then are overcome by the resin's toxicity. It is also thought that resins have high antiseptic qualities that prevent decay and lower the amount of water lost from the tree's tissues.

From tree disease to the wildwood(s)

The only Fineshade tree that our coring showed to be in decline was the ash. It may have succumbed to ash dieback (*Chalara Fraxinea*). This fungus was first spotted in Europe in Poland in 1992, where it probably arrived on commercially imported ash from East Asia. In its native Asia, the fungus is a widespread leaf pathogen and is relatively harmless to the trees.

However, across Europe it is killing ashes at an alarming rate. It spreads quickly through tiny airborne spores and reached the UK from mainland Europe in 2012. This timing coincides with the Fineshade ash's growth decline. As botanist Elizabeth Orton says, 'Trees have such a long lifetime, and their populations take so long to recover from attacks by invasive pathogens, that it is vital to restrict the movement of potentially infected plants into and around Europe'.

We should be aware, however, that trees have long moved around the world. What we regard today as being native UK trees, survived the Ice Age by growing in warmer areas further south. According to climate change expert Andrew Watkinson, the English oak originated in Spain, beeches arrived from the Balkans, and ashes from Spain. Forests naturally expand at a rate of 250-500 metres a year through seeding by wind or birds. This begs the question; did they slowly spread here whilst there was still the land bridge to mainland Europe, or were the seeds introduced by the first farmers? It was probably a combination of both.

No wildwood (what we would call an arboreal wilderness) survives today in Britain. Around 4,500 years ago, a period of cold, wet weather began, encouraging the spread of peat bogs that are used by dendrochronologists today. Pollen studies suggest that in some areas,

this was not so favourable for tree growth. The tree-line became lower, and in the wettest areas, pine retreated and were replaced by scattered broad-leaf trees.

We are in a similar position today in the Anthropocene Age. Changing climates are again having a profound effect on trees. In addition to how species adapt to changing rainfall, temperatures, and wind conditions, warmer weather causes tree diseases such as those associated with the Oak Processionary Moth. Changing climate also affects more mobile biodiversity such as birds and mammals. The wildwood/forest has always been influenced by humans, and still is, which is why it is part of our cultural heritage. Woods are cultural constructions. The good news is that land stewardship is being questioned in many ways and contexts. For example, there are planting schemes such as urban community forests, which have created over 10,000 hectares of new woodland since 1990. We are literally and metaphorically asking important questions about the "nature" of a place.

Perhaps we can also learn from these long-lived trees. The ecologist Aldo Leopold coined the term 'self-willed land' for large wild areas, free of intensive human management. Instead of humans stewarding the landscape, how might forests "manage" themselves? This is being tested by rewilding projects such as Wild Ennerdale in Cumbria, in partnership with the Forestry Commission. Even over a relatively short period (in woodland terms), there has been a huge positive impact to all areas of the forest's biodiversity and disease resistance. Knepp Wildland Project's rewilding experiment in Sussex also challenges conventional ideas about past and present UK landscapes, dating back to the wildwood.



In 2019, the 'natural capital' of services provided by trees in the publicly owned woodlands (including the Forestry Commission) was calculated as £22.5 billion. This sum factors in the trees' ability to maintain air and water quality.

1972

1971

Forests as recovery/recovering spaces: *Douglas Fir* (planted 1959)

Douglas Firs were introduced from the west coast of America. They are one of many tree species that have 'mast years': this is a natural phenomenon in which they produce a glut of seeds. Mast years are not just one-off events occurring with one specific tree - the vast majority of woodland trees across the UK have an excessive seed crop. They normally occur every five to ten years, but this has increased globally

over the 20th century. In the UK, mast seeding intensity appears to be linked to the North Atlantic Oscillation (part of the jet stream), which controls springtime temperatures and rainfall. Why do trees do this given that it diverts a significant amount of the tree's energy away from transpiration, the creation of new xylem and creates competition for itself? Is masting a recovery mechanism?

1968 The Countryside Act opened Forestry Commission woodlands to the public for the first time.


1976 With the drop in demand for timber, the UK government re-branded woodlands as leisure spaces. Forests had to pay their way using other means.

2000 My fondest memory of visiting Fineshade Wood was just after they'd released the Red Kites. There were two or three pairs released. Two were poisoned originally, but everything has been fine since then. Adrian



2010 We started coming to Fineshade after we had a bereavement - we lost one of our little boys. We spent a lot of time here after that and walking because it makes us feel peaceful. We can switch off here. J and J

2017 This last year I've used mountain biking around Fineshade Wood as a way to recover from depression. I visit once or twice a week. Every so often I stop, do nothing and listen to the birds. C



An oak tree can shorten itself in response to the ageing process in an effort to live longer.

1964

This and the previous year had very low rainfall.

1967

1966

1965

1964

A culture is no better than its woods: *being wildly imaginative*

The artist Olafur Eliasson defines culture as being 'where identity, history and belonging, are evaluated and formed'. Forests have been influenced by humans since the wildwood, which is why they are part of our cultural heritage, being simultaneously our past, present and future.

Despite having the lowest forestation in Europe, we excel at old trees. According to the Woodland Trust, there are 3,400 oaks over 600 years old in the UK. By contrast, the figure for the whole of mainland Europe is estimated to be just 2,000 ancient oaks – 1,260 of which are in Sweden. Why are there so many more in the UK? Royal Botanic Gardens Kew's recent research suggests that England's ancient oak heritage is a consequence of this country's unique political and cultural history. Given that landowners had quotas to fell ancient oaks during WWII, that is quite an achievement. It means that we have the opportunity to enjoy the extraordinary biodiversity that only these very old trees provide.


Much of our disconnection with the "natural" world (often attributed to the Romantic Movement) is rooted in language. What do we mean by "nature" both historically and today? Also, we are forgetting words, and by doing so we are losing powerful insights into the world around us. Isabella Tree (Knepp Farm Wildland Project) asks 'How many trees, flowers, birds and insects can an average person identify today? ... The 2012 Oxford Junior Dictionary, aimed at seven-year-olds, continues writing nature out of young minds, replacing 'acorn', 'buttercup' and 'conker', with 'attachment', 'blog' and 'chat room'. Other words such as 'climate change' have become meaningless because the actual scale, duration and impact of this, is as unimaginable to humans as what a 1000 year-old oak may have lived through.

Geographers Erle Ellis and Navin Ramankutty argue that 'we live in human systems with natural ecosystems embedded within them. The long-held barriers between nature and culture are breaking down. It's no longer us against "Nature." Instead, it's we who decide what nature is and what it will be. To master this huge shift, we must change the way we perceive ourselves and our role in the world.'

Also, how do we "consume" our environment? We love consuming things, be they coal (more heat...), oil (more cars or holiday flights...), food grown thousands of miles away, or Amazon purchases (wrapped in processed trees). In fairy tales, the opening line is often 'in a land far far away'. In the "developed world", humans have put a lot of faith in the land of "Far Far Away". This exists beyond a toilet's U-bend, or in the refuse bin or in a landfill site.

"Far Far Away" is how we've disposed of the unwanted and the toxic for years. Finally, we are becoming aware that "Away" doesn't exist. "Away" is someone else's problem. "Away" is the plastics choking sea birds in the Arctic. This may be the tipping point, which shifts our extractive behaviours to ones that are additive, interconnected and empathic.

So can we be wildly imaginative in order to make this change? And what do we really mean by wilding and being wild? To quote Isabella again, 'to some, the idea of re-wilding is a licence to behave wildly'. This implies that in human terms, wild means unruly or disrespectful, whereas we respect wildness in "nature". Perhaps being more speculative, more "what if..." can address this, particularly through science-art collaborations. This is why we wanted to show you the extraordinariness of the interiors of trees.



1962-3 This winter was known
as the "Big Freeze".
It was the third coldest winter on record.

1962

1961

1960

1959



ISBN 578-1-78572-327-4



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